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TECHNICAL MANUAL

ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE WITH ILLUSTRATED PARTS BREAKDOWNS EMERGENCY PERSONNEL AND DROGUE PARACHUTE SYSTEMS

This Change incorporates IRAC's 137, 138, 139 (Cancelled), and 140, TPDR's, and minor technical and administrative changes.

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WITH ILLUSTRATED PARTS BREAKDOWN

EMERGENCY PERSONNEL AND DROGUE PARACHUTE SYSTEMS

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WARNINGS APPLICABLE TO HAZARDOUS MATERIALS

Warnings in this manual alert personnel to hazards associated with the use of hazardous materials. Additional information related to hazardous materials is provided in OPNAVINST 5100.23, Navy Occupational Safety and Health (NAVOSH) program manual, NAVSUPINST 5100.27, Navy Hazardous Material Control Program and the DOD 6050.5, Hazardous Materials Information System (HMIS) series publications. For each hazardous material used within the Navy, a Material Safety Data Sheet (MSDS) must be provided and available for review by users. Consult your local safety and health staff concerning any questions regarding hazardous materials, MSDS, personal protective equipment requirements, appropriate handling and emergency procedures and disposal guidance.

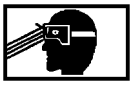
Under the heading **"HAZARDOUS MATERIALS WARNINGS",** complete warnings including related Icon(s) and a numeric identifier are provided for hazardous materials used in this manual.

In the text of the manual, the caption **"WARNING"** is not used for hazardous material warnings. Hazards are cited with appropriate Icon(s), the nomenclature of the hazardous material, and the numeric identifier that relates to the complete warnings. Users of hazardous materials shall refer to the complete warnings, as necessary.

EXPLANATION OF HAZARDOUS MATERIAL ICONS

CHEMICAL
The symbol of a liquid dripping onto a hand shows that the material will cause burns or irritation to human skin or tissue.

EXPLOSIVE
This rapidly expanding symbol shows that the material may explode if subjected to high temperature, sources of ignition, or high pressure.



EYE PROTECTION
The symbol of a person wearing goggles shows that the material will injure the eyes.

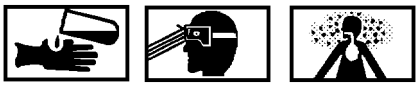
FIRE
The symbol of a fire shows that the material may ignite and cause burns.

POISON
The symbol of a skull and crossbones shows that the material is poisonous or is a danger to life.

VAPOR
The symbol of a human figure in a cloud shows that material vapors present a danger to life or health.

Technical Acetone, O-A-51 **1**

Technical Acetone, O-A-51, is toxic and flammable, Protection: chemical splashproof goggles and good ventillation; keep container closed; keep sparks, flames and heat away. Keep acetone off skin, eyes and clothes, do not breath vapors. Wear gloves.



Aluminum Oxide, PC 451 **2**

Aluminum Oxide, PC 451, is toxic, Protection: chemical splashproof goggles and good ventillation. Wear impervious gloves, apron. Prevent skin contact, do not breath vapors, contact lenses pose a special hazard.

Chemical Conversion Coating, MIL-C-81706 **3**

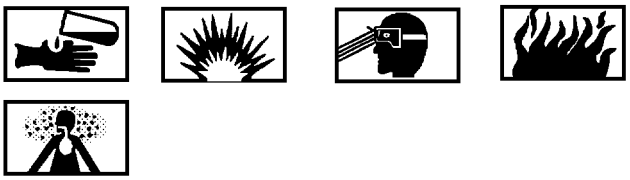
Chemical Conversion Coating, MIL-C-81706, Is an irritant. Protection: good ventillation, rubber gloves, safety glasses/goggles, apron.

Diethylene Triamine, O-D-271 **4**

Diethylene Triamine, O-D-271, is toxic and flammable. Protection: chemical splashproof goggles, face shield, rubber apron, rubber gloves, chemical respirator. Do not breath vapors.

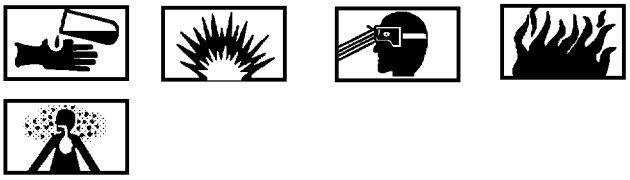
Epoxy Primer, MIL-P-23377 **5**

Epoxy Primer, MIL-P-23377, is toxic and flammable. Protection: do not breath vapors, wear gloves, chemical splashproof goggles, respirator, good ventillation. Keep container tightly closed, store in dry area. Protect from physical damage.



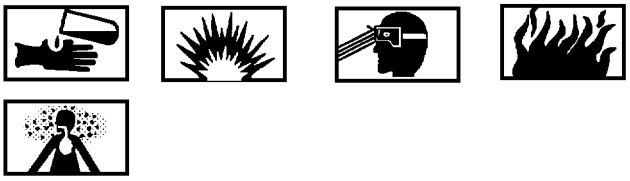
Epoxy Resin, MIL-R-9300 **6**

Epoxy Resin, MIL-R-9300, is toxic and flammable. Amber colored liquid and ammonia odor. Protection: chemical splashproof goggles, respirator and good ventillation, closed container. Do not breath vapors.



Polyvinyl Alcohol, MIL-P-265 **7**

Polyvinyl Alcohol, MIL-P-265, is toxic and flammable. Protection: chemical splashproof goggles, gloves, respirator and good ventillation. Keep container closed; store in cool dry area, avoid dust inhalation.



Aliphatic Thinner, MIL-T-81772 **8**

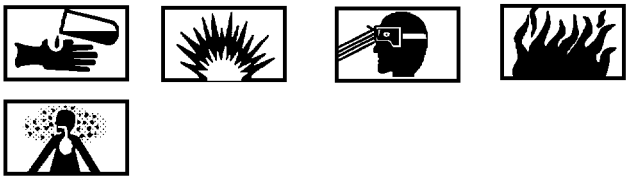
Aliphatic Thinner, MIL-T-81772, is toxic and flammable. Clear thin organic thinner solvent-MEK odor. Reactivity data: Stability yes; Health Hazard: Moderate irritation to skin, vapors can cause irritation or narcosis, avoid prolonged inhalation of vapors; Protection: chemical splashproof goggles, rubber gloves, respirator and good ventillation

Denatured Alcohol **9**

Denatured Alcohol, O-E-760, is a fire and explosive hazard, the alcohol's volatility is an inhalation and fire hazard. Avoid exposure to elevated heat, any possible sources of ignition/explosion, such as heat, sparks, open flame, or lighted tobacco products; and direct physical contact with any chemicals that would produce hazardous reactions. Protection: chemical safety goggles, rubber gloves, respirator and good ventillation.

Uralane Adhesive **10**

Uralane Adhesive, 8089ABX, unusual fire and explosive hazards material; may/may not burn. Container may explode in heat of fire. Fire may yield toxic gases. If inhaled remove to fresh air, give CPR is necessary, flush eyes. If ingested; rinse mouth. Get medical attention for eyes, breathing difficulty or other symptoms of exposure. Protection: chemical safety goggles, rubber gloves, respirator and good ventillation. Full work clothing to prevent repeated or prolonged contact.



Isopropyl Alcohol, TT-I-735 **11**

Isopropyl Alcohol, TT-I-735, use water spray to cool. The material is stable in closed containers at room temperature. Notify safety personnel of large spills or leaks. May cause irritation of the eyes, nose and throat. Protection: chemical safety goggles, rubber gloves, respirator and good ventillation.

Sealing Compound, MIL-S-46163 **12**

Thread locking sealing compound, MIL-S-46163, Type I Grade K, L; Type II Grade M, N, O; or Type III Grade R. May cause dermatitis on prolonged contact. Avoid prolonged skin contact. Protection: rubber gloves, chemical goggles, and protective compound.

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INTRODUCTION

ORGANIZATIONAL, INTERMEDIATE AND DEPOT MAINTENANCE

WITH ILLUSTRATED PARTS BREAKDOWNS

EMERGENCY PERSONNEL AND DROGUE PARACHUTE SYSTEMS

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1	11	12	10	23	10	26 thru 27	9
2 thru 8	9	13 thru 20	9	24	9	28	10
9	10	21 thru 22	11	25	11	29	11
10 thru 11	9						

1. PURPOSE AND SCOPE.

a. This manual provides organizational, intermediate and depot maintenance instructions, with Illustrated Parts Breakdowns for Emergency Personnel and Drogue Parachute Systems used in naval aircraft.

b. This manual contains information and instructions pertaining to configuration, function, application, maintenance and storage of these parachutes.

c. The above information and procedures are presented in Work Packages (WPs). Each WP contains all information, including tables of required materials and equipment, necessary to complete required maintenance tasks. WPs are designed to be compatible with the Source, Maintenance, and Recoverability Codes contained in the Illustrated Parts Breakdowns.

2. COMMENTS AND RECOMMENDATIONS.

a. Comments and recommendations shall be submitted on Technical Publications Deficiency Report (OPNAV 4790/66).

3. DRAWINGS.

a. Requests for engineering drawings will be made per NAVAIRINST 5600.15.

4. QUALITY ASSURANCE PROCEDURES.

a. Quality Assurance (QA) points are provided for critical operations. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Verifying completion of QA steps may be delayed by QA if their satisfactory completion is verified in later steps. In no case shall an Aircrew Survival Equipmentman perform his own quality assurance inspection.

5. NAVAIR TECHNICAL PUBLICATIONS.

a. Procedures to be used by naval activities and other Department of Defense activities requiring NAVAIR technical manuals are defined in NAVAIR 00-25-100 and NAVAIR 5605.5A.

b. To automatically receive future changes and revisions to NAVAIR technical manuals, an activity must be established on the Automatic Distribution Requirements List (ADRL) maintained by the Naval Air Technical Data and Engineering Service Command (NATEC). To become established on the ADRL, notify your activity central technical publications librarian. If your activity does not have a library, you may establish your automatic distribution requirements by contacting the Commanding Officer, Naval Air Technical Data and Engineering Service Command (NATEC), Naval Air Station North Island, P. O. Box 357031, Building 90 Distribution, San Diego, CA 92135-7031. Annual reconfirmation of these requirements is necessary to remain on automatic distribution. Please use your NATEC assigned account number whenever referring to automatic distribution requirements.

c. If additional or replacement copies of this manual are required with no attendant changes in the ADRL, they may be ordered by submitting requisitions to the Naval Inventory Control Point - Philadelphia.

6. WARNINGS, CAUTIONS AND NOTES.

a. Operating procedures or practices that, if not correctly followed, could result in injury to personnel or damage to equipment are highlighted by applicable notes, cautions or warnings. A note refers to an operating procedure or any information that requires emphasis. A note shall appear before text to which it applies. A caution refers to an operating procedure which, if not correctly observed, could cause equipment damage. A warning refers to an operating procedure which, if not correctly observed, could cause injury to personnel. Both cautions and warnings precede text to which they apply.

7. ILLUSTRATED PARTS BREAKDOWN.

a. The illustrated parts breakdowns in this manual list and describe the parts necessary for support of the Emergency Personnel and Drogue Parachute Systems.

8. ATTACHING PARTS.

a. Attaching parts are listed immediately after the part they attach and are separated by a caption (ATTACHING PARTS) which is placed three indents to the right of the nomenclature of the part to be attached. Quantities of attaching parts are total quantities per individual unit.

9. SOURCE, MAINTENANCE AND RECOVERABILITY (SM&R) CODES.

a. SM&R codes, as assigned by Naval Air Systems Command, have been applied to the Group Assembly Parts Lists and are shown in the proper code column. Definitions of SM&R codes used are contained in NAVAIRINST 4423.11 and (Table 1).

10. USABLE ON CODE.

a. This column contains suitable coding for assemblies and parts to indicate specific usability by serial number, type, model or series numbers of the articles for which the breakdown is prepared. The absence of a code in the Usable on Code column indicates that the parts shown are usable as replacements on all models covered. An asterisk (*) in the Usable on Code column, for parts that are listed under the same index number, indicates that all such parts are interchangeable and that the part or parts that are not asterisked are interchangeable and preferable to the asterisked parts. If all parts are asterisked, they are completely interchangeable; no part is preferable. An asterick and usable on code (*B) indicate that interchangeability is limited to the extent of the usable on code.

11. VENDOR CODE.

a. The description of a vendor supplied item includes a five-digit manufacturer's identification code. To convert this five-digit code to a manufacturer's name, reference the Federal Supply Code for Manufacturers, which consists of two Cataloging handbooks. The H4-1 alphabetically lists manufacturer's name and his proper code, and the H4-2 numerically lists the codes and gives the corresponding manufacturer. This code is omitted for all prime contractor's parts and all government standard parts.

12. GLOSSARY.

a. The following is a list of all nonstandard abbreviations, terms and symbols used in this manual.

ACID. A fundamental chemical class distinguished by having reactive hydrogen radicals (pH below 7.0). Acids can be extremely corrosive to metal and damaging to fabric.

ADAPTER, HARNESS. A rectangular metal fitting with a fixed crossbar used primarily as an anchoring point.

ADAPTER, HARNESS FRICTION. A rectangular metal fitting with a movable center bar (friction grip). Facilitates quick adjustment of a harness by the wearer.

ALKALINE. A substance which is the opposite of an acid, also known as a base. Also, any substance which has the properties of an alkali (metallic hydroxide).

ANEROID. A corrugated metal capsule used in parachute automatic releases for sensing atmospheric pressure. The aneroid will initiate operation of the release at a preset altitude.

ANTI-SQUID LINE. See LINE, ANTI-SQUID.

AWL. A pointed tool for piercing small holes in cloth, leather, wood and other soft materials.

BACKSTITCH. A stitch made by inserting the needle a stitch length to the right and bringing it up an equal distance to the left. Also, sewing back over a row of stitches.

BALL, CABLE RETAINING. A steel ball which is swaged to the ripcord cable and secures the ripcord handle to the cable.

BAND, LATERAL. Webbing inserted in the canopy skirt and vent hems to reinforce edges and distribute load.

BAND, RUBBER, RETAINING. A rubber band used to hold suspension lines in the container or in the faked line together.

SOURCE (D012)				MAINTENANCE			
				USE (D013A)		REPAIR (D013B)	
1st POSITION		2nd POSITION		3rd POSITION		4th POSITION	
P	PROCURE	A	REPLENISH	O	REPLACE OR USE AT ORG LEVEL	Z	NO REPAIR (CONSUMABLE)
		B	INSURANCE				
		C	CURE-DATED				
		D	INITIAL	F H G	REPLACE OR USE AT IMA LEVEL	B	RECONDITION BY ADJUSTMENT, CALIBRATION, LUBRICATION, PLATING, ETC.
		E	END ITEM GSE/STOCKED				
		F	GSE/NOT STOCKED				
K	REPAIR KIT COMPONENT	F	ORG/IMA	L	REPLACE OR USE AT SPECIALIZED IMA	O	REPAIR AT ORG LEVEL
		D	DEPOT				
		B	BOTH KITS				
M A	MANUFACTURE ASSEMBLE	O F H G D	ORG AFLOAT ASHORE BOTH DEPOT	D	REPLACE OR USE AT DEPOT	F H G	REPAIR AT IMA LEVEL
X	MISC	A	REQUEST NHA			L	REPAIR AT SPECIALIZED IMA
		B	OBTAIN FROM SALVAGE OR ONE TIME BUY	Z	NOT REQUIRED THIS APPLICATION	D	REPAIR AT DEPOT OR COMMERCIAL
		C	DIAGRAMS-SCHEMATICS, INSTALL DWGS				

RECOVERABILITY (D013C)		SERVICE OPTION (D012A)	
5th POSITION		6th POSITION	
O	REPAIRABLE ITEM. CONDEMN AT ORGANIZATIONAL LEVEL.	1 2 3	APPLIES TO ENGINES ONLY. IDENTIFIES THE HIGHEST (1) TO LOWEST (3) LEVEL OF MAINTENANCE WHICH CAN REPLACE (3rd POSITION OF SM&R CODE) THE ITEM.
F H G	REPAIRABLE ITEM. CONDEMN AT INTERMEDIATE LEVEL INDICATED.	4 5 7	SAME AS ABOVE. IN ADDITION, ITEM IS A FLR WITH A UNIT COST OF OVER $5000. THESE CODES ARE NO LONGER ASSIGNED TO NEW, NON-FAMILY RELATED ITEMS.
L	REPAIRABLE ITEM. CONDEMN AT SPECIALIZED INTERMEDIATE LEVEL.	6	NORMALLY PROCURED AND STOCK NUMBERED BUT ORGANIC CAPABILITY EXISTS FOR EMERGENCY STOP-GAP REQUIREMENTS.
		E	END-TO-END TEST REQUIRED BY IMA PRIOR TO BCM ACTION.
D	REPAIRABLE ITEM. CONDEMN AT DEPOT OR CONTRACTOR FACILITY.	J	FLR OR CONSUMABLE ITEM. CHANGE 5th POSITION SM&R CODE TO "D" UNDER PICA/SICA. NAVAIR APPROVAL REQUIRED.
		8	SAME AS "J" ABOVE EXCEPT USED FOR ENGINES ONLY. APPLIES TO 2nd LEVEL OF IMA.
A	SPECIAL HANDLING REQUIRED. CONTACT ITEM MANAGER FOR DISPOSAL INSTRUCTIONS	9	SAME AS "J" ABOVE EXCEPT USED FOR ENGINES ONLY. APPLIES TO 3rd LEVEL OF IMA.
		M	ITEM IS A FLR WITH A UNIT COST OF OVER $5000. THESE CODES ARE NO LONGER ASSIGNED TO NEW, NON-FAMILY RELATED ITEMS.
Z	NON-REPAIRABLE ITEM. CONDEMN AT LEVEL IN 3rd POSITION.	N	ASSIGNED TO XB SOURCE CODE AND INDICATES ITEM IS PROCURED LOCALLY. NOT STOCKED IN THE SUPPLY SYSTEM.
		T	ASSIGNED TO TRAINING DEVICES WITH SOURCE CODE OF "PD". INDICATES ITEM IS NOT A PROCURABLE SPARE. NSN IS ASSIGNED ONLY TO PERMIT VISIBILITY OF REPAIR PART RELATIONSHIP.

Table 1. NAVY APPLICATION OF JOINT SERVICES UNIFORM SM&R CODES

BARREL, AUTOMATIC PARACHUTE RIPCORD RELEASE. That part of an automatic parachute ripcord release which houses the cartridge and piston, or spring and piston.

BARTACK. A concentrated series of zig-zag like stitches used to reinforce points of stress. A bartack shall have 28 stitches per half inch.

BASEBALL STITCH. See STITCH, BASEBALL.

BASTING STITCH. See STITCH, BASTING.

BEESWAX. A wax generally containing paraffin that is applied cold or melted to thread to prevent raveling or cloth unknotting and to make thread easier to sew.

BINDING. A piece of tape or fabric folded over and stitched to a raw edge of cloth to prevent raveling or fraying.

BODKIN. A large-eyed, blunt needle instrument for inserting thread, tape, ribbon or line thru a loop, hem or channel. Used to feed suspension lines thru canopy radial seams or to stow suspension line bights in certain parachute container assemblies.

BOTTOM, FALSE. A piece of cloth sewn to the inside of a pack to retain the frame. It also serves as a base for attaching suspension line hesitator loops.

BOXSTITCH. See STITCH, BOX.

BRAID. A narrow band of interlaced strands.

BUNCHED STITCHING. Stitches too close or more stitches per inch than required.

BURL. A knot or lump in thread or cloth.

BURN, FRICTION. A hard spot on the suspension line caused by two lines rubbing together at high speeds, generally off-color and brittle.

BUTTERFLY REINFORCEMENT. See V-TAB.

BUTTONHOLE STITCH. See STITCH, BUTTONHOLE.

CABLE, ARMING, AUTOMATIC PARACHUTE RIPCORD RELEASE. A cable which, when attached to the ejection seat or other designated point, arms the automatic parachute ripcord release at seat/man separation.

CABLE, POWER, AUTOMATIC PARACHUTE RIPCORD RELEASE. A cable covered by a housing, which transmits the force from the automatic parachute ripcord release to the ripcord cable.

CABLE RETAINING BALL. See BALL, CABLE RETAINING.

CABLE, RIPCORD. A flexible cable joining the locking pins and ripcord handle.

CANOPY. The main supporting surface of a parachute which, when opened, reduces the rate of descent. It is usually made of nylon and includes a framework of cords, called suspension lines, from which the load is suspended.

CANOPY, CONICAL. A canopy constructed in the shape of a cone. See also CANOPY.

CANOPY CLOTH. See CLOTH, CANOPY.

CANOPY, FLAT CIRCULAR. A canopy which has the shape of a flat circle or disk when spread out. See also CANOPY.

CANVAS. A heavy, closely-woven cloth of linen, cotton or synthetic fiber.

CASING (SLEEVE). The outer woven cover of the suspension line.

CHANNEL, CANOPY. The space or opening formed by the overlapping of cloth in the making of radial seams. The suspension lines pass thru the channels and are retained in position. The channels aid in transmitting load from the lines to the cloth.

CLAMP, DUAL HOUSING. A metal clamp located on the outside of the end flap of back-type parachutes. The clamp secures the ripcord cable and power cable to the container end flap.

CLEVIS. A U-shaped metal fitting with a hole in each end to receive a pin or bolt.

CLIP. A device which fastens, holds together or retains, for example, a clip is tacked to a riser and holds the ripcord housing in place.

CLOTH, CANOPY. The cloth used in parachute canopies. It is woven to withstand the impact of air pressure when the parachute opens. The canopy cloth is woven from nylon yarns, usually in a ripstop weave. See also CANOPY. (Ref. MIL-C-7020, Cloth, Nylon, Parachute).

CLOTH, NYLON RIP-STOP. A type of nylon cloth utilized in canopy manufacture. The weave pattern of the nylon cloth consists of reinforced ribs, in both the warp and the filling, forming a uniform pattern of squares. The cloth is designed to keep hole damage to a minimum when rips or tears develop in the canopy.

CLOVERLEAF HANDLE. A ripcord handle that is used on chest and integrated back-type parachutes. It is shaped in the form of a cloverleaf.

COLLAR, VENT. A strip of nylon cloth. One edge is sewn to the vent hem of the canopy so that a collar or cylinder is formed above the top of the parachute. The other edge is hemmed to form a channel for the insertion of a molded rubber ring.

COMPONENT (PART). Item of equipment making up part of an assembly; for example, a ripcord housing is a component part of a ripcord assembly.

CONE, LOCKING. A small, smooth, coneshaped metal post sewn to the flaps of the container or inside the vane-type pilot parachute. The cone has a horizontally drilled hole a short distance from the top to admit a temporary locking pin or the ripcord pin. The pilot parachute locking cone contains two holes. The flange contains holes for securing purposes.

CONFLUENCE POINT. A coming or run together of two or more lines.

CONICAL CANOPY. See CANOPY, CONICAL.

CONTAINER. An assembly that encloses and protects the canopy, suspension lines and risers until the parachute is opened. Sometimes called the pack assembly.

CONTAINER, HARDSHELL. A container which has a rigid plastic or fiber body with cloth end and side flaps, designed to withstand high wind blast conditions.

CONTAINER STIFFENER. See STIFFENER, CONTAINER.

CONTROLLER DROGUE. A small parachute which is used to extract the stabilizer drogue parachute.

CORE OVERLAP. During suspension line manufacture, the insertion of an incoming core yarn which runs parallel to a running out yarn, and results in two core yarn ends protruding thru the casing a distance of about two to six inches. These ends are normally cut off during the final phase of parachute suspension line manufacture.

CORDS, CLOSING. Type I nylon cord about 18 inches long used as an aid in the closing of the parachute container.

CROSS CONNECTOR STRAP. See STRAP, CROSS CONNECTOR.

CROSS BOX. A sewing pattern.

CROSS SEAM. See SEAM, DIAGONAL.

CROWN. A cloth panel used to cover the peak of a vane-type pilot parachute. Also, the portion of the main canopy surface near the peak.

D-RING. A metal fitting shaped in the form of a letter "D." A D-Ring on a harness connects to a chest type parachute assembly by means of snap fittings.

DART. A short, tapered seam.

DEFLATION POCKETS. See POCKETS, DEFLATION.

DEPLOYMENT BAG. An envelope, usually fabric, and usually enclosed in a parachute pack, containing a parachute canopy. Means, may, or may not, be provided for stowage of suspension lines. A drogue piston lifts a deployment bag away from a parachute pack, causing the suspension lines to be extended before the canopy emerges from the deployment bag.

DIAMETER. The greatest straight distance across a circle; specifically, the greatest distance across a flat canopy, from skirt to skirt, measured when the canopy is lying flat. Used to designate the size of a flat circular canopy.

DIP. A line or group of lines passing thru a group of lines. Also, a group of suspension lines not in proper continuity.

DROGUE, CONTROLLER. See CONTROLLER DROGUE.

DROGUE PARACHUTE. See PARACHUTE, DROGUE.

EJECTION SEAT. An emergency escape seat for propelling an occupant out and away from the aircraft by means of an explosive charge or rocket motor.

EJECTOR BOARD. A small, rectangular board with rounded edges and a grommet in one end, used on Martin Baker parachutes. It serves as a firm place for the pilot parachute to spring from during opening.

END OUT (MISSING END). A warp yarn missing from a portion of, or the entire length of, cloth.

END TAB. See TAB, END.

EYE. A small, steel-wire loop; for example, the loops attached to the parachute container, into which a hook on a container spring opening band is fastened.

EYELET. A metal reinforcement for a hole in cloth, similar to a grommet, except thinner and smaller, and having no washer. The eyelet is used to reinforce lacing holes in small covers, etc.

FAKE. To fold a line, rope, cord or hawser in a back and forth fashion.

FALSE BOTTOM. See BOTTOM, FALSE.

FASTENER, DIRECTIONAL. A snap fastener which can be engaged or released only in one direction.

FASTENER, NON-DIRECTIONAL. A snap fastener which can be engaged or released by applying pressure or pull from any angle.

FASTENER, SLIDE. A type of fastener made of two lengths of tape with a series of metal or plastic scoops fastened to one side of each. A metal slide is provided which causes the scoops to lock in place as the fastener is closed or to separate as the fastener is opened.

FERRULE. A cap or ring used to finish the end of a housing; for example, the finished ends of a ripcord housing.

FID. A small, flat hand tool of metal or wood used during the packing process to straighten end flaps and to insert corner flaps into a finished pack.

FILLING. Threads which are perpendicular to selvage edges and extend across the width of cloth.

FITTING, CANOPY QUICK-RELEASE. A device which connects the canopy and risers to the harness, permitting the aircrewmember to disengage, on instant response, from the canopy.

FITTING, OVERRIDE DISCONNECT. A directional fitting used on the NES-12 parachute assemblies that connects the external pilot parachute and the pilot parachute.

FITTING, QUICK-RELEASE. A device used to connect and release on instant response.

FITTING, SWAGE. A connection, adapter or pin which is fastened to a cable by pressure. It is applied by means of a machine which compresses the fitting, causing it to tightly grip the cable or wire to which it is being attached.

FLAP, CORNER. One of the small, rectangular cloth tabs which are part of the container side flaps and act as protection and reinforcement of the container corners when the parachute is packed also known as a corner keeper.

FLAP, END. A cloth extension on the short sides of the container base which folds over to enclose the canopy. One of the end flaps is usually designated as the ripcord end flap.

FLAP, SIDE. A cloth extension on each of the long sides of the container base, which folds over and encloses the canopy. Each side flap is designated according to the fittings it carries, such as “locking cone side flap” or “grommet side flap.”

FLARING. The process of opening or widening; for example, the method of splitting, taping and stitching the ends of webbing in order to widen and prevent from slipping thru an adapter.

FLAT CIRCULAR CANOPY. See CANOPY, FLAT CIRCULAR.

FRAYED (SUSPENSION LINE). A fuzzy condition in which short lengths or pieces of thread or yarn protrude from the surface of the suspension line.

FRICTION BURNS. See BURNS, FRICTION.

GORE. That portion of the canopy located between two adjacent radial seams and the vent and skirt hem. It consists of cloth sections sewn together (Figure 1).

GROMMET. A metal eye and washer used to reinforce a hole in material; for example, grommets on container side flaps.

GUIDE TUBE. A narrow tube used to guide the vane type pilot parachute grommet over its locking cone.

HANDLE, RIPCORD. The handle secured to the ripcord cable and retained in a pocket located on the harness or container. Pulling of the handle begins the process of container and parachute opening. Often referred to as handpull or grip.

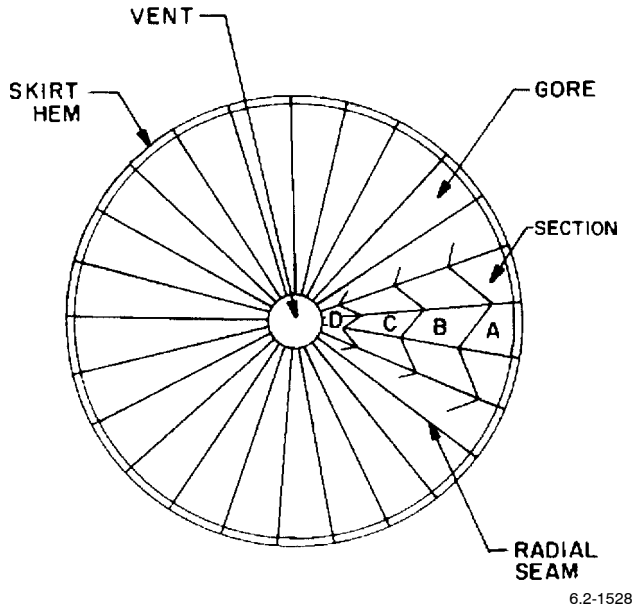

Figure 1. Gore

HARDSHELL CONTAINER. See CONTAINER, HARDSHELL.

HARNESS ADAPTER. See ADAPTER, HARNESS.

HARNESS, CHEST-TYPE. A harness assembly used with attachable, chest-type parachutes.

HARNESS FRICTION ADAPTER. See ADAPTER, HARNESS FRICTION.

HARNESS MAINSLING. The main load carrying member of the harness. Formed by two lengths of webbing, it is routed from the shoulder adapters of D-Rings down across the seat, up the side ending at the opposite adapters of D-Rings.

HEM. A border or reinforced edge formed by folding cloth back and securing it, usually by sewing, for example, vent and skirt hem of a parachute canopy.

HOLE, CLOTH DAMAGE. Three or more warp and/or filling threads broken at the same location.

HOOK, PACKING. A special hook used to draw suspension lines into place in hesitator loops.

HOOK, TENSION. Hooks used to retain the connector links during parts of the packing procedure.

HORIZONTAL BACK STRAP. See STRAP, HORIZONTAL BACK.

HOUSING, RIPCORD. A flexible steel tube encasing the ripcord cable, used to protect against accidental release or damage and to serve as a cable guide. Integrated ripcord assembly housings are constructed of vinyl-coated flexible tubing.

INNER CORE. Five to nine internal yarns (number depending on type) for suspension lines which are covered by a woven sleeve or casing.

KEEPER. Small strip of tape or loop used to retain an object, for example, riser and back pad keepers.

KEEPER, CORNER. See FLAP, CORNER.

KICKPLATE. A platform on the NES-8B parachute container which serves as a firm place for the pilot parachute to spring from during opening.

KNOT, BINDER. The simplest method of joining two threads or lines. The two ends are placed side by side and a simple, overhand knot is then tied in both lines simultaneously. It will not slip when drawn tightly. Also called a thumb knot (Figure 2).

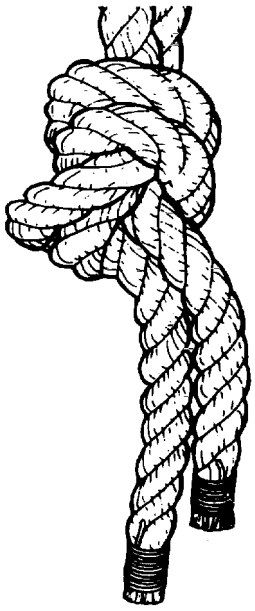

Figure 2. Binder Knot

KNOT, BOWLINE. A knot formed by making a small overhand loop a desired distance from the end of the line. The end of the line is then passed thru the loop from the underside of the main part of the line and back thru the small loop. When this knot is drawn tight, it will not slip but still can be easily untied (Figure 3).

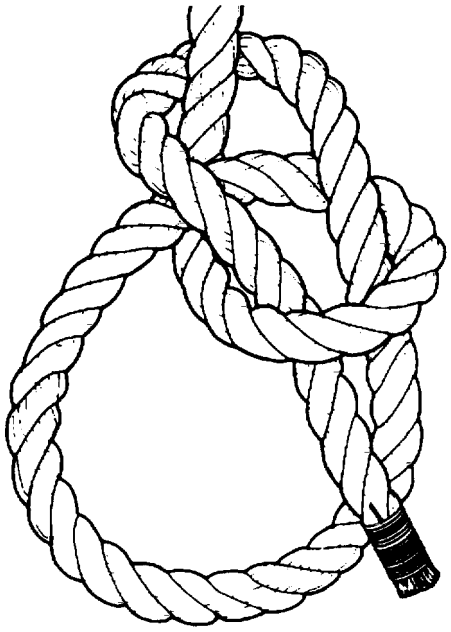

Figure 3. Bowline Knot

KNOT, CLOVE-HITCH. A knot formed by making one turn around a post, bringing the end across the line, continuing around the post a second time and passing the end under the second loop. Used to tie suspension lines to connector links (Figure 4).

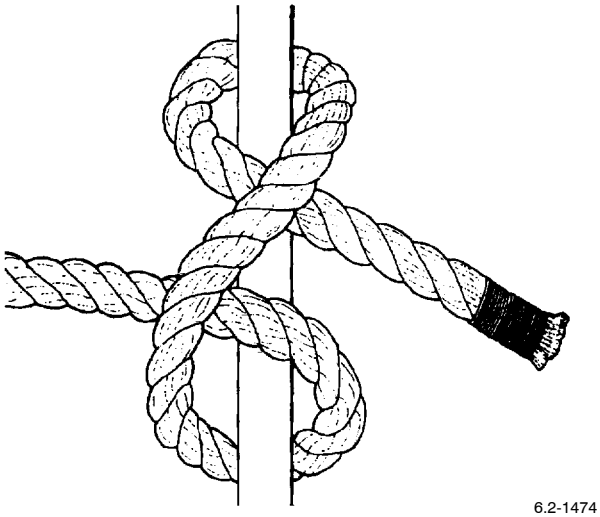

Figure 4. Clove-Hitch Knot

KNOT, LARK'S HEAD. A knot formed around an attachment ring or bar by passing the free ends of the line around the bar or thru the ring and then thru a loop or bight in the line. This knot is used to attach pilot parachute connector straps (Figure 5).

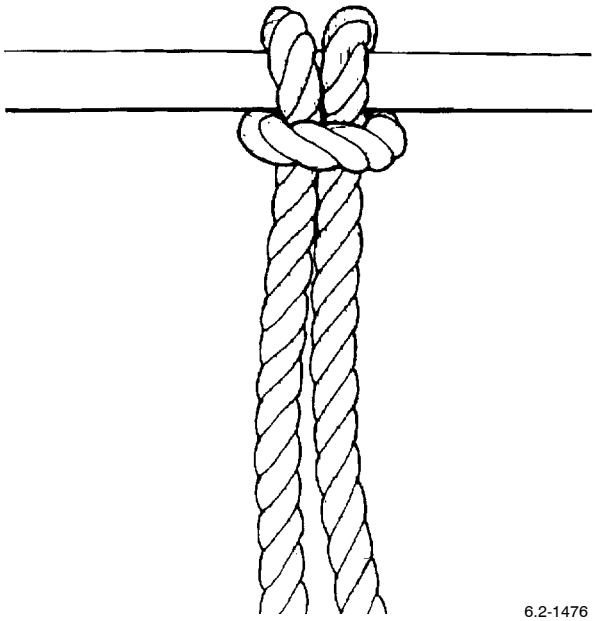

Figure 5. Lark's Head Knot

KNOT, OVERHAND. A simple knot tied in the end of a line by forming a loop and passing the end over and down thru the loop (Figure 6).

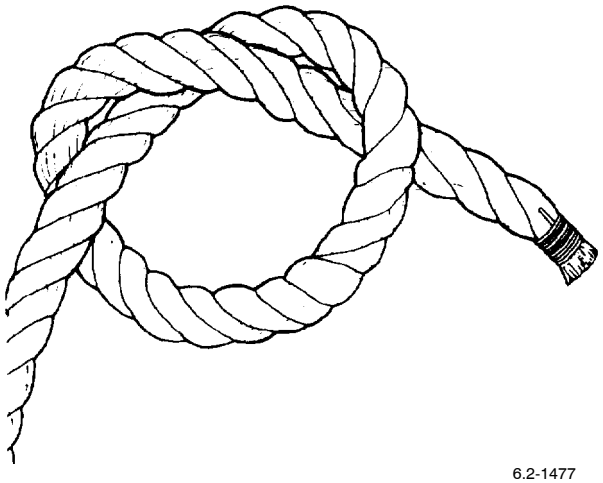

Figure 6. Overhand Knot

KNOT, SQUARE. A knot formed by passing the end of the cord in the left hand over and under the end in the right hand and then reversing the process by passing the end in the right hand over and under the one in the left hand (Figure 7).

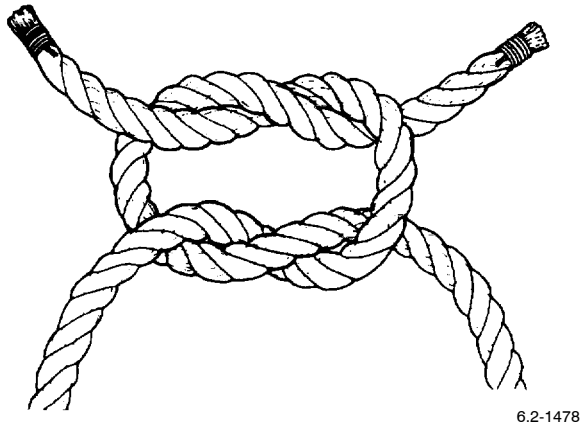

Figure 7. Square Knot

KNOT, SURGEON'S. The surgeon's knot is similar to the square knot, except that the first overhand tie is wrapped twice around the cord or line (Figure 8).

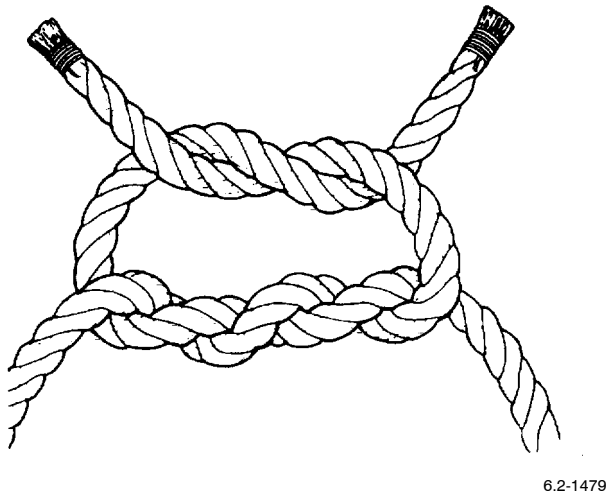

Figure 8. Surgeon's Knot

LE-MOIGNE SLOTS. Provides directional control and forward velocity on command.

LINE, ANTI-SQUID. A line attaching two suspension line connector links to canopy vent lines on some parachute assemblies. The anti-squid lines are shorter than suspension lines and prevent the main canopy from squidding by bearing the load of the drogue parachute until the main canopy is fully opened. See also SQUIDDING.

LINE, DROGUE LINK. A line connecting the withdrawal line to the drogue parachute on MBEU systems which do not employ a guillotine. The drogue link line contains a slide disconnect pin which will separate the line and withdrawal line in case of manual parachute actuation.

LINE, SHORT ANTI-SQUID. A Martin-Baker patent improved anti-squid line, also called a pull down vent line. See LINE, ANTI-SQUID.

LINE, SUSPENSION. Nylon cords which connect the canopy of the parachute to the harness assembly.

LINE, VENT. Nylon cord which crosses the vent opening of a canopy.

LINE, WITHDRAWAL. A line connecting the stabilizer drogue on the ejection seat to the locking pins and canopy vent on Martin Baker parachute assemblies. The line opens the container and withdraws the canopy during normal ejection operation.

LINK, CONNECTOR. A small, releasable, rectangular metal fitting used to connect the lift webs and suspension lines.

LINK, CONNECTOR WITHDRAWAL LINE. Nylon webbing with loops sewn in both ends. The withdrawal line connector link attaches the withdrawal line to the apex of the canopy and large loop in shortened anti-squid line.

LOCK, RIPCORD PIN. The ripcord pin lock is used in conjunction with the ripcord pin pull test. The lock is designed in such a manner as to allow initial movement of the ripcord pins but does not permit them to totally disengage.

LOCKSTITCH. A common sewing-machine stitch formed when the thread in the needle goes thru the material and connects with the bobbin thread. The needle and bobbin thread should lock in the center of the material thickness (Ref. ASTM-D-6193, Type 301) (Figure 9).

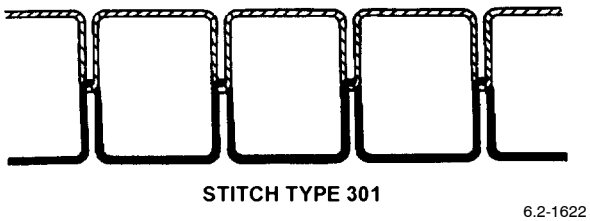

Figure 9. Lockstitch

LOCKER, WET. See WET LOCKER.

LONG BAR. A long metallic or wooden bar used in parachute packing and used as an aid in closing a parachute container.

LOOP. A warp or filling thread pulled out to form a loop on a cloth surface.

LOOP, HESITATOR. One of a series of webbing or tape loops which holds suspension lines in an orderly position in the container when the parachute is packed and which pays the lines out in sequence for orderly deployment of the canopy assembly.

LOOP, RETAINING. Webbing or tape loop used to hold folded lines or excess webbing in position.

LOOSE STITCHES. Thread that does not lie smoothly on the surface of the cloth.

LUMP. An internal imperfection of a suspension line that feels hard to the touch. Is usually caused by internal knots in core yarns or casings, or by slippage or displacement one or more inner core yarns near an overlap.

MAIN SEAM. See SEAM, RADIAL.

MAINSLING, HARNESS. See HARNESS, MAINSLING.

MILDEW. A damaging fungus or mold which forms on cloth and leather. It is caused by dampness and the absence of fresh air and sunlight.

MIS-PICK. An extra or incorrectly positioned filling thread.

MISSING PICK. A filling yard (pick) wholly or partially missing.

MISSING STITCHES. A space between stitches in same row in which there is no thread.

MOUTHLOCKS. A device which holds the mouth of the canopy closed until the lines are deployed.

NAMEPLATE. A label attached to equipment, giving data as to type, model number, date of manufacture, date placed in service, etc. The stenciled gore on a canopy is called the nameplate gore.

NEEDLE DAMAGE. Where needle penetration has damaged threads in the cloth.

NYLON RIP-STOP. See CLOTH, NYLON RIPSTOP.

OPENING BANDS. See SPRING ASSEMBLY, CONTAINER OPENING.

OVEREDGE. The stitching around the outer edge of cloth to prevent the edges from raveling or fraying.

OVERFOLD. An excess of material causing edge of inner fold to double, wrinkle or pleat.

OVERLAP, CORE. The overlapping of an incoming and outgoing suspension line inner core line.

OVERTHROW STITCH. See STITCH, OVERTHROW.

PACK. To put together compactly; to store neatly, for example, the act of packing a parachute consists of stowing suspension lines and canopy in the container assembly in such a way as to ensure safe storage and proper opening of the parachute assembly.

PACK ASSEMBLY. A rigged and packed parachute. See also CONTAINER.

PACK STAND. See STAND, CONTAINER.

PACKING BAR. See LONG BAR.

PACKING BOARD. A tool used to tension suspension lines with the anti-squid lines attached to the connector links. Basically it consists of a board and two large spools.

PACKING FID. See FID.

PACKING HOOK. See HOOK, PACKING.

PACKING TRAY. The suspension line stowage assembly on the NES-8B parachute assembly. It is a cloth covered board with hesitator tubes attached. After stowage of suspension lines the container is moved up around the tray. The tray is then secured by bolts which pass thru the bottom of the container.

PALM, SEWING. A hand protector which is used when sewing.

PANEL. See SECTION.

PANEL, END. See FLAP, END.

PANEL, SIDE. See FLAP, SIDE.

PARACHUTE. A device which offers resistance to the air, thereby decreasing the velocity of a descending body to permit landing at a suitable rate of descent.

PARACHUTE ASSEMBLY. A complete parachute, including the canopy assembly, container assembly, harness assembly and riser/lift web assembly.

PARACHUTE, BACK-TYPE. A parachute which is worn on the back in order to allow the wearer freedom of movement for example, NB-6 parachute assembly.

PARACHUTE, CHEST-TYPE. A parachute which is attached to D-rings on chest-type harness. It may be detached to permit more freedom of movement.

PARACHUTE, DROGUE. An auxiliary parachute used with any system that requires some method of deceleration or stabilization, for example, ejection seat.

PARACHUTE, PILOT. A small, spring-operated, cloth-covered auxiliary parachute which is usually constructed on a steel wire frame and attached to the peak of the canopy. It accelerates the withdrawal of the canopy from the container. The pilot parachute is packed under tension and immediately opens when released from the container.

PARAFFIN. Wax generally used with 50 percent beeswax as a hot dip to prevent the fraying of cut ends of webbing, cord and tape. See also BEESWAX.

PARARAFT. An emergency, one-man life raft packed in a container, along with survival equipment. The pararaft is secured to the parachute pack or seat pan.

PART NUMBER. A contractor, vendor, government, or manufacturer's drawing or reference number which provides positive identification without further reference to specific parts lists, model number, symbol numbers, special coding, or any other additional data when used in combination with the Federal Supply Code for Manufacturers.

PH VALUE. An indication of the acidity or alkalinity of a solution. A reading of pH may be made by the use of test strips. A reading below 7.0 indicates an acid. A reading above 7.0 indicates an alkaline.

PICK. A cloth filling thread, taken as a unit of fineness of cloth.

PILE TAPE. See TAPE, PILE.

PILOT PARACHUTE FRAME. Wire frame or spring used in a type of pilot parachute to initiate opening action of a parachute upon release from the container.

PIN, RIPCORD LOCKING. A small steel pin attached to a ripcord and passed thru a locking cone to hold a container in a closed position.

PIN, SLIDE DISCONNECT. A directional fastener which connects the withdrawal line and drogue link line on MBEU parachutes not designed for use with a guillotine. One portion connects to the ejection seat and the other is a metal sleeve around the drogue link line. Depending on the direction of pull, the lines will either remain attached, or the slide disconnect pin will be withdrawn and the line will separate.

PIN, TEMPORARY LOCKING. A metal pin inserted thru the eye of the locking cones to hold the side flaps in place until the ripcord pin is inserted.

PLATE, ANCHOR. A narrow metal plate used on MBEU parachute assemblies. It is attached to the end of the ripcord housing and has holes which fit over the container locking cones. When the ripcord pins are inserted in the locking cones the anchor plate is held in place, thus holding the ripcord housing in position.

PLATE, LOCKING PIN. A temporary locking pin attached to a thin, flat, rectangular metal plate. The pin-plate arrangement is used to temporarily lock the pilot parachute while the side flaps are being closed.

PLEAT. A fold sewn in cloth.

POCKET, RIPCORD HANDLE. A small pocket of cloth or plastic webbing sewn to the harness (or container assembly). It holds the ripcord handle in position.

POCKETS, WATER DEFLATION. Pockets sewn to the canopy at the skirt. After landing in water, they serve to anchor the canopy, causing the canopy to deflate. This prevents the canopy from dragging the aircrewmember thru water.

PROTRUDING YARN (Core Casing or Thread). A condition in which either the inner core yarns extend thru the casing, or where the yarn or threads of the casing extend beyond the surface of the casing itself.

PULL DOWN VENT (PDV) LINE. See LINE, SHORT ANTI-SQUID.

PULL UP CORDS. Nylon cords of varying lengths used to pull up the sides and ends of the container flaps over the container cover and to pull the cones thru the grommets. They are also used to pull the suspension lines into place in some types of containers.

PYRO-BOX. The container used to store pyrotechnic devices such as flares and cartridges while they are removed from the ammunition storage area.

QUICK-DISCONNECTOR SNAP. See SNAP, QUICK-CONNECTOR.

QUICK-EJECTOR SNAP. See SNAP, QUICK EJECTOR.

QUICK-FIT ADAPTER. See ADAPTER HARNESS FRICTION.

RADIAL SEAM. See SEAM, RADIAL.

RAVEL (UNRAVEL). To separate, untwist or unwind, leaving a frayed or ragged edge. Ravel is the preferred word to describe such a condition.

RECEIVER ASSEMBLY, AUTOMATIC PARACHUTE RIPCORD RELEASE. That part of the cartridge-actuated automatic parachute ripcord release which houses the aneroid, sear and hammer.

REINFORCEMENT. Any strengthening measure which enhances the basic integrity of a structure, joint or assembly, for example, the tape or webbing used to strength parts of a canopy, container, harness, etc., in a parachute assembly. See also WEBBING, REINFORCEMENT.

RELEASE ASSEMBLY, RIPCORD HOUSING, MANUAL. An assembly which releases the ripcord housing at the top end flap when the parachute is at full suspension line stretch.

REMOVABLE CONNECTOR LINK. See LINK, CONNECTOR.

RETAINING SLEEVE. A series of stowage tunnels.

RIG. To assemble and adjust, to equip. Example, the act of rigging a parachute assembly consists of assembling all component parts in preparation for packing.

RING, VENT. A molded rubber ring in the vent collar. It stretches when the air rushes in to the canopy as the parachute begins to inflate.

RIPCORD. A locking device which secures the folded parachute within the container and which effects the release of the parachute. The ripcord consists basically of locking pins, a flexible cable and a handle. See also BALL, CABLE RETAINING; CABLE, RIPCORD; HANDLE, RIPCORD; HOUSING, RIPCORD; PIN, RIPCORD LOCKING; POCKET, RIPCORD HANDLE.

RIPCORD PIN RETENTION TIE. A thread of a predetermined value that is usually secured to a lead ripcord pin of a packed parachute. Its function is to retain a ripcord pin in its cone and prevent premature disengagement of the pin from the cone. USE ONLY AS AUTHORIZED.

RIP-STOP WEAVE. See CLOTH, NYLON RIPSTOP.

RISER. The webbing which connects an integrated torso suit or harness to the canopy assembly on parachutes. The riser is composed of two risers, and there are two risers on each parachute assembly.

RUNOFF. Sewing not on a seam or cloth.

RUPTURE. One or more yarns of suspension line casing being cut or severed, sometimes exposing the inner core. Occasionally, tears, cuts or other forms of damage to the canopy are defined as a rupture when caused by dynamic load conditions.

SADDLE. That part of the main lift web of the harness which provides a seat or sling for the wearer.

SAFETY-TIE. A low strength thread which serves to indicate that an assembly has not been damaged, tampered with or opened since the last regular inspection.

SEAM. A series of stitches joining two or more pieces of cloth. For government work, the type of seam is indicated by a symbol which gives class of seam, the number of stitching, and the number of rows of stitching (Ref. ASTM-D-6193).

SEAM, DIAGONAL. A French-fell seam of canopy which joins two sections of gore. Diagonal seams meet the centerline of gore at angles of 45° and 135°.

SEAM, FOUR-NEEDLE FOUR-STITCH. A method of stitching which can be performed in one operation by a four-needle sewing machine. It is used in sewing the vent hem, skirt hem and radial seams of a canopy.

SEAM, OVERLAP. A seam in which the two pieces of cloth are joined by overlapping enough to accommodate one or more rows of stitching.

SEAM, RADIAL. A seam, joining two gores, which extends radially from the vent to the skirt hem.

SEAM, TWO-NEEDLE TWO-STITCH. A seam in one operation by a two-needle sewing machine, for example, a diagonal seam.

SEAR. To melt or seal with heat, for example, to sear the end of nylon webbing one heats the end until the nylon melts and fuzes. This prevents raveling. Also, the catch that holds the hammer of a firing mechanism cocked. The sear in an automatic parachute ripcord release is attached to the aneroid in the receiver assembly.

SEAT PAN. A sponge rubber covered metal seat which is contoured for comfort to the user. A seat pan is used with back-type parachutes when a packaged Life Raft Assembly is used. A high-speed seat pan has sections for support under the pilot's thighs during ejection. This reduces leg strain caused by high acceleration loads.

SECTION. Each major part of a gore. Sections are bordered by radial seams, diagonal seams or vent or skirt hems. In the 28-foot, flat canopy, four sections are used in each gore (previously known as panel).

SELVAGE. An edge of a woven fabric so formed as to prevent raveling, as compared to a cut edge, which will ravel.

SEPARATOR, SMALL LINE. A tool used to aid in keeping suspension lines and canopy skirt in order while packing a parachute.

SERVICE LIFE. The time period during which the item can be maintained in service without replacement.

SERVING, FRENCH SPIRAL. A series of turns and half-hitches using cord, line, etc. wound tightly around rope, braided line, etc., to bind it together. It has many uses in parachute fabrication and/or rigging but is generally giving way to other methods (i.e., machine sewing) because of time consumption of this handwork (Figure 10).

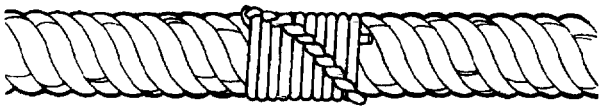

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Figure 10. French Spiral Serving

SHOT BAG. A bag filled with lead shot used to hold the canopy in place during packing.

SKIPPED STITCHES. Threads that are not interlocked.

SKIRT, CANOPY. The lower edge of a canopy.

SNAP, QUICK-CONNECTOR. A large, hookshaped, spring-loaded snap used to attach the chest type parachute to the two D-rings on the harness.

SNAP, QUICK-EJECTOR. A harness snap that attaches to the V-ring to secure two parts of the harness together. The ejector arm releases the V-ring when the finger grip lever is pulled outward.

SOCKET, AUTOMATIC PARACHUTE RIPCORD RELEASE. The part of the automatic parachute ripcord release which engages the ball on the power cable. This socket is attached to the piston by a rivet.

SPLICE. The joining of two strands or core ends by inter-weaving or mechanical joint.

SPREADING GUN, BALLISTIC. A device attached to suspension lines just below the skirt hem on the parachute assembly. Just before full suspension line stretch, the gun discharges and, by explosive force, spreads the skirt of the canopy.

SPRING ASSEMBLY, CONTAINER OPENING. Stretchable bands composed of a series of springs installed in a cloth with a hook at each end. They are installed under tension on the pack, to pull apart the end and side flaps after the ripcord is pulled.

STAND, CONTAINER. A rigid stand used to hold some parachute containers, as the Martin-Baker horseshoe container, during part of the packing procedure.

STIFFENER, CONTAINER. A piece of metal or fiberglass or phenolic fiber placed in the container to stiffen the flaps. These strips are also used for stiffening and shaping the bottoms of several back-type containers.

STITCH, BASTING. A long, loose stitch made with single or double thread. Used to temporarily hold two or more pieces of material.

STITCH, BOX. Rectangular stitch pattern.

STITCH, BUTTONHOLE. A reinforced stitch, made on the edge of a slit or hole. Each individual stitch forms a half-hitch. The distance from the edge, and the spacing of the stitches is determined by the type of material used.

STITCH, LOCKING OR LOCK. See LOCKSTITCH

STITCH, OVERTHROW. A stitch used to repair weakened seams, reinforce slide fasteners and to join two pieces of material together.

STITCHES PER INCH. The number of needle penetrations where threads are interlaced, per linear inch.

STITCH, ZIGZAG. A stitch made by sewing machine which stitches alternately on two or more parallel lines, for example, it is used to reinforce and anchor the suspension lines to the canopy. The number of stitches per inch is determined by counting the number of points on one side per linear inch (Figure 11).

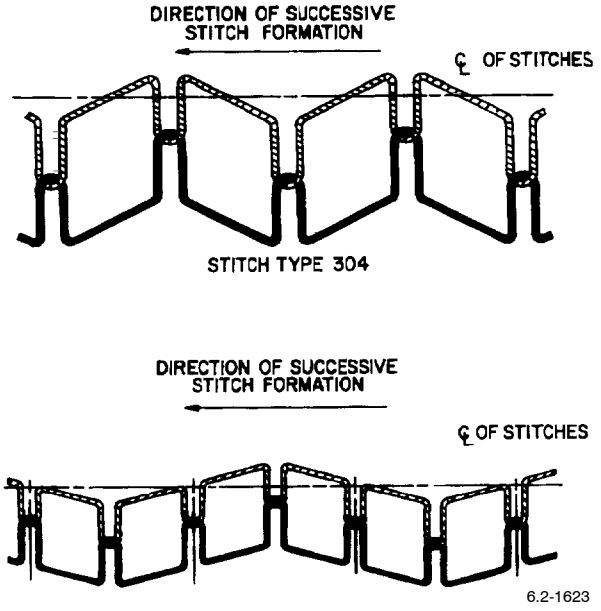

Figure 11. Zigzag Stitch

STRIP BACK. Broken thread filament(s) wrapped around the remaining thread forming an enlarged area on cloth.

STRAP, CROSS CONNECTOR. A short length of webbing sewn across the left web assembly or attached between suspension line connector links. It prevents streaming of a canopy in the event one riser was not properly attached to the harness.

STRAP, HORIZONTAL BACK. An adjustable part of harness webbing extending across the small of the wearer's back.

STRAP, LAP RESTRAINT. A strap attached to the parachute restraint harness suit to retain the rigid seat survival kit to the wearer. Prior to ejection it serves as safety restraint for the aircrewman.

STRAP, PILOT PARACHUTE CONNECTOR. Tubular nylon webbing which joins the main parachute and the pilot parachute.

STRAP, SHOULDER RESTRAINT. A short strap attached to the riser assembly on parachutes using the parachute restraint harness suit. The strap connects to the seat and serves to hold the aircrewmember in position in the seat in case of buffeting, severe g-loads or ejection.

STRAP, TENSION. A strap which attaches to the apex of a canopy to keep the canopy and suspension lines taut during parts of the packing procedures.

STOWING. The act of putting away in a neat, orderly way. Stowing of suspension lines involves inserting the lines into the hesitator loops or stowage channels in such a way as to ensure proper paying out of lines when the parachute is opened. Stowing of the canopy involves folding and inserting the canopy into the container in such a way as to ensure proper opening of the canopy when the parachute is used.

SURGEON'S KNOT TOPPED WITH SQUARE KNOT. This combination of knots is used extensively for parachute assembly and other related aircrewmember survival equipment tackings (Figure 12).

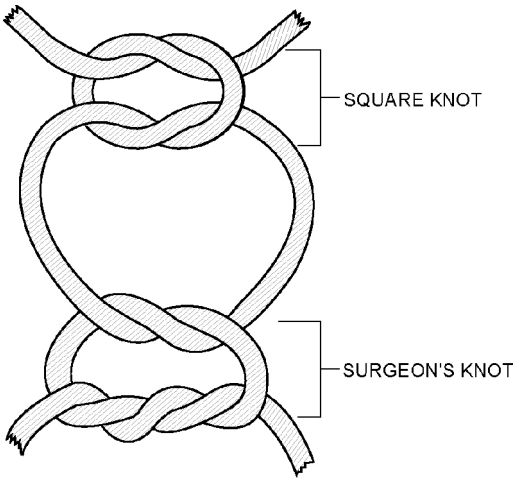

Figure 12. Surgeon's Knot Topped With Square Knot

SURVEY. A formal process by which a parachute or other accountable equipment is withdrawn from service or removed from records.

SUSPENSION LINE. See LINE, SUSPENSION.

SWAGE. To attach a device to a cable by means of pressure. A swaging machine compresses a fitting, causing it to grip tightly to the cable to which it is being attached.

T-HANDLE. A handle in the shape of the letter "T".

TAB, ANCHOR. A cloth loop attached to a metal plate and used on some MBEU parachute assemblies. It is placed over a locking cone and is used to secure the withdrawal line slide disconnect pin in position prior to operation.

TAB, END. An oval metal fitting secured to each end flap of seat-type Martin-Baker and chest-type parachute containers. The end tabs fit over the cones and secure the end flaps in a closed position until the locking pins are pulled.

TACK (HANDTACK). To attach temporarily prior to final sewing. Also, to tie temporarily as an aid in positioning. Also, to permanently secure portions of a parachute together, for example, the attachment of a seat cushion to a parachute container assembly.

TAPE, FILAMENT. An adhesive tape with fiber cords in the backing. The cords are usually fiberglass nylon, linen or other high strength material. This tape has high tensile strength along the lengthwise direction.

TAPE, HOOK. Strip of nylon tape with small nylon hooks on one side. Hook tape is used with pile tape as a fastener.

TAPE, PILE. A strip of nylon tape with small nylon loops on one side. Pile tape is used with hook tape as a fastener.

TEMPORARY LOCKING PIN. See PIN, TEMPORARY LOCKING.

TENSION STRAP. See STRAP, TENSION.

TERMINAL END FITTING. The end of the automatic parachute ripcord release arming cable which connects to the ejection seat, lap belt or other designated point.

THIN SPOT (Suspension Line). A condition whereby the diameter of the suspension line is seen visually to be less than other portions of the suspension line. This condition normally caused by broken inner cord yarn(s) or an improper overlap.

THREAD, SEPARATION. A bunching of threads in cloth, leaving a hole or separation in the cloth. A thread separation can run either with the warp or filling of a cloth.

TIE, RIPCORD PIN RETAINING. A low strength thread or cord used specifically to prevent ripcord pins from creeping and possibly causing inadvertent opening.

TIGHT STITCHES. Thread under excess tension causing one sewing thread to lie on the surface of the cloth or causing puckering of the cloth.

TORQUE. A force or combination of forces that tend to produce a rotating or twisting motion. Torque is often expressed in pounds-inches or pounds-foot. A torque wrench is used to apply a measured torque.

TOTAL LIFE. Total life is the period of time starting with date of manufacture that an item may be retained in a packaged, out-of-service condition and remain acceptable for service.

TUBULAR WEBBING. See WEBBING, TUBULAR.

TWIST. Rotation of the suspension line casing induced generally during final assembly of the canopy, suspension lines and connector links.

UNEVEN STITCHING. Stitching wavy or number of stitches varying.

V-RING. A metal fitting shaped in the form of a closed letter “V”. For example, V-rings, used with quick ejector snap fittings, secures a harness assembly on a wearer.

V-TAB. Webbing reinforcement at the point where the suspension line enters the canopy.

VENT HEM. The circular opening at the peak, or top of the canopy. As the parachute opens and descends, some of the air in the canopy escapes thru the vent hem, thus reducing the strain on the canopy and steadying decent. It is about 18-in. in diameter for personnel parachutes.

VENT COLLAR. See COLLAR, VENT.

VENT RING. See RING, VENT.

WARNING FLAG. A tag attached to an assembly indicating that the assembly is not operational. Often the flag is attached to safety-pins on pyrotechnic devices to indicate necessity of removal before operation. Also it is used to flag defective or incomplete equipment to preclude use.

WAX, PARAFFIN. See PARAFFIN.

WEAVE SEPARATION. Looseness of weave caused by strain or poor weaving.

WEBBING, TUBULAR. Strong synthetic or natural fiber webbing woven in the form of a tube.

WET LOCKER. A tower or compartment maintained for hanging parachutes which are damp or have been immersed in water.

WHIPPING. A method of wrapping or binding the ends of cord or line to prevent unraveling (Figure 13).

Figure 13. Whipping

WHIPSTITCH. A stitch used to join two pieces of webbing and to reinforce weak seams.

YOKE AND PLATE ASSEMBLY. The removable end of a connector link.

ZIG-ZAG STITCH. See STITCH, ZIG-ZAG.

13. SUPPORT EQUIPMENT.

a. Military specifications (MIL-X-XXX and MSXXX) are being converted from military standards to industry standards. For the textile and hardware specifications now owned by the Parachute Industry Association (PIA), only the owner designator letters have been changed. Some textile examples are: MIL-C-7020, which is now PIA-C-7020, MIL-W-4088 is now PIA-W-4088, and MIL-T-5038 is now PIA-T-5038. Hardware examples are: MS22021 is now PS22021 and MS70101 is now PS70101. New hardware or textiles received with the new designations have been reviewed by the appropriate government agency and are acceptable for use. These and other specification conversions can be found on the DOD specification web site:

http://assist2.daps.dla.mil/quicksearch/

Please contact the CFA if you need assistance.

b. The following is a list of all support equipment used in this manual, including standard shop tools and materials:

Standard Shop Tools

Part Number	Nomenclature
A-A-130 NIIN 00-205-1760	Adjustable Metal Stencil, 1/2-in.
—	Bolt Cutter
Refer to WP 005 00	Bodkin
—	C-Clamp
Refer to WP 005 00	Canopy Ties
—	Cartridge Tool, 1/2-in.
—	Cartridge Tool, 9/16-in.
TMRX10 NIIN 01-348-7323	Crowfoot, Socket, Wrench, 5/16-in.
—	Dowel
—	Driver, Hex Head, 1/4-in. Drive
TQS6 NIIN 01-274-3412	Driver, Torque, in-lbs.
Refer to WP 005 00	Fid, 8-in. or 12-in.
A-A-2311 NIIN 00-234-6537	File, Hand
GGG-G-17C NIIN 00-221-1999	Gauge, Thickness
—	Micrometer, 0-1-in. Outside
GGG-C-105 NIIN 00-050-5143	Micrometer, 0-8-in. Depth
FLUKE-77 NIIN 01-168-6856	Multimeter
*S7410	Nippers, Rigging
—	Nut Driver, 3/8-in.
—	Packing Closing Tool
Refer to WP 005 00	Packing Hook
Refer to WP 005 00	Packing Hook, 20-in.
Refer to WP 005 00	Pilot Parachute Pin Plate
Refer to WP 005 00	Pilot Parachute Temporary Locking Pin
M-100	Press
—	Punch, 1/8-in.
—	Punch, 15/32-in.
—	Screwdriver, Flat
268P-6 NIIN 00-675-0867	Screwdriver, Cross Tip, Size 6
BD122 NIIN 00-234-8913	Screwdriver, No. 2 Phillips
—	Screwdriver, Torque
—	Screwdriver, Torque 0-25 in-lbs.
—	Screwdriver, Torque, 1/4-in. Drive
11-1-3512 NIIN 00-092-8661	Separator, Line

Part Number	Nomenclature
—	Sewing Machine Needle, Size 22
*S7010-6	Shears, Bent Trimmers 6-in.
*S7010-8	Shears, Bent Trimmers 8-in.
*S7010-10	Shears, Bent Trimmers 10-in.
*S7010-12	Shears, Bent Trimmers 12-in.
GGG-S-00278 NIIN 00-293-9199	Shears, Straight Trimmers
CW16 NIIN 00-228-9506	Socket or Wrench, 1/2-in.
—	Socket, Hexagonal, Head Key Wrench, 1/4-in. Drive
3405AS101-2 NIIN 01-433-8386	Socket, Special 7/16 x 1/4-in. Drive
GGG-W-641	Socket Handle, 1/4-in. Drive
*S7425	Temporary Locking Pin, Cypres
Refer to WP 005 00	Temporary Locking Pin
Refer to WP 005 00	Temporary Locking Pin Plate
SA852AS105-1 NIIN 01-213-1989	Tool Set, Special
SA852AS112 NIIN 01-274-3412	Torque Driver
TQS6 NIIN 01-274-3412	Driver, Torque, in-lbs.
Refer to WP 005 00	Wrench, Allen-Type Modified, 3/32-in., Short End 1/4-in.
—	Wrench, Open End, 1/4-in.
A-A-1358 NIIN 00-228-9504	Wrench, 3/8-in.
OEX100 NIIN 01-335-1280	Wrench, Combination, 5/16-in.
A-A-1356 NIIN 00-081-2304	Wrench, Open End, 5/16-in.
—	Wrench, Socket, 1/4-in.
—	Wrench, Socket, 3/4-in.
—	Wrench, Socket, 3/8-in.
—	Wrench, Torque, 3/8-in. Drive, 0-50 ft. lb.
—	Wrench, Torque, 0-25 in.-lbs.
TE51F NIIN 01-260-6872	Wrench, Torque (0-50 ft. lbs.)
TSQ-050 NIIN 00-177-6801	Wrench, Torque (0-96-in. oz)
GGG-W-00686 NIIN 01-396-6070	Wrench, Torque (30-150 in.-lbs.)
GGG-Y-0035 NIIN 00-985-6610	Yard Stick

Support Equipment

Part Number	Nomenclature
MBEU68051 NIIN 01-091-9953	Aligning Rod (2)
711-07076-2 NIIN 01-256-8220	Altitude Chamber (Model 7000)
MBEU149516	Block, Packing, Loose-Large
MBEU149526	Block, Packing, Loose-Small
MBEU149517	Block, Packing, Loose-Withdrawal Line
MBEU149009	Block, Packing, Press, Intermediate
MBEU149010	Block, Packing, Press, Long
MBEU149008	Block, Packing, Press, Short
MBEU143003	Block, Support, Front
MBEU143002	Block, Support, LH
MBEU143001	Block, Support, RH
MBEU143005	Block, Support, Lower
MBEU143004	Block, Support, Rear
MBEU143000	Box Assembly, Packing
1401 or (*S7920) NIIN 00-090-4412	Button Die

Part Number	Nomenclature
1483 NIIN 00-509-8062	Die, Fastener Button
8244 NIIN 00-764-8985	Chart, Recording Instrument
*S7740	Chuck and Die Set 9/16-in.
9766 NIIN 00-329-3346	Chuck, Punch 9/16-in.
—	Cloth Wipes
Procure Locally	Clothes Drier (With Low Speed Capability)
—	Curved Long Bar
C-70513 NIIN 00-956-0081	Cutter, Nylon Webbing
1407 NIIN 00-144-2097	Die, Eyelet
MIL-P-85582	Epoxy Primer, Coating Kit
Refer to WP 005 00	Fixture, Holding, Drogue Parachute Container
MBEU149527	Guide, Tray, Rigging Line
Refer to WP 005 00	Guide Tube
MIL-H-45193 NIIN 00-785-1162	Heater, Gun Type
*S7975	Hot Knife
—	Laundry Bag, Cloth Mesh
*S7320	Leverage Closing Device (A/P22P-21)
Refer to WP 005 00	Long Bar
Procure Locally	Marker Permanent, Sharpie, Fine Point
—	Needle, Sewing
—	Needle, Sewing, Curved
A-A-55066 NIIN 00-237-4959	Needle, Upholsterers
*S7230	Packing Hook (A/P28S-32)
MBEU68049 NIIN 01-073-8247	Packing Pressure Block, (Large)
MBEU68050 NIIN 01-074-9778	Packing Pressure Block, (Small)
MBEU149535	Packing, Support, Front
MBEU149533	Packing, Support, LH
MIL-C-83286 NIIN 01-397-3941	Paint, Polyurethane, Flat, Black
MIL-C-85285B	Paint Polyurethane, Type 1, Lusterless Black -or-
MIL-P-23377	Primer, Epoxy
Refer to WP 005 00	Parachute Container Holding Fixture A/P28S-28, 30, 31
PX-0 NIIN 00-043-3408	Pen, Marking
—	Pencil, Indelible
A-A-87 NIIN 00-240-1526	Pencil, Black, Thick
A-A-87 NIIN 00-181-7267	Pencil, Black, Thin
A-A-87 NIIN 00-282-7894	Pencil, Blue, Thin
A-A-87 NIIN 00-174-3205	Pencil, Red, Thick
A-A-87 NIIN 00-282-3375	Pencil, Red, Thin
MBEU149424	Pin, Removal
**3233K83	Pot, Melting, Electric
MBEU143026 NIIN 99-301-1621	Press, Parachute Packing (A/P28S-32) GSU-342/E
MBEU68750 NIIN 01-100-8917	Press, Parachute Packing (A/P28S-24)
GG-P-655 NIIN 00-264-3718	Printing Set, Rubber Type
Style No. 8 NIIN 00-976-4962	Printing Set, Rubber Type
9758 or (*S7928) NIIN 00-343-8210	Pull the Dot Button Die

Part Number	Nomenclature
8059 or (*S7926) NIIN 00-628-4265	Pull the Dot Socket Chuck
9760 or (*S7921) NIIN 00-329-3295	Pull the Dot Stud Chuck
—	Pull-Up Cord, 100 lb.
9323 NIIN 00-090-4401	Punch
1486 NIIN 00-329-3297	Punch, Stud Fastener
MS17985C310 NIIN 00-097-6343	Quick Release Pin
—	Rod, Wood or Steel, 3/8-in. Rounded End
Locally Procure	Rubber Mat/Pad
—	Rubber Stamp Kit
—	Ruler, 12-in.
SK86-0089-1 NIIN 00-144-7250	Safety Pin Assembly
472P950D053-1 NIIN 00-171-3572	Safety Pin Assembly
—	Safety Pin, Static Line
QQ-W-423 NIIN 00-186-9126	Safety Wire, 0.050-in.
ASTM A580 NIIN 00-892-4616	Safety Wire, 0.080-in.
TMA2 NIIN 01-367-3453	Screwdriver Attachment 1/16-in. Bit Socket Wrench
Refer to WP 005 00	Shot Bag
68D37721-3 NIIN 00-371-2243	Snap Ejector, with Removable Pin
—	Soft Brush
P-D-680, Type 2	Solvent, Dry Cleaning
MBEU149518	Spacer, RH
Procure Locally	Stamp Pad
128GT10156 NIIN 00-868-4996	Stand, Drogue Chute (MK-GRU7/MK-GRU7A/ MK-GRUEA7
MBEU68048 NIIN 01-081-8022	Stick, Drogue Parachute Packing
1410 or (*S7910) NIIN 00-144-2084	Socket Chuck
1412 or (*S7890) NIIN 00-144-2088	Stud Chuck
MBEU68042 NIIN 01-074-9795	Support Box Assembly, Packing Press
MBEU68043 NIIN 01-073-8246	Support Box Packing Plate (Front)
MBEU68044 NIIN 01-073-8255	Support Box Packing Plate (Rear)
MBEU68045 NIIN 01-073-8256	Support Box Packing Plate (Left)
MBEU68046 NIIN 01-073-8257	Support Box Packing Plate (Right)
MBEU68047 NIIN 01-073-8232	Support Box Packing Plate (Lower)
Refer to WP 005 00	Support Fixture
Refer to WP 005 00	Suspension Line Stowing Aid
MIL-T-50036A NIIN 01-080-9589	Talc, Technical (Dusting Powder)
5579245-1 NIIN 00-103-8531	Template, Parachute (Go-No-Go)
MBEU68053 NIIN 01-087-3841	Tensioner Locking Key (Spanner Wrench)
ST86-0064-1 NIIN 00-556-6324	Test Fixture Firing Pin Pull Force (Spreading Gun)
ST86-0064-3 NIIN 00-125-9417	Test Fixture (Spreading Gun)
DPP-50 NIIN 00-880-7583	Tester, Spring Resiliency (0-50 lb.)
DPP-100 NIIN 00-578-5285	Tester, Spring (0-100 lb.)
F4069TH NIIN 00-505-0547	Thermohumidigraph
Refer to WP 005 00	Tool, Securing, Mouthlocks
MBEU68052 NIIN 01-087-1359	Tool, Transfer, Suspension Line
SA852AS113 NIIN 01-285-5198	Torque Tool, Sensor Plug (Seawars)

Part Number	Nomenclature
—	Wash Tub
Procure Locally	Washing Machine (Tumble Type)
VVW95 NIIN 00-285-2044	Wax, Paraffin
MBEU149534	Wedge, Lid, Fitting

Materials

Specification or Part Number	Nomenclature
MIL-A-9962 NIIN 00-967-5089	Abrasive Material
BEHR-TEX NIIN 01-065-9989	Abrasive Material, Woven, Types
O-A-51 NIIN 00-184-4796	Acetone, Technical
015-710001-1 or 990065-1 NIIN 00-148-8492	Adapter Assembly (Male)
015-11366-1 or 990070-1 NIIN 00-986-8334	Adapter Assembly, Lap Belt (Male)
MIL-A-5540 NIIN 00-142-9913	Adhesive
MIL-A-46106 NIIN 00-148-7207	Adhesive, (Sealant)
MMM-A-121 NIIN 00-273-8716	Adhesive
O-E-760 NIIN 00-577-4889	Alcohol, Denatured
MIL-P-265 NIIN 00-264-9031	Alcohol, Polyvinyl
QQ-A-250/116061	16 Aluminum Alloy, 0.06 x 0.75 x 4.0-in.
362 NIIN 01-234-6838	Applicator, Disposable
A-A-1799 NIIN 00-837-7757 (or Commercial Equivalent)	Bag, Plastic
C-B-191 NIIN 00-253-1171	Beeswax, Technical
H-B-491 NIIN 00-297-6657	Brush, Paint
MS51940-35 NIIN 00-821-5871	Buckle
711-07026 NIIN 00-403-9755	Cable, Arming
MS27980-2N (3/8-in., Nickel) NIIN 00-276-6271	Cap, Snap Fastener
V-F-106 NIIN 00-281-4781	Chain, Interlocking Slide Fastener, Medium Duty
CCC-C-440 NIIN 00-222-2423	Cheesecloth
MIL-C-81706 NIIN 00-057-2354	Chemical Conversion Coating, Class 1A
60A113D16-1 NIIN 00-572-6970	Clamp, Base Assembly
MIL-C-12369 NIIN 00-261-8516	Cloth, Ballistic, Natural, Type I
MIL-C-5646 NIIN 00-191-3977	Cloth, Airplane, Cotton, Natural, Type A
MIL-C-20696 NIIN 01-102-7912	Cloth, Coated, Red, Type I, Class 3
CCC-C-419 NIIN 00-262-0438	Cloth, Cotton Duck, Olive Drab Green, Type III
—	Cloth, Emery, 180 or Equal
MIL-C-7219 NIIN 00-261-8515	Cloth, Duck, Nylon, Green, Type II, Class 3
MIL-C-3953 NIIN 00-229-6789	Cloth, Duck, Nylon, Sage Green, Class 2
MIL-C-7219 NIIN 01-173-4436	Cloth, Duck, Nylon, Sage Green, Type III, Class 3
CCC-C-458 NIIN 01-157-9676	Cloth, Flannel White, Type III, Class 2
MIL-C-23070 NIIN 00-132-5009	Cloth, Laminated Blue
MIL-C-85043 NIIN 00-044-9281	Cloth, Lint Free Cleaning, White

Specification or Part Number	Nomenclature
MIL-C-508 NIIN 00-261-8140	Cloth, Oxford, Nylon, Green
MIL-C-7020 NIIN 00-251-5889	Cloth, Parachute, Nylon, (Orange) Type I
MIL-C-7020 NIIN 01-115-9168	Cloth, Parachute, Nylon, (Green) Type I
MIL-C-7020 NIIN 01-189-7066	Cloth, Parachute, Nylon, (Sand) Type I
MIL-T-43618 NIIN 00-176-1802	Cloth, Parachute, Mending, Pressure-Sensitive
MIL-C-5040 NIIN 00-246-0688	Cord, Nylon, Olive Drab, Type III, 550 lbs.
MIL-C-5040 NIIN 00-240-2154	Cord, Nylon, Natural, Type I, 100 lbs.
MIL-C-5040 NIIN 00-240-2146	Cord, Nylon, Natural, Type III, 550 lbs.
MIL-C-7515 NIIN 00-965-0473	Cord, Nylon, Olive Drab, Type V, 1500 lbs.
***9512-300-UNT	Cord, Spectra 300 lb., Untreateed
O-D-1271 NIIN 00-995-4804	Diethylene Triamene (Hardener)
O-C-265 NIIN 00-107-1510	Distilled Water
MIL-E-5558 NIIN 00-263-3192	Enamel, Lusterless, Wrinkle-Finish, Type II, Black
BMS-10 NIIN 00-082-2450	Epoxy Primer, Yellow
MIL-P-23377 NIIN 01-139-3550	Epoxy Primer, Class 2
60A113C28-1 NIIN 00-992-5577	Eye
MIL-C-22787 NIIN 00-935-2831	Fabric, Red, Type IV USAF 1556
MIL-F-21840 (Black) NIIN 00-935-6761	Fastener Tape, Hook, 1-in. Wide, Type II, Class 1
MIL-F-21840 (Green) NIIN 00-106-5973	Fastener Tape, Hook, 1 1/2-in. Wide, Type II, Class 1
MIL-F-21840 (Black) NIIN 00-926-4931	Fastener Tape, Hook, 2-in. Wide, Type II, Class 1
MIL-F-21840 (Green) NIIN 00-106-5974	Fastener Tape, Pile, 1-in. Wide, Type II, Class 1
MIL-F-21840 (Black) NIIN 00-006-9837	Fastener Tape, Pile, 1 1/2-in. Wide, Type II, Class 1
MIL-F-21840 (Black) NIIN 00-926-4930	Fastener Tape, Pile, 2-in. Wide, Type II, Class 1
782AS100-4 NIIN 00-395-1870	Fitting End, Arming Cable
—	Foil
MIL-C-9084 NIIN 01-007-2672	Glass Cloth, Natural Class 2, Type VIIIB
MS22048GC1 NIIN 00-483-2467	Grommet, 1/2-in.
MS20230-B20 NIIN 00-291-0302	Grommet, Metallic, 5/32-in.
MS22048C2 NIIN 00-250-0405	Grommet and Washer
MS20230B10 NIIN 00-231-6589	Grommet Assembly, 3/16 Size 0
MIL-I-6903 NIIN 00-144-9672	Ink, Marking, Parachute, Light Blue
MIL-I-6903 NIIN 00-634-6583	Ink, Marking, Parachute, Orange-Yellow
TT-I-1795 NIIN 00-148-9817	Ink, Marking, Black
ASTMD3295	Insulation Sleeving, Electric
MIL-I-23053/5	Insulation Sleeving, Electrical

Specification or Part Number	Nomenclature
TT-I-735 NIIN 00-286-5435	Isopropyl Alcohol, Technical
A-A-2787 NIIN 01-331-6106	Lacquer, White Lusterless, No. 37875
MIL-L-19537 NIIN 00-847-4968	Lacquer, Class 2, Olive Drab, Color-34087
MIL-L-19537 NIIN 00-527-2496	Lacquer, Color Fed Std 13538 (Yellow)
MS22020-1 NIIN 00-862-5749	Link, Parachute Harness, Triangle
MS20995F32 NIIN 00-684-4841	Lockwire, Size 0.032
— (CAGE Code 45255)	Milled Glass Fibers (Glass Floc)
60A113C1-1 NIIN 00-468-7072	Parachute Pack, Cone, 0.338 Grip
60A113C24-1 NIIN 00-572-7689	Parachute Pack, Cone, 0.410 Grip
A-11 or B-11	Plastic Hydrocal (Locally Purchased)
LP 00370 NIIN 00-476-5267	Plastic Sheet
MIL-P-46144 NIIN 01-024-8887	Plastic Sheet
MIL-S-22473 NIIN 00-181-8372	Primer, Sealing Compound, Grade T, Form R
MIL-P-8585 NIIN 01-290-4508	Primer, Zinc Chromate
00311 Dry Film Vydax Sprayon Products	Release Agent, (Cold Mold) (Open Purchase)
015-10307-5 or 990055-1 NIIN 00-866-6878	Release Assembly, Lapbelt (Female)
015-11365-1 or 990060-1 NIIN 00-997-6662	Release Assembly, Lapbelt (Female)
MIL-R-9300	Resin, Epoxy, Type II, Grade D, Form A
MS20426AD4-9 NIIN 00-619-4093	Rivet, Solid
MS20427F4-9 NIIN 00-526-2958	Rivet, Solid
MS20470A6-4 NIIN 00-242-1582	Rivet, Solid
MS20470DD2-3 NIIN 01-307-4680	Rivet, Solid
MS20470B2-8 NIIN 00-205-7660	Rivet, Solid
A-A-131 NIIN 00-243-3437	Rubber band, No. 18
MIL-R-1832 NIIN 00-568-0323	Rubber bands, Retaining, Type I
12059-11 NIIN 01-179-4948	Seal
MIL-S-8802 NIIN 00-685-0915	Sealing Compound, Polysulphide, Type I, Class A
MIL-S-22473 NIIN 00-067-6744	Sealing Compound
F-900 Torque Seal (Color Optional) NIIN 01-125-0055	Sealing Compound
MIL-S-22473 NIIN 00-081-2325	Sealing Compound, Grade H
MIL-S-45180 NIIN 00-656-1426	Sealing Compound, Type III
General Dispersion, Inc. 53-T LaFrance Ave. Bloomfield, NJ 07033	Sergene
— General Plastics Corp. Bloomfield, NJ 07003	Sergene Adhesive (Open Purchase)
MIL-S-8660 NIIN 00-177-5094	Silicone Compound
Lenzip Manufacturing 1900 W. Kinzie St. Chicago, IL Catalog # 1031 (Open Purchase)	Slide Fastener, 3 1/2-in. Long Thong, Type IV, Style 8, Size MH
9005231 NIIN 00-578-4294	Sleeving, Insulation
V-F-106 NIIN 00-291-0195	Slider and Pull, Interlocking Slide Fastener, Medium Duty

Specification or Part Number	Nomenclature
MS27980-1B (9/32-in., Black) NIIN 00-359-6844	Snap, Fastener, Button
MS27980-8B (9/32-in., Black) NIIN 01-023-3843	Snap, Fastener, Eyelet
MS27980-10B (13/32-in., Black) NIIN 01-026-0894	Snap, Fastener, Eyelet
MS27981-1B (Black) NIIN 00-276-4954	Snap, Fastener, Button
MS27983-4 (Pull the Dot, Black) NIIN 00-276-4978	Snap, Fastener, Eyelet
MS22017-1 NIIN 00-887-2150	Snap, Parachute Ejector
MS27981-5B (3/16-in., Black) NIIN 00-250-6858	Snap, Fastener, Eyelet
MS27983-1 (Pull the Dot, Black) NIIN 00-891-9073	Snap, Fastener, Button
MS27756 NIIN 00-020-4075	Snap Hook
MS27767 NIIN 00-591-8336	Snap, Retainer
Procure Locally	Soap (e.g., Ivory)
MS27980-6B (Black) NIIN 00-285-6250	Socket, Snap Fastener
MS27980-6N (Nickel) NIIN 00-276-4946	Socket, Snap Fastener
MS27981-3B (Black) NIIN 00-276-4966	Socket, Snap Fastener
MS27983-2 (Pull the Dot, Black) NIIN 00-893-6243	Socket, Snap Fastener
1100/82	Spandex Fabric
V-F-106 NIIN 00-276-4938	Stop, Interlocking Slide Fastener, Close Type, Medium Duty
V-F-106 NIIN 00-291-0197	Stop, Interlocking Slide Fastener, Open Type, Medium Duty
MS27980-7B (Black) NIIN 00-842-1879	Stud, Snap Fastener
MS27981-4B (Black) NIIN 00-901-9660	Stud, Snap Fastener
MS27983-3 (Pull the Dot, Black) NIIN 00-276-4908	Stud, Snap Fastener
1791K10 NIIN 01-242-6473 (or Commercial Equivalent)	Tape, Duct
MIL-I-19166 NIIN 00-543-1597 or NIIN 00-612-8492	Tape, Insulation Electrical
A-A-52080-B-2 NIIN 00-753-6329	Tape, Lacing and Tying, Finish B, Size 2, Type I, Natural
A-A-52080-B-2 NIIN 01-384-6100	Tape, Lacing and Tying, Type I, Finish B, Size 2, Black, 80 lbs.
PIA-T-5038	Tape, Nylon, Type III, 1/2-in., Class 1 or 1A
PIA-T-5038 NIIN 00-253-6264	Tape, Nylon, Type III, 1/2-in. Wide, Natural, Class 1 or 1A, 250 lbs.
PIA-T-5038 NIIN 00-753-6144	Tape, Nylon, Type III, 1-in. Wide, Green, Class 1 or 1A, 525 lbs.
PIA-T-5038 NIIN 01-155-0462	Tape, Nylon Type II, 1-in. Wide, Class 1 or 1A
PIA-T-5038 NIIN 00-261-8579	Tape, Textile Reinforcing, Nylon, Type IV, 1-in. Sage Green, Class 1 or 1A
PIA-T-5608 NIIN 00-496-9905	Tape, Nylon, Type II, 3/8-in. Natural, 18 lbs.

Specification or Part Number	Nomenclature
PPP-T-97 NIIN 00-802-8311	Tape, Pressure Sensitive Type II, 3/4-in. Wide
A-988 NIIN 00-420-0507	Test Kit, Alkacid
MIL-T-81772 NIIN 00-181-8080	Thinner, Aliphatic
A-A-52094 NIIN 00-895-6543	Thread, Cotton, Size 30/3, Red
V-T-295 NIIN 00-227-1244	Thread, Nylon, Size FF, Type I or II, Olive Drab, Class A, 17.5 lbs.
V-T-295 NIIN 00-244-0603	Thread, Nylon, Size A, Type I or II, Olive Drab, Class A, 2.8 lbs.
V-T-295 NIIN 00-244-0609	Thread, Nylon, Size E, Type I or II, Olive Drab, Class A, 9 lbs.
V-T-295 NIIN 00-262-2775	Thread, Nylon, Size 3, Type I or II, Olive Drab, Class A, 27 lbs.
V-T-295 NIIN 00-559-5211	Thread, Nylon, Size 6, Type I or II, Olive Drab, Class A, 54 lbs.
MIL-T-2520 NIIN 00-270-5469	Twine, Fibrous, Natural, Type I, 6-Ply
8089ABX NIIN 00-828-4936	Uralane, Adhesive
60A113C25-1 NIIN 00-158-3785	Washer, Flat
MS22048WC2 NIIN 00-282-9527	Washer, Flat
MS20230-WB10 NIIN 00-810-7709	Washer, Metallic, 5/32-in.
Procure Locally	Water Softener
VVW95 NIIN 00-285-2044	Wax, Paraffin
PIA-W-5664 NIIN 00-263-3602	Webbing, Elastic, Cotton, Type I, Black, Class 2
PIA-W-5625 NIIN 00-082-5752	Webbing, Nylon, Tubular, 1/2-in., Natural, 1000 lbs.
PIA-W-4088 NIIN 00-262-1643	Webbing, Nylon, 1-in., Yellow, Type II Class 1, 1A, or 2, 600 lbs.
PIA-W-4088 NIIN 00-260-6909	Webbing, Nylon, 9/16-in., Olive Drab, Type I, Class 1, 1A, or 2, 500 lbs.
PIA-W-4088 NIIN 00-782-3224	Webbing, Nylon, 3/4-in., Olive Drab, Type IA, Class 1, 1A, or 2, 600 lbs.
PIA-W-4088 NIIN 00-260-6910	Webbing, Nylon, 1-in., Olive Drab, Type II, Class 1, 1A, or 2, 600 lbs.
PIA-W-4088 NIIN 00-261-8856	Webbing, Nylon, 9/16-in., Olive Drab, Type I Class 1, 1A, or 2, 500 lbs. Abrasion Resistant
PIA-W-4088 NIIN 00-281-3013	Webbing, Nylon, 1 23/32-in., Olive Drab, Type VI, Class 1, 1A, or 2, 2500 lbs.
PIA-W-4088 NIIN 00-531-2449	Webbing, Nylon, 3-in., Olive Drab, Type IV, Class 1, 1A, or 2, 1800 lbs.
PIA-W-4088 NIIN 00-261-8585	Webbing, Nylon, 1 23/32-in., Olive Drab, Type VIII, Class 1, 1A, or 2 4000 lbs.
PIA-W-4088 NIIN 00-261-8846	Webbing, Nylon, Type IX Class 1, 1A, or 2, 9000 lbs.
PIA-W-4088 NIIN 00-281-3012	Webbing, Nylon, 1 23/32-in., Olive Drab, Type XII, Class 1, 1A, or 2 1200 lbs.

Specification or Part Number	Nomenclature
PIA-W-4088 NIIN 00-260-4585	Webbing, Nylon, 1 23/32-in., Type XIII, Class 1, 1A, or 2, 7000 lbs.
PIA-W-4088 NIIN 00-530-1489	Webbing, Nylon, 1 23/32-in., Olive Drab, Type XXVII, Class 1, 1A, or 2, 6500 lbs.
PIA-W-4088 NIIN 01-014-6744	Webbing, Nylon, 2 1/4-in., Type XXVIII, Class 1, 1A or 2, 8700 lbs.
PIA-W-5625 NIIN 00-262-1653	Webbing, Nylon, Tubular, Sage Green, 1-in., 4000 lbs.
MS20995CY20 NIIN 01-047-6455	Wire, Copper, 0.020-in.

Suggested Sources:

*Para-gear Equipment Co. INC.
3839 West Oakton St.
Skokie, IL 60076-3438
Phone (847) 679-5905 FAX (847) 679-8644
www.para-gear.com

**McMaster-Carr
6100 Fulton Industrial Blvd.
Atlanta, GA 30336-2852
www.mcmaster.com

***CSR Inc.
3235 State Road
Sellersville, PA 18960
Phone (215) 453-0600

14. REFERENCE MATERIAL.

a. The following publications supplement the information presented in this manual:

Aviation Crew Systems Manual, Aircrew Personal Protective Equipment (Aircrew/Passenger)	NAVAIR 13-1-6.7-1
Aviation Crew Systems Manual, Aircrew Personal Protective Equipment (Clothing)	NAVAIR 13-1-6.7-2
Aviation Crew Systems Manual, Aircrew Personal Protective Equipment (Helmets and Masks)	NAVAIR 13-1-6.7-3
Aviation Crew Systems Manual, Aircrew Personal Protective Equipment (Protective Assembly, Aircrew Survival-Armor)	NAVAIR 13-1-6.7.4
Aviation Crew Systems Manual, Oxygen Equipment	NAVAIR 13-1-6.4
Aviation Crew Systems Manual, Rescue and Survival Equipment	NAVAIR 13-1-6.5
Cartridges and Cartridge-Actuated Devices	NAVAIR 11-100-1.1
Contractor and Government Entity	H-4/H-8
Maintenance Instruction Manual	NAVAIR 01-60GAB-2-2-2
Naval Aviation Safety Program	OPNAVINST 3750.6
Naval Aviation Maintenance Program Manual	OPNAVINST 4790.2
Aviation Crew System Seat Survival Kits (Oxygen Hoses and Non-SKU Series Seat Kits)	NAVAIR 13-1-6.3-1
Aviation Crew System Seat Survival Kits (SKU Series Seat Kits)	NAVAIR 13-1-6.3-2
Uniform Source, Maintenance and Recoverability (SM&R) Codes	NAVAIRINST 4423.3

15. RECORD OF APPLICABLE TECHNICAL DIRECTIVES.

a. The following technical directives have been incorporated in this manual.

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 380 Rev A	30 Sep 87	Stowage of Survival Items and O_2 Mini-Regulator (EP 2)	1 Oct 89	30 Jun 93
ACC 380 Rev A Amend 1	17 Jun 88	Stowage of Survival Items and O_2 Mini-Regulator (EP 2)	1 Oct 89	30 Jun 93
ACC 380 Rev A Amend 2	4 Aug 88	Stowage of Survival Items and O_2 Mini-Regulator (EP 2)	1 Oct 89	30 Jun 93
ACC 380 Rev A Amend 3	25 Sep 89	Stowage of Survival Items and O_2 Mini-Regulator (EP 2)	1 Oct 90	30 Jun 93
ACC 417	1 Jun 82	NES-8B Parachute Withdrawal Line Assembly Modification (ECP 41)	1 Nov 82	31 Dec 86
ACC 425	28 Jan 82	NES-12 Parachute Lumbar Pad Support Modification (ECP 45R1)	15 Jun 82	31 Dec 86
ACC 435 Rev A	15 Jan 87	Flashlight Attachment to Harness Configured with ACC 380 (RAMEC P-26-81)	1 Oct 89	31 Dec 90
ACC 438	11 Mar 83	NES-12 Parachute Cross-Connector Strap, Replacement (ECP 78R1)	1 Jun 83	30 Jun 88
ACC 438 Amend 1	11 Mar 83	NES-12 Parachute Cross-Connector Strap, Replacement (ECP 78R1)	1 Jun 83	30 Jun 88
ACC 440	1 Feb 84	NES-14 Parachute Cross-Connector Strap Replacement of (ECP-106)	1 Jun 84	31 Dec 89
ACC 446 Rev A	9 Jan 85	Parachute Harness Sensing Release Unit, Installation of (ECP-93)	31 Dec 86	31 Dec 89
ACC 446 Rev A Amend 1	12 Dec 85	Parachute Harness Sensing Release Unit, Installation of (ECP-93)	31 Dec 86	31 Dec 89
ACC 450	17 Mar 86	Installation of Improved Slug Design (ECP-24632-132)	1 Oct 89	31 Dec 91
ACC 471	22 Mar 85	NES-12 Riser Protection Sheath (RAMEC P-34-84)	1 Aug 92	30 Jun 89
ACC 478	27 Feb 89	Modification to Support OBOGS Installation (EPC 135)	1 Oct 89	30 Jun 99
ACC 478 Amend 1	18 Dec 89	Modification to Support OBOGS Installation (EPC 135)	1 Jan 91	30 Jun 99
ACC 478 Amend 2	1 Jun 91	Modification to Support OBOGS Installation (EPC 135)	1 Aug 92	30 Jun 99

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 491	13 Mar 86	NES-12 Container Base Plate Protector Flap, Extender Tab Installation (RAMEC P-34-84)	1 Oct 89	30 Jun 91
ACC 494 Amend 2	28 Oct 86	NES-12 EPC Bridle Protection Flap, Installation (RAMEC P-12-85)	1 Oct 89	31 Dec 91
ACC 494 Amend 1	7 May 87	NES-12 EPC Bridle Protection Flap, Installation (RAMEC P-12-85)	1 Feb 92	31 Dec 91
ACC 494 Amend 2	20 Jul 88	NES-12 EPC Bridle Protection Flap, Installation (RAMEC P-12-85)	1 Feb 92	31 Dec 91
ACC 497	28 Oct 86	NB-6 Lumbar Pad Installation (RAMEC T-03-86)	1 Oct 89	30 Jun 91
ACC 497 Amend 1	31 Mar 87	NB-6 Lumbar Pad Installation (RAMEC T-03-86)	1 Oct 89	30 Jun 91
ACC 497 Amend 2	25 Jun 87	NB-6 Lumbar Pad Installation (RAMEC T-03-86)	1 Oct 89	30 Jun 91
ACC 510	11 May 88	NB-6 Arming Cable Terminal Fitting and Lanyard Stowage Pocket (RAMEC T-07-86)	1 Oct 89	30 Jun 92
ACC 518 Rev A	1 Jun 91	Replacing AN/PRC-90 Radio Set With AN/PRC-90-2 Radio Set (ECP 10856R1)	1 Aug 92	30 Jun 99
ACC 538	15 Nov 88	A/P28S-30, -31, Drogue Parachute Riser Keeper Shielding (RAMEC 05-88)	1 Oct 89	31 Dec 93
ACC 538 Amend 1	8 Dec 88	A/P28S-30, -31, Drogue Parachute Riser Keeper Shielding (RAMEC 05-88)	1 Oct 89	31 Dec 93
ACC 539	17 Nov 88	NES-12 EPC Release Mechanism Cam Assembly (RAMEC R-02-87)	1 Oct 89	31 Dec 93
ACC 546	18 Jul 89	A/P28S-24 Front Riser Protector, Canopy Abrasion Cover and Lower Steering Line Modification (RAMEC P-01-88)	1 Feb 92	30 Jun 94
ACC 549	18 Jun 89	PCU-33/56P Parachute Restraint Harness Holster Handgun Pocket (RAMEC L-36-87)	1 Oct 90	30 Jun 94

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 551	23 Oct 89	Installation of Protective Cover for Ejection Seat Controller Drogue Parachutes (RAMEC L-08-89)	1 Feb 92	31 Dec 94
ACC 568	3 Apr 91	PCU-33/56P Stowage Pocket for HEED (RAMEC L-44-89)	1 Aug 92	30 Jun 96
ACC 568 Amend 1	31 Aug 92	PCU-33/56P Stowage Pocket for HEED (RAMEC L-44-89)	1 Aug 92	30 Jun 96
ACC 568 Amend 2	3 May 93	PCU-33/56P Stowage Pocket for HEED (RAMEC L-44-89)	1 Aug 92	30 Jun 96
ACC 577	30 Nov 93	NES-14 Stowage Tray Mounting (ECP 16264)	1 Oct 94	31 Dec 01
ACC 584	5 Jan 93	Establishment of the PCU-17/P and 68E417-10 Safety Strap As Authorized SAR/Loadmaster Restraint System for the P-3 and C-2 Aircraft (RAMEC P-13-90)	1 Oct 93	31 Dec 97
ACC 584 Amend 1	7 May 93	Establishment of the PCU-17/P and 68E417-10 Safety Strap As Authorized SAR/Loadmaster Restraint System for the P-3 and C-2 Aircraft (RAMEC P-13-90)	1 Oct 93	31 Dec 97
ACC 585	13 May 93	A/P28S-32 Riser Protective/Cover (RAMEC P-14-92)	1 Oct 94	31 Dec 98
ACC 587	8 Jul 93	NES-12 Protective Cover (RAMEC P-14-90)	1 Oct 93	31 Jan 97
SEC 5073	30 Jul 91	Socket Modification SEAWARS Cartridge Installation	1 Aug 92	30 Dec 96
ACC 592	8 Feb 94	NES-14 Riser Protective Cover (RAMEC R-01-91)	1 Oct 94	2 Feb 99
ACC 597	9 Mar 94	PCU-33/56P Modification for Removable OBOGS/Bracket/ Mini Regulator	1 Oct 95	31 Dec 97
ACC 597 Rev A	8 Apr 03	Modification of the PCU-59/P and PCU-59A/P Integrated Parachute Restraint Harness Assemblies with a CRU-103 Oxygen Regulator Pocket (WUC 96A3C00). For NALCOMIS Optimize Users, WUC (96A31) (ECP-16452)	1 Dec 03	31 Dec 2005
ACC 623	14 Feb 96	PCU-33/56P Riser Restraint Keeper (RAMEC P-08-95)	1 Jul 96	31 Dec 2003
ACC 623 Amend 1	14 Mar 96	PCU-33/56P Riser Restraint Keeper (RAMEC P-08-95)	1 Jul 96	31 Dec 2003

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 623 Amend 2	21 Mar 96	PCU-33/56P Riser Restraint Keeper (RAMEC P-08-95)	1 Jul 96	31 Dec 2003
ACC 623 Amend 3	24 Apr 96	PCU-33/56P Riser Restraint Keeper (RAMEC P-08-95)	1 Jul 96	31 Dec 2003
ACC 633	14 Sep 98	Replacement of LPU-23/P Floatation Device with the Low Profile Floatation Collar (LPFC) on PCU-33/P (Series) and PCU-56/P (Series) Integrated Parachute Restraint Harnesses (96A30)	1 Jan 00	31 Dec 2006
ACC 633 Rev A	13 Sep 00	Replacement of LPU-23/P Floatation Device and LPU-33/P LPFC with LPU-36/P on PCU-33/P (Series) and PCU-56/P (Series) Integrated Parachute Restraint Harnesses (96A30) (ECP-16387)	1 Jan 01	30 Jun 2008
ACC 633 Rev A, Amendment 1	29 Oct 01	Replacement of LPU-23/P Floatation Device and LPU-33/P LPFC with LPU-36/P on PCU-33/P (Series) and PCU-56/P (Series) Integrated Parachute Restraint Harnesses (96A30) (ECP-16387) and to include the PCU-58/P (Series) Integrated Parachute (Restraint Harness to the basic Equipment	1 Jun 02	30 Jun 2008
ACC 667 Part 2	11 Mar 02	A/P28S-28, A/P28S-30, A/P28S-31 Headrest Assemblies in TAV-8B AV-8B Aircraft, Installation of Four-Line Release System and Over-Inflation Control Line (WUC1774O, WUC174AO, WUC1749O) ECP-16416	1 Jun 02	31 Dec 2004
ACC 672 Amendment 2	30 Jan 03	A/P28S-32(V) 1, 2, 3, 4, 6 Parachute Lower Riser Cover Installation (RAMEC PAX 4613-02-02)	1 Apr 03	30 Jun 2007
ACC 674	22 Jan 03	Modification of the Integrated Parachute Restraint Harness, PCU-56P/(WUC96A3800), PCU-57P/(WUC96A3A00) and PCU-58P/(WUC96A3B00) for Joint Helmet Mounted Cueing System (JHMCS)	1 Apr 03	31 Dec 2004
AFC (TBD)	(TBD)	Installation of A/P22P-21 Crew Back Pack Assembly	1 Apr 03	(TBD)

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ORGANIZATIONAL, INTERMEDIATE AND DEPOT MAINTENANCE

PARACHUTE LOFT REQUIREMENTS/ADMINISTRATION

List of Effective Work Package Pages

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1 thru 16	10						

Reference Material

Cartridge Actuated Devices (CADS) and Propellant Actuated Devices (PADS) (IETM) . . . . . NAVAIR 11-100-1.1
Naval Aviation Maintenance Program . . . . . OPNAVINST 4790.2
Naval Aviation Safety Program . . . . . OPNAVINST 3750.6
Organizational, Intermediate, and Depot Maintenance, Support Equipment . . . . . WP 005 00

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Record of Applicable Technical Directives

None

1. DESCRIPTION.

a. The parachute loft is the work area designated for the maintenance of parachute assemblies, systems and parts. If possible, the loft shall be centrally located and at ground level, so that it is accessible to all organizations serviced. The parachute loft shall be large enough to accommodate parachute packing tables 36-in. high, at least 36-in. wide, and long enough to service the longest parachute presently in service. Other related parachute items may be necessary, and room for additional shops, such as oxygen and survival gear, should be made available. Two general types of parachute lofts currently in use are the shore-based parachute loft and the shipboard parachute loft (Figure 1).

b. All parachute lofts are equipped to perform specific levels of maintenance procedures (depending on equipment and personnel). These lofts shall be manned by qualified Aircrew Survival Equipmentmen.

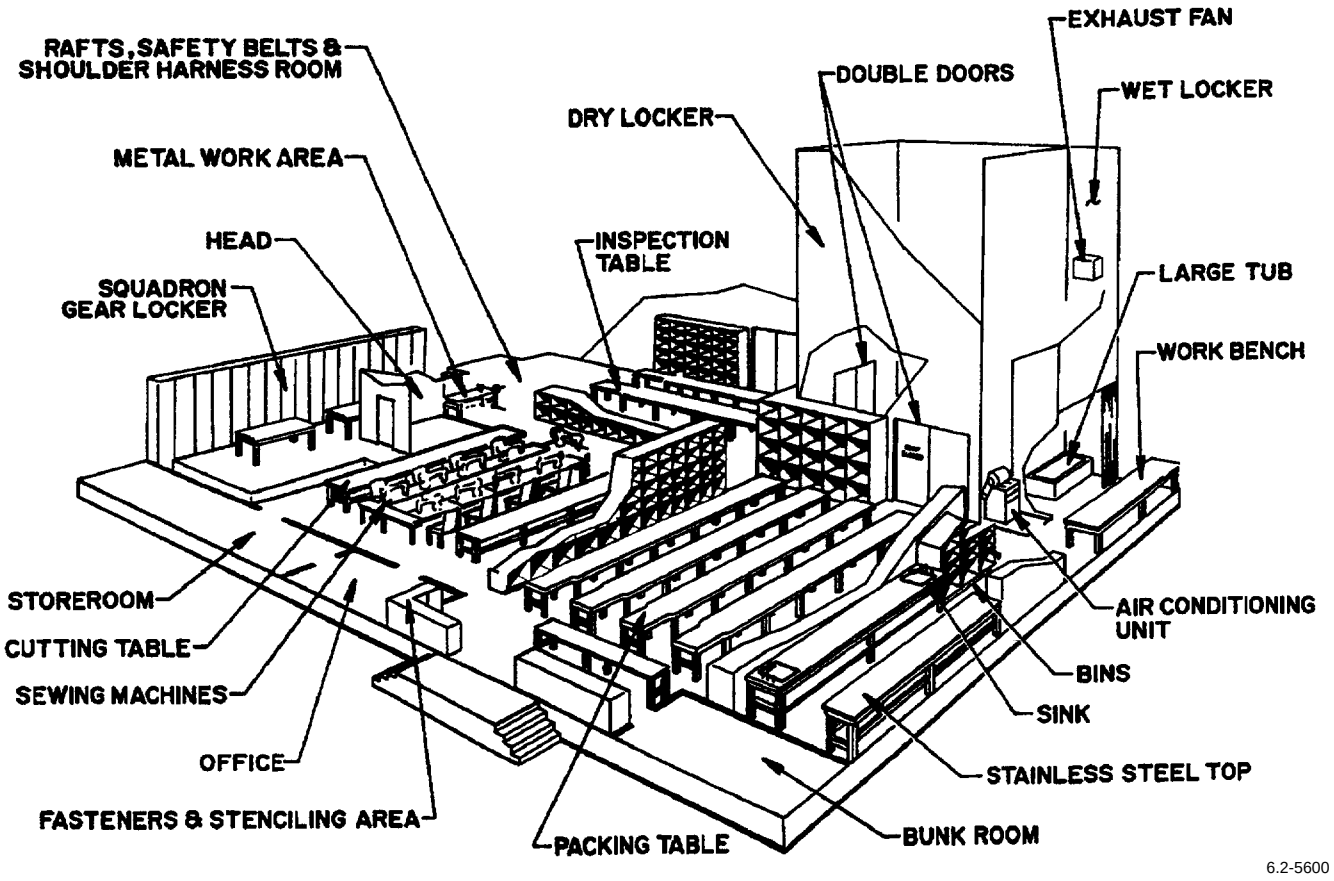

Figure 1. Typical Parachute Loft

2. PARACHUTE LOFT LAYOUT.

3. GENERAL.

a. The wet locker and washroom shall be separate areas. The packing area, store rooms, and fabric areas should be separated if room is available. The packing tables shall be adequately spaced. The fabric area shall be kept clean. All local fire regulations shall be adhered to.

4. PACKING AREA.

a. The packing area is used for inspection, rigging, and packing of parachutes and related equipment.

5. FABRIC AREA.

a. All sewing, manufacturing, modifications, or repairs shall be performed in the fabric area. The fabric area shall be equipped with a cutting table, sewing machine and miscellaneous authorized hand tools.

6. WET LOCKER.

a. The wet locker is used for drying parachutes after washing. It should be separated from the dry locker and provided with dehumidification and floor water drains. The ceiling should be of enough height to permit the parachutes to be hung full-length without touching the walls, floors, or other parachutes. The wet locker shall not have windows or sky-lights. If enough height is not available, the suspension lines shall be chained to prevent entanglement and the harness and container should be placed on a smooth table or suspended above the floor (Figures 1 and 2). The hoist lines shall be spaced at least 24-in. apart and at least 12-in. from wall. Hoist line must be free of harmful agents, such as tars, oils and acid. Also an adequate number of low-heat, flush type incandescent lighting fixtures shall be installed in wet locker walls and ceiling (Figure 2).

NOTE

Airing a parachute full length is no longer required unless damp or wet. If damp or wet, the assembly shall be suspended full length from its apex lines, in a wet locker unit assembly feels dry. Inspect assembly after drying per this applicable assembly chapter.

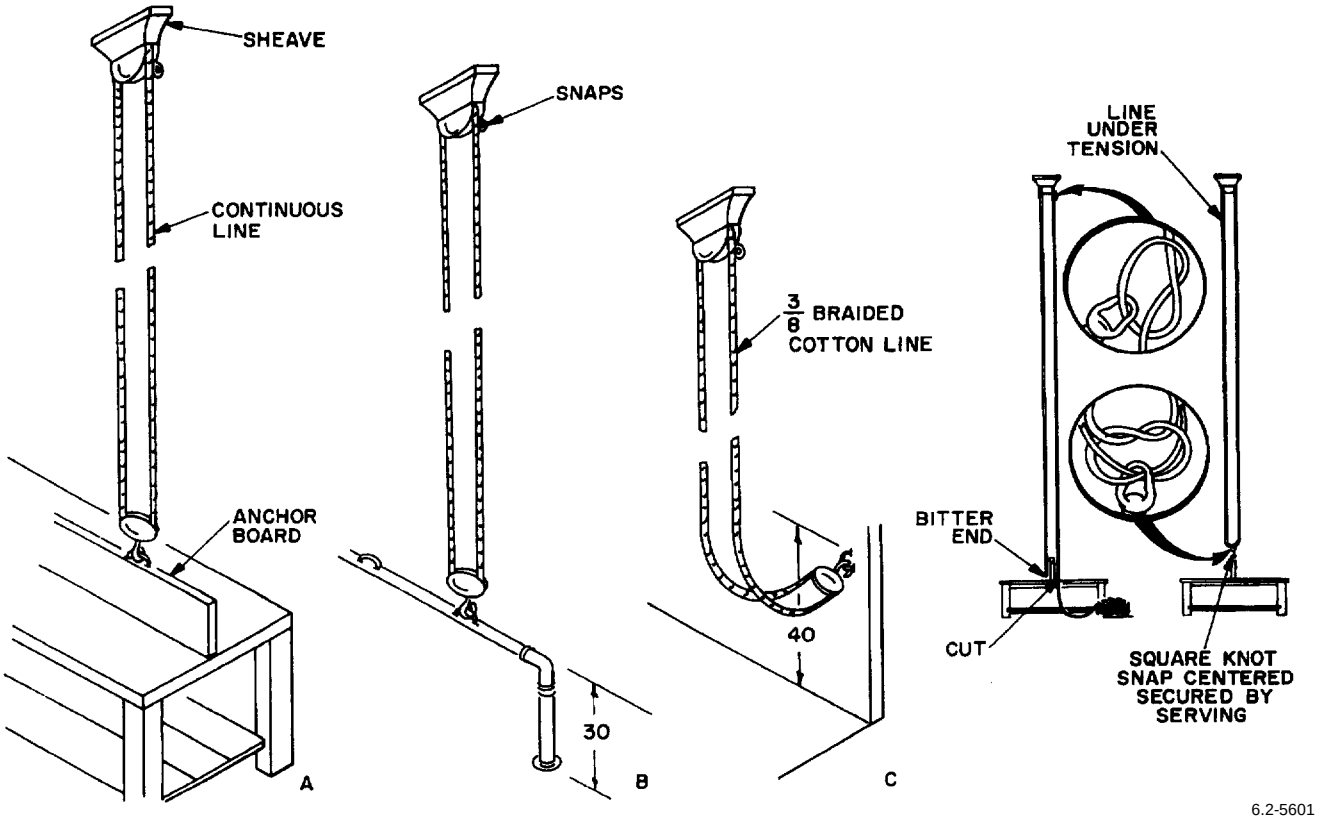

Figure 2. Hoisting Line Installation

7. WASHROOM.

a. The washroom is used for cleaning parachutes. It shall contain a large tub and a spin drier. Hoist lines should be installed over these units to facilitate parachute handling.

8. STORAGE FACILITIES.

a. Bins and other storage facilities should be constructed to accommodate packed and unpacked parachutes. These facilities should consist of closed lockers or cupboards divided into compartments large enough to accommodate single parachutes. Open racks or shelves may be used as a substitute for closed lockers. The shelves should be designed to allow storage of parachutes at least 4-in. from walls and 12-in. from the floor. Storage facilities shall be well-ventilated and free of dust and other contaminants such as oil, acid, and cleaning fluids. Parachutes shall not be stored directly over hot water pipes, heating apparatus, or in direct sunlight. Additional adequate storage facilities shall be established for organizational level use by squadrons.

9. ENVIRONMENTAL CONDITIONS.

10. GENERAL.

a. Parachutes should be inspected, repaired and packed under regulated temperature and humidity conditions. So, these conditions must be controlled in all parachute lofts. In general, the loft shall not be excessively damp or dusty. It shall be continuously or frequently ventilated.

11. REQUIREMENTS.

a. The temperature and relative humidity in packing loft and dry locker shall be maintained within limits indicated in (Figure 3). Ideal conditions are a temperature of 24-degrees C (75-degreesF) and a relative humidity of 60%.

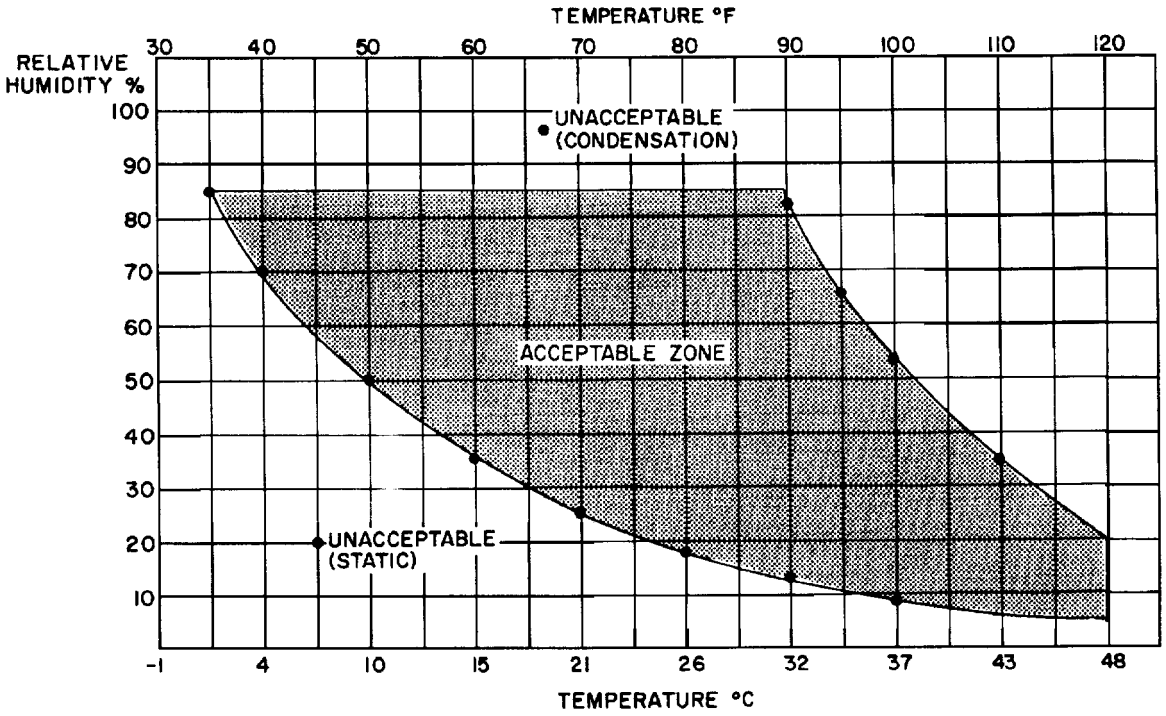

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Figure 3. Packing Loft and Dry Locker Temperature-Humidity Conditions

b. The shaded area on temperature-humidity chart, shown in (Figure 3), outlines the allowable environmental limits inside parachute loft and illustrates favorable and unfavorable conditions. Parachutes should not be packed when conditions are in the unacceptable zone. These limits are affected by two variables: relative humidity and temperature. Recordings of these variables shall be taken at least 3 times daily, using the relative humidity and temperature indicator (WP 005 00) to ensure that favorable conditions are maintained.

NOTE

Do not pack parachutes when conditions are outside acceptable conditions

c. Relative humidity is ratio between amount of water vapor in air and amount the air could hold at a given temperature. Relative humidity is usually written as a percent-age. Specific humidity is the weight of the water vapor found in a given volume of air. Relative humidity limits must be maintained to prevent condensation in actuators and other metal parts. Specific humidity limits must be maintained to prevent static electricity in canopy cloth.

d. Given any two of these variables, it can be determined, by using the chart, if the packing loft and dry locker have safe environmental conditions.

12. CONTROL.

a. The ideal method for regulating air temperature and humidity is an air-conditioning system. To obtain most effectiveness from the air-conditioner, a continuous check shall be made of the physical conditions of the loft.

13. LIGHTING.

a. The nylon material in parachutes is subject to deterioration by sunlight and some forms of artificial lighting. Avoid exposure of parachutes to sun-light; also, avoid prolonged exposure over inspection lights. Lighting should be adequate and free of shadows. Fluorescent lighting is most desirable for this purpose. But, parachutes should not be exposed to fluorescent lights closer than 5 ft. for long periods of time. Keep parachutes under cover except when being inspected and/or worked on.

14. PARACHUTE LOFT EQUIPMENT.

15. PACKING TABLES.

a. Basic requirements for a packing table are that it be long enough to lay out complete assembly for inspection and servicing (45 ft. by 36-in. by 36-in.) and that it be smooth and free of slivers and burrs. Two types of packing tables are generally used for packing personnel type parachutes; cutaway table and portable table (Figure 4). When procuring for a new parachute loft, packing table detailed in MIL-T-43150 should be considered for use with personnel parachutes. Each packing table can be equipped with tension attachments and a tensioning strap device. Packing tables shall not be used as cutting tables.

16. INSPECTION TABLES.

a. An inspection table shall be long enough to inspect an entire gore at one time, smooth and free of slivers and burrs, and radiate minimum heat from lighting. Fluorescent lighting is recommended. This does not conflict with requirements of Paragraph 13, due to the protection provided by the glass. When procuring for a parachute loft, the table detained in MIL-T-43238 should be considered, if room is available for an inspection table. Do not leave parachutes on lighted table longer than required for inspection. Excessive exposure to artificial lighting will degrade nylon. Lights shall be turned off when table is not in use.

17. CUTTING TABLES.

a. Cutting tables are used for laying out and cutting cloth flat patterns. They are located in the fabric area and shall have clean smooth surfaces (Figure 5).

18. SEWING MACHINES.

a. Service manuals covering each class and variety of sewing machine are furnished with new machines. Replacement manuals may be ordered, thru open purchase, from the sewing machine manufacturer. Servicing of all sewing machines shall be performed per the applicable sewing machine maintenance manual. Adjustments to sewing machines shall be made only by qualified personnel.

19. PARACHUTE LOFT REQUIREMENTS.

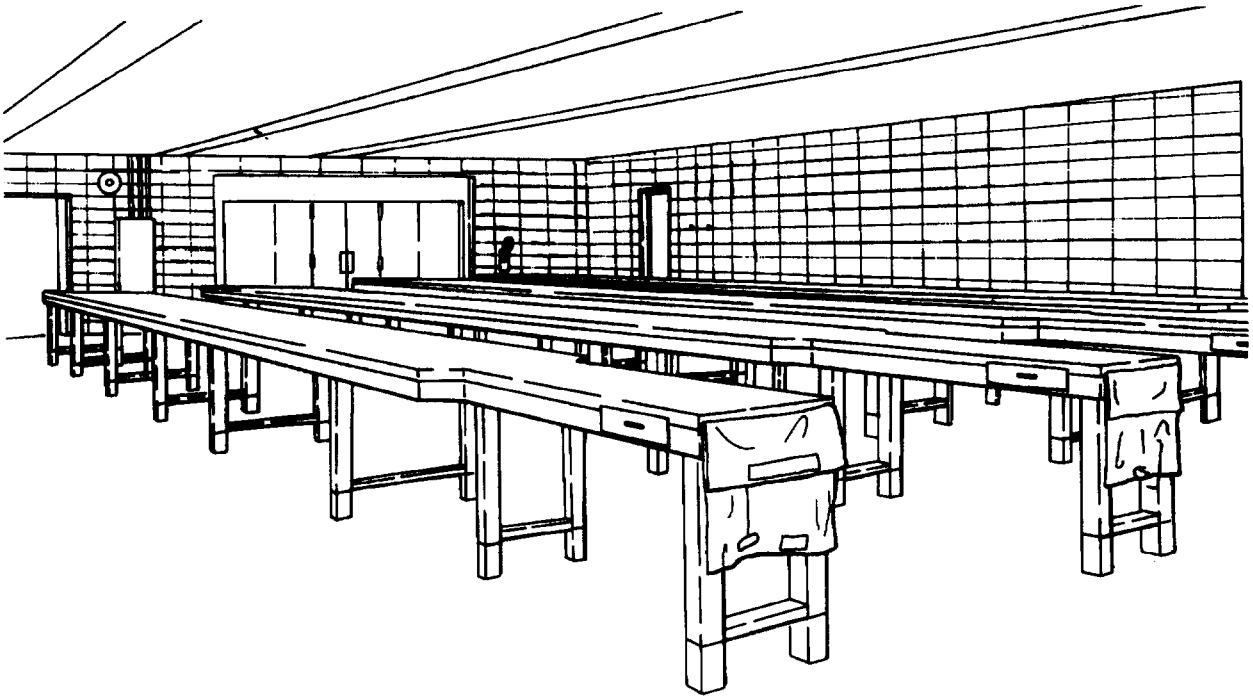
20. SAFETY REQUIREMENTS.

a. Handling, shipping, and storing of pyrotechnics shall be done per NAVAIR 11-100-1.1.

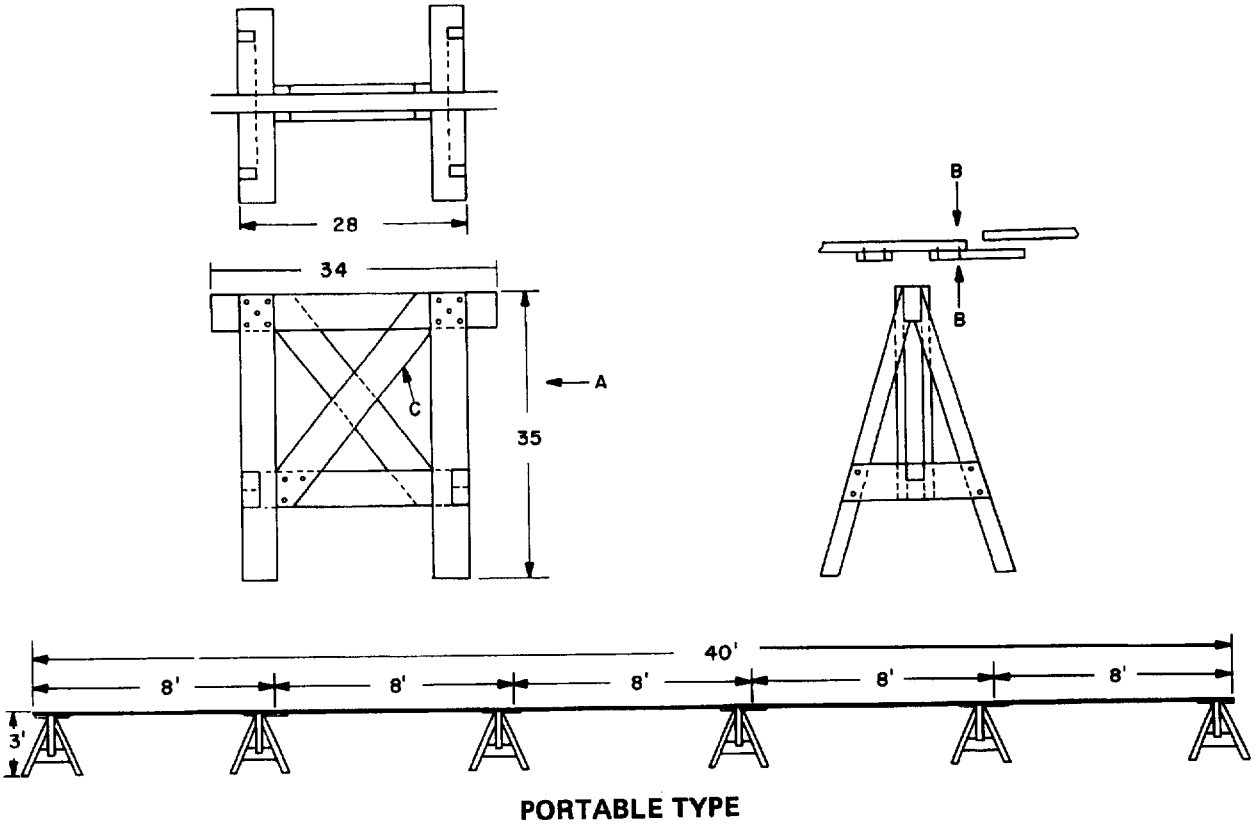
21. STORAGE OF PARACHUTE ASSEMBLIES.

NOTE

Packed parachute assemblies may be left in aircraft during accomplishment of Class C preservation.



CUTAWAY TYPE



PORTABLE TYPE

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Figure 4. Packing Tables

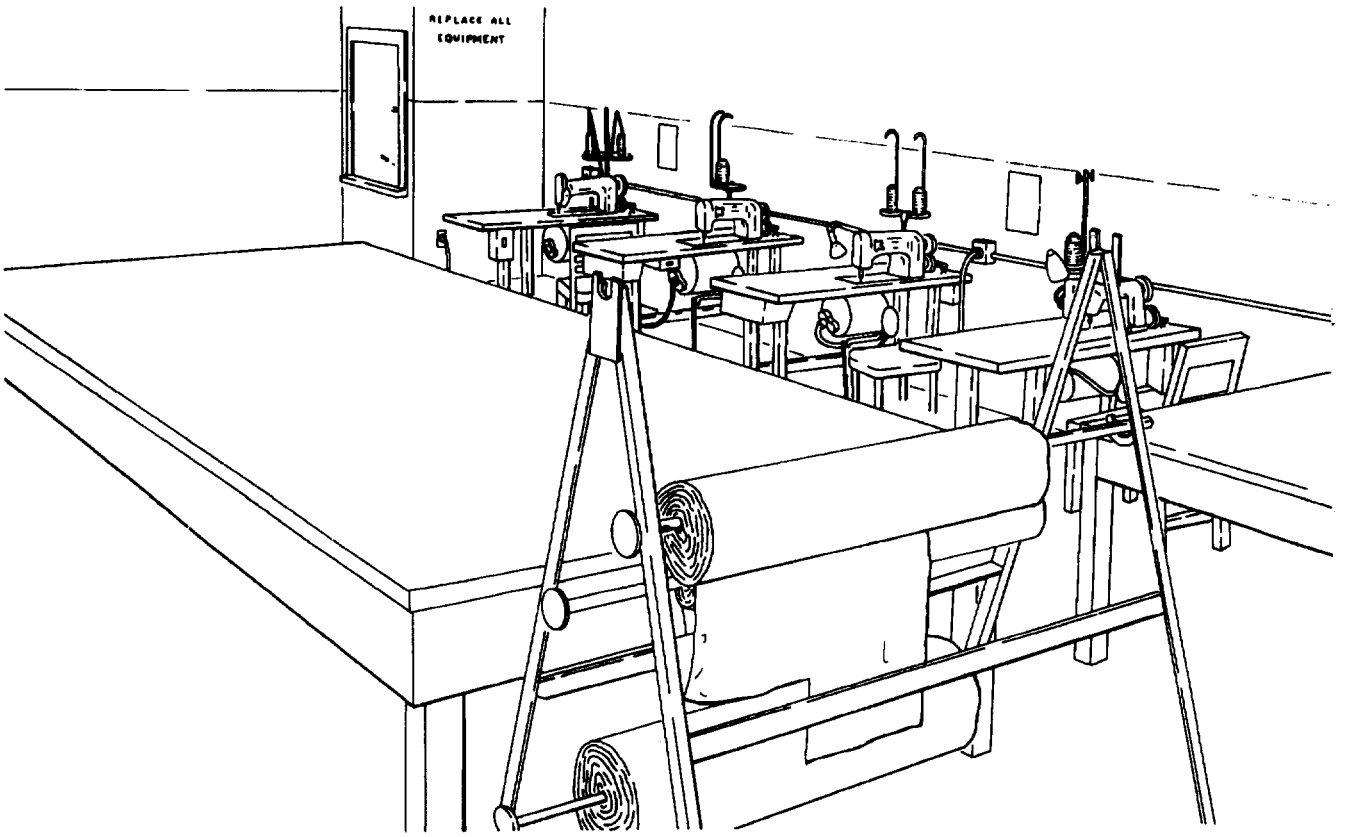

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Figure 5. Cutting Table and Miscellaneous Loft Equipment

22. PARACHUTE RFI (READY-FOR-ISSUE) POOL ASSET STORAGE REQUIREMENTS.

a. Storage facilities shall be well-ventilated and free of dust and other contaminants such as oil, acid, and cleaning fluids. The temperature and relative humidity in the storage area should be from 10-degrees to 35-degrees C (50-degrees to 95-degrees F) and relative humidity of 25 to 80 percent. Occasional temperatures between 0-degrees and 48-degrees C (32-degrees and 120-degrees F) are allowable.

b. Place RFI material in storage container, cardboard or plastic including parachute record, and all other related documents.

c. Store in bins or other storage facilities to accomodrate RFI assets. Do not store on floor or deck.

d. Parachute pool assets are authorized up to 90 days RFI shelf life before they begin to accumulate time for inspection purposes.

23. TAKING PARACHUTE ASSEMBLIES OUT OF SERVICE.

a. To take a parachute assembly out of service conduct the following:

(1) Place parachute on parachute packing table; inspect assembly per applicable personnel parachute assembly.

WARNING

Automatic parachute ripcord releases shall not be taken out of service and returned to supply with cartridge installed.

(2) Remove and disarm automatic parachute ripcord release. Assemble parachute release and tag.

CAUTION

Cartridge-actuated devices for parachutes shall not be taken out of service and returned to supply with cartridge installed.

(3) Remove cartridges from all cartridge-actuated devices. Store cartridges per NAVAIR 11-100-1.1 instructions.

(4) Release all snap fasteners, open all slide fasteners, and remove one end of all container spring opening bands.

(5) Chain suspension lines.

(6) Remove/separate parachute assembly parts, tag and place each part in a plastic bag and seal.

(7) Turn in parts to supply per applicable supply directives.

24. MAINTENANCE AND MAINTENANCE DOCUMENTS.

25. GENERAL.

a. All parachutes shall be scheduled for periodic maintenance under direction and control of Maintenance Control Officer. The parachute periodic inspection cycles shall coincide with applicable aircraft inspection cycles specified in OPNAVINST 4790.2 (series). For those assemblies procured from other agencies and not specifically covered by this document, maintenance documents of those agencies shall be used unless otherwise specified or authorized by TYCOM. The different types of periodic inspection are as follows: acceptance/transfer, calendar and conditional.

b. Any parachute assembly, harness, survival equipment, or component that requires maintenance shall be handled at the lowest level of maintenance equipped to satisfactorily perform the work. Mission, time, equipment, trained personnel, and operational needs are the basic considerations involved in determining which level shall be used.

26. PARACHUTE MAINTENANCE RECORDS.

a. The records and documents used by Aircrew Survival Equipmentmen, under the direction of the Maintenance Control Officer, to provide a systematic means of control consist of the following:

- Aircrew Systems Record (OPNAV 4790/138)
- Canopy Damage Chart
- DOD Single Line Item Requisition System Document (DD 1348 series)
- Parachute Record (OPNAV 4790/101)
- Quality Deficiency Report (Cat II, SF-368)
- Support Action Form (OPNAV 4790/42)
- Technical Publication Deficiency Report (OPNAV 4790/66)
- VIDS/MAF Form (OPNAV 4790/60)

NOTE

Reproduce proper canopy damage charts from this manual as may be required at local level. All entries are to be printed in blue or black ink or typewritten. Felt tip pens and pencils are unacceptable for log book entry purposes.

27. VIDS/MAF (OPNAV 4790/60).

a. The VIDS/MAF is used to record special (7/14 day) inspection per applicable Aircraft Maintenance Requirements Cards Manual and OPNAVINST 4790.2 (series).

28. PARACHUTE RECORD (OPNAV 4790/101).

a. Prepare Parachute Record per OPNAV 4790.2 (series).

b. After the parachute assembly has been repaired, inspected, and repacked, and the packer is satisfied the parachute assembly is ready for flight, the packer shall legibly sign his name and rate. After the Quality Assurance Inspector is sure all QA inspection points have been inspected, the Quality Assurance Inspector shall legibly sign his name and rate, QA stamp the inspector block, and enter the date and 3-M organization code of the IMA at the bottom of the parachute record (OPNAV 4790/101). The stamp shall not obscure the signatures.

c. If the part number of the parachute assembly is changed by the technical directive, the directive will be annotated on the parachute record at the time of incorporation. During following parachute repacks the TD need not be listed in the TD section of the parachute record. Aircrew system bulletins must be annotated every repack as they do not change the parachute assembly part number until recended.

d. If service life has been extended for a part, enter issuing authority and date time group of authorizing message on form.

29. EXPIRATION OF CANOPY ASSEMBLY.

a. When a parachute canopy is retired from service because its total/service life has expired or because repair is beyond capabilities of IMA history record and permanent file may be destroyed. Subassembly parts with service life remaining may be salvaged. Proper service life information must be annotated and securely attached to salvaged items if they are to be reused or installed on another parachute assembly. Under no circumstances shall a salvaged part be reused if history of part cannot be firmly established.

30. CANOPY DAMAGE CHARTS.

a. Whenever a canopy is inspected and found to need repairs, proper Canopy Damage Chart shall be filled out. If repairs cannot be accomplished locally, a damage chart shall go with canopy to next higher level of maintenance. This form shall not be discarded. Upon completion of repairs, Canopy Damage Chart shall be affixed to Parachute Record (OPNAV 4790/101) (Figures 6, 7, 8, 9 and 10).

31. SHELF LIFE OF REPAIR MATERIALS.

a. There are no limits on shelf life of repair materials. Materials that can not be identified shall not be used.

32. AIRCRAFT ACCIDENT REPORT INSPECTION.

a. Any personnel and drogue parachute, along with related subassemblies or equipment which have been recovered following use in an emergency bailout or ejection, will be returned to nearest Naval Supply Activity for shipment to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N. Knox Road Stop 6206, China Lake, CA 93555-6106. Related subassemblies or equipment are: pilot/drogue stabilization parachutes, cushions, containers, automatic parachute ripcord releases, canopy, spreading guns, harnesses, parachute harness sensing release units (PHSRU), etc. Parts shall not be tampered with during or after recovery. **Do not chain the canopy suspension lines.**

NOTE

Under no circumstances will any part be returned to service subsequent to an ejection or bailout.

b. Stencil outside of container in 1-in. letters as follows: **THIS EQUIPMENT HAS BEEN USED IN AN EMERGENCY.** These items of equipment are required for evaluation and determination of design deficiency and to establish requirements for product improvement.

c. Per OPNAVINST 3750.6 and to provide the Naval Air Warfare Center Weapon Division (NAVAIRWARCENWPNDIV) with enough information to critically inspect/evaluate parts, reporting custodian of the aircraft involved shall provide NAVAIRWARCENWPNDIV, when possible, with following information:

(1) Name of submitting activity and aircraft accident report number and aircraft type BUNO number.

(2) Parachute Records with canopy damage charts and PHSRU X-rays.

33. POST-COMBAT INSPECTION.

a. Organizational level maintenance shall inspect parachute assemblies for external damage or abnormal condition after each combat mission. When an aircraft has been subjected to flak, missile, or gun-fire all parachutes shall be examined for damage prior to next flight. If externally foreign objects have entered parachute assembly, remove it from service and perform a conditional inspection.

34. PERIODIC MAINTENANCE REQUIREMENTS CARDS MANUAL.

a. This manual contains minimum scheduled maintenance requirements to inspect for material degradation that may have occurred during preceding inspection interval, and to perform essential preventive maintenance. Tolerances, illustrations, and support equipment required are included.

35. NAVAL AVIATION MAINTENANCE PROGRAM.

a. The following forms used in the Naval Aviation Maintenance Program (NAMP) are applicable to parachute maintenance: VIDS/MAF Form, support Action Form, and DOD Single Line Item Requisition System Document. Proper completion of documents is essential to function of program. Detailed instructions on their use may be found in Naval Aviation Maintenance Program Manual, OPNAVINST 4790.2 (series).

36. RECORDING OF MODIFICATIONS.

a. When a modification is performed on a parachute assembly, record the assigned Technical Directive Code and Modification Code numbers on Parachute Record. Other records shall be completed per OPNAVINST 4790.2 (series).

CANOPY DAMAGE CHART

ACTIVITY			DATE
DATE OF MANUFACTURE	CONTRACT NO.	SERIAL NO.	INSPECTOR (PRINT)

INSTRUCTIONS

1. USE FOLLOWING SYMBOLS TO INDICATE LOCATION AND TYPE OF DAMAGE ON CANOPY DIAGRAM

6	TEAR, 6—INCHES LONG
3 4	TEAR, "L" SHAPED WITH 3—AND 4—INCH LEGS
3 4	TEAR, "T" SHAPED WITH 4—INCH BASE AND 3—INCH LEG
8	RUPTURE, 8—INCH DIA AT WIDEST POINT
	BURN MARKS
	STRAINED AREA
	PULLED DRAG SURFACE THREAD
	SINGLE BROKEN DRAG SURFACE THREAD
#	WEAVE SEPARATION
S/D	STAINS DISCOLORATION
3	BROKEN SEAM STITCHES ALONG 3 INCHES ON SEAM
	PULLED OR LOOPED SEAM THREAD
	OTHER DAMAGE: EXPLAIN

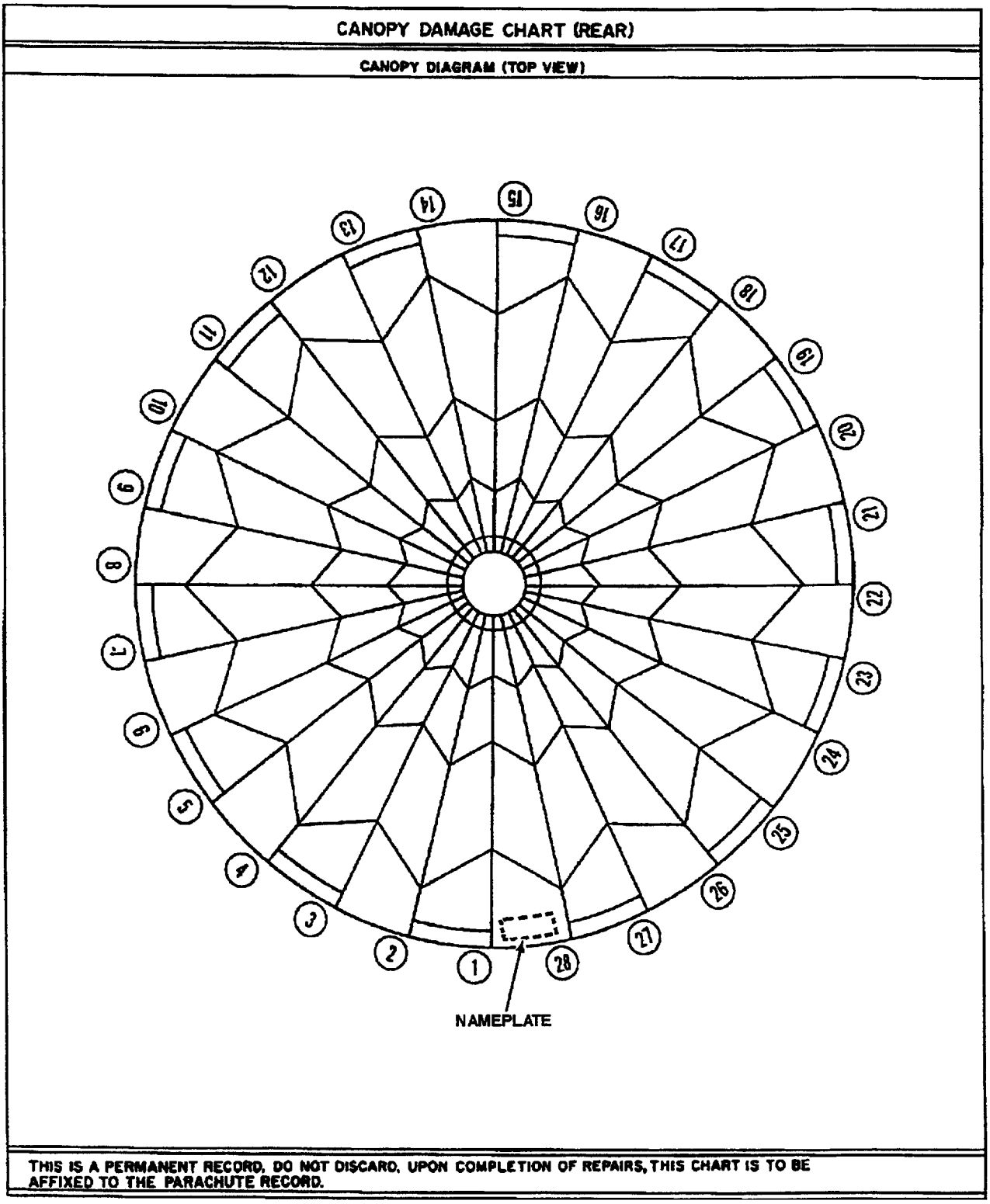
2. MARK DAMAGE USING SYMBOLS TO SHOW AREA AFFECTED.
3. AS DAMAGE IS REPAIRED ON EACH GORE, PLACE SYMBOL "OK" ADJACENT TO SKIRT AT END OF EACH GORE.

REMARKS: _____

THIS IS A PERMANENT RECORD. DO NOT DISCARD. UPON COMPLETION OF REPAIRS, THIS CHART IS TO BE AFFIXED TO THE PARACHUTE RECORD. (FRONT)

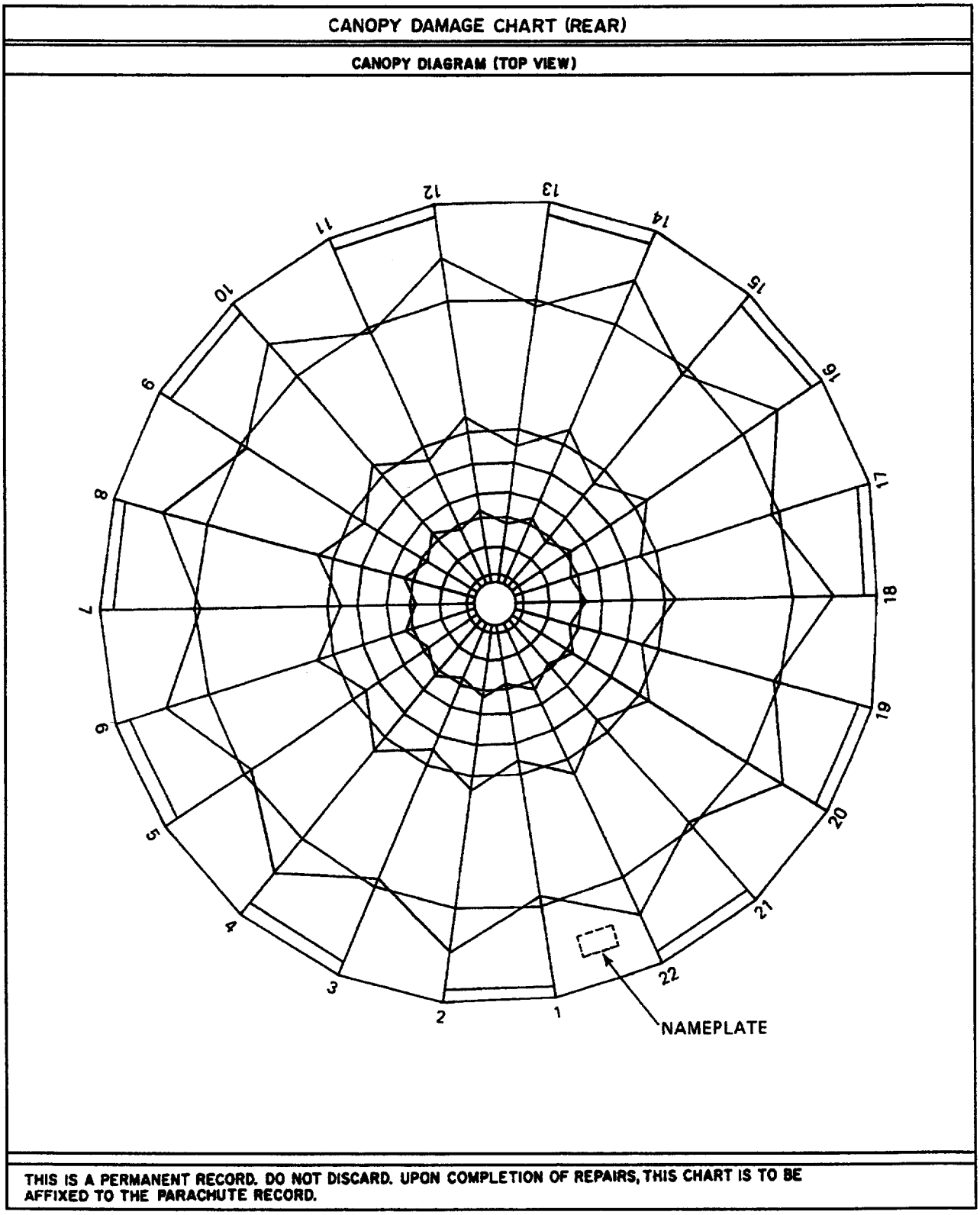
6.2-5606

Figure 6. Canopy Damage Chart



6.2-5608

Figure 7. Canopy Damage Chart for 28-Foot Diameter Canopy



6.2-5607

Figure 8. Canopy Damage Chart for 26-Foot Diameter Canopy

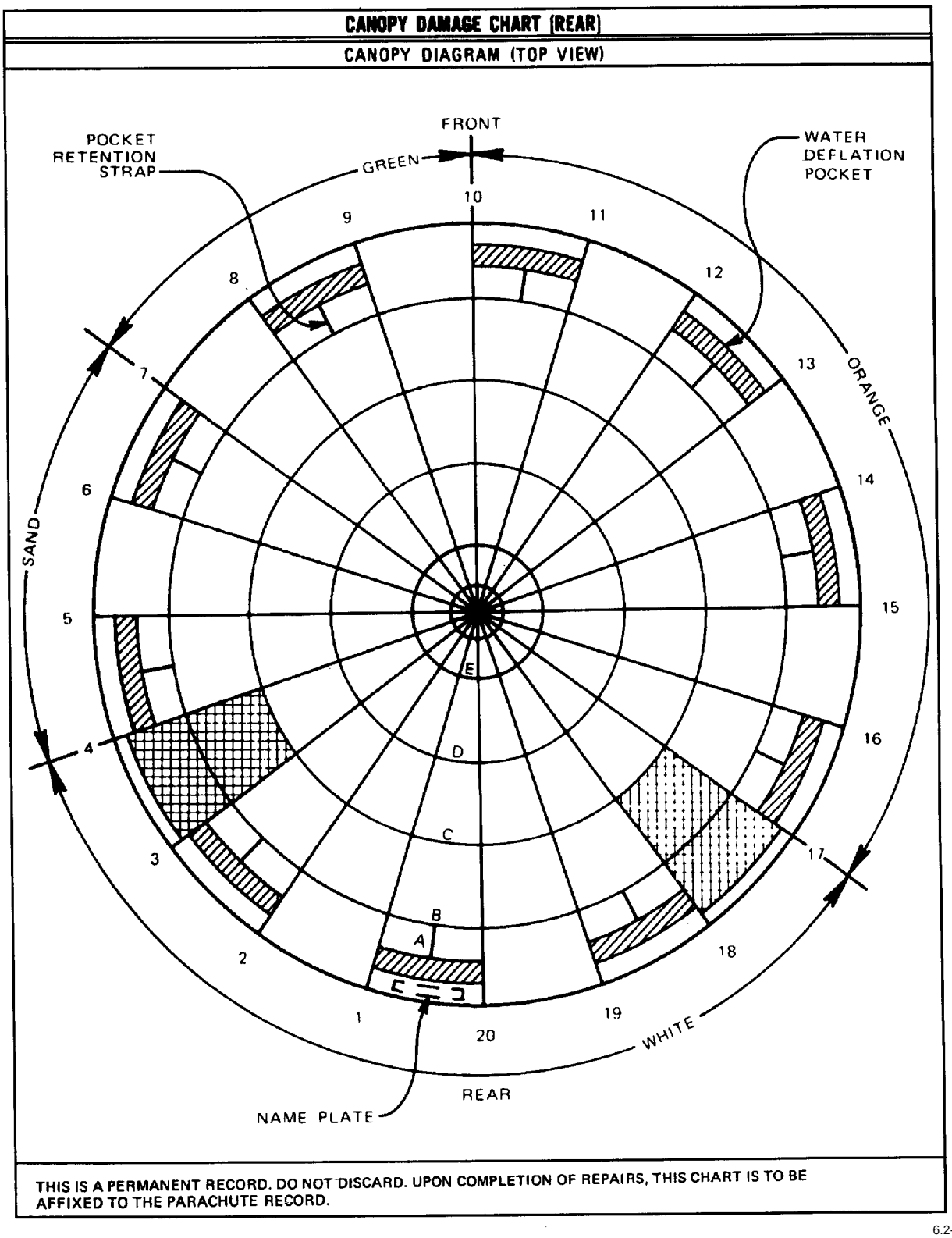
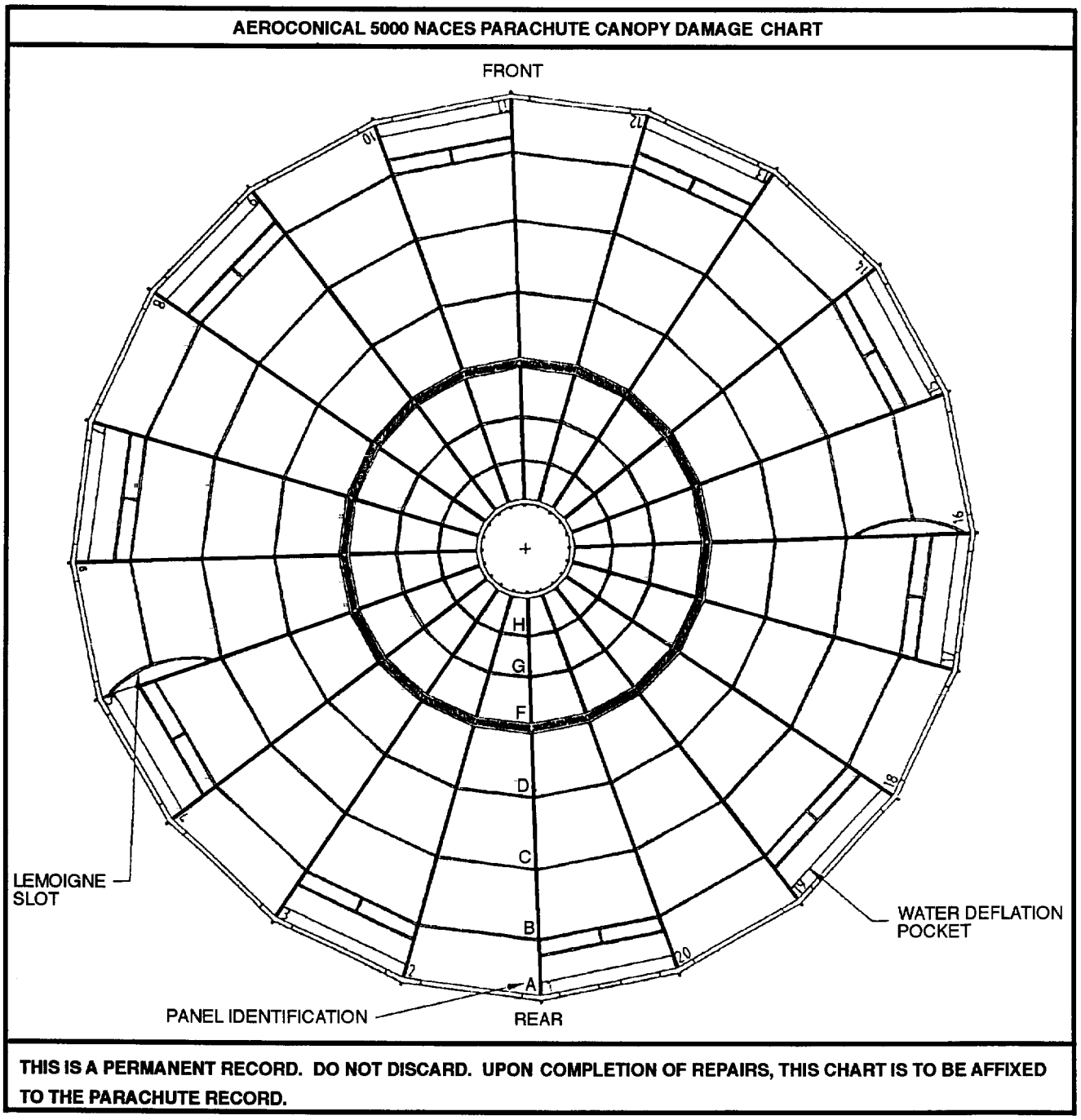


Figure 9. Canopy Damage Chart for A/P28S-24, Aeroconical Type 1000 Canopy



6.2-5610

Figure 10. Canopy Damage Chart for A/P28S-32

37. RECORDING OF REPAIRS.

a. When a repair is performed on a parachute assembly or subassembly, a notation shall be made in the Local Use block when specified in the procedure.

38. INSPECTION.

39. CALENDAR/PHASED/CONDITIONAL.

a. The acceptance calendar/conditional inspection shall be performed at lowest level of maintenance possible. Inspections include, but are not limited to, aircraft emergency escape assemblies and/or systems.

40. ACCEPTANCE/TRANSFER INSPECTION.

a. An acceptance/transfer inspection is required when custody of a parachute assembly is changed (squadron, contractor, depot, or air station transfer). The acceptance/transfer inspection does not void the last packing facilities repack or initial issue inspection of the parachute assembly. An acceptance/transfer inspection consists of a review of the Parachute Record, and an external visual inspection per the applicable daily inspection requirements. If discrepancies are found with the parachute record, correspondence (message, letter, and/or telephone) with the In Service Support Team (ISST) is required. (The Naval Air Warfare Center Weapons Division, China Lake, CA, is the ISST for parachutes unless otherwise specified in the current edition of NAVAIRINST 5400.15). A repack of the parachute assembly may or may not be directed by the ISST. Repacking of the parachute assembly as a result of an acceptance/transfer inspection discrepancy may only be directed by the ISST of the specific parachute assembly type or by the Naval Air Systems Command. This inspection is also applicable to parachute assemblies packed, repacked or placed in service by Navy authorized contractors facility and warranted by that facility. Sealed or warranted parachutes with time/life remaining, will not be subjected to disassembly by the receiving custodian.

b. The regular inspection cycle of a parachute assembly shall correspond either to aircraft calendar inspection or to phase maintenance cycle program. Ensure parachute assembly inspection period does not expire before scheduled maintenance period of aircraft. To meet unusual situations and facilitate workload scheduling, a plus or minus one week or portion thereof may be applied to the authorized inspection interval. To enable a ferry flight to return to home station/ship after any away from home grounding discrepancy of such duration that inspection interval expired, necessary additional days may be added. However, in each instance deviations shall only apply to the immediate inspection due. If unusual circumstances dictate deviations of succeeding inspection interval, each shall be computed from the date on which inspection would have been due if the preceding deviation had not been granted.

NOTE

CONDITIONAL INSPECTION DOES NOT CHANGE REPACK CYCLE.

41. CONDITIONAL.

a. When a parachute assembly must be inspected as the result of a specific situation or set of conditions unrelated to the normal inspection interval, a conditional inspection shall be performed. A conditional inspection, shall include a repack of the parachute assembly. This does not change the repack cycle. A parachute assembly repack is not required if the parachute assembly pack is not opened or the part is external.

INTERMEDIATE AND DEPOT MAINTENANCE

COMMON REPAIR PROCEDURES

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1 thru 3	10	5 thru 10	10	13 thru 26	10	28 thru 45	10
4	6	11 thru 12	6	27	6		

Reference Material

Cartridge Actuated Devices (CADS) and Propellant Actuated Devices (PADS) (IETM) . . . . . NAVAIR 11-100-1.1
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdown, Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration . . . . . WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment . . . . . WP 005 00

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1. INTRODUCTION.

a. This Work Package (WP) contains instructions for the maintenance, repair, replacement, and fabrication of various parachute parts, subassemblies and restraint harness, to ensure that proper items of equipment remain in a Ready-For-Issue (RFI) status. Selected repairs shall be documented on applicable records. See Table 1 for standard dimension tolerances.

Table 1. Standard Dimension Tolerances

Dimension	Tolerance
Less than 2-in.	± 1/16-in.
2-in. to 10-in.	± 1/8-in.
10-in. to 30-in.	± 1/4-in.
30-in. to 60-in.	± 3/8-in.
60-in. and greater	± 1%
Angles	± 2-degree
Tensions	± 10%
Zig Zag Stitch Length	± 1/2 - 0-in.

Where a dimension of 1/16-in. is given, the tolerance shall be ± 1/32-in.

Tolerances shall not be cumulative.

2. REPAIRS.

a. Though many of the more common repairs are covered in this manual, it should not be construed to mean that such procedures are the only authorized repair. Any time a parachute assembly or parachute restraint harness can be restored to operational condition, repairs may be made.

b. Supervisors are responsible for determining if repairs may be performed locally, if a parachute assembly should be forwarded for repairs, or if any assembly is unrepairable.

c. The primary concern in repairing an assembly is ensuring that the basic structure integrity designed into the assembly is maintained. This is necessary for the safety of the aircrew who uses the parachute assembly or parachute restraint harness. Repairs, other than those listed, may be performed on any parachute assembly or parachute restraint harness, provided the integrity of the assembly is maintained.

d. When performing repairs detailed in this WP, the following procedures will be observed:

(1) Review and follow applicable instructions in this WP prior to starting repair.

(2) Ensure that all necessary Support Equipment and Materials Required are available.

(3) When required, remove enough material from its source for immediate use only. Ensure that the material identification ticket remains with the source material at all times. Materials that can not be identified will not be used.

(4) For all machine stitching, use either stitch type 301 (lockstitch), 304 (single-throw zigzag) or 308 (double-throw zigzag) of ASTM-D-6193, unless otherwise specified (Figure 1). Exact stitch type and stitches per inch shall be as specified in repair/fabrication instructions. Stitches per inch for stitch type 301 shall be number or needle penetrations where threads are interlaced per linear inch. Backstitch shall not be less than 1/2-in. Stitches per inch for stitch types 304 and 308 are determined by number of needle penetrations on one side per linear inch (Figure 1).

(5) All seams and stitches shall conform to original design. If conflicts occur, the applicable parachute part's drawings shall be reviewed and followed.

(6) All standard dimension tolerances shall be per Table 1, unless otherwise specified.

(7) When opening seams and removing stitching use extreme care to ensure that no damage to the material results.

(8) To ensure conformity, repair/fabrication work shall be carefully inspected and compared to applicable instructions at the completion of work.

(9) A Quality Assurance (QA) inspector shall witness all applications of torque values and functional inspections, and shall examine all designated QA tasks and finished work.

e. When performing repairs not detailed in this WP, the following procedures will be observed:

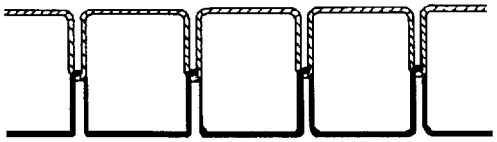
(1) The applicable parachute drawings and specifications shall be reviewed and followed. Refer to Table 1 for standard dimension tolerances.

(2) If conflicts occur, parachute specifications and drawings shall take precedence.

(3) Extreme care shall be observed in removal and opening of seams to ensure that no damage to material results.

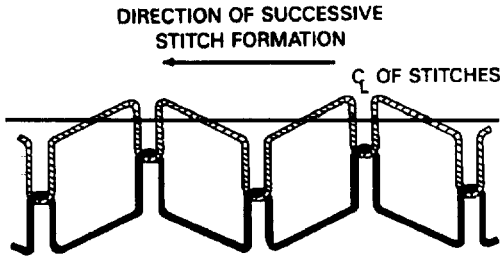
(4) All repair work shall be carefully inspected and compared to drawings and specifications at completion of work to ensure conformity.

THREAD SIZE	NUMBER OF STITCHES PER INCH		
	STRAIGHT STITCHING TYPE 301	ZIG – ZAG STITCHING	
		SINGLE THROW TYPE 304	DOUBLE THROW TYPE 308
B	7 – 11	12 – 16	8 – 12
E	7 – 11	12 – 14	7 – 10
F	7 – 11	12 – 14	7 – 10
FF	6 – 9	–	–
3	5 – 8	–	–
5	4 – 6	–	–
6	4 – 6	–	–



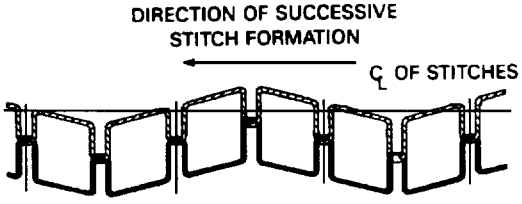
STITCH TYPE 301

LOCKSTITCH



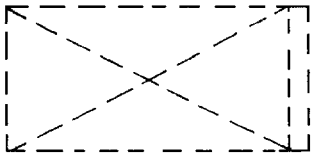
STITCH TYPE 304

SINGLE THROW ZIGZAG STITCH

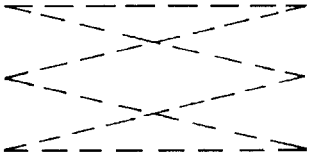


STITCH TYPE 308

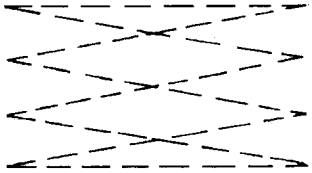
DOUBLE THROW ZIGZAG STITCH



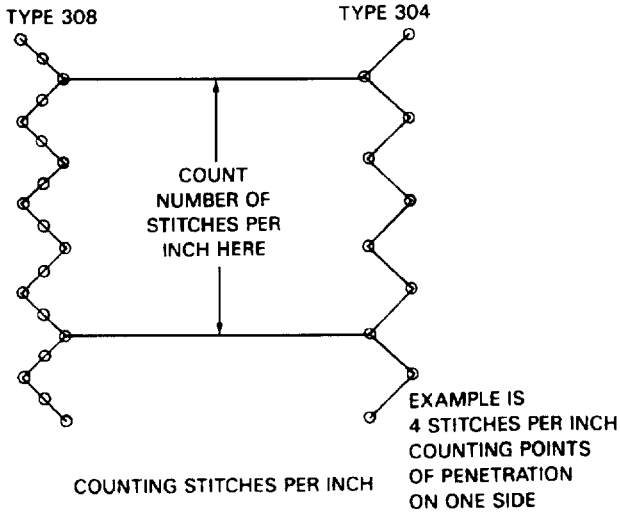
BOXSTITCH PATTERN



3 POINT CROSS – STITCH PATTERN



4 POINT CROSS – STITCH PATTERN



COUNTING STITCHES PER INCH

6.2-5152C

Figure 1. Stitching and Stitch Patterns

3. CLEANING.

4. GENERAL.

a. Cleaning of parachute parts and restraint harness should be held to a minimum and performed only when necessary to avoid deterioration. Only pilot parachute, connector strap, canopy and restraint harness may be cleaned by machine and these must be washed individually. Two methods of cleaning are presented: handwashing and machine washing. Cleaning by handwashing should be attempted first. If handwashing does not clean part, try machine washing. No parachute part or restraint harness shall be machine washed more than 2 times. Any parachute part or restraint harness requiring machine washing a third time shall be removed from service. Activities not having facilities for cleaning shall forward the assembly to depot level maintenance.

5. CLEANING, SUPPORT EQUIPMENT, AND MATERIAL REQUIREMENTS.

a. Washing Machines: Tumble type washing machines shall be used. The washing machine must have a temperature control and a rinse cycle.

CAUTION

Do not use a forced-heat dryer. Do not wring water from canopy.

b. Clothes Dryers: Any tumble action dryer that can be controlled so that air temperature does not exceed 60_C (140_F) or a vacuum type dryer designed for parachutes or restraint harness is acceptable. Do not use a forced heat dryer.

c. Cleaning Chemicals: Mild soap (e.g., Ivory) or soap solution and a water softener may be used.

d. Washing Requirements: Parachute parts and restraint harness shall be machine washed for not more than 10 min. at a temperature not to exceed 60_C (140_F). The part shall be rinsed in warm water, followed by cold water.

e. Drying Requirements: Machine drying should be used only after 1 hr. of drip-drying while suspended full length. Parachute parts and restraint harness shall not be left in dryer any longer than necessary to complete drying. Machine drying should not be used to completion if an indoor drying facility is available. Where indoor drying is available, parachute parts and restraint harness should be removed from dryer while slightly damp and suspended for air drying.

6. HANDWASHING.

Support Equipment Required

Part Number	Nomenclature
—	Wash Tub
00-W-860	Clothes Dryer (with Low Speed Capability)

Materials Required

Specification or Part Number	Nomenclature
CCC-C-458	Cloth, Flannel, (Any Suitable)

a. Wrap all metal fittings in heavy flannel cloth or remove hardware.

b. Immerse assembly in clean fresh water not to exceed 60_C (140_F). Gently move items by hand until all air pockets are removed.

c. Agitate by hand while water flows thru and around fabric.

CAUTION

Do not wring out the canopy.

d. After a short time (not to exceed 10 min.), remove part from tub and allow it to drain as completely as possible.

e. Rinse part in clean warm water, followed by cold water until rinse water is clean.

CAUTION

Do not use a force-heat dryer.

f. Dry parachute either by air drying indoors or by using a machine dryer Paragraph 5.b.

7. MACHINE WASHING OF CANOPY AND RESTRAINT HARNESS.

Support Equipment Required

Part Number	Nomenclature
00-W-860	Washing Machine, Tumble Type
00-W-860	Clothes Dryer, Low Speed Capability
—	Laundry Bag, Cloth Mesh

Materials Required

Specification or Part Number	Nomenclature
—	Soap (e.g., Ivory)
—	Water Softener, (If Required)
CCC-C-458	Cloth, Flannel (Any Suitable)

NOTE

Laundry bag shall be large enough to hold one parachute assembly or restraint harness loosely.

a. Canopy and suspension lines shall be removed from container; connector links shall be removed from suspension lines and wrapped in heavy flannel cloth.

b. The suspension lines shall be gathered together and tied with cord every 3-ft. from ends to canopy skirt.

c. Place canopy or restraint harness loosely in a cloth mesh laundry bag.

d. Add soap and water to washing machine (add water softener if necessary) prior to placing canopy or restraint harness in washing machine.

e. Wash canopy or restraint harness.

f. Remove tie cords on canopy.

g. Dry canopy or restraint harness per Paragraph 5.e.

h. Record date of washing on applicable Record.

8. MACHINE WASHING OF PILOT PARACHUTE AND CONNECTOR STRAP.

Support Equipment Required

Part Number	Nomenclature
00-W-860	Washing Machine, Tumble Type
00-W-860	Clothes Dryer (with Low Speed Capability)

Materials Required

Specification or Part Number	Nomenclature
—	Soap (e.g., Ivory)

a. Add soap and water to washing machine (add water softener if necessary) prior to placing part in washing machine.

b. Wash part.

c. Dry part per Paragraph 5.e.

d. Record date of washing on Parachute Record (OPNAV 4790/101).

9. MACHINE WASHING OF DROGUE PARACHUTE ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
00-W-860	Washing Machine (Tumble Type)
Part Number	Nomenclature
00-W-860	Clothes Dryer (with Low Speed Capability)
—	Laundry Bag, Cloth Mesh

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type III
—	Soap (eg, Ivory)
—	Water Softener (If Required)
CCC-C-458	Flannel Cloth (Any Suitable)

a. Place drogue assembly loosely in a cloth mesh laundry bag.

b. Add soap and water to washing machine (water softener if necessary) prior to placing part in washing machine.

c. Wash part.

d. Dry part per Paragraph 5.e.

e. Record date of washing on Parachute Record (OPNAV 4790/101).

10. APPLICATION OF MARKINGS.

Support Equipment Required

Part Number	Nomenclature
—	Stamp Pad
—	Rubber Stamp Kit -or- Adjustable Metal Stencil
Style No. 8	-or- Printing Set
GG-P-655	-or- Printing Set

Materials Required

Specification or Part Number	Nomenclature
MIL-I-6903	Ink, Marking, Light Blue
TT-I-1795	Ink, Marking, Black

a. When a parachute part is placed in-service, the month/year of opening the manufacturer's individual shipping container shall be stenciled on part.

b. When using a stamp pad, moisten pad with ink. Pad must be evenly coated and free of clots.

c. Make a test impression to determine correctness of marking and inking.

NOTE

When stamping canopy material, place paper towels behind area to be stamped to prevent smearing or blotching.

d. Mark on part as follows:

(1) Canopy. On gore 28 (A/P28S-24 on gore 20) below nameplate information, marking shall be 1/2-in. high and made with blue ink. The term "DATE PLACED IN SERVICE", followed by month/year notation, will be placed directly below the nameplate.

(2) Pilot parachute. On crown, marking shall be 1/4-in. high.

(3) Pilot parachute connector strap. On strap, marking shall be 1/4-in. high.

(4) Pilot parachute bridle. On identification and service life label, marking shall be 1/4-in. high.

(5) Harness. On identification and service life label, marking shall be 1/4-in. high.

(6) Risers. On identification and service label, marking shall be 1/4-in. high.

(7) Container label. On container label, marking shall be 1/4-in. high. Serial number from canopy name plate. Assembly activity (CAGE code). Contract number from canopy nameplate. Month/year for date of assembly. Complete assembly dash number from illustrated parts breakdown.

(8) Spreading gun cartridge. Mark in black ink with characters no smaller than 1/16-in. and as large as practicable: CAGE code, lot number, and month and year of can open/installation on side of cartridge, can open date and service life expiration date on the cartridge head (Figure 2).

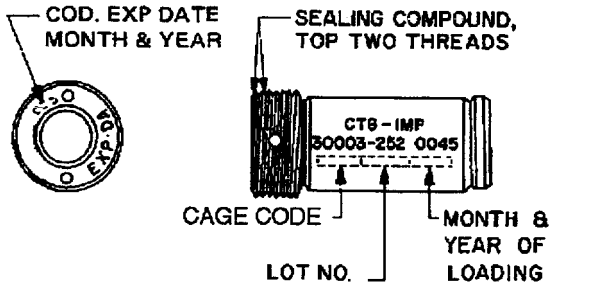


Figure 2. Spreading Gun Cartridge Marking

(9) Drogue withdrawal line. Above point of attachment to controller drogue. Marking shall be 1/4-in. high.

(10) Controller drogue. On canopy above identification label. Marking shall be 1/4-in. high.

(11) Connecting line. At overlap within stitched area. Marking shall be 1/4-in. high.

(12) Cross-connector strap. On identification and service label. Marking shall be 1/4-in. high.

(13) Stabilizer drogue. On canopy above identification label. Marking shall be 1/4-in. high.

(14) Extender strap. Adjacent to stitched area on standing portion of strap on one end only. Marking shall be 1/4-in. high.

(15) Link line. On visible portion of webbing or neoprene sleeve. Marking shall be 1/4-in. high.

(16) Word bridle. Between sear and spool. Marking shall be 1/4-in. high.

(17) Deployment sleeve. On identification and service label. Marking shall be 1/4-in. high.

d. Verify correctness of all markings. (QA)

e. Allow marking ink to dry for 20 to 30 min.

f. Make proper entries on Parachute Record (OPNAV 4790/101).

11. CONTAMINATION REMOVAL.

a. Remove from service any parachute assembly, subassembly or restraint harness for any of the following conditions:

(1) Immersion in salt water for more than 24-hr. or immersion in salt water and cannot be cleaned within 36-hr.

(2) Contamination by firefighting agent.

12. DETERMINATION OF ACID OR ALKALINE CONTAMINATION.

Materials Required

Specification or Part Number	Nomenclature
O-C-265	Water, Distilled
A-988	Test Kit, Alkacid

a. Parachute parts or restraint harness suspected of acid or alkaline contamination shall be tested with pH test paper. A pH reading of 5.0 to 9.0 is in the safe zone. Readings below 5.0 indicate excess acidity, and readings above 9.0 indicate excess alkalinity. To test for excess acidity or alkalinity, do as follows:

CAUTION

Ensure that testing area is free of contaminants to avoid false readings or damage to assembly.

(1) Dampen suspected area with distilled water.

NOTE

Handle test paper at one edge only to prevent obtaining a false reading.

(2) Place a piece of full range test paper (0.0 to 14.0 pH) on dampened area. A color change will indicate the approximate pH value and the specific short range test paper to be used.

(3) Place short range test paper indicated in Sub-step (2) on dampened area. The color change indicates the pH factor of affected area. By matching test strip with applicable range color chart supplied with pH indicator kit, acid or alkaline strength can be determined.

NOTE

If contamination is found, care must be taken to prevent contact between the contaminated area other portions of the assembly, which could spread the contamination.

13. REMOVAL OF ACID.

a. If acid contamination is found, the affected area and/or part shall be removed and replaced per applicable procedures in this WP.

14. REMOVAL OF ALKALINE.

Materials Required

Specification or Part Number	Nomenclature
A-988	Test Kit, Alkacid

a. Rinse suspected area with cool, fresh water.

b. Check suspected area with alkacid test kit.

c. When a safe pH reading is attained (5.0 to 9.0), carefully inspect for deterioration. Repair or replace any deteriorated portions per applicable procedures in this WP.

15. REMOVAL OF BLOODSTAINS.

Materials Required

Specification or Part Number	Nomenclature
—	Soap (e.g., Ivory)

a. Soak stained area in cold water.

b. Follow soaking by handwashing affected area with mild soap and water solution.

c. Rinse affected area thoroughly with fresh clean water.

d. Hang assembly by its vent lines in a wet locker to dry.

e. After drying, inspect contaminated area for deterioration. Repair or replace per applicable procedures in this WP.

16. REMOVAL OF FRESH WATER.

a. Dry parachute assembly by hanging it by its vent lines in wet locker.

b. After drying, inspect contaminated area for deterioration. Repair or replace per applicable procedures in this WP.

c. Dry restraint harness by hanging on a wooden hanger in the wet locker.

d. After drying, inspect contaminated area for deterioration.

NOTE

Minor discoloration due to water immersion is allowable.

17. REMOVAL OF FUNGI.

Materials Required

Specification or Part Number	Nomenclature
—	Soap (e.g., Ivory)

a. Wash affected area with a mild soap and water solution.

b. Rinse affected area thoroughly with fresh clean water.

c. Hang in a wet locker to dry.

18. REMOVAL OF MUD, DIRT, SAND, AND TRASH.

Materials Required

Specification or Part Number	Nomenclature
H-B-491	Soft Brush

a. Hang parachute assembly by its vent lines and allow it to dry. Hang restraint harness on a wooden hanger and allow to dry, then shake thoroughly.

b. Shake this assembly thoroughly, then brush lightly with a soft brush.

c. If necessary, clean per Paragraph 3.

19. REMOVAL OF PERSPIRATION.

a. Clean parachute parts or restraint harness per Paragraph 3.

b. After cleaning, inspect contaminated area for deterioration. Repair or replace per applicable procedures in this WP.

20. REMOVAL OF PETROLEUM PRODUCTS.

Materials Required

Specification or Part Number	Nomenclature
—	Soap (e.g., Ivory)

a. Wash affected area by repeated applications of mild soap and water solution. Each application shall be followed by a rinse in clean fresh water.

b. Continue washing and rinsing affected area until clean.

c. Hang assembly by its vent lines in a wet locker to dry.

d. After drying, inspect contaminated area for deterioration. Repair or replace per applicable procedures in this WP.

21. REMOVAL OF SALT WATER.

a. If the parachute part meets the decontamination criteria in Paragraph 11, clean per Paragraph 3.

22. CANOPY ASSEMBLY REPAIRS.

a. Repair of the canopy, suspension lines, four-line release lanyards, and connector links limited to the following:

(1) Do not repair holes 1-in. or less, mark location on a canopy damage chart.

(2) Repair of any canopy hole or tear larger than 1-in and less than 8-in. long with a double patch.

(3) Cleaning of contaminated areas.

(4) Replacement of connector link torque seal (after correct torquing is verified).

(5) Repair of suspension lines and four-line release lanyards (Figure 3 or 4).

(6) Repair of four-line release lanyards per paragraphs 33, 34, or 35.

(7) Removal of dips and twists.

(8) Four-line release lanyard removal and replacement.

(9) Four-line release tacking replacement.

(10) Rigging four-line release daisy chain.

(11) Removal and reinstallation of suspension lines for proper sequencing.

(12) Pull down vent (PDV) lines replacement (if applicable).

b. Replace canopy assembly for any of the following:

(1) One or more complete gores are torn.

(2) Holes larger than 8-in. in diameter or tears longer than 8-in. in length in any one or more section.

(3) Any one canopy section requireing more than two double patches, replace the canopy assembly.

(4) Damaged suspension lines (Figure 3 or 4).

(5) Service/total life per applicable personnel parachute assembly.

c. Replace connector links for any of the following:

(1) Play in yoke and plate assembly is more than 1/32-in. when screw is correctly torqued.

(2) Corrosion, distortion, bends, nicks, burrs, sharp edges, and breaks where that damage may affect the safe operation of the parachute.

23. DOUBLE PATCHING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
PIA-C-7020	Cloth, Parachute, Nylon, Type I, Color-As Required

NOTE

Upon completion of repair, backstitch 2 1/2-in. on radial seams or hems and 1 1/4-in. on diagonal seams. If patch is not anchored to a seam or hem, backstitch 1 1/4-in.

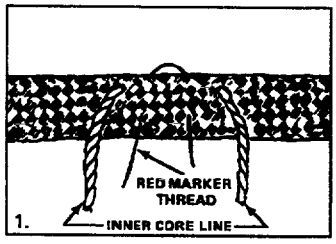
a. Using a soft lead pencil, outline area with a minimum margin of 1-in. around a 1 to 3-in. hole; 1 1/2-in. around a 3 to 6-in. hole; and 2-in. around a 6 to 8-in. hole.

NOTE

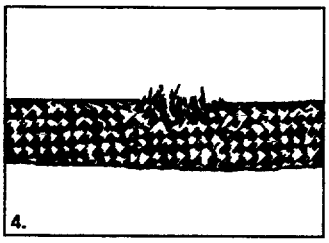
If possible, anchor patch to at least one seam or hem.

b. Place a piece of new material over outlined area so that weave of new material matches weave of canopy. Cut a patch 1-in. larger than outlined area. This is inside patch.

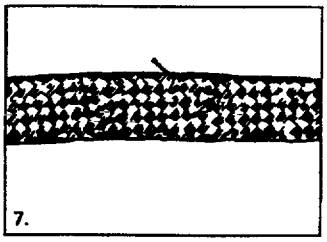
c. In order to cut outside patch, lay inside patch on a piece of new material and cut patch 1/4-in. larger on all sides except side or sides to be anchored to a seam or hem. Side to be anchored to a seam or hem shall be cut to same size as inside patch.



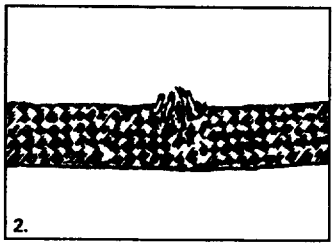
TWO CORE ENDS PROTRUDING THROUGH SLEEVE.



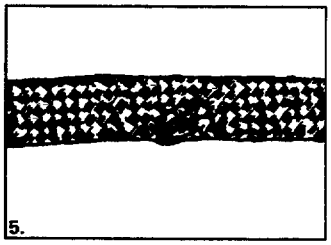
FRAYED SLEEVE



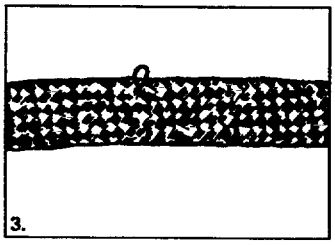
SINGLE THREAD OR YARN MATERIAL EXTENDING FROM SLEEVE.



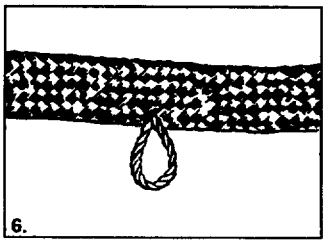
RUPTURE



MINOR WEAVE SEPARATION TO SLEEVE.



LOOPED PULLED THREAD IN SLEEVE.



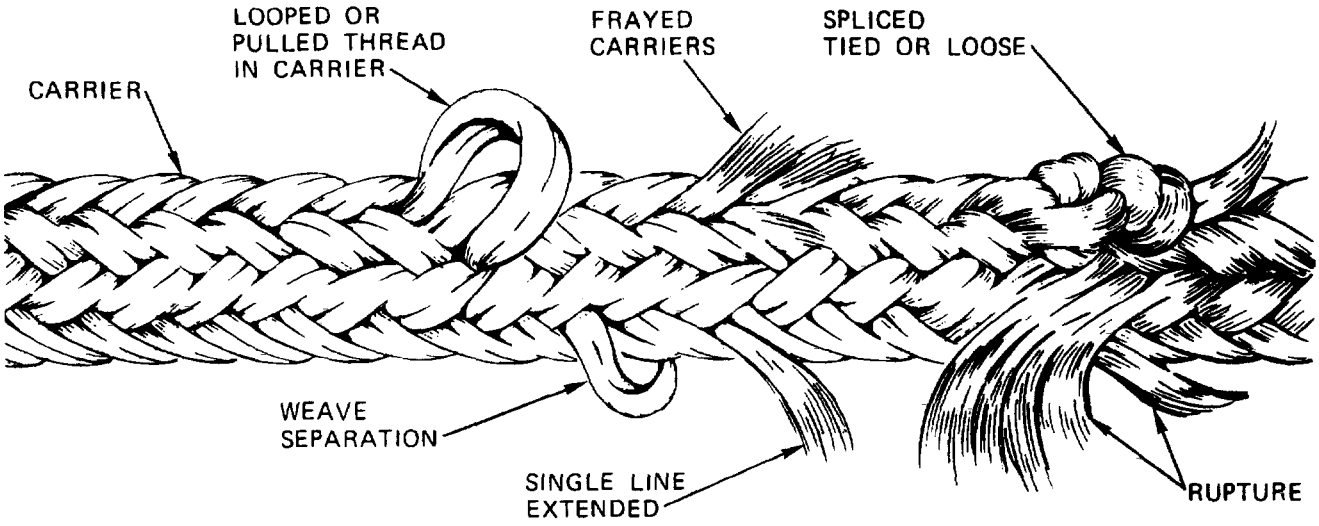
LOOPED INNER CORE LINE NO DAMAGE TO SLEEVE.

TYPE OF DAMAGE	ACTION REQUIRED
1. TWO CORE ENDS PROTRUDING THROUGH SLEEVE.	TRIM BOTH ENDS FLUSH WITH SLEEVE. IF PRESENT, REMOVE MARKER THREAD (UTILIZED BY MANUFACTURER INDICATING CORE SPLICES).
2. RUPTURE.	REPLACE ENTIRE CANOPY ASSEMBLY.
3. LOOPED PULLED THREAD OR YARN IN SLEEVE.	IF AREA AFFECTED IS SMALL AND LOOP THREAD OR YARN CAN BE RETRACTED INTO SLEEVE THE SITUATION IS ACCEPTABLE, OTHERWISE REPLACE ENTIRE CANOPY ASSEMBLY. REFER TO NOTE 1.
4. FRAYED SLEEVE.	REPLACE ENTIRE CANOPY ASSEMBLY WHEN YARN OF FRAYED AREA IS COMPLETELY SEVERED OR INNER CORE LINES ARE VISIBLE. OTHERWISE NOTE PARACHUTE CONFIGURATION INSPECTION AND HISTORY RECORD TO INSURE CLOSER INSPECTION OF AREA DURING FUTURE REPACKING OF ASSEMBLY.
5. MINOR WEAVE SEPARATION TO SLEEVE	GENTLY MASSAGE WEAVE TO ACHIEVE NORMAL THREAD ORIENTATION.
6. LOOPED INNER CORE LINE. NO DAMAGE TO SLEEVE.	TRY CORRECTIVE ACTION AS TYPE 3.
7. SINGLE THREAD OR YARN MATERIAL EXTENDING FROM SLEEVE.	TRIM END FLUSH WITH SLEEVE.

NOTES:
1. 1/16 INCH PROTRUSION IS ALLOWABLE.
2. FOR PURPOSE OF TRIMMING PROTRUDING INNER CORE ENDS ONLY, ONE SUSPENSION LINE WILL BE CONSIDERED FROM CONNECTOR LINK TO SKIRT HEM.

6.2-5153A

Figure 3. Repair of Suspension Lines



	TYPE OF DAMAGE	ACTION REQUIRED
1	SPLICE INTERNAL OR EXTERNAL (TIED OR LOOSE)	WORK SPLICE INTO MAIN BODY CORD. IF PRACTICAL, TIE ENDS WITH SQUARE KNOT. USE OF BEESWAX TO STIFFEN CARRIER PERMISSABLE TO AID TYING ENDS. ENDS LESS THAN 1/2–IN. LONG NOT REQUIRED TO BE TIED NO MORE THAN 2 PER LINE
2	RUPTURE OF CARRIER	TWO OR MORE RUPTURED CARRIERS PER SUSPENSION LINE, REPLACE CANOPY
3	LOOPED OR PULLED THREAD (FILAMENT) CARRIER	LOOPS LESS THAN 1/2–IN. NEED NOT BE WORKED BACK INTO BODY OF CORD. WORK LOOPS OR PULLS OVER 1/2–IN. INTO MAIN BODY OF CORD. PULLED FILAMENTS NEED NOT BE WORKED BACK INTO CARRIER LINES
4	FRAYED CARRIER	NOT REASON FOR REJECTION UNLESS CARRIER BECOMES RUPTURED
5	SINGLE CARRIER LINE EXTENDING	NOT REASON FOR REJECTION; NORMAL PROCESS FOR MANUFACTURE OF CORD. WORK INTO MAIN BODY OF CORD. IF CARRIER IS BROKEN REFER TO RUPTURE ABOVE
6	WEAVE SEPARATION	WORK CORD TO ACHIEVE NORMAL WEAVE

6.2-5676

Figure 4. Repair of Suspension Lines For A/P-24S-24, A/P28S-28, -30, AND -31

d. Lay damaged area with the inside facing up on a padded table or ironing board. Pin damaged area flat to end wrinkles and baste inside patch to outlined area. The raw edges of patch shall be turned under 1/2-in. Lockstitch patch, using one row of stitching around edge of patch, (Figure 5). Stitching around edge of patch shall be continuous.

e. When applying outside patch, lay damaged area with outside facing up on a padded table or ironing board. Pin damaged area flat to end wrinkles and baste patch directly over inside patch. The raw edges of patch shall be turned under 1/2-in. Lockstitch patch, using two rows of stitching around edges of patch (Figure 5). Stitching around edges of patch shall be continuous. (QA)

f. Document repairs on canopy damage chart WP 003 00. (QA)

24. REPAIR OF SUSPENSION LINE.

a. Suspension line repair is performed per Figure 3.

25. REPAIR OF SUSPENSION LINE FOR A/P28S-24, -28, -30, -31, AND -32.

a. Suspension line repair is limited to that shown in Figure 4.

26. REMOVAL OF DIPS AND TWISTS.

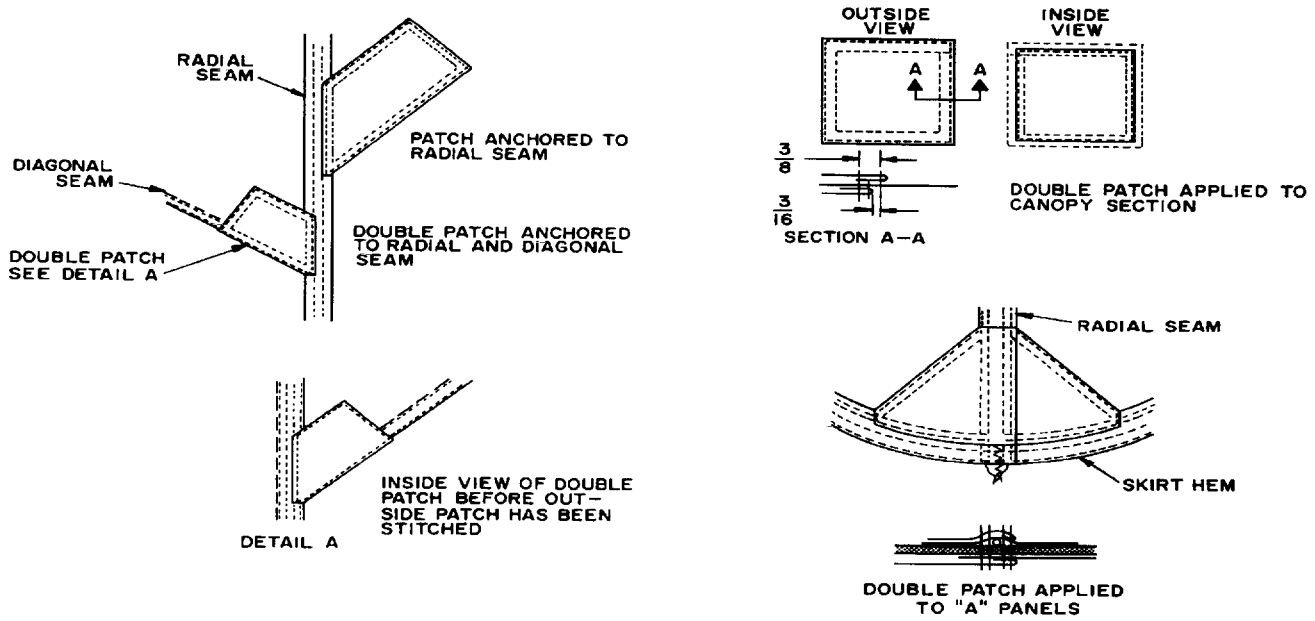
a. Unwinding suspension line group twists by revolving line groups in opposite directions of twists.

b. Remove dips and twists as follows:

(1) Lift number 1 line at skirt hem with one hand and walk down to connector link. Form a loop of all suspension lines around the hand, holding the single line by placing all lines that go over the line over the arm, and those that pass under the line, under the arm.

(2) Pass connector links thru loop formed in sub-step (1).

(3) Continue above procedure with remaining lines until all dips are removed. (QA)



6.2-5085

Figure 5. Double Patching Canopy

27. REPLACEMENT OF CONNECTOR LINK.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Temporary Locking Pin
—	Screwdriver, Torque

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Inspect replacement connector link for proper part number, corrosion, distortion dents, nicks, burrs, cracks, sharp edges, and defective yoke and plate assembly.

b. Remove connector link yoke and plate assembly.

c. Slide suspension lines onto a temporary locking pin or rod.

d. Slide riser loop off connector link bar.

e. Reinstall suspension lines on new connector link bar. Ensure that connector link bar slides thru lines so that when yoke and plate assembly will face outboard.

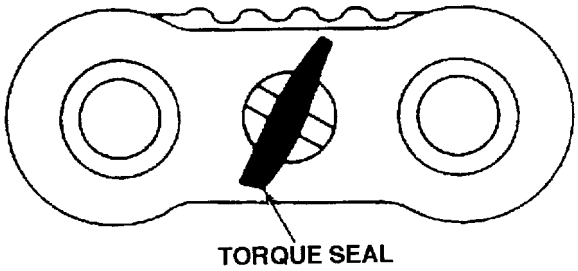
f. Slide riser loop onto connector link bar.

g. Ensure yoke and plate assembly facing outboard and the knurled portion faces up.

h. Check suspension line continuity.

i. Loosen screw then tighten screw to a torque value of 20 to 25 in-lbs. (QA)

j. Apply a torque seal to screwhead (Figure 6). (QA)



6.2-5086

Figure 6. Replacement of Connector Link Torque Seal

28. REPLACEMENT OF CONNECTOR LINK TORQUE SEAL.

Support Equipment Required

Part Number	Nomenclature
—	Screwdriver, Torque

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Remove torque seal from screwhead.

b. Check that yoke and plate assembly is installed with knurled portion up and screwhead facing outboard.

c. Loosen screw, then tighten screw to a torque value of 20 to 25 in-lbs. (QA)

d. Apply torque seal to screwhead (Figure 6). (QA)

29. FABRICATION OF FOUR-LINE RELEASE FLUTE.

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon, Type XII, Class 1, 1A or 2
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Cut a 7-in. length of Type XII webbing and sear ends (avoid sharp edges).

b. Fold back each end of webbing 1-in. and sew 1/8-in. from ends and edges (Figure 7).

c. Fold webbing lengthwise and align edges. Sew edges together 1/8-in. from edge (Figure 7).

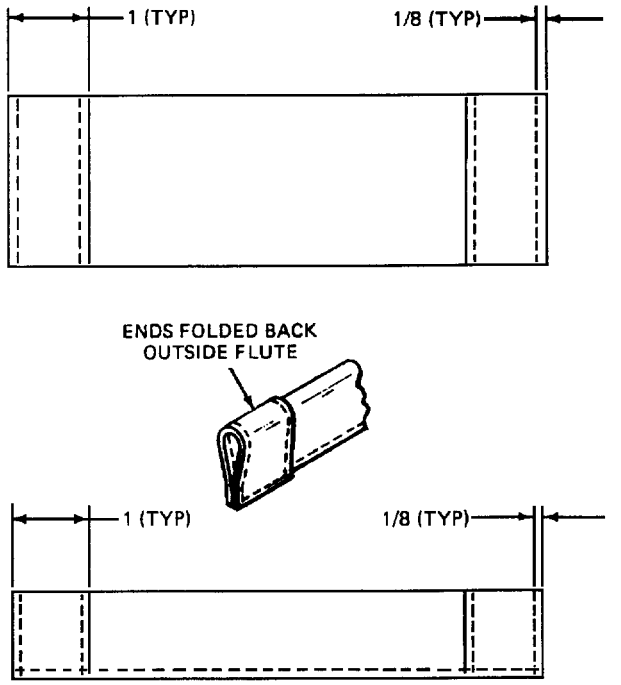


Figure 7. Four-Line Release Flute Fabrication

30. REPLACEMENT OF FOUR-LINE RELEASE FLUTE.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Temporary Locking Pin

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Insert a temporary locking pin in last daisy chain loop to prevent inadvertent release of daisy chain.

b. Carefully break tackings at top of flute and pull lanyard pull loop up thru flute.

c. Remove connector link yoke and plate assembly from each connector link. Remove riser from connector links.

d. Loosely reattach connector link yoke and plate assembly.

e. Install new flute on front inboard side of rear riser (Figure 8) and machine stitch to riser with one row of size E thread.

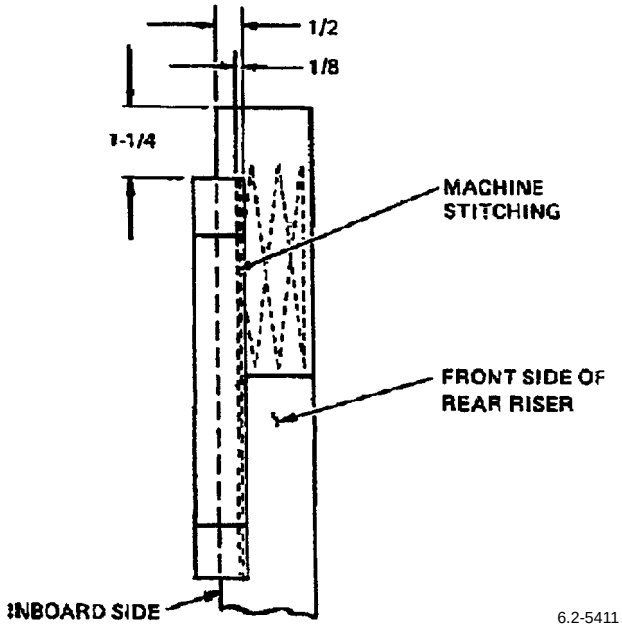


Figure 8. Four-Line Release Flute Installation

f. Lay out harness and container on packing table with corresponding risers facing each other and positioned at connector links. An aircrew wearing the harness would be positioned head toward canopy and facing packing table.

g. Remove yoke and plate assemblies from connector links. Slide harness riser loops onto connector link bars.

h. Attach yoke and plate assemblies to connector link bars so that knurled portions face up.

i. Check suspension line continuity. (QA)

j. Tighten screws on yoke and plates to a torque value of 20 to 25 in-lbs. (QA)

k. Apply torque seal to screwhead.

l. Using a bodkin or equal tool, insert and pull release lanyard pull loops thru flutes. Pull loops should extend completely thru flutes with tops of loops butted up against lower edge or flute.

m. Tack release lanyard to flute with one turn of size FF thread, single and waxed. There should be 1/8-in. between first flute entry and return flute entry. Tacking shall pass thru outer cover of flute, thru release lanyard, thru and around last daisy chain loop and then back thru flute; tie off (Figure 9).

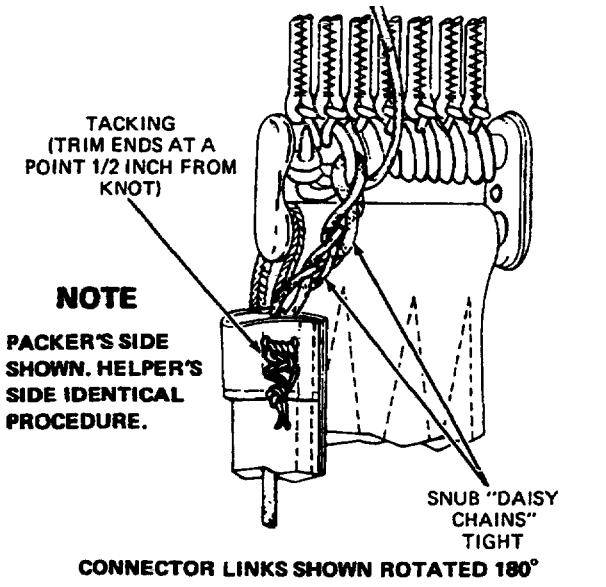


Figure 9. Tie Off Tacking

n. With lanyard pull loop fully extended, tack risers together. Tack at center of riser and 1/2-in. above bottom of lanyard pull loop with one turn of size FF thread, single and waxed; tie off (Figure 10).

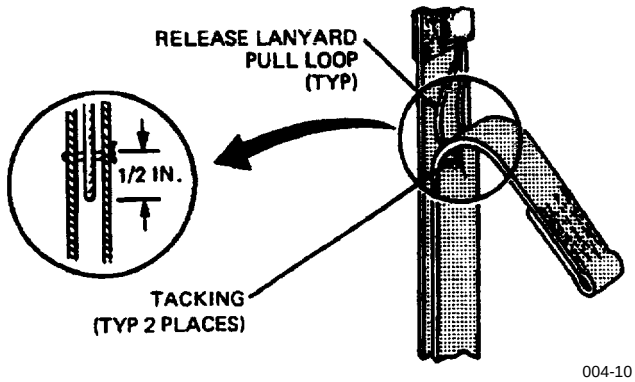


Figure 10. Tack Risers Together

31. REPLACEMENT OF FOUR-LINE RELEASE PULL LOOP TACKING.

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove loose or broken tacking, and ensure daisy chain remains properly constructed and snug.

b. With lanyard pull loop fully extended, tack risers together. Tack at center of risers and 1/2-in. above bottom of lanyard pull loop with one turn of size FF thread, single and waxed. Tie off (Figure 10).

32. REMOVAL AND REINSTALLATION OF SUSPENSION LINES FOR PROPER SEQUENCING.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Temporary Locking Pin

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Remove old torque seal and connector link yoke and plate assembly.

b. Slide suspension lines onto a temporary locking pin or rod.

CAUTION

Ensure clove-hitch and half-hitch at ends of suspension lines do not separate during handling.

c. Sequence lines on connector link bar.

d. Attach yoke and plate assembly to connector link so knurled portion faces up and screwheads face outboard.

e. Check suspension line continuity.

f. Tighten screw on yoke and plate assembly to a torque value of 20 to 25 in-lbs. (QA)

g. Apply torque seal to screwhead.

33. FABRICATION OF FOUR-LINE RELEASE LANYARD FOR THE NC-3, NB-7, -8, NES-12, AND -25A.

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type III
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Cut a 79-in. length of Type III nylon cord.

b. Fold back one end of cord 14 3/4-in. Align cords and, starting 1/2-in. from folded end, machine stitch cord together using zig zag stitching until 1 1/2-in. of cord remains unsewn (Figure 11).

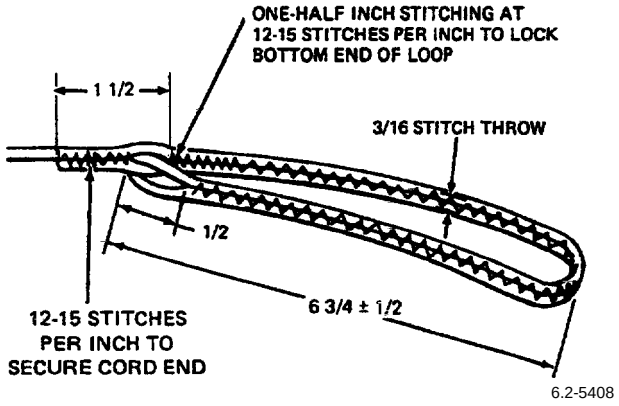


Figure 11. Four-Line Release Lanyard Fabrication

c. Insert the 1 1/2-in. length of remaining cord into 1/2-in. loop formed in above step to form a pull loop.

d. Secure pull loop together by machine zigzag stitching the 1 1/2-in. cord length to remainder of lanyard using 12 to 15 stitches per inch (Figure 1).

34. FABRICATION OF FOUR-LINE RELEASE LANYARD FOR THE NES-8B.

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type III
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Cut a 86 3/4-in. length of Type III nylon cord.

b. Fold back one end of cord 14 3/4-in. Align cords and, starting 1/2-in. from folded end, machine stitch cord together using zigzag stitching until 1 1/2-in. of cord remains unsewn (Figure 11).

c. Insert the 1 1/2-in. length of remaining cord into 1/2-in. loop formed in above step to form a pull loop.

d. Secure pull loop together by machine zigzag stitching the 1 1/2-in. cord length to remainder of lanyard using 12 to 15 stitches per inch (Figure 1).

35. FABRICATION OF FOUR-LINE RELEASE LANYARD FOR THE NES-14.

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type III
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Cut a 92-in. length of Type III nylon cord.

b. Fold back one end of cord 14 3/4-in. Align cords and, starting 1/2-in. from folded end, machine stitch cord together using zig zag stitching until 1 1/2-in. of cord remains unsewn (Figure 11).

c. Insert the 1 1/2-in. length of remaining cord into 1/2-in. loop formed in above step to form a pull loop.

d. Secure pull loop together by machine zigzag stitching the 1 1/2-in. cord length to remainder of lanyard using 12 to 15 stitches per inch (Figure 1).

e. Finished length after fold back is 72 ± 1/2-in.

36. REMOVAL, INSTALLATION AND REPLACEMENT OF FOUR-LINE RELEASE LANYARD.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Bodkin

Materials Required

Specification or Part Number	Nomenclature
666AS101	Lanyard, Four-Line Release
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Carefully remove defective release lanyard from anchor loop. Remove four-line release rigging and remove lanyard.

b. Ensure the proper length of replaced release lanyard is; (NC-3 57 1/2 ± 1/2-in.), (NB-7, -8, NES-12, -25 591/2 ± 1/2-in.), (NES-8B 65 3/4 ± 1/2-in.) and (NES-14 72 ± 1/2-in. measured from end of pull loop to end of lanyard.

c. Remove and cut 7-in. of inner core from end of release lanyard.

d. Mark lanyard 4-in. from end with a grease pencil.

e. Pass free end of lanyard thru anchor loop (Figure 12).

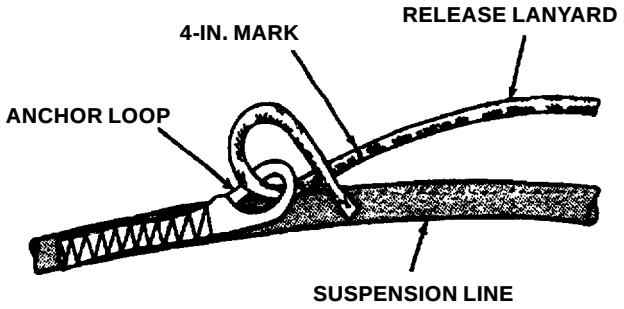


Figure 12. Pass Free End Thru Loop

f. Insert small bodkin or needle thru one wall of coreless section of lanyard 1-in. down from 4-in. mark. Repuncture cord with bodkin or needle protruding at 4-in. mark (Figure 13).

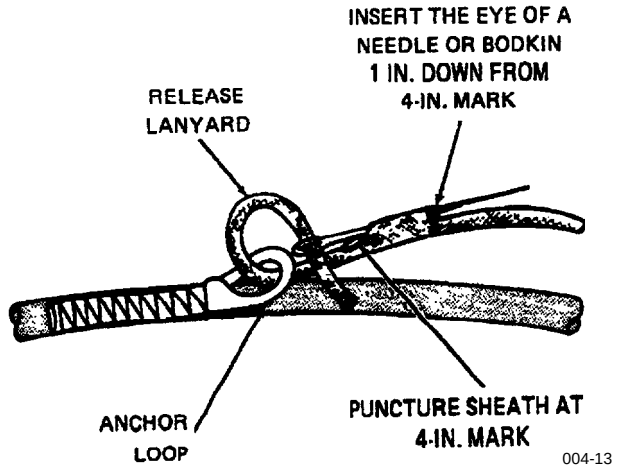


Figure 13. Insert Small Bodkin

g. Insert free end of lanyard thru bodkin or needle and carefully pull coreless line thru sleeve; leave about 1/2-in. loop at loose end. Remove bodkin or needle and tie a half-hitch knot at point where line comes thru sheath (Figure 14).

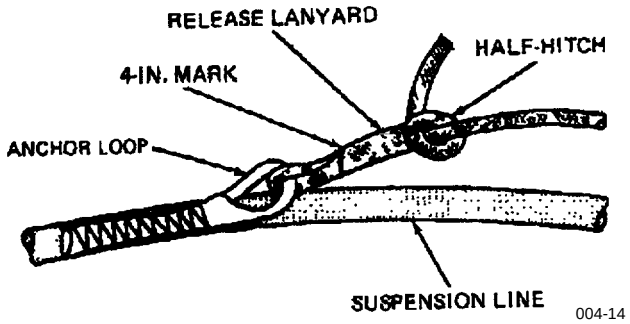


Figure 14. Insert Free End

h. Insert bodkin or needle at core end of lanyard and repuncture cord just below half-hitch knot. Insert loose end of coreless line thru bodkin or needle and carefully pull excess line thru sheath. Remove bodkin or needle and hand tack cords together with two turns of size E thread, single and waxed; tie off (Figure 15). Trim excess. (QA)

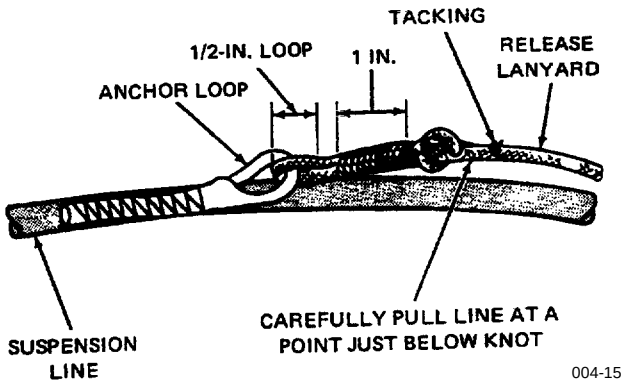


Figure 15. Insert Bodkin at Core End

i. Using a bodkin or equal tool, insert and pull release lanyard pull loop thru flute. Pull loop should extend completely thru flute with top of loops butted up against lower edge of flute.

j. Measure 30-in. down from 4-in. point on lanyard and mark with grease pencil. (QA)

NOTE

Correct distance between 4-in. mark and 30-in. mark is important for proper rigging.

k. Rig four-line release lanyard per Paragraph 38.

37. REPAIR OF FOUR-LINE RELEASE LANYARD ANCHOR LOOP.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. If anchor loop zigzag stitching is found unraveling, repair as follows:

(1) Trim off loose thread.

(2) Using one turn of size E thread, single and waxed tack each end of zigzag stitching. Tie off.

38. RIGGING OF FOUR-LINE RELEASE LANYARDS FOR THE NC-3, NB-7, -8, AND NES-25.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Bodkin

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Place parachute canopy under slight tension on packing table.

b. Ensure that release lanyard is free of any entanglement with suspension lines.

c. Rotate top right risers 180-degrees clockwise and top left risers 180-degrees counterclockwise.

d. Using a bodkin or equal tool, insert and pull release lanyard pull loops thru appropriate lanyard flute. Pull loops should extend completely thru flute with top of loops butted up against lower edge of flute.

e. Remove top connector links from tension hooks and position lines 1 and 2 or 27 and 28, as applicable, on top of upper connector link bar, insert lines between bars ensuring continuity is maintained and lanyard remains free of dips and twists. Holding lines in place, rotate top connector links outboard so inside of riser strap with flute faces up.

f. Make two twists in ends of lines 1 and 2 or 27 and 28 as applicable (Figure 16).

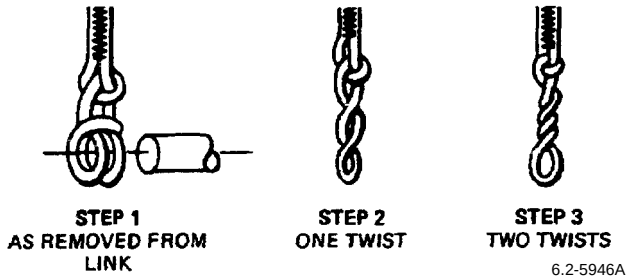


Figure 16. Make Two Twists

NOTE

Do not allow 30-in. mark on release lanyard to be positioned below upper connector link bar after daisy chains have been completed. This will ensure that 30-in. of release lanyard extend above connector links and that slack is present in lanyard as compared to line 3 and 26.

g. With the 30-in. mark positioned at upper connector link bar, form a 3 to 4-in. bight in release lanyard between top of the flute and the 30-in. mark.

h. While maintaining two twists in suspension line ends, route bight in lanyard thru lines 1 and 2 or 27 and 28 as applicable (Figure 17).

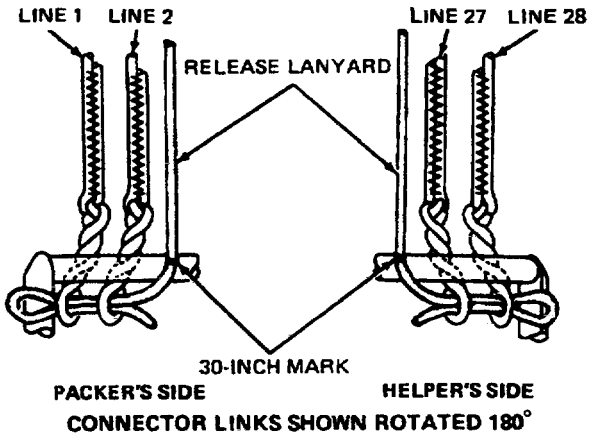


Figure 17. Maintaining Two Twists

i. Route release lanyard bight over upper connector link bar and then thru lines 1 and 2 or 28 and 27 as applicable (Figure 18).

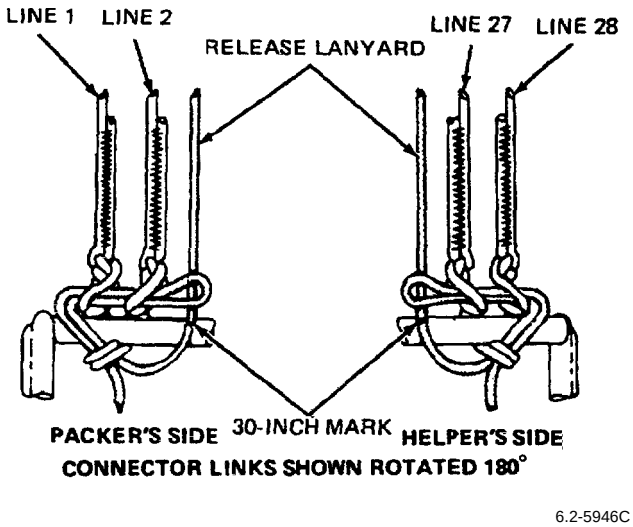


Figure 18. Route Release Lanyard

j. With 30-in. mark positioned at upper connector link bar, construct first daisy chain loop. Form a bight in remaining slack of release lanyard and insert it thru small loop of bight which was routed thru lines 1 and 2 or 27 and 28 (Figure 19).

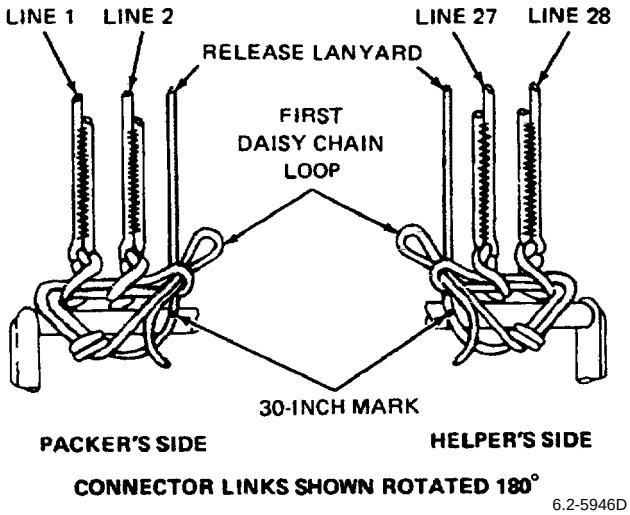


Figure 19. 30-in. Mark Position

k. Continue to form additional daisy chain loops as in step j. Use all available slack in release lanyard between top of flute and 30-in. mark (Figure 20).

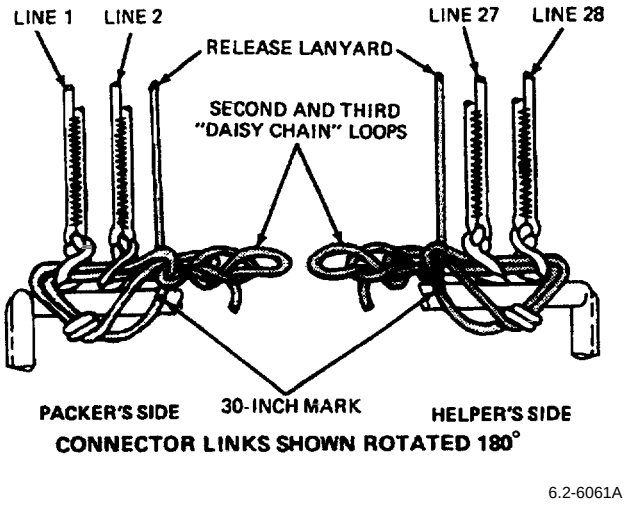


Figure 20. Continue to Form Additional Daisy Chain Loops

l. Tack release lanyard to flute with one turn of size FF thread, single and waxed. There should be 1/8-in. between first flute entry and return flute entry. Tacking shall pass thru the release lanyard, thru and around last daisy chain loop and then back thru flute (Figure 21). (QA)

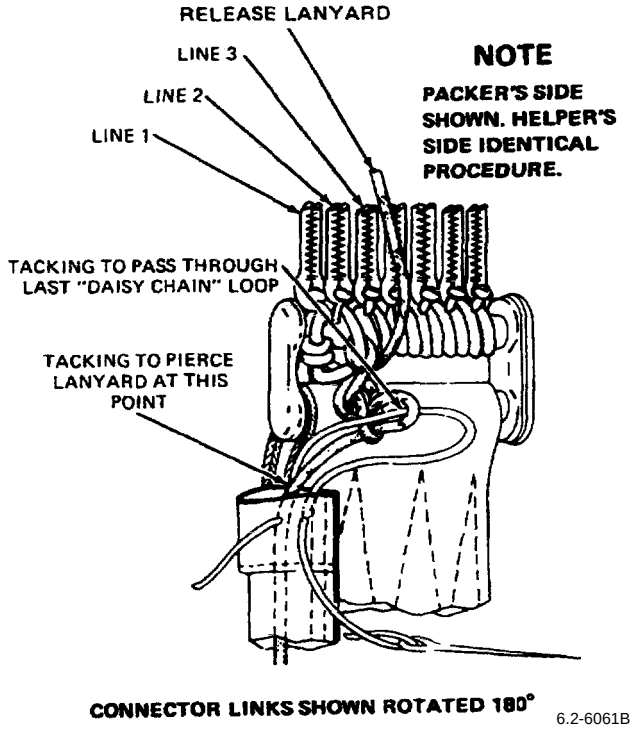


Figure 21. Tack Release Lanyard to Flute

m. Tie off tacking and trim ends at a point 1/2-in. from knot (Figure 22).

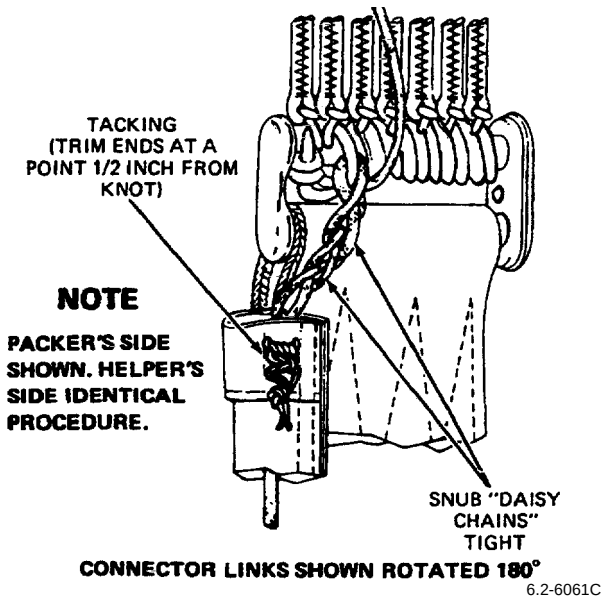


Figure 22. Tie Off Tacking

n. Fully extend lanyard pull loops.

o. Tack risers together at center of riser and 1/2-in. Above bottom of lanyard pull loop with one turn of size FF thread, single and waxed. Tie off (Figure 23).

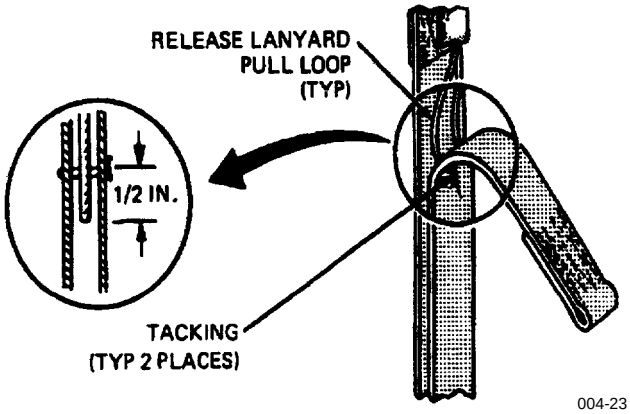


Figure 23. Tack Risers Together

p. Rotate riser straps back to original position and reinstall connector links on tension hooks and then into respective holes in packing table. Pull canopy taut and check suspension line continuity. (QA)

39. RIGGING OF FOUR-LINE RELEASE LANYARDS FOR THE NES-8B, -12 AND -14.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Bodkin

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Place parachute canopy under slight tension on packing table with lines 1, 2, 28, and 27 removed from connector links.

b. Remove top risers from tension hooks and place outboard of bottom risers.

c. Ensure that release lanyard is free of any entanglement with suspension lines.

d. Using a bodkin or equal tool, insert and pull release lanyard pull loops thru proper lanyard flute. Pull loops should extend completely thru flute with top of loops butted up against lower edge of flute.

e. Make two twists in ends of lines 1 and 2 or 27 and 28 as applicable (Figure 24).

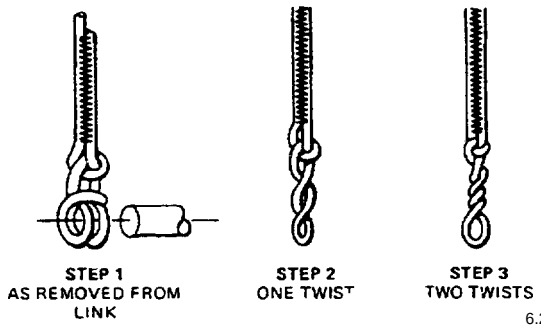


Figure 24. Make Two Twist

f. Remove bottom links from tension hooks and position lines 1 and 2 or 27 and 28, as applicable, under bottom of connector link bar. Insert lines between bars ensuring that continuity is maintained and lanyard remains free of dips and twists.

NOTE

Do not allow the 30-in. mark on the release lanyard to be positioned below the upper connector link bar after the daisy chains have been completed. This will ensure that 30-in. of release lanyard extend above the connector links and that slack is present in the lanyard as compared to lines 3 and 26.

g. With the 30-in. mark positioned at the upper connector link bar, form a 3 to 4-in. bight in release lanyard between the top of the flute and the 30-in. mark.

h. While maintaining two twists in suspension line ends, route bight in lanyard thru lines 2 and 1 or 27 and 28 as applicable (Figure 25).

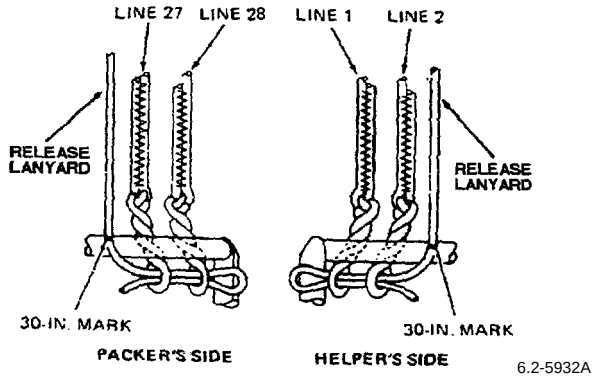


Figure 25. Maintaining Two Twist

i. Route release lanyard bight over upper connector link bar and then thru lines 1 and 2 or 28 and 27 as applicable (Figure 26).

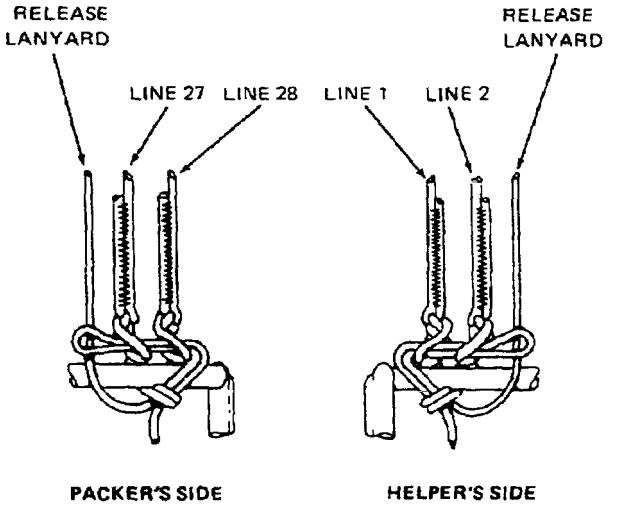


Figure 26. Route Release Lanyard

j. With 30-in. mark positioned at upper connector link bar, construct first daisy chain loop. Form a bight in remaining slack of release lanyard and insert it thru small loop of bight which was routed thru lines 1 and 2 or 27 and 28 (Figure 27).

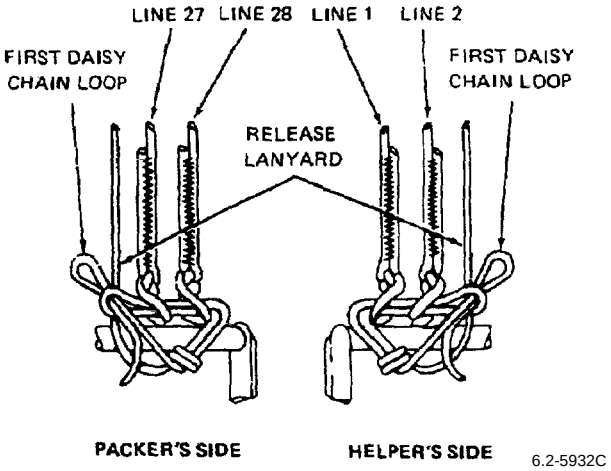


Figure 27. 30-in. Mark Position

k. Continue to form additional daisy chain loops as in step j. Use all available slack in release lanyard between top of flute and 30-in. mark (Figure 28).

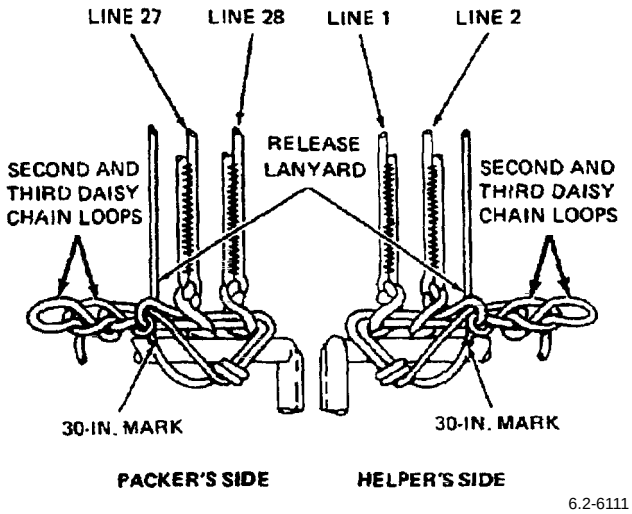


Figure 28. Continue to Form Additional Daisy Chain Loops

l. Tack release lanyard to flute with one turn of size FF thread, single and waxed. There should be 1/8-in. between first flute entry and return flute entry. Tacking shall pass thru outer cover of flute, thru the release lanyard, thru and around last daisy chain loop, and then back thru flute (Figure 29). (QA)

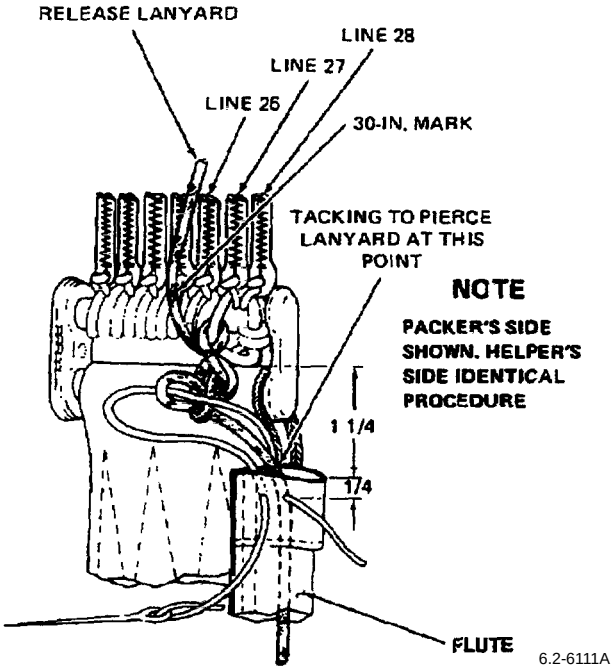


Figure 29. Tack Release Lanyard to Flute

m. Tie off tacking and trim ends at a point 1/2-in. from knot (Figure 30).

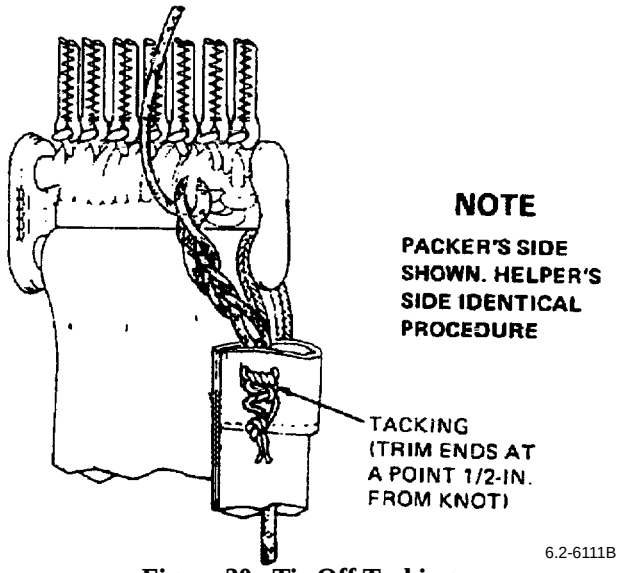


Figure 30. Tie Off Tacking

n. Fully extend lanyard pull loops.

o. Tack risers together at center of riser and 1/2-in. above bottom of lanyard pull loop with one turn of size FF thread, single and waxed; tie off (Figure 31).

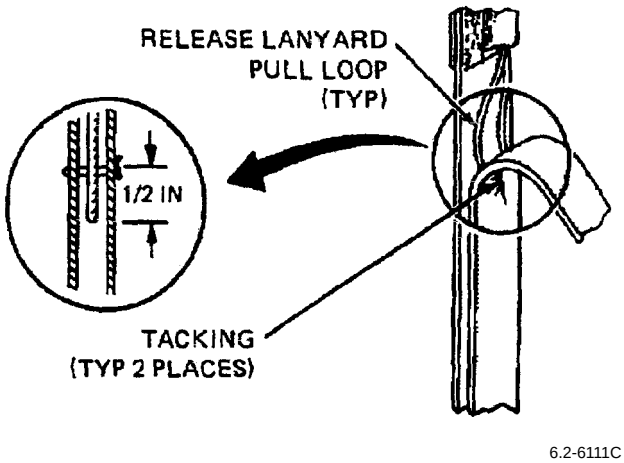


Figure 31. Tack Risers Together

p. Rotate riser straps back to original position and reinstall connector links on tension hooks and then into respective holes in packing table. Pull canopy taut and check suspension line continuity. (QA)

40. REPLACEMENT OF FOUR-LINE RELEASE LANYARD FLUTE TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove loose or broken tacking, and ensure daisy chain remains properly constructed and snug.

b. Tack release lanyard to flute with one turn of size FF thread, single and waxed. Tacking shall pass thru outer cover cover of flute, thru the release lanyard, thru and around last daisy loop, and then back thru flute. Tie off.

41. CONTAINER ASSEMBLY REPAIRS.

a. Repair of the container assembly is limited to the following:

(1) Cleaning of contaminated areas.

(2) Replacement of grommets, locking cones, snap fasteners, and eyes.

(3) Repair of loose or broken stitching, holes, tears, and seam separations.

(4) Replace protective container cover on NES-12.

b. Replace container for any of the following:

(1) Service/total life has expired per applicable personnel parachute assembly.

(2) Broken or distorted container stiffeners.

(3) Deterioration, fading, abrasion, or excessive contamination.

42. REPAIR OF LARGE HOLES, TEARS, OR SNAGS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
PIA-C-7219	Cloth, Nylon, Type III, Class 3

NOTE

Container material used shall be same as type used to construct container.

a. Cut patch large enough to fully cover damaged area, overlap 3/4 to 1-in., and allow for edge to be turned under 1/2-in.

b. Place patch over damage and fold edges of patch under 1/2-in. Sew into rows, using size E thread, around edge of patch (Figure 32).

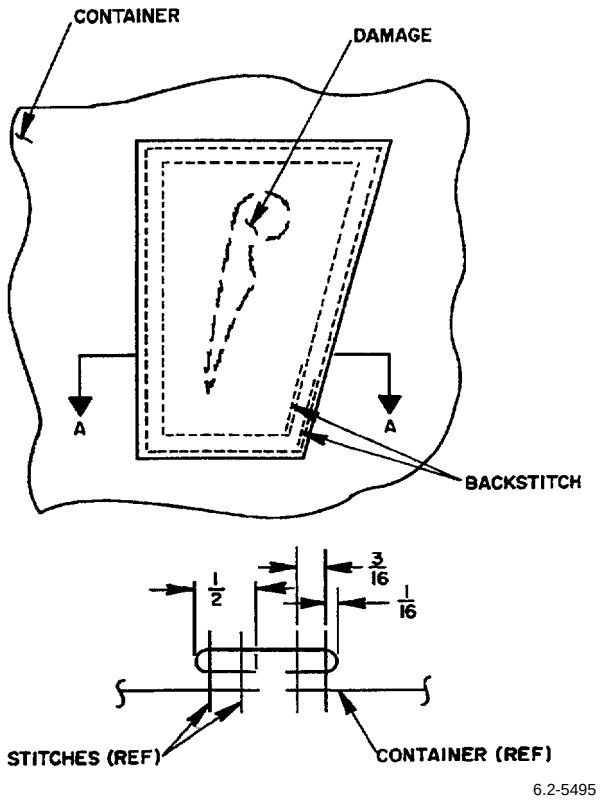


Figure 32. Repair of Large Holes, Tears or Snags

43. REPLACEMENT OF GROMMET AND WASHER ON CONTAINER CONE AND PANEL ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
PN A172 and PN A1721-2	Chuck and Die Set, 9/16-in.

Materials Required

Specification or Part Number	Nomenclature
MS22048GCI	Grommet
60A113C25-1	Washer
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove stitching from washer.

b. Cut crimped edge of grommet at three or four places.

c. Remove grommet and washer.

d. Install new grommet from outside of panel and then set grommet and washer in place with chuck and die.

e. Inspect crimped rolled edge of grommet for sharp edges. If sharp edges are present, repeat steps b, c and d.

NOTE

The washer will be machine stitched from inside of the container. Stitches will be made by manually moving sewing machine balance wheel. As an alternate to machine stitching, handstitching is permitted. If handstitching is used employ the same stitch pattern as in steps h thru i.

f. Set sewing machine at zero stitches per inch.

g. Remove power belt from balance wheel pulley.

h. Prior to starting, ensure enough thread is reserved for final tie off.

i. Stitch thru the nearest hole in washer. Continue stitching thru each hole in series.

j. Make one stitch outside the washer; then return to hole.

k. Make a stitch thru the following hole, then outside the washer; return to hole. Repeat this procedure two times around.

l. Continue sewing thru each hole until returning to starting point (Figure 33).

m. Ensure enough thread is reserved for tie off and then cut.

n. Pull threads thru to inside of panel and tie off with an overhand knot. Trim excess thread.

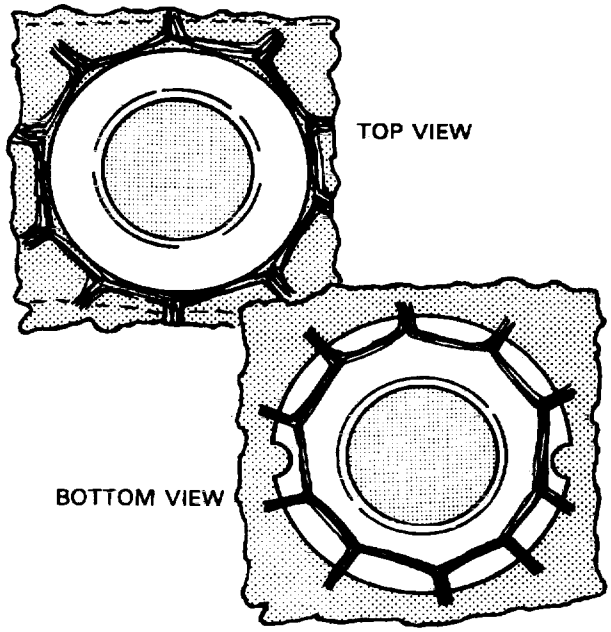


Figure 33. Installation of Grommet and Washer

44. REPLACEMENT OF GROMMET AND WASHER ASSEMBLY ON CONTAINER GROMMET PANEL ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
—	Chuck and Die Set, 7/16-in.

Materials Required

Specification or Part Number	Nomenclature
MS22048C	Grommet and Washer

a. Cut crimped edge of grommet at 3 or 4 places.

b. Remove gromet and washer.

c. Install new grommet from outside of panel, then set grommet and washer in place with chuck and die.

d. Inspect crimped rolled edge of grommet for sharp edges. If sharp edges are present, repeat steps a, b, and c.

45. REPLACEMENT OF LOCKING CONE ON CONTAINER AND PANEL ASSEMBLY OR BOTTOM FLAP.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 3, Type I or II, Class A
60A116C16-1	Cone, 0.267 Grip

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove tacking retaining damaged cone to container.

b. If fabric retaining locking cone is damaged, repair per Paragraph 42, as applicable.

c. Position replacement locking cone in exact location of damaged or missing cone. Ensure that ripcord locking pin hole is aligned in same direction as that removed.

NOTE

During manufacturing, locking cone was sewn on before container was completely assembled; thus, original locking cone stitching is not visible on finished container. For repairs, it is permissible to sew thru panel with finished stitching present on inside of the panel.

d. Attach locking cone.

e. Using size 3 thread, doubled and waxed push tacking needle up thru panel and thru hole 1 until about 3-in. of thread remains below panel (Figure 34).

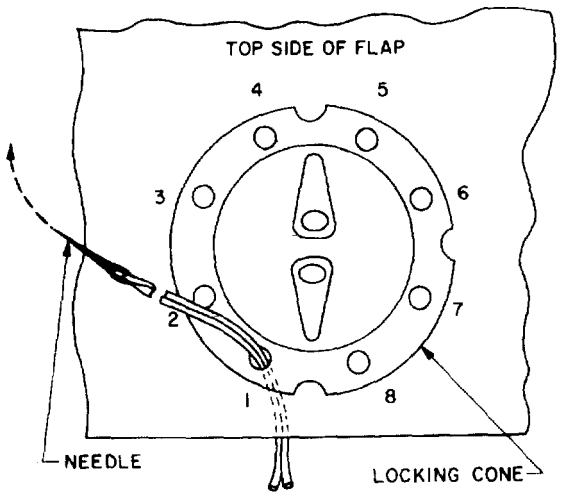


Figure 34. Start Thread Thru Panel

f. Working clockwise, pass needle down thru hole 2, up thru hole 3. Continue until all holes are threaded and needle passes up thru hole 1. Take up all slack in thread (Figure 35).

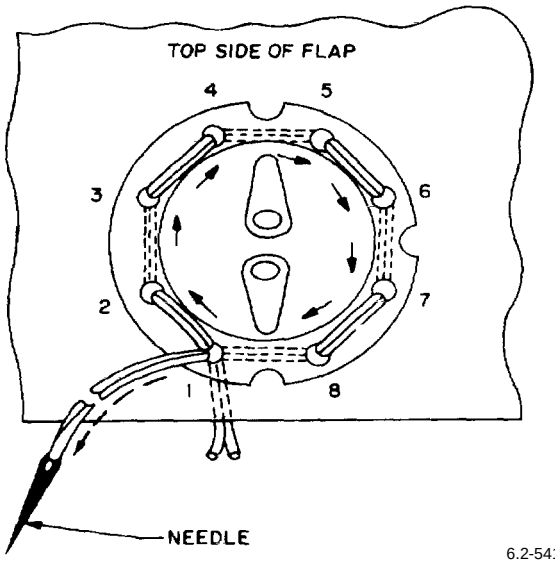


Figure 35. Working Clockwise Pass Needle Thru Hole 2

g. Working counterclockwise, pass needle down thru hole 8, up thru hole 7, continue until needle passes down thru hole 2. Take up all slack in thread (Figure 36).

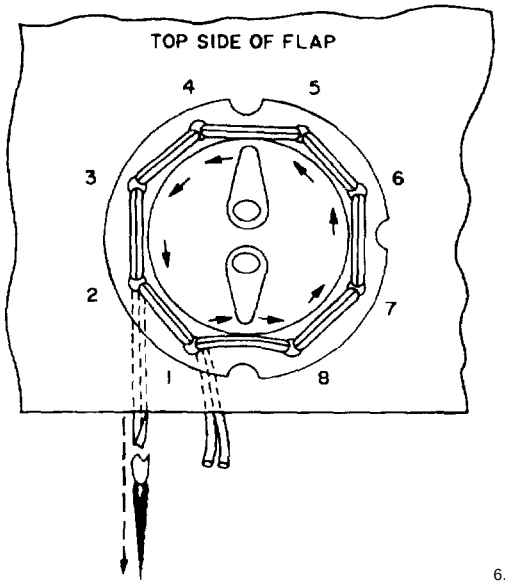


Figure 36. Working Counterclockwise Pass Needle Thru Hole 8

h. Pass needle up thru panel next to outside edge of locking cone, directly in front of hole 1.

i. Working clockwise, pass needle down thru hole 1, up thru panel in front of hole 2, down thru hole 2. Continue stitching in this manner until needle passes down thru hole 8. Take up all slack in thread (Figure 37).

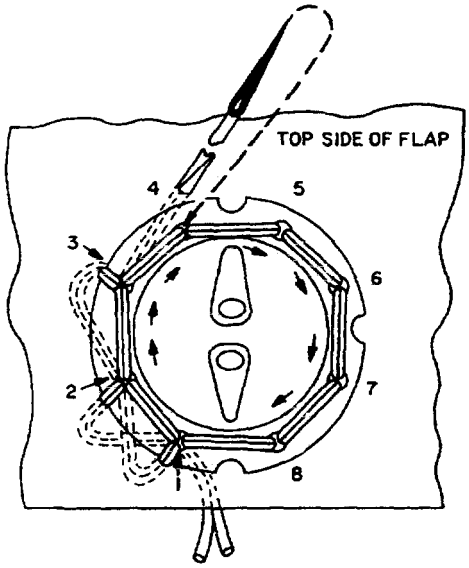


Figure 37. Working Clockwise Pass Needle Thru Hole 1

j. Tie ends of thread on inside of flap; tie off. Trim thread ends to within 1/4-in. of knots. Locking cone, directly in front of hole 1.

46. REPLACEMENT OF SNAP FASTENER.

Support Equipment Required

Part Number	Nomenclature
CAGE 57771	Chuck, Stud and Die, Eyelet,
	-or-
CAGE 57771	Chuck, Socket and Die, Button

Materials Required

Specification or Part Number	Nomenclature
MS27983-1	Fastener, Snap, Button
MS27980-8B	Fastener, Snap, Eyelet
MS27983-2N	Fastener, Snap, Socket
	-or-
MS27983-3	Fastener, Snap, Stud
PIA-T-5038	Webbing,Nylon, Type IV, Class 1 or 1A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove damaged fastener using care not to damage webbing.

b. If material around hole has been damaged, cut a 1-in. piece of Type IV webbing and sew to underside of damaged area using a boxstitch pattern (Figure 1). For stitching, use size E thread. Backstitch 1/2-in.

c. Punch new hole if required.

NOTE

During manufacturing, fasteners on grommet panel were installed before container was completely assembled; thus, bottom of snap fastener stud is not visible on finished container. For repairs, permissible to install stud completely thru the panel.

d. Install new fastener.

47. REPLACEMENT OF EYE.

Materials Required

Specification or Part Number	Nomenclature
60A113C28-1	Eye
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size 3, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove damaged eye and thread.

NOTE

During manufacturing, eyes on cone and grommet panel were sewn on before container was completely assembled thus, stitching is not visible on inside of panels. For repairs, permissible to sew thru panels with finished stitching present on inside of each panel.

There are three holes provided in grommet stiffener for sewing each eye on grommet panel. Optional to machine stitch with size E thread, using nine single stitches per grouping in lieu of two turns doubled.

b. Sew replacement eye to container in stitch pattern shown in (Figure 38), with two turns of size 3 thread, doubled and waxed; tie off.

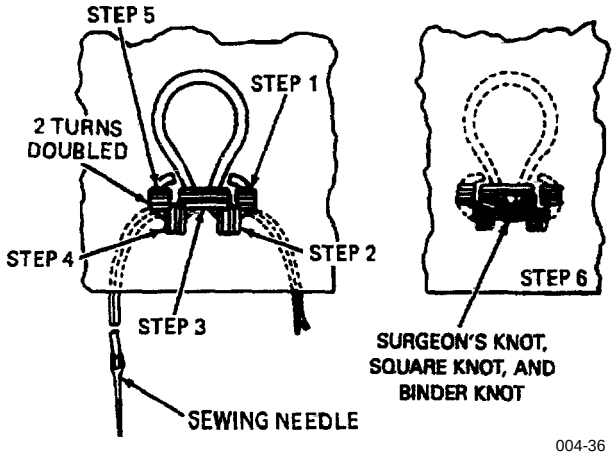


Figure 38. Eye Replacement

48. REPAIR OF LOOSE OR BROKEN CONTAINER STITCHING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Trim off only loose thread ends.

b. Machine stitch over loose or broken stitching on original stitch line. New stitch shall begin and extend 3/4-in. beyond affected area.

49. RIPCORD ASSEMBLY REPAIRS.

50. GENERAL.

a. Repair of the ripcord assembly is limited to the following:

(1) Cleaning contaminated areas per Paragraph 11.

(2) Replacement of loose or broken tackings.

b. Replace ripcord assembly for any of the following:

(1) Bent, broken, or cracked locking pins.

(2) Corroded, frayed, or permanently bent cable.

(3) Loose cable swage ball or housing ferrule.

(4) Corroded, cracked, or bent handle or housing.

51. REPLACEMENT OF RIPCORD ASSEMBLY.

a. Inspect replacement ripcord assembly per applicable personnel parachute assembly.

b. Replace ripcord assembly in the proper step of packing procedures.

52. SPREADING GUN REPAIRS.

a. Repair of spreading gun is limited to following:

(1) Replacement of spreading gun.

(2) Replacement of cartridge.

(3) Replacement of torque seal on plate screws.

(4) Replacement of retainer cord and/or tackings.

(5) Repair/replacement of safety pin assembly.

(6) Replacement of french spiral.

b. Replace spreading gun for the following:

(1) Service/total life per applicable personnel parachute assembly.

(2) Fails pull force check failed.

(3) Service life expires.

(4) Ball bearings unseat.

53. REPLACEMENT OF SPREADING GUN ASSEMBLY FOR THE NES-12, -25, A/P28S-28, -30 AND -31.

Support Equipment Required

Part Number	Nomenclature
ST86-0064-1	Test Fixture
56B9914	Torque Screwdriver
TSQ-050	Torque Meter
—	C-Clamp (2)
DPP-50	Scale, Spring

Materials Required

Specification or Part Number	Nomenclature
O-E-760	Alcohol, Denatured
PIA-C-5040	Cord, Nylon, Type III, 20 ft.
F-900 Torque Seal (Color Optional)	Sealing Compound
MIL-S-45180	Compound, Sealing, Type III

WARNING

The spreading gun employs an explosive cartridge. Failure to observe procedures in this paragraph could result in serious injury.

a. Replacement of the spreading gun assembly consists of removal of the cartridge and removal of the spreading gun from the canopy, followed by the pull force check, attachment of the spreading gun to the canopy and cartridge installation

54. REMOVAL OF SPREADING GUN CARTRIDGE.

WARNING

Safety pin must be installed in spreading gun.

NOTE

Use only special tools furnished for cartridge removal. A helper assist person doing the cartridge removal.

A firing pin pull force check shall be made each time the parachute assembly is packed.

a. Ensure safety pin is installed in spreading gun. (QA)

CAUTION

Cartridge extractor wrench surface must mate with cartridge. Resurface wrench if required.

b. Helper will place spreading gun on packing table, with cartridge opening in upright position and hold (Figure 39).

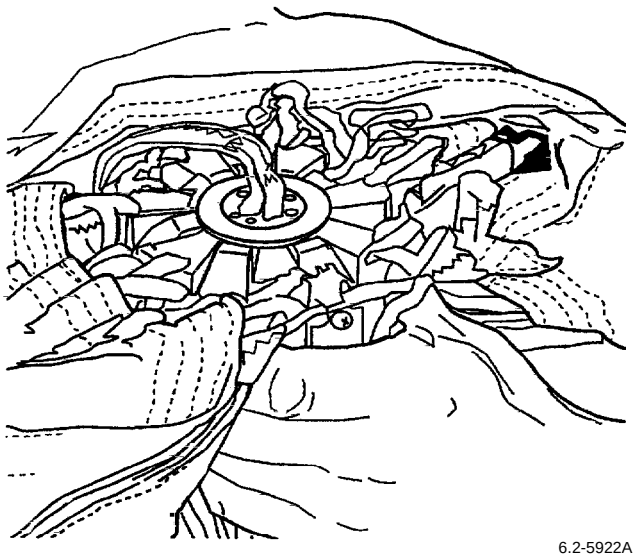


Figure 39. Positioning of Spreading Gun on Packing Table

c. Packer will place pins of cartridge extractor wrench in holes in cartridge. Loosen cartridge (Figure 40).

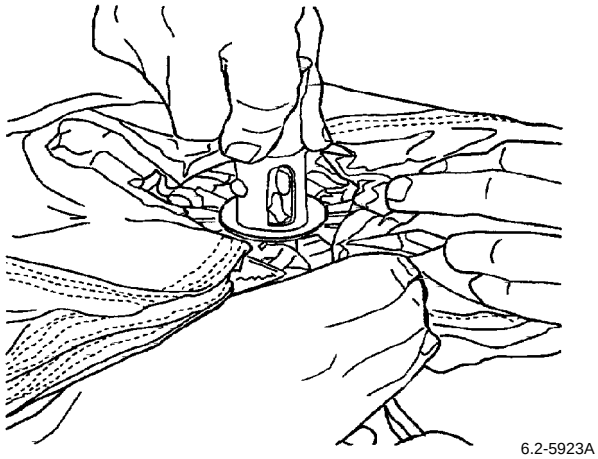


Figure 40. Placement of Cartridge Extractor Wrench

NOTE

Ensure that proper malfunction description code is recorded. If difficulty occurs in removal of cartridge using extractor wrench, request assistance of Explosive Ordnance Disposal (EOD) personnel.

d. Manually unscrew and remove cartridge from chamber.

e. Remove cartridge from retainer cord by removing pin. Retain pin for reinstallation.

f. Store cartridge per NAVAIR 11-100-1.1.

55. REMOVAL OF SPREADING GUN FROM CANOPY.

a. Loosen screws holding plates to spreading gun slugs a sufficient amount to allow suspension lines to be removed.

b. Slip all suspension lines and attached loops from under plates.

c. Remove spreading gun from canopy.

d. Attach free end of new retainer cord to old cord and pull both cords thru canopy apex. Remove old retainer line from apex and discard.

e. Attach new retainer cord to apex per Paragraph 57.

56. INSTALLATION OF PULL FORCE CHECK AND CARTRIDGE.

a. Clamp spreading gun test fixture to packing table (Figure 41). Use one C-clamp positioned as closely as possible to clamp assembly.

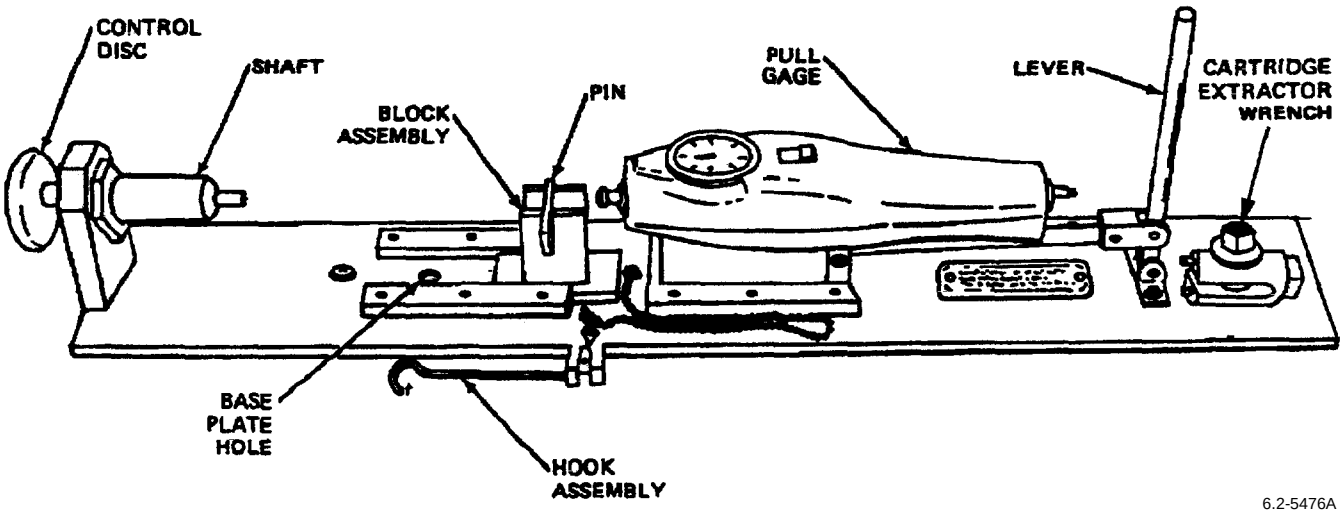


Figure 41. Spreading Gun Test Fixture

b. Examine replacement spreading gun chamber to ensure that no pistons are protruding into chamber and that no foreign matter is present.

c. Slide spreading gun onto test fixture so that shaft butts against bottom of cartridge chamber (Figure 42).

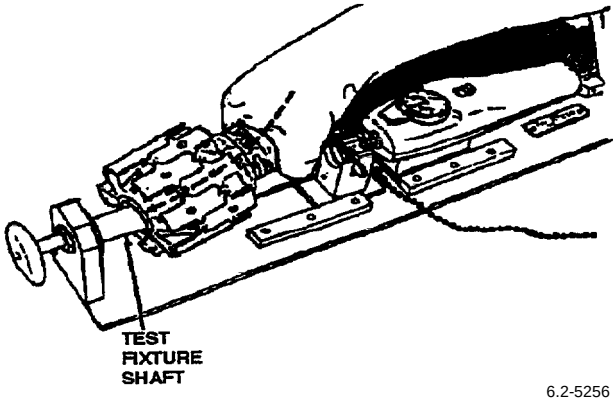


Figure 42. Slide Spreading onto Test Fixture

d. Open snap fasteners on spreading gun extractor sleeve and expose firing pin housing.

e. Slide block assembly at center of test fixture under firing pin housing until block assembly pin slides into base plate hole. Align firing pin subassembly so that eye is horizontal and firing lanyard is located on top (Figure 43).

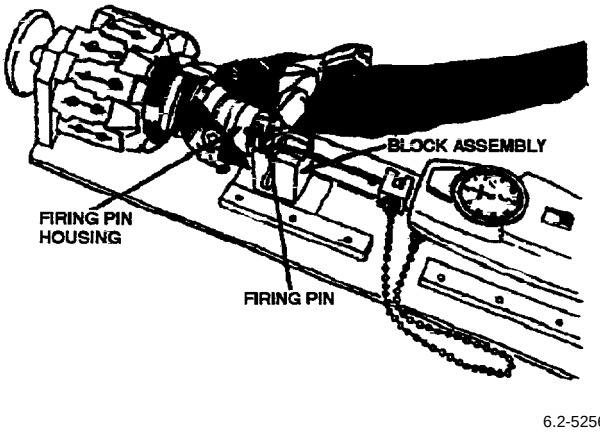


Figure 43. Slide Block Assembly at Center of Test Fixture

f. Attach hook assembly to firing pin eye and slide hook assembly block over nut attached to spring scale.

g. Move switch on spring scale to center position. Zero scale by rotating bezel. Move switch to full down position away from meter to observe pull force.

CAUTION

Do not withdraw firing pin subassembly further than distance needed for release of firing pin. Complete removal of firing pin is not required for this test. Complete removal would cause ball bearings to unseat, thus requiring a depot overhaul.

h. Pull test fixture lever until firing pin subassembly releases. Verify that the pull force is 32 ± 6 lbs. If spreading gun fails first test it shall be tested twice more. Spreading gun must pass both retests. (QA)

NOTE

If spreading gun fails pull force check, do not place gun into service.

i. After pull force measurement has been obtained, remove hook assembly from firing pin subassembly.

j. Push firing pin subassembly back into housing. Push control disc firmly inward, forcing firing pin subassembly out of housing. Apply inward hand pressure to firing pin subassembly as it moves out. Continue to move control disc inward, applying hand pressure to firing pin subassembly until it clicks into place. When click is heard, gun is cocked. Gently release control disc while still exerting pressure on firing pin subassembly.

k. Tug gently on firing pin subassembly until effect of spring loading is felt. If firing pin subassembly moves without any spring tension, the gun is not cocked and steps f and g must be repeated. (QA)

l. Inspect spreading gun safety pin for ease of operation, presence of two locking balls, and condition of flag and flag stowage strap.

WARNING

Safety pin must be installed.

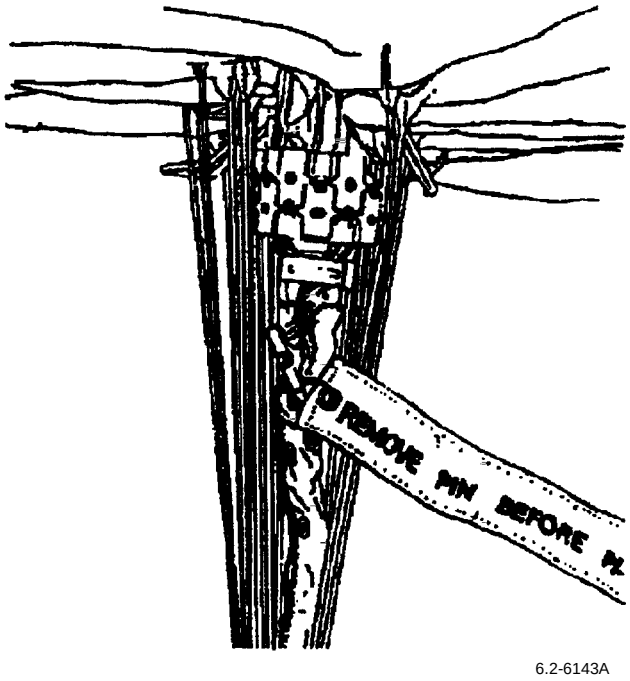
m. Install safety pin. (QA)

n. Remove spreading gun from test fixture as follows:

(1) Release block assembly by pulling pin out of hole in base plate and sliding away from spreading gun

(2) Remove gun from shaft. Do not remove gun by pulling on firing lanyard.

o. Attach spreading gun to canopy assembly. Align top of spreading gun with skirt hem (Figure 44).



6.2-6143A

Figure 44. Align Top of Spreading Gun

p. Loosen screws and plate on slug 14-13. Place suspension line number 13 and a single length of attached spreading gun loop in closed slot of slug. Place suspension line 14 in open slot of same slug (Figure 45).

q. (For NES-25, A/P28S-28, -30, and -31) Loosen screws and plate on slug 28-27. Place suspension line number 27 and a single length of attached spreading gun loop in closed slot of slug. Place suspension line 28 in open slot of same slug.

r. Pass loop around plate and over suspension line in slug. Secure plate to slug with screw provided and ensure that suspension lines move in slots and not trapped by plate assembly. Torque plate screws to 6 ± 1/2 in-lbs. (Figure 46).

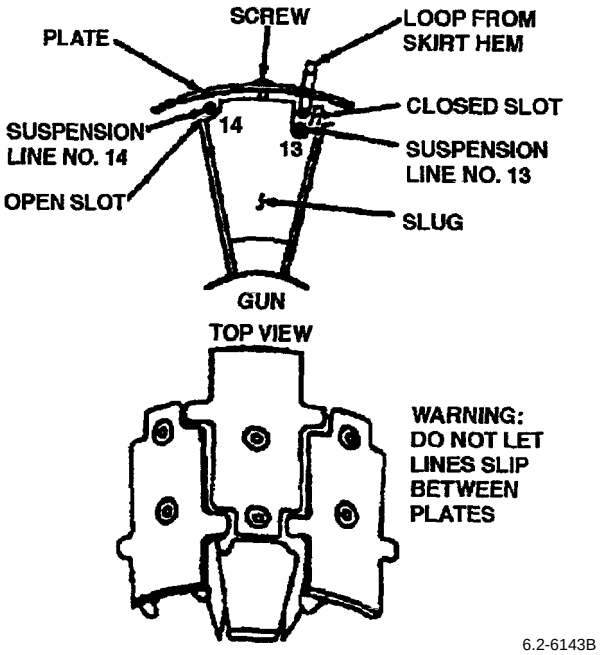


Figure 45. Loosen Screws and Plate

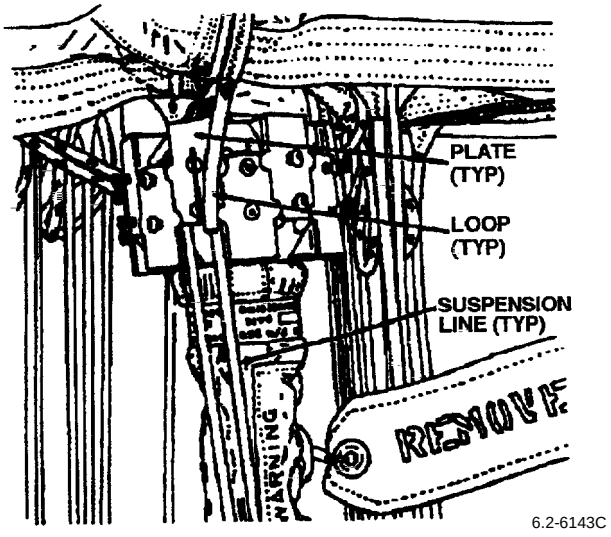


Figure 46. Pass Loop Around Plate

s. Secure remainder of suspension lines and loops to corresponding slugs in same manner as in step r. Work from suspension line 12 thru 1 and from line 15 thru 28 (Figure 47). (QA)

CAUTION

Do not allow alcohol to flow inside gun as this could damage O-rings and lubrication.

Denatured Alcohol **9**

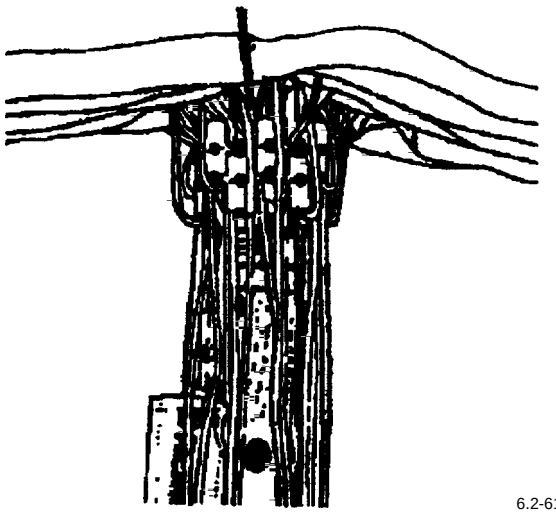


Figure 47. Secure Remainder of Suspension Line

t. Clean cartridge chamber and threads with a small amount of denatured alcohol. Ensure that the old sealing compound and all foreign matter are removed. Gun shall be tilted to allow denatured alcohol to run out of gun. Allow at least 2 min. drying of time for denatured alcohol to evaporate.

u. Compare type of cartridge, part number, lot number and service life expiration date on Parachute Record (OPNAV 4790/101) to that marked on cartridge. (QA)

v. Apply sealing compound to top two threads of cartridge (Figure 48).

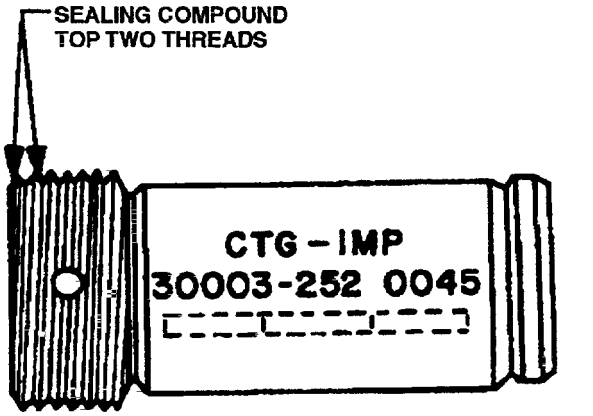


Figure 48. Spreading Gun Cartridge

w. Attach cartridge to retainer cord by passing pin thru screw base of cartridge and loop in end of retainer cord (Figure 49).

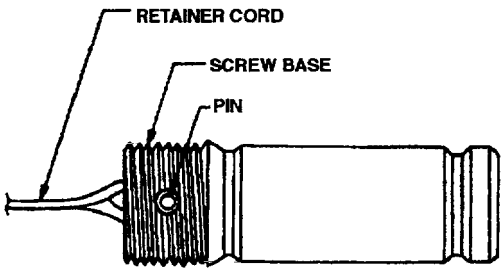


Figure 49. Attachment of Retainer Cord to Cartridge

WARNING

Do not force cartridge into chamber. Safety pin must be installed.

NOTE

Use only special tools furnished for cartridge installation. It is recommended that a helper assist the person performing cartridge installation by verifying procedures as each step is accomplished.

When a cartridge is properly installed, base should be about even with top edge of chamber. If cartridge is more than one thread above edge, remove cartridge and check bottom of chamber for any obstruction, (i.e., slug pistons). If cartridge is damaged, replace it with a new cartridge.

x. Insert cartridge into chamber. Manually tighten cartridge into chamber. If cartridge stops before threads are engaged, remove cartridge and check for any protruding slug pistons; push back as necessary.

y. Place pins of cartridge extractor wrench into holes in cartridge and torque to a value of 84 ± 12 in-lbs. (QA)

z. Apply torque seal to each screwhead.

WARNING

Spreading gun employs an explosive cartridge. Failure to observe procedures in this paragraph could result in serious injury.

57. REPLACEMENT OF RETAINER CORD.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

WARNING

Safety pin must be installed.

a. Ensure that the safety pin is installed. (QA)

b. Remove cartridge per Paragraph 54.

c. Attach free end of new retainer cord to old cord and pull both cords thru canopy apex.

d. Remove old retainer cord from apex lines.

e. Insert loop end of new retainer cord into end of cartridge, and reinsert retainer cord securing pin (Figure 49). (QA)

f. Perform spreading gun pull force check and cartridge installation per Paragraph 56.

g. Route retainer cord thru lark's head knot in internal bridle and under all vent lines. Center retainer cord plastic sleeve over indexing line on retainer cord and then align indexing line above apex lines (Figure 50).

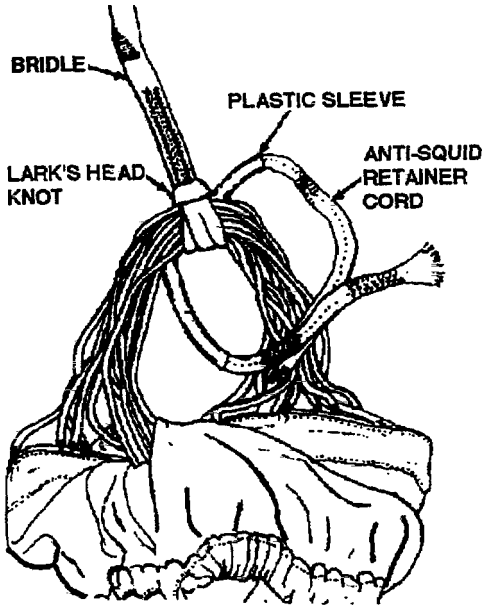


Figure 50. Route Retainer Cord

h. Using a bodkin, telescope 2-in. of retainer cord into itself, forming a 3 ± 1/4-in. loop around apex lines. Cut off 1-in. of retainer cord at a 45-degree angle (Figure 51).

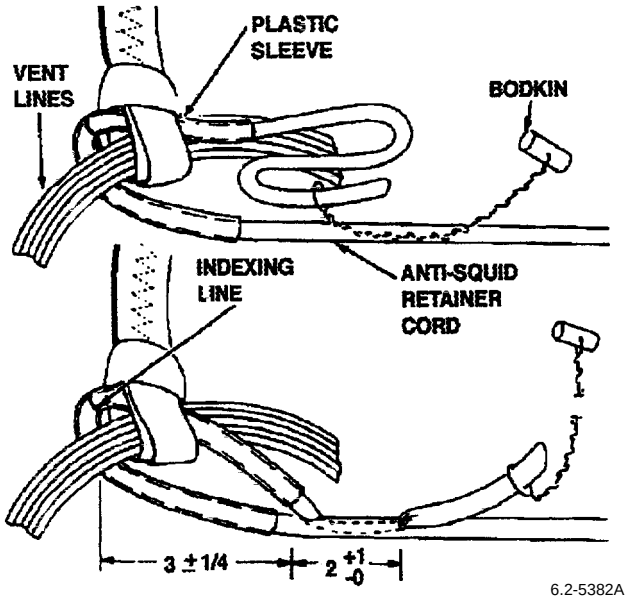


Figure 51. Using a Bodkin Telescope Retainer Cord

i. Tie a half-hitch around retainer cord and telescope remainder of end into retainer cord. Work line smooth on inside of casing (Figure 52).

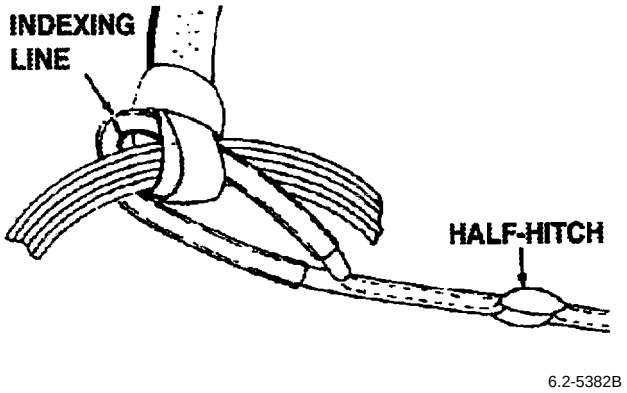


Figure 52. Tie a Half-Hitch Around Retainer Cord

j. Tack end inside retainer cord with two turns of size 6 thread doubled and waxed. Tie off (Figure 53).

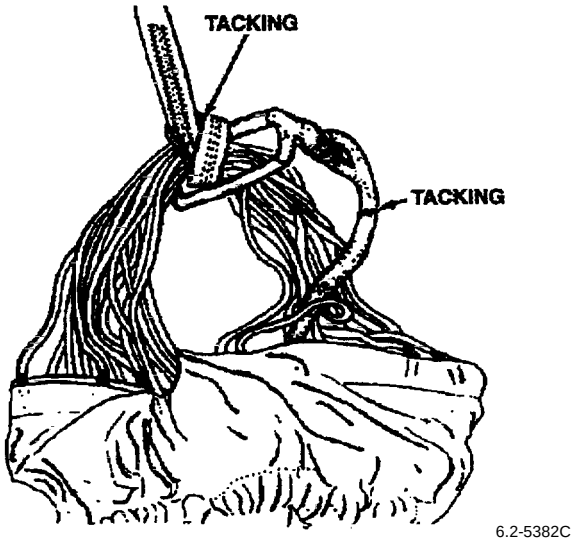


Figure 53. Tack End Inside Retainer Cord

58. STOWAGE OF FIRING LANYARD IN STOWAGE SLEEVE.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Cut a 30-in. length of Type I or IIA cord to use as a stowage aid. Beeswax may be lightly applied to cord as a lubricant.

b. Starting at 7-in. mark on firing lanyard, form a bight in lanyard the length of stowage sleeve. Position stowage sleeve end with pull-the-dot fastener facing connector links. Socket of fastener faces table (Figure 54).

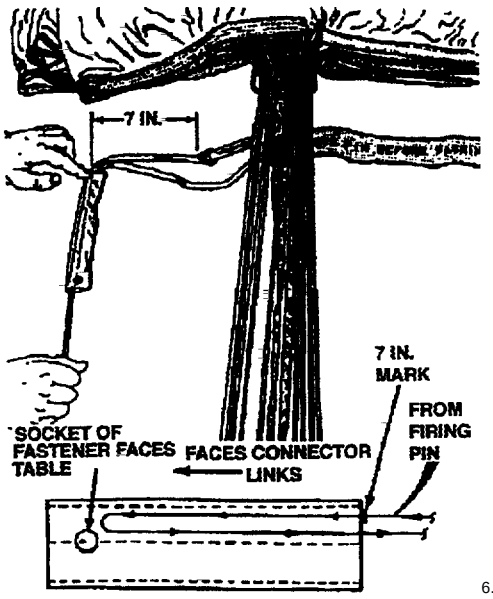


Figure 54. Stowage of Firing Lanyard in Stowage Sleeve

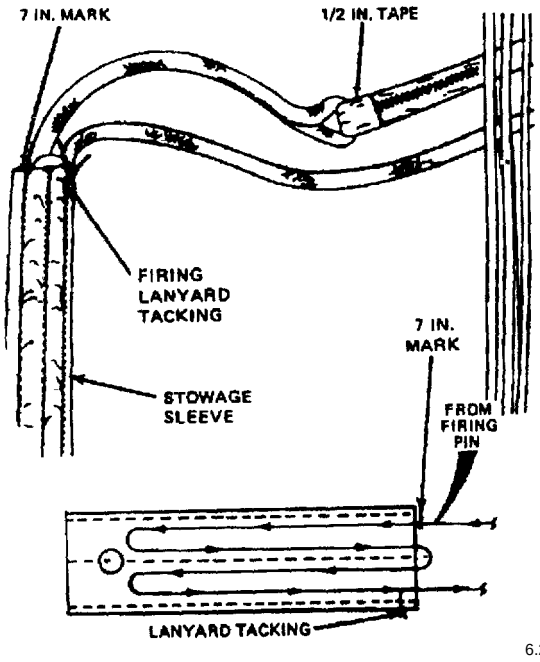


Figure 55. Tacking Firing Lanyard to Stowage Sleeve

c. With button on stowage sleeve facing up, route stowage aid thru bight in firing lanyard. Draw stowage aid thru left stowage sleeve channel with a bodkin from end opposite snap fastener to end with snap fastener (Figure 54).

d. Draw firing lanyard thru stowage channel to bottom using stowage aid (Figure 54).

CAUTION

Rapid removal of stowage aid from firing lanyard bight could damage lanyard.

e. Slowly remove stowage aid from firing lanyard bight.

f. Form an 8-in. bight in firing lanyard and stow in remaining stowage sleeve channel.

g. Tack second stow of firing lanyard to stowage sleeve at end opposite snap fastener with one turn of size A thread, single and waxed or one turn of cotton 30/3 thread. Tie off (Figure 55). (QA)

WARNING

The 1/2-in. tapes must not be twisted around firing lanyard.

h. Ensure 1/2-in. tapes are not twisted around firing lanyard (Figure 55).

59. TACKING OF ANTI-SQUID RETAINER CORD.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove loose or broken tacking.

b. Measure length of internal bridle line. Proper length is 30 ± 1/2-in. unattached.

c. Measure length of cross-connector strap. Proper length is 16 ± 1/4-in. unattached.

d. Measure length of anti-squid retainer cord. Proper length is 157 ± 1 1/2-in. Ensure that tackings (two) are present and line is properly stowed in stowage sleeve (Figure 56).

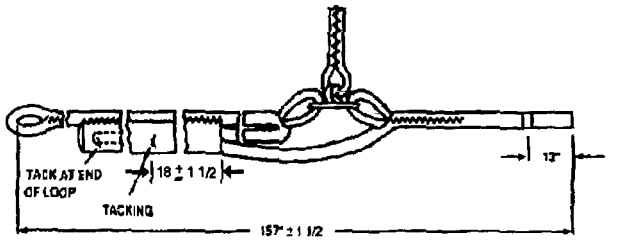


Figure 56. Tack End of Sleeve

e. Tack 18 ± 1 1/2-in. from end of sleeve and at end of loop. Use one turn of size FF thread single and waxed, tack thru sleeve anti-squid retainer cord and sleeve. Tie off (Figure 56).

60. FABRICATION OF SAFETY PIN FLAG.

Support Equipment Required

Part Number	Nomenclature
1412	Chuck, Fastener
1401	Chuck, Fastener
1407	Die, Fastener
1410	Die, Fastener
M-100	Press
GGG-S-00278	Scissors

Materials Required

Specification or Part Number	Nomenclature
MIL-C-22787	Fabric, Red, Type IV, USAF 1556, 22-in.
	-or-
MIL-C-20696	Cloth, Coated Type I, Class 2, No. 21136 Red Color

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon, 6 1/2-in., Type I or IA, Class 1, 1A or 2
PIA-T-5038	Tape, Textile Type IV, 3/4-in. 3/4 x 3/4 (1 ea)
MS27983-1	Buttons (2 ea)
MS27983-2N	Sockets (2 ea)
MS27983-3	Studs (2 ea)
MS27983-4	Eyelets (2 ea)
MS20230B10	Grommet Assembly, Size 0 (1 ea)
TT-L-50	Lacquer, Black Lusterless No. 37875

a. Cut a 22-in. length of red fabric and fold ends over 1-in.

b. Using dimensions shown, install a size 0 grommet at one folded end and a pull-the-dot button and socket at other end with dot on centerline facing inboard (Figure 57).

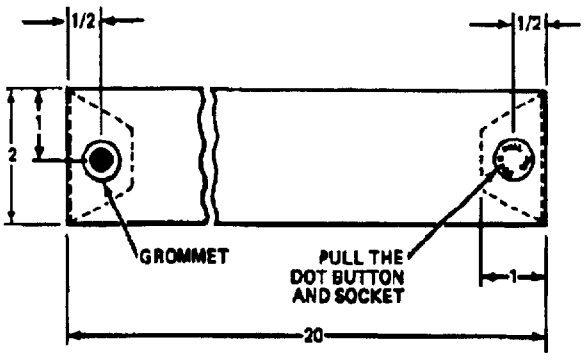


Figure 57. Install a Size 0 Grommet

c. Using dimensions shown, cut a 6 1/2-in. length of olive drab webbing and install a pull-the-dot button and socket at one end (Figure 58).

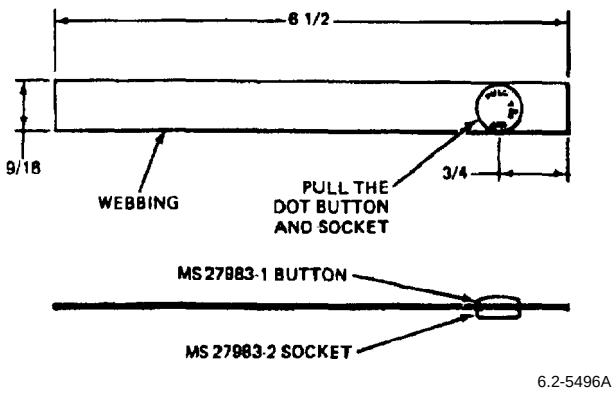


Figure 58. Cut a Length of Webbing

d. Secure a piece of webbing to flag with eyelet and stud as shown (Figure 59).

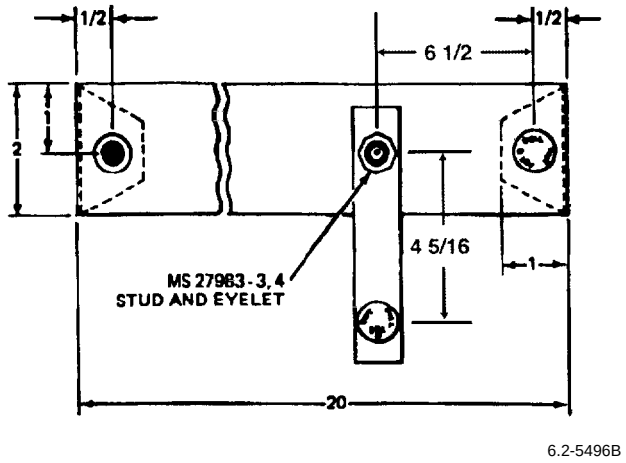


Figure 59. Secure Piece of Webbing to Flag

e. Install eyelet, stud and tape 5 1/2-in. from centerline of pull-the-dot button at folded end of pennant.

f. Using black lusterless lacquer, mark "REMOVE PIN BEFORE PACKING" in 1/2-in. high letters as shown (Figure 60).

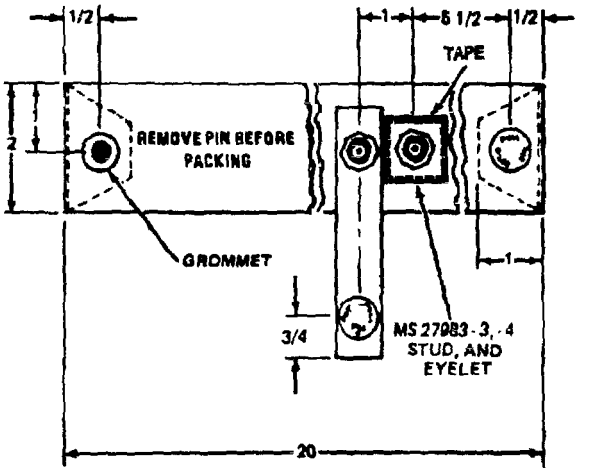


Figure 60. Marking of Pennant

61. CORROSION REMOVAL.

Materials Required

Specification or Part Number	Nomenclature
Break-Free CLP Liquid (Oper Purchase)	Cleaner, Lubricant Preservative
MIL-A-9962	Mat, Abrasive
H-B-491	Soft Brush

a. Inspect parachute hardware for corrosion (red, rust, gray to black discoloration, and white deposits).

b. White deposits shall not be cause for rejection, except for deposits on actuating parts/mechanisms.

NOTE

Do not reject hardware for cosmetic purposes.

c. Gray to black discoloration on parts/mechanisms shall not be cause for rejection. Staining and discoloration of cadmium plating is a normal result of its protective action. Removal of this discoloration will damage the plating and decrease its ability to prevent corrosion of the metal base.

d. Remove minor red rust and white deposits from non-actuating parts/mechanism surfaces only, using mildest methods possible and necessary to remove deposits. Rub off with soft rag, pencil eraser, or non metallic abrasive pad (MIL-A-9962); do not use surface treatments or metal cleaning compounds, such as, alodine or harsh abrasive metal polishes.

CAUTION

Ensure dirt and corrosion particles are not brushed or wiped into actuating parts/mechanisms.

e. Remove dirt and corrosion particles with a soft brush or clean dry cloth.

NOTE

Do not spray lubricant onto hardware or use lubricant on hardware inside parachute container.

f. Wipe general parachute hardware and canopy release assemblies with cloth dampened with MIL-L-63460, lubricant. Shield nylon webbing from contract with lubricant during application. Allow lubricant to dry 2 min. Remove excess lubricant by wiping with clean dry cloth.

g. Manually operate hardware, such as, canopy release fittings, ripcord release handle, V-rings, quick release snaps, etc. to determine functionality. If results of functional tests are questionable, sluggish, hesitant, or rough functioning of hardware shall be cause for rejection.

62. DISASSEMBLY OF AUTOMATIC PARACHUTE RIPCORD RELEASE.

a. Remove cover locking screw and washer (Figure 61).

NOTE

Cover and power cable assembly and receiver and barrel assembly are serialized, matched sets. Do not mix assemblies.

b. Slide cover off receiver and barrel assembly.

c. Disengage barrel by pushing down on snap-lock; slide back and release (Figure 62).

d. Remove temporary pin and discard.

63. AUTOMATIC PARACHUTE RIPCORD RELEASE (APRR) REPAIRS.

a. Repair of ripcord release is limited to following:

(1) Replacement of torque seal on leaf spring retaining screw.

(2) Superficial cleaning.

b. Replace ripcord release for any of following:

(1) Fired ripcord releases.

(2) Failure to meet requirements of firing altitude check.

(3) Failure of firing pin to cause indent on dummy cartridge during firing altitude check.

(4) Flattening, gouges, or any other damage to firing pin and hammer.

(5) Excessive nicks, cracks, gouges, distortion, corrosion, or any other damage to receiver and barrel assembly which could cause a malfunction.

(6) Insecure attachment of power cable housing to cover.

(7) Broken, bent, corroded, or frayed arming or power cable.

(8) Loose power cable swage ball or eye.

(9) Loose power or arming cable housing ferrules.

(10) Binding of power cable, preventing free movement.

(11) Insecure retention of arming pin in arming pin retainer.

(12) Damage to socket or insecure retention of socket and piston by shear pin.

(13) Damage to snaplock and snaplock pins.

(14) Damage to leaf springs.

(15) Broken sealing compound on aneroid (cracks due to normal aging are acceptable).

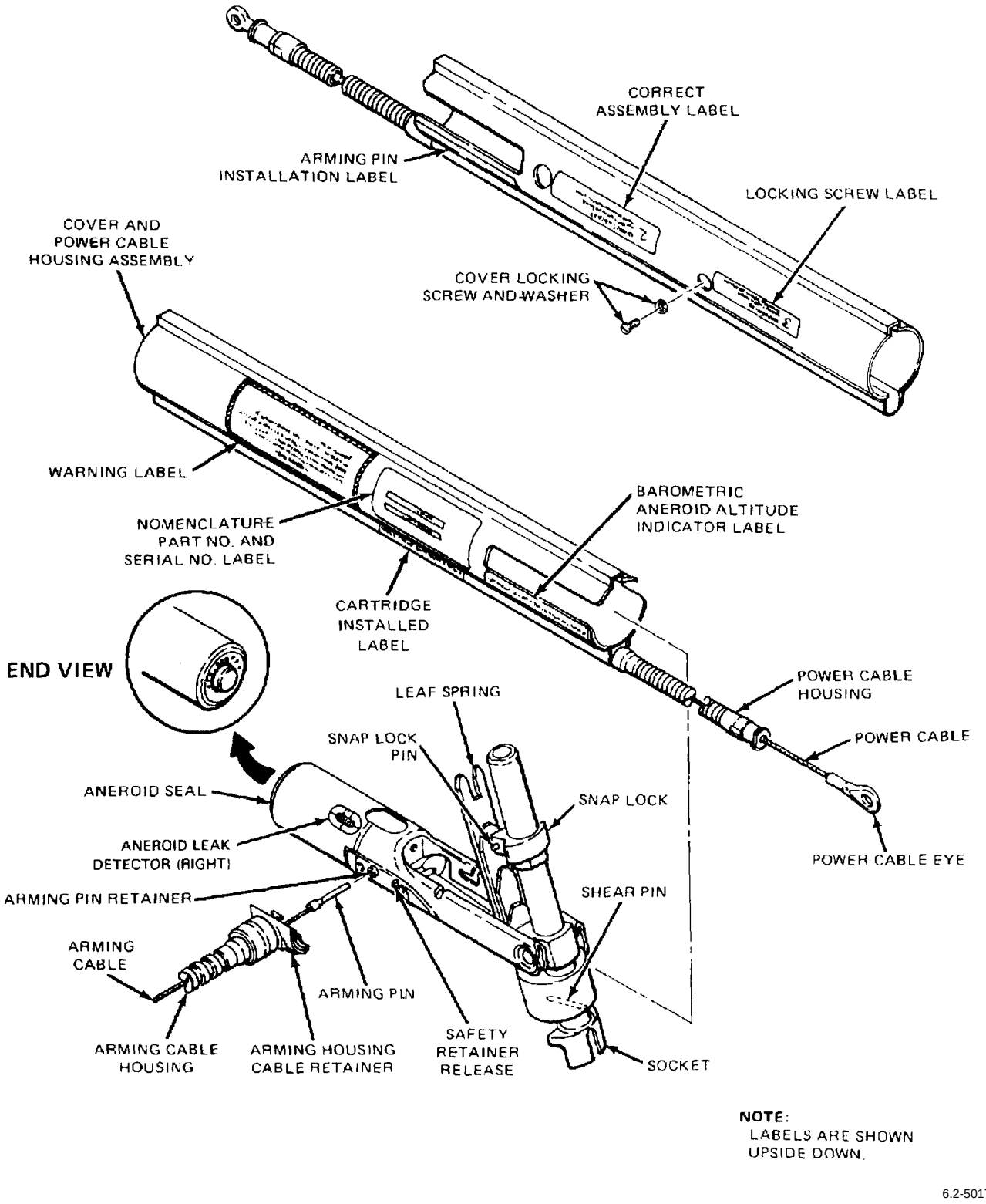


Figure 61. Automatic Parachute Ripcord Release, Model 7000

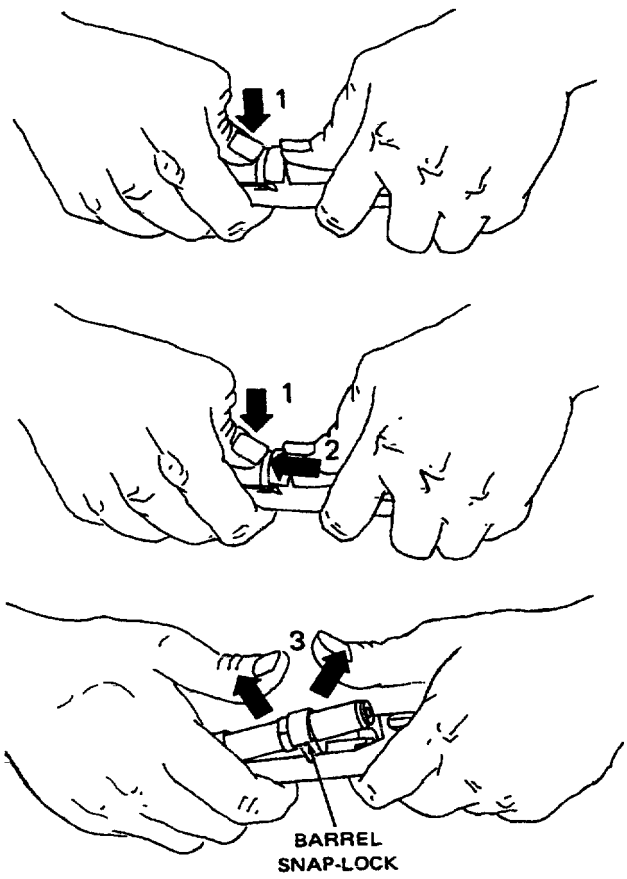


Figure 62. Disassembly of Automatic Parachute Ripcord Release

(16) Improper placement of teflon seal inside barrel.

(17) Loose arming cable pin or swages.

(18) Distortion, corrosion, or other damage to arming cable retainer clip.

(19) Damage to arming cable housing retainer.

(20) Mismatched serial numbers on cover and receiver and barrel assembly.

64. REPLACEMENT OF AUTOMATIC PARACHUTE RIPCORD RELEASE.

a. Inspect replacement ripcord release per applicable personnel parachute assembly and then reinstall at proper point in packing procedure.

65. REPLACEMENT OF TORQUE SEAL ON LEAF SPRING RETAINING SCREW.

Support Equipment Required

Part Number	Nomenclature
—	Screwdriver, Torque

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Torque retaining screw to a value of 15 ± 1/2 in-lbs. (QA)

b. Apply torque seal to screwhead and leaf spring (Figure 63). (QA)

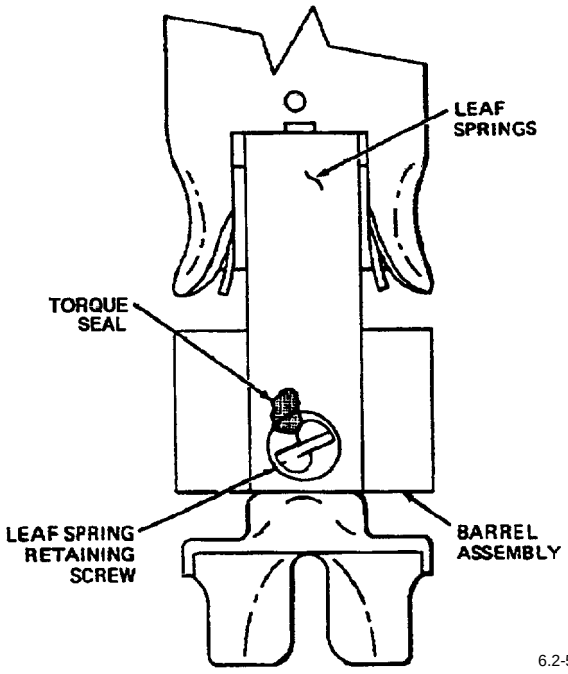


Figure 63. Application of Torque Seal

66. HARNESS REPAIRS.

67. FABRICATION AND REPLACEMENT OF ELASTIC STRAP KEEPER.

Materials Required

Specification or Part Number	Nomenclature
PIA-W-5664	Webbing, Elastic, Type I, 1 1/2-in. Class 2
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Cut a 5-in. length of elastic webbing.

b. Pass webbing around harness. Place both ends together and sew in place 1/4-in. from end and 1/8-in. from edges, in a box stitch, and backstitch 1/2-in. (Figure 64).

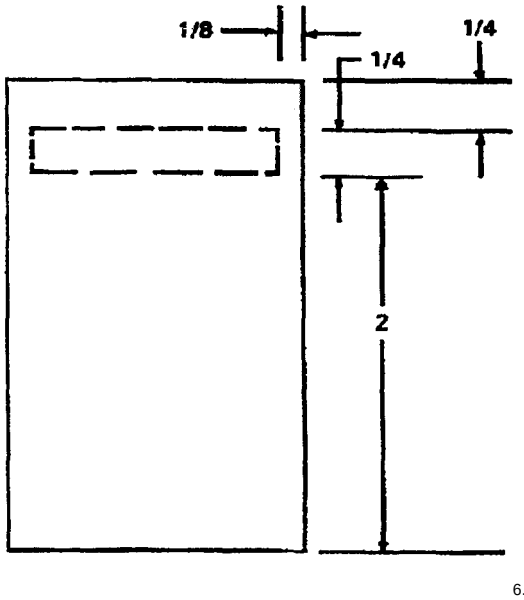


Figure 64. Fabrication of Keeper Strap

c. Turn webbing inside out.

68. REPAIR OF LOOSE OR BROKEN HARNESS/ RISER STITCHING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. Sew over loose or broken stitching on original stitch line. New stitching shall extend 3/4-in. beyond affected area (Figure 65).

69. REPLACEMENT OF LEG STRAP EJECTOR SNAP.

Materials Required

Specification or Part Number	Nomenclature
MS22018	Snap, Parachute Harness Quick Fit Ejector

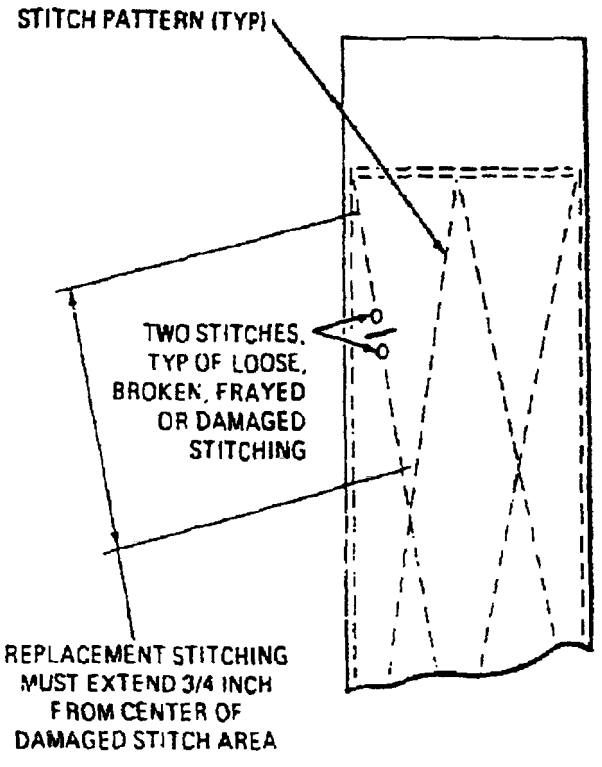


Figure 65. Typical Repair of Harness Loose or Broken Stitching

a. Remove defective ejector snap by unreeving leg strap from ejector snap adapter.

b. Inspect replacement ejector snap per for proper function, corrosion, sharp edges, and damage.

c. Reeve leg strap thru ejector snap per (Figure 66). Ejector snap must be facing wearer.

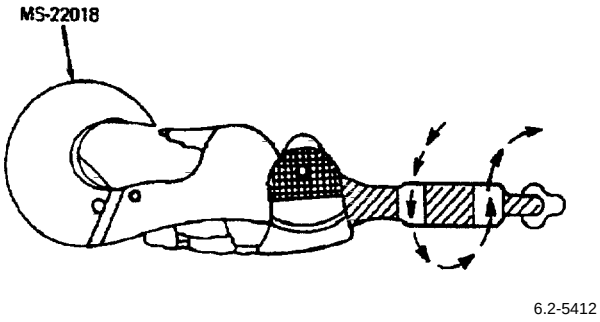


Figure 66. Leg Strap Ejector Snap Replacement

70. REPLACEMENT OF CHEST STRAP EJECTOR SNAP.

Materials Required

Specification or Part Number	Nomenclature
MS22017	Snap, Parachute Harness Ejector

a. Remove defective ejector snap by unreeving chest strap from adapter (MS22014-2) and ejector snap.

b. Inspect replacement ejector snap for proper function, corrosion, sharp edges, and damage.

c. Reeve chest strap thru adapter and ejector snap per (Figure 67). Ejector snap must be facing wearer.

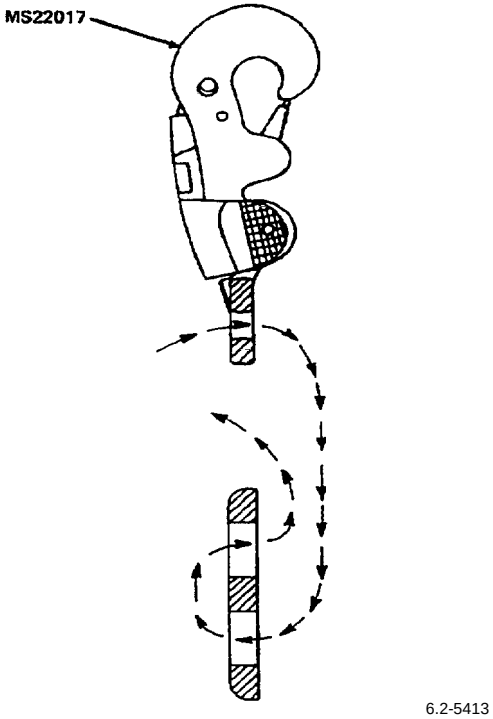


Figure 67. Chest Strap Ejector Snap Replacement

71. REPLACEMENT OF CHEST STRAP TRIANGLE LINK.

Materials Required

Specification or Part Number	Nomenclature
MS22020-1	Link, Parachute Harness Triangle

a. Remove defective triangle link by unreeving chest strap from adapter (MS22014-2).

b. Inspect replacement triangle link for any damage or corrosion.

c. Reeve chest strap thru adapter and triangle link per (Figure 68).

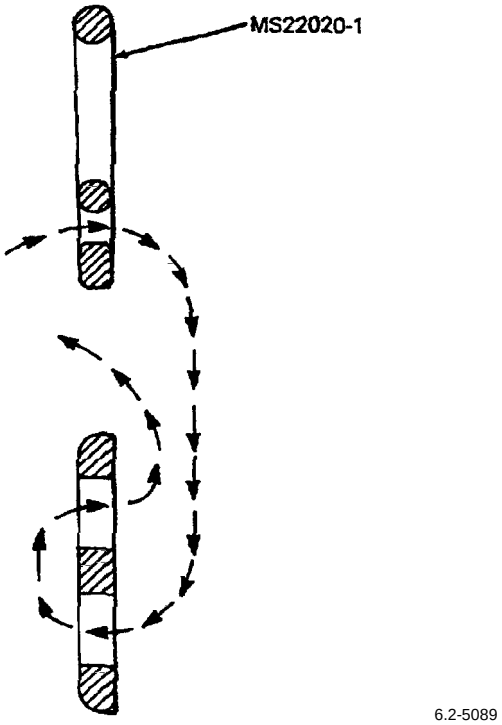


Figure 68. Chest Strap Triangle Link Replacement

72. REPLACEMENT OF RIPCORD POCKET AND RIPCORD HOUSING TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
	-or-
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove ripcord assembly from ripcord pocket and housing.

b. Cut tackings and stitching securing pocket to harness and remove.

c. Inspect replacement pocket fabric areas and elastic for contamination, cuts, tears, burns, fraying and loose or broken stitches.

d. Insert free end of ripcord housing thru loop of ripcord handle pocket. Tack housing to pocket loop using four turns of size 6 thread, doubled and waxed; tie off (Figure 69).

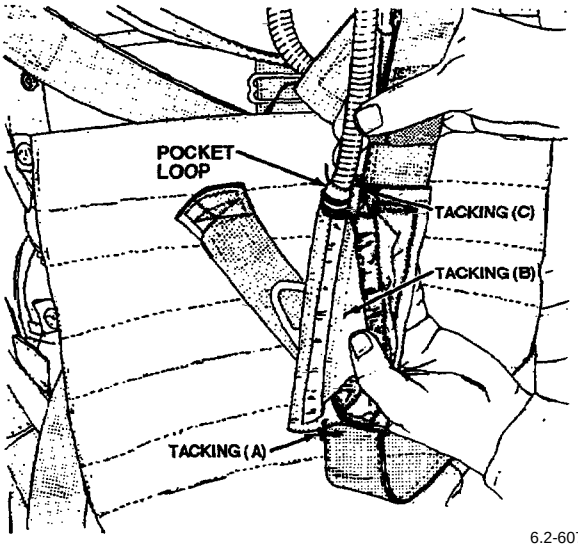


Figure 69. Replacement of Ripcord Pocket and Housing

e. Ensure pocket is positioned so that ripcord housing is on inside edge of harness webbing.

f. Fold ripcord pocket around left main sling of harness so that housing is on inside edge of harness webbing. Secure both sides of pocket together by machine stitching with size E thread. Sew with two rows of stitching to outboard edge of stiffener and pocket edge, back stitch 1/2-in. (QA)

g. Tack both sides of pocket together between stiffener and harness at points A and C (Figure 69) tack with two turn of size 6 thread, doubled and waxed; tie off. (QA)

h. Tack both sides of pocket together at point B (Figure 69) between harness and stiffener with two turn of size 6 thread, doubled and waxed; tie off. After tacking, pocket must move freely. (QA)

73. ATTACHMENT OF RIPCORD HOUSING TO RIPCORD POCKET.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove tacking securing housing to ripcord pocket.

b. Loosen ripcord housing clamp and remove housing from clamp.

c. Remove ripcord assembly from ripcord pocket and housing.

d. Remove ripcord housing from ripcord pocket loop

e. Inspect replacement ripcord housing for corrosion permanent bends, dents, breaks, cracks and loose ferrules.

f. Insert free end of housing thru loop of ripcord handle pocket. Tack housing to pocket loop using four turns of size 6 thread, doubled and waxed. Tie off.

g. Pass other end of housing thru shoulder tab sleeve and clamp to base plate with housing clamp.

h. Reinstall ripcord.

74. PARACHUTE HARNESS SENSING RELEASE UNITS (PHSRU) INSTALLATION.

a. Install per WP 024 01.

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ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

SUPPORT EQUIPMENT

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1 thru 16	9						

Reference Material

Naval Aviation Maintenance Program Manual . . . . . OPNAVINST 4790.2

Alphabetical Index

Title	Page
Description	1

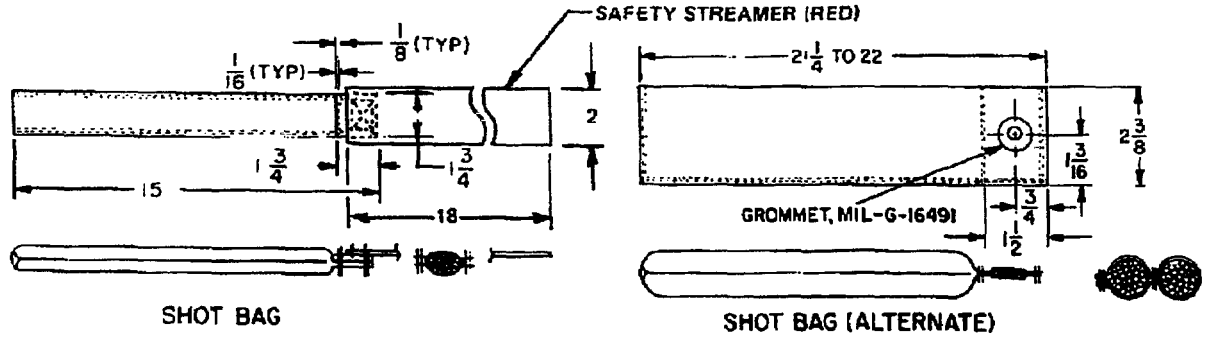
Record of Applicable Technical Directives

None

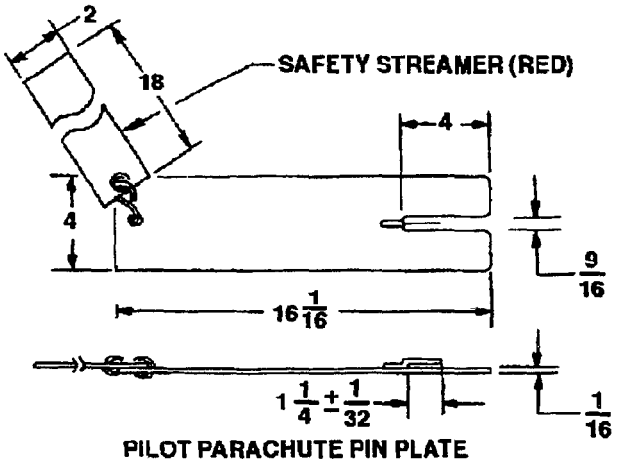
1. DESCRIPTION.

2. A set of tools and equipment are required for each packing table in parachute maintenance facility. These tools may be located either in a drawer attached to table or in a tool box located nearby, as established by current directives. Because certain type parachute assemblies require special maintenance tools and peculiar fixtures, inventory is based on support requirements and assigned maintenance tasks (Figure 1).

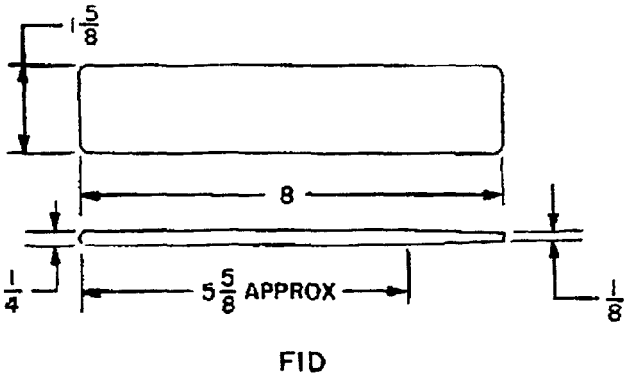
3. OPNAVINST 4790.2 series requires periodic calibration of tools and test equipment.



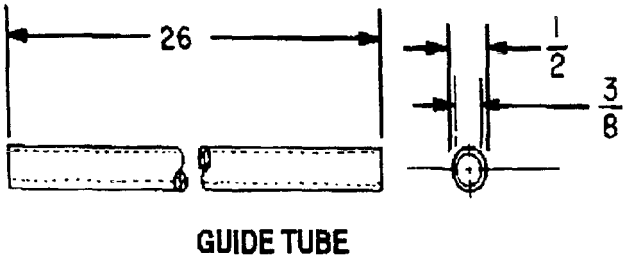
6.2-5504



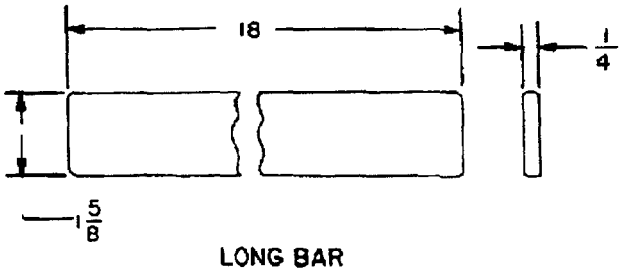
6.2-5504A



6.2-5504C

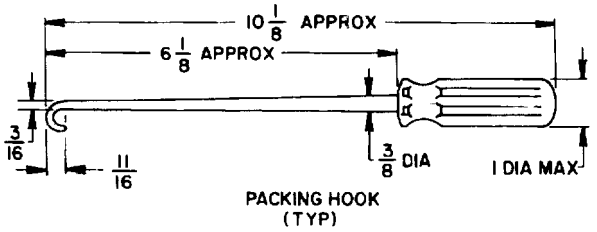


6.2-5504B



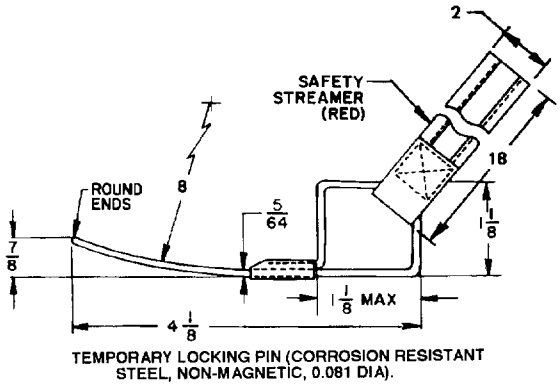
6.2-5504D

Figure 1. Servicing Tools and Equipment, Packing (Sheet 1 of 15)

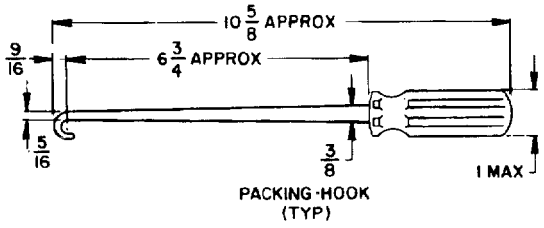


NOTE: HOOK END AND SHANK SHALL BE FREE OF RUST, BURRS, SHARP EDGES, OR NICKS.

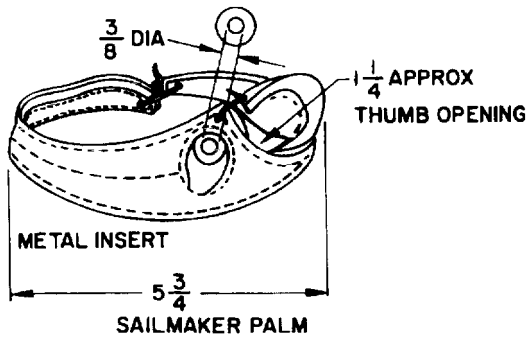
6.2-5505



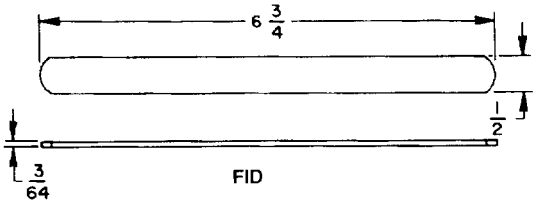
6.2-5505C



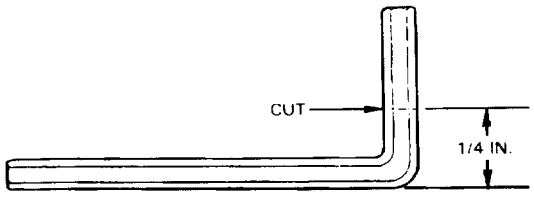
6.2-5505A



6.2-5505D



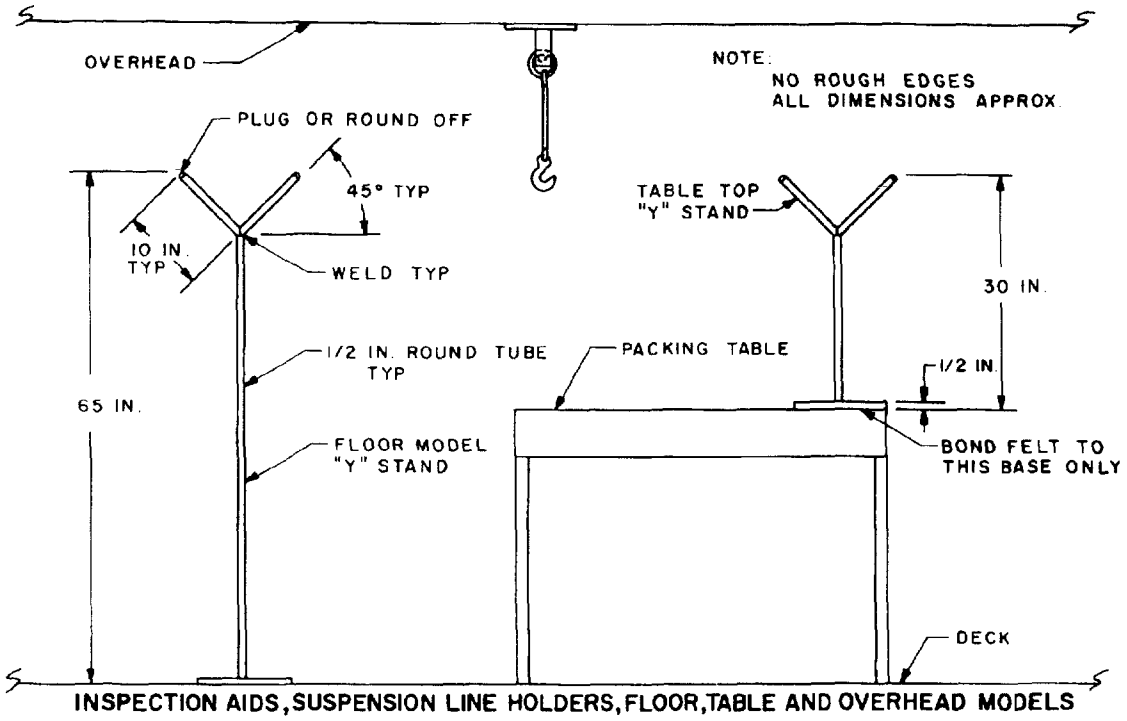
6.2-5505B



PART NUMBER	NOMENCLATURE	MATERIAL /SPECIFICATION	SIZE, IN.
AWL 3	WRENCH, ALLEN - TYPE	FSCM 55719	3/32

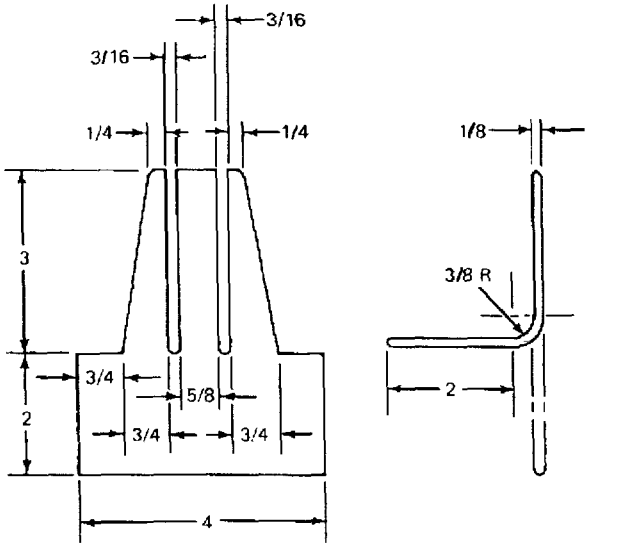
6.2-5505E

Figure 1. Servicing Tools and Equipment, Packing (Sheet 2 of 15)



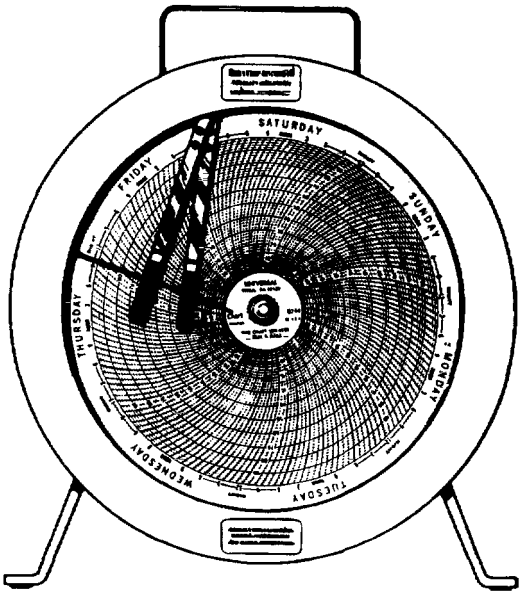
INSPECTION AIDS, SUSPENSION LINE HOLDERS, FLOOR, TABLE AND OVERHEAD MODELS

6.2-5506



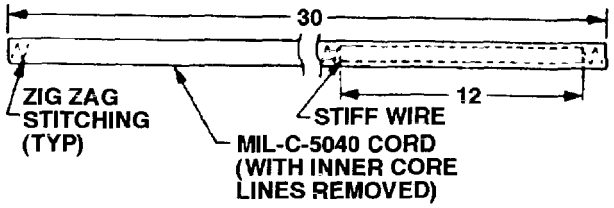
SMALL LINE SEPARATOR

6.2-5506A



6.2-5506B

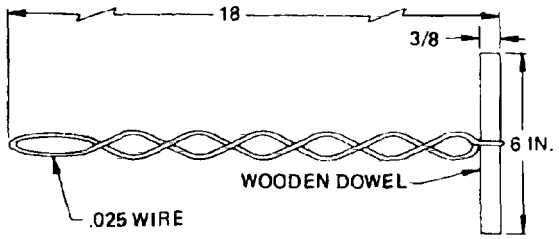
Figure 1. Servicing Tools and Equipment, Packing (Sheet 3 of 15)



NOTE:
BEESWAX MAY BE LIGHTLY USED AS A LUBRICANT

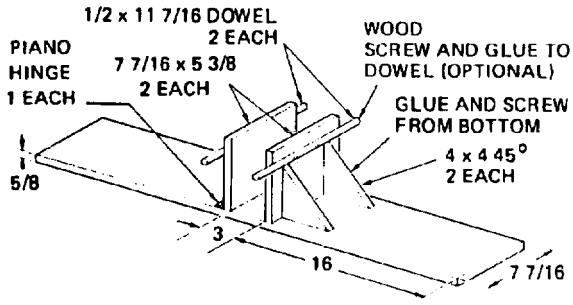
LINE STOWAGE AID

6.2-6504A



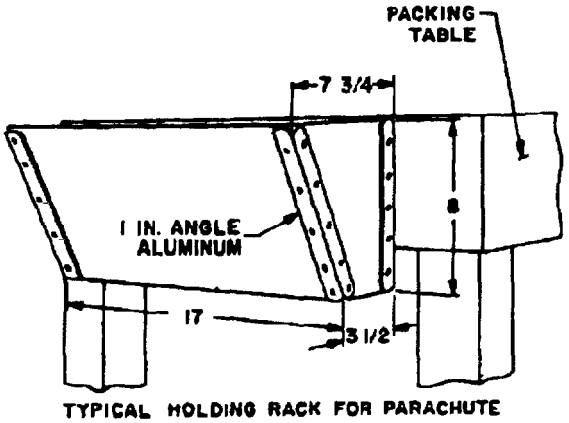
BODKIN

6.2-6504C



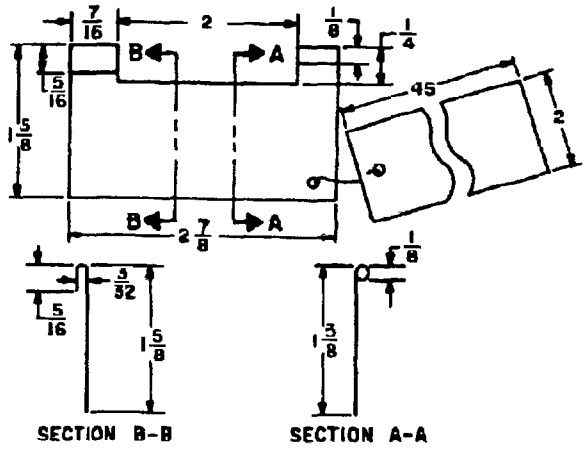
PCU-29/A DROGUE PARACHUTE CONTAINER HOLDING FIXTURE

6.2-6504E



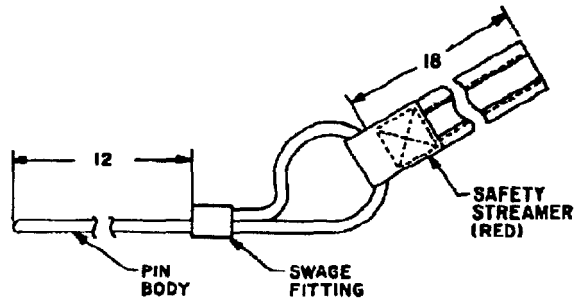
TYPICAL HOLDING RACK FOR PARACHUTE

6.2-5507A



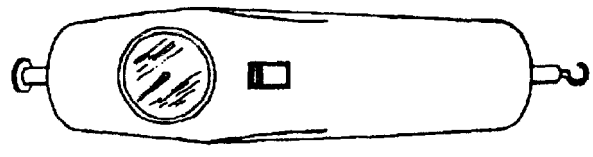
RIPCORD PIN STOP TOOL (0.031 MIL-S-5055 CRES.)

6.2-5507B



PILOT PARACHUTE TEMPORARY LOCKING PIN

6.2-5507C



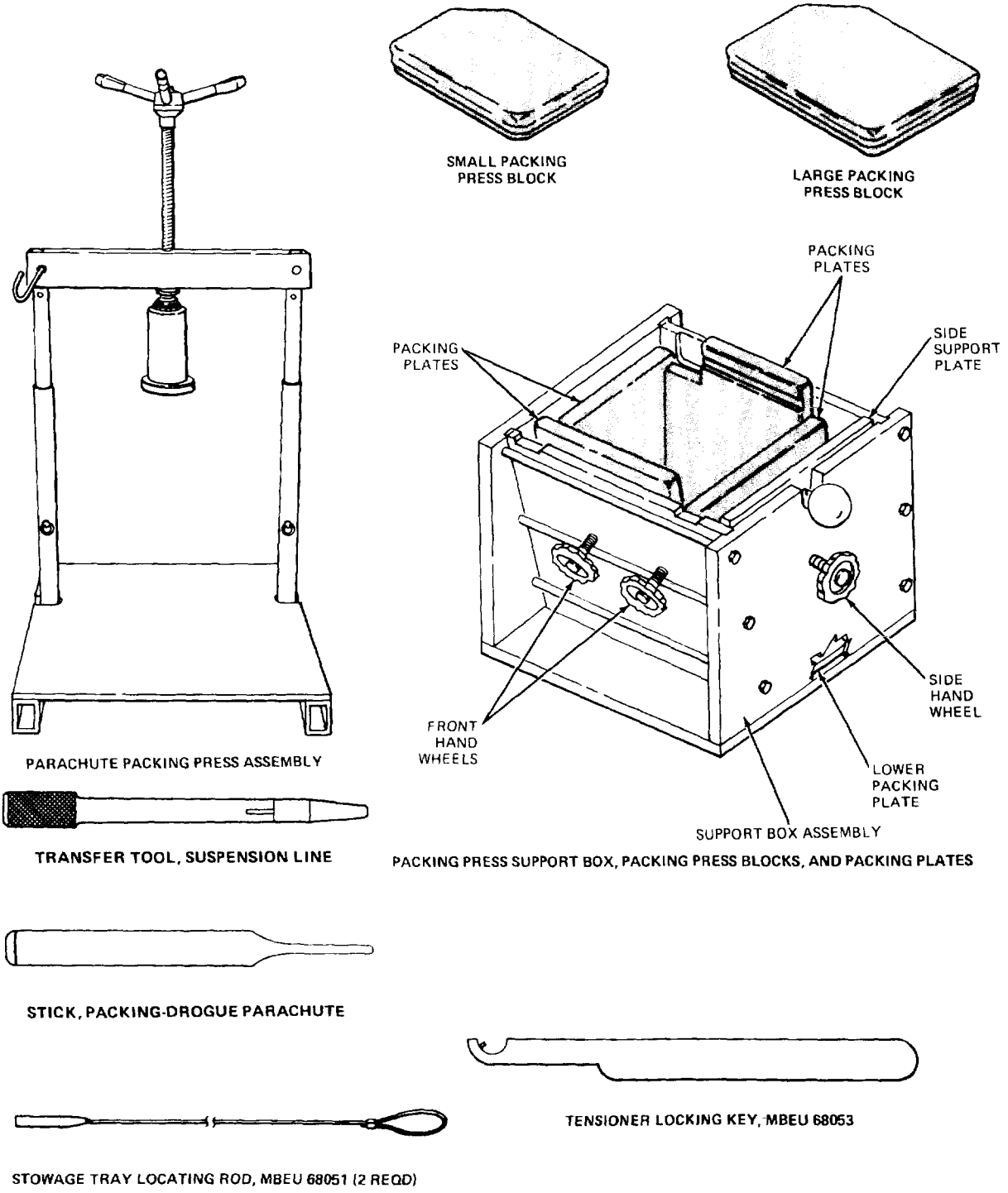
PUSH-PULL SCALE (DPP-50, DPP-100)

GENERAL NOTES:

1. FSN 6635-578-5283-SX
2. MANUFACTURER'S CODE NO. 11710 OR 91692

6.2-5507D

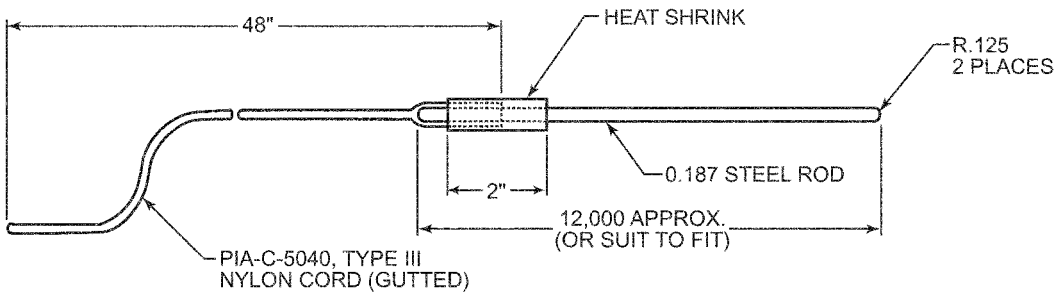
Figure 1. Servicing Tools and Equipment, Packing (Sheet 4 of 15)



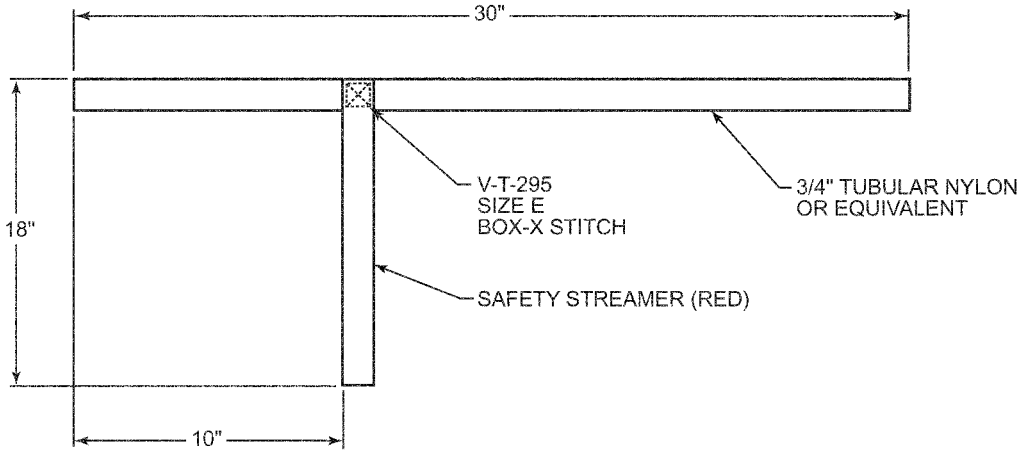
SPECIAL TOOLS FOR PACKING THE
F/A-18 AND F/A-18B A/P28S-24 PARACHUTE ASSEMBLY

6.2-5509

Figure 1. Servicing Tools and Equipment, Packing (Sheet 5 of 15)

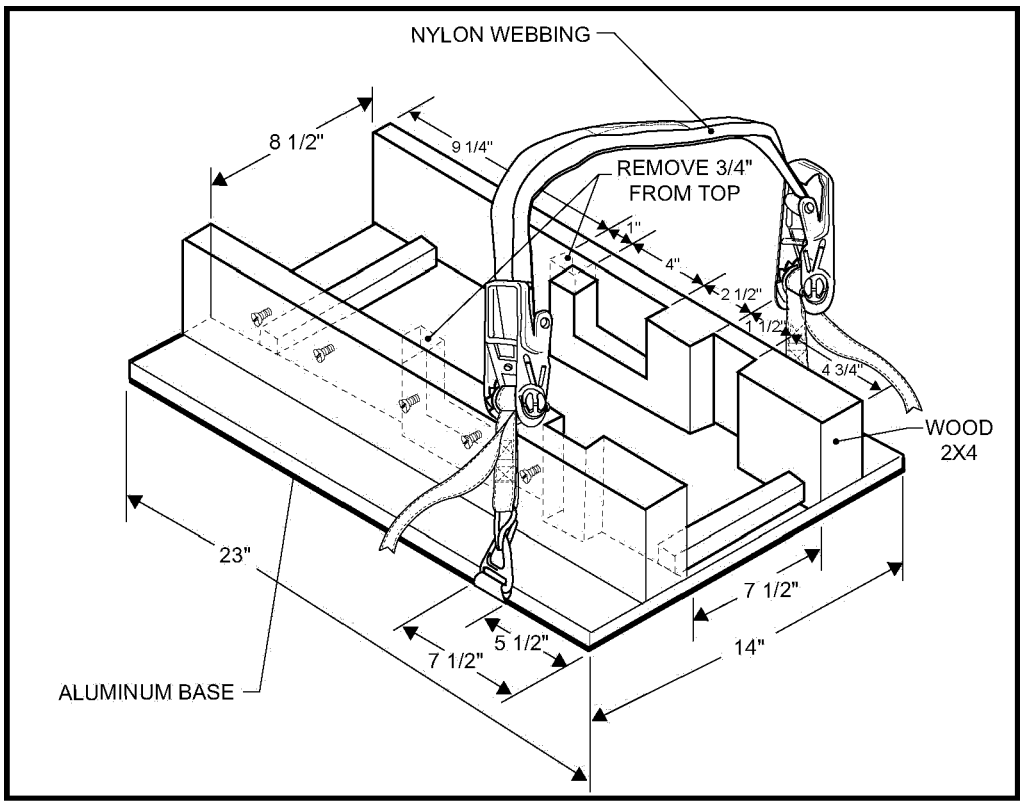


PACKING AID/PULL-UP CORD



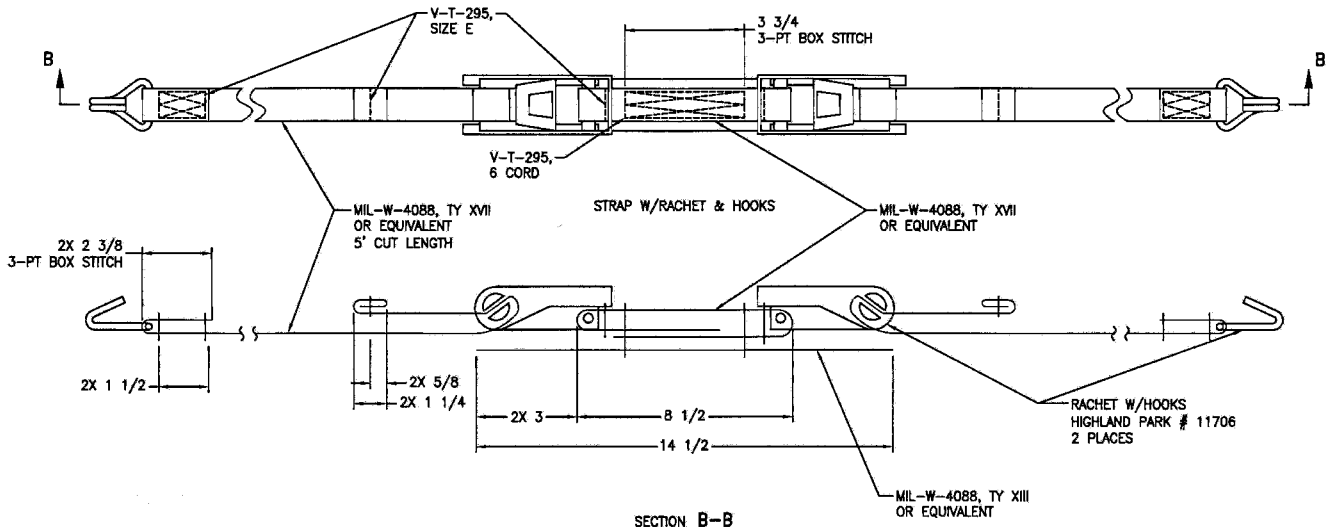
CANOPY TIE

Figure 1. Servicing Tools and Equipment, Packing (Sheet 6 of 15)

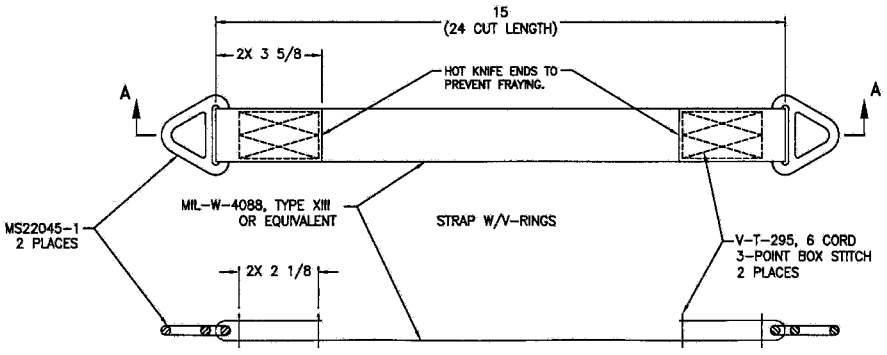


A/P 28S-28, -30 AND -31 PARACHUTE CONTAINER HOLDING FIXTURE

Figure 1. Servicing Tools and Equipment, Packing (Sheet 7 of 15)

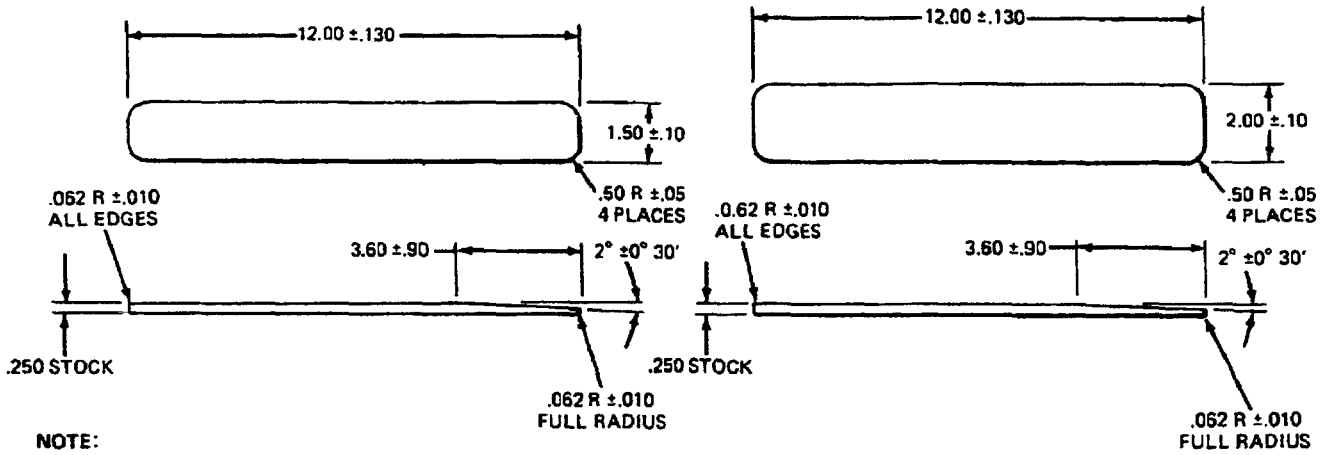


RATCHET ASSEMBLY



"V" STRAP ASSEMBLY

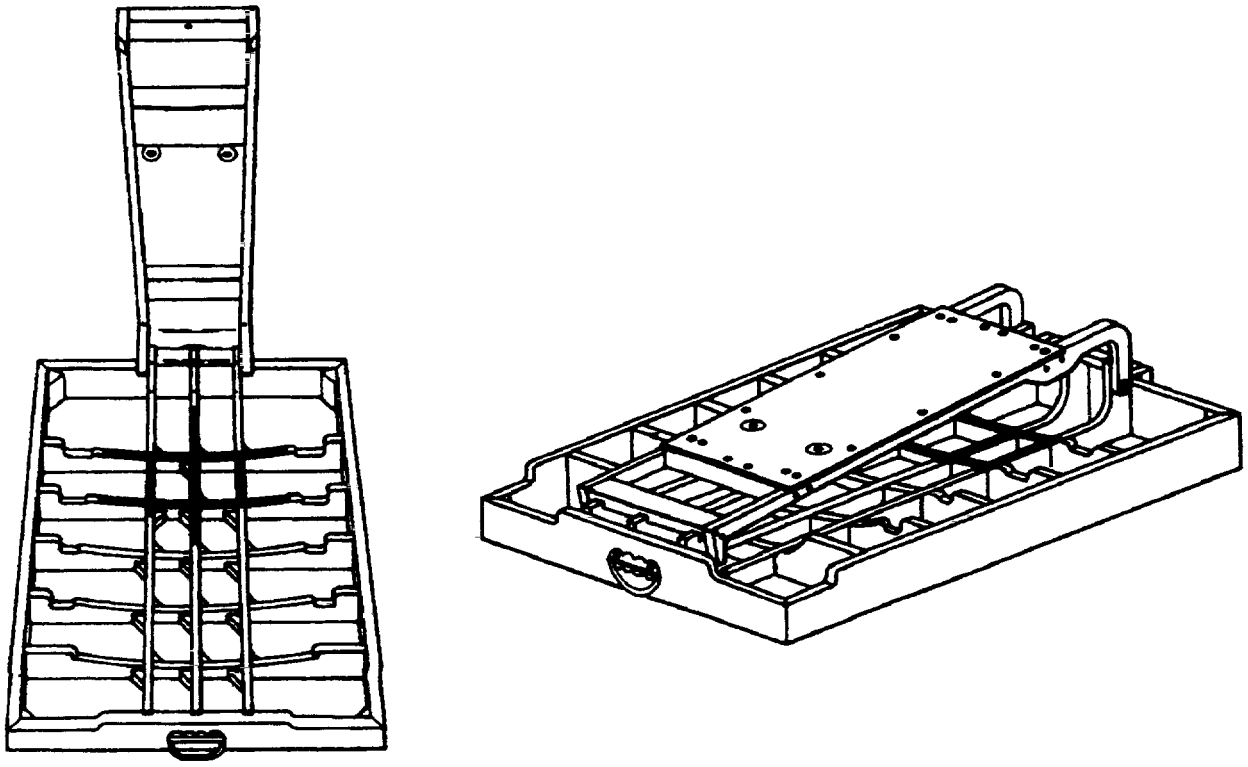
Figure 1. Servicing Tools and Equipment, Packing (Sheet 8 of 15)



NOTE:
RADIUS ALONG TAPERED SECTION TO BLEND WITH NO SHARP EDGES.
MATERIAL MIL-P-5425 FINISH A PLASTIC SHEET.

PACKING FIDS (A/P28S-28, -30, AND -31)

6.2-7104



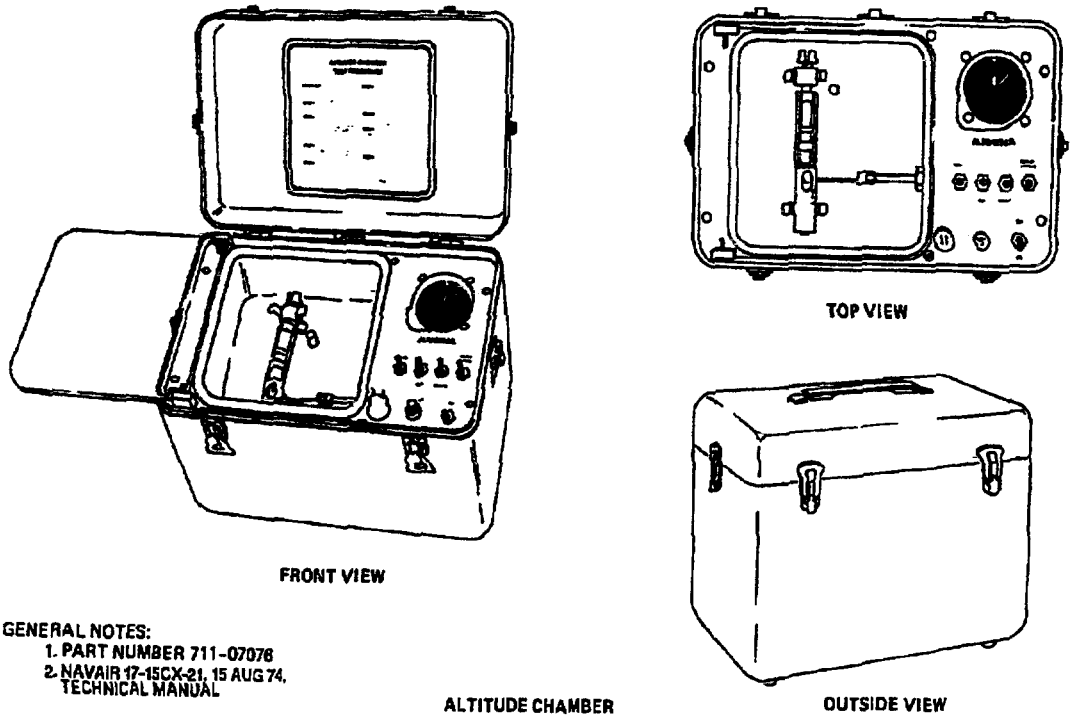
NES-12 GO-NO-GO GAGE

GENERAL NOTES:

1. FSN-IRD: 4920-103-8531 DA3X
2. PART NUMBER: 5579245-1

6.2-7104A

Figure 1. Servicing Tools and Equipment, Packing (Sheet 9 of 15)



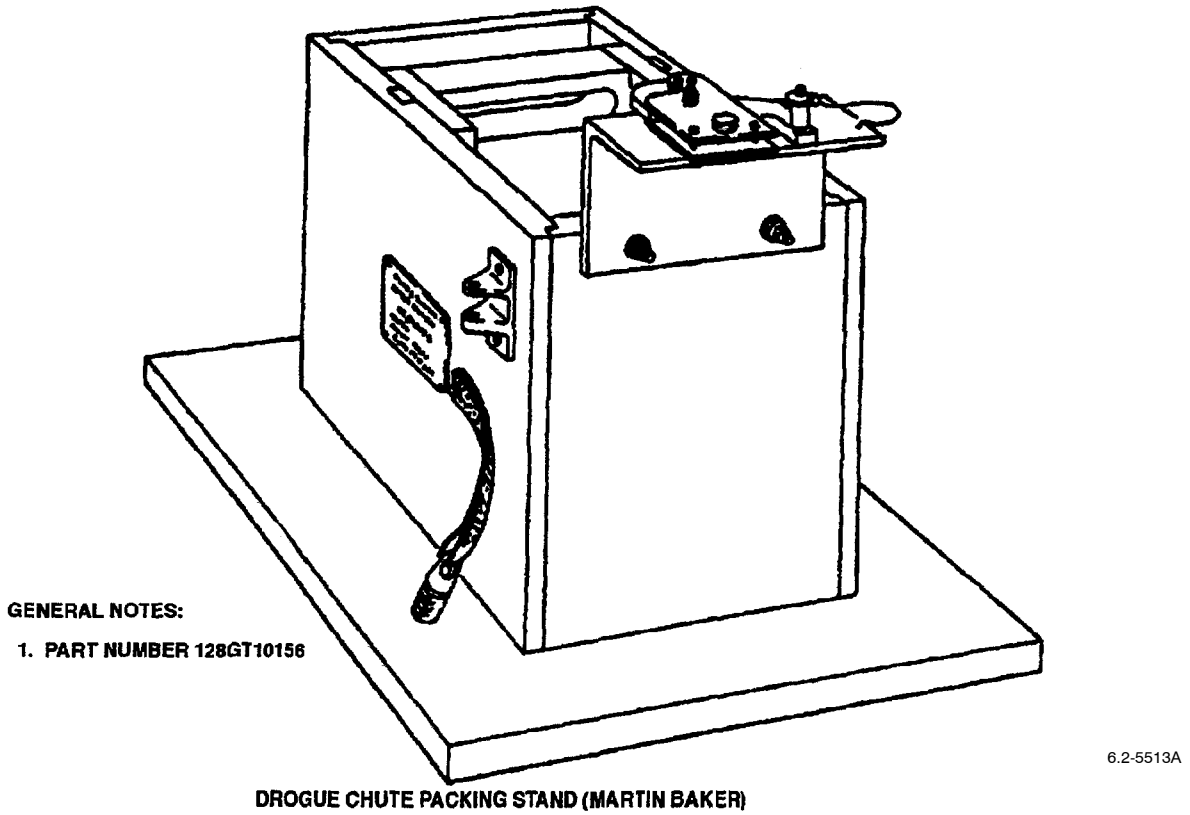
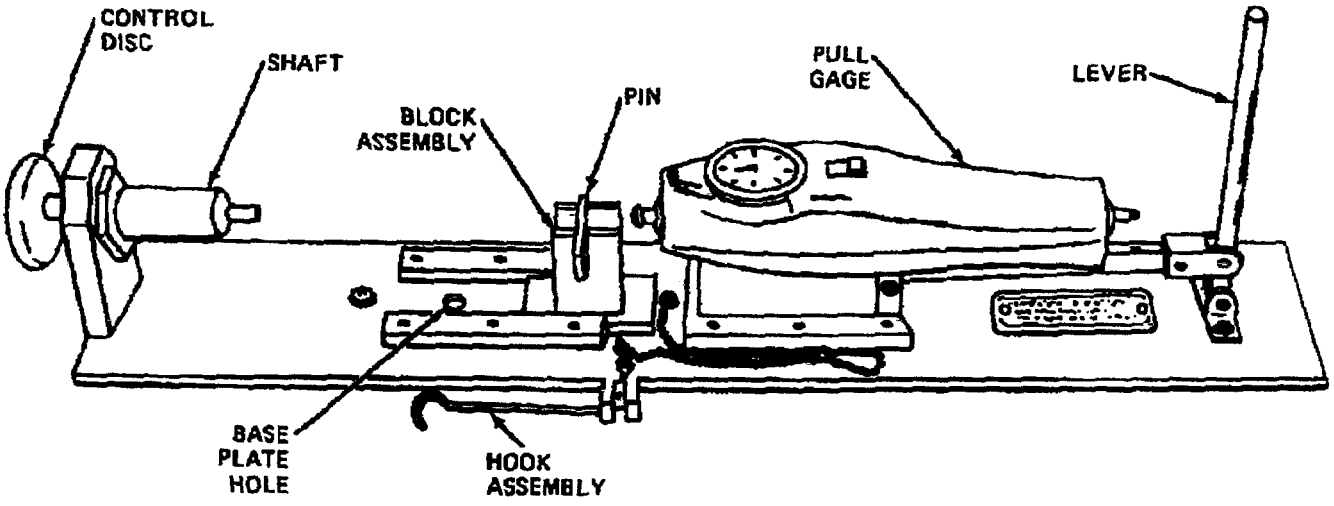
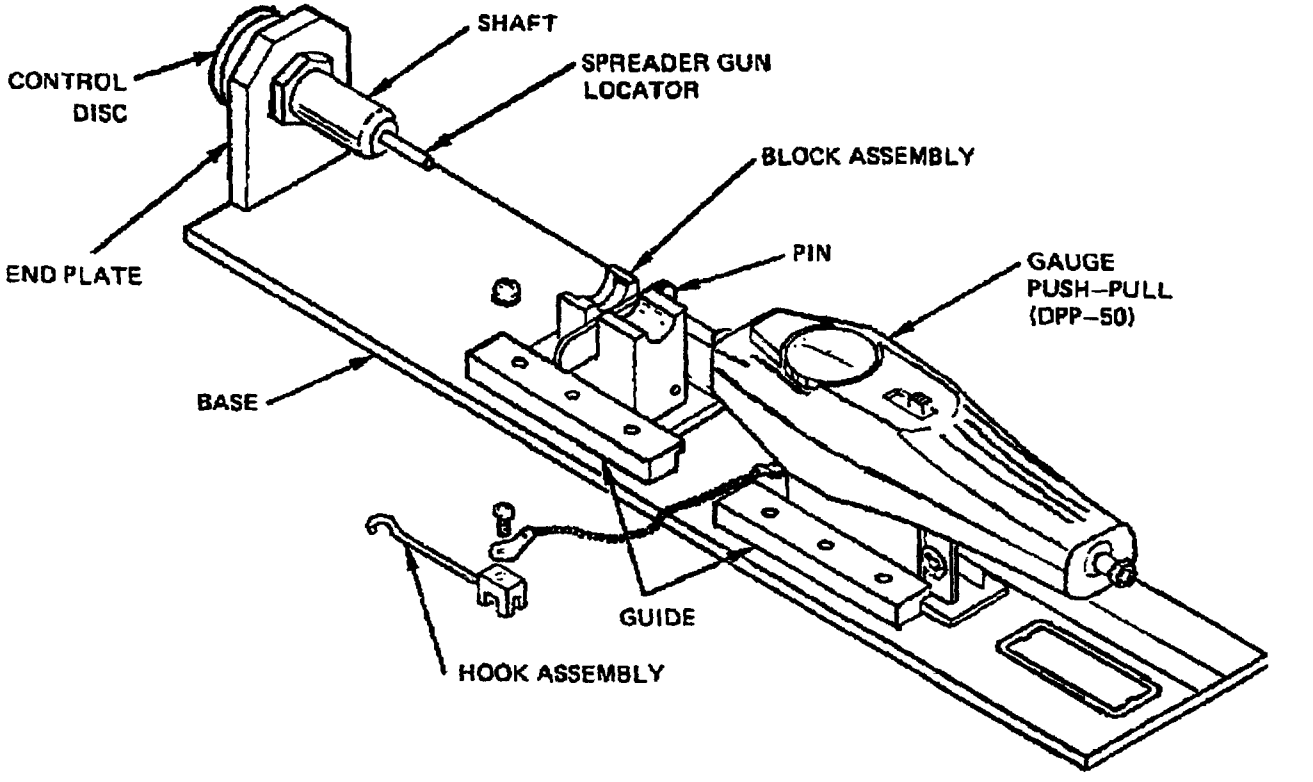


Figure 1. Servicing Tools and Equipment, Packing (Sheet 10 of 15)

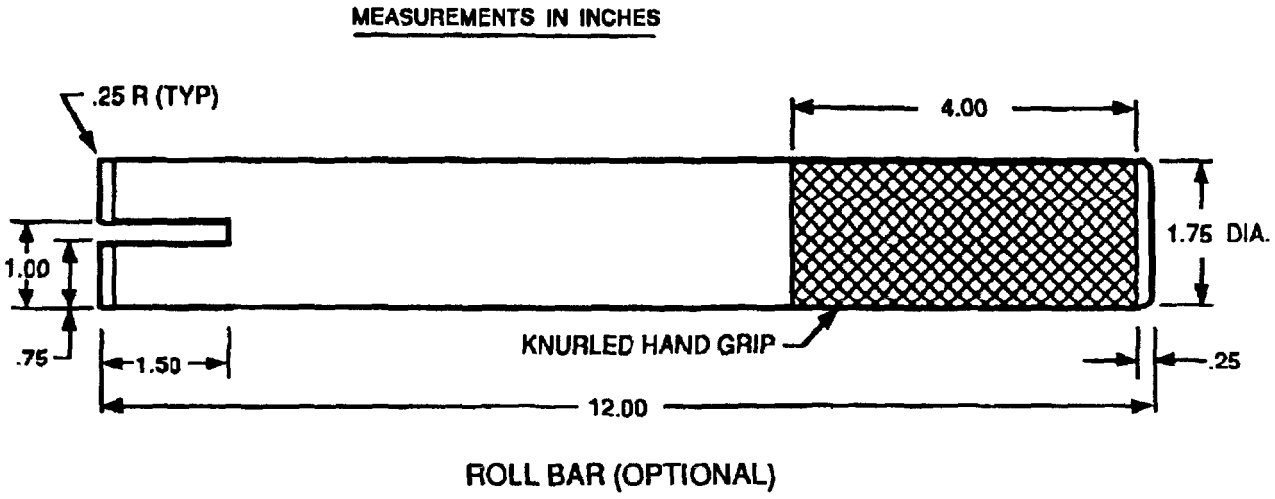


SPREADING GUN TEST FIXTURE - ST86-0064-1



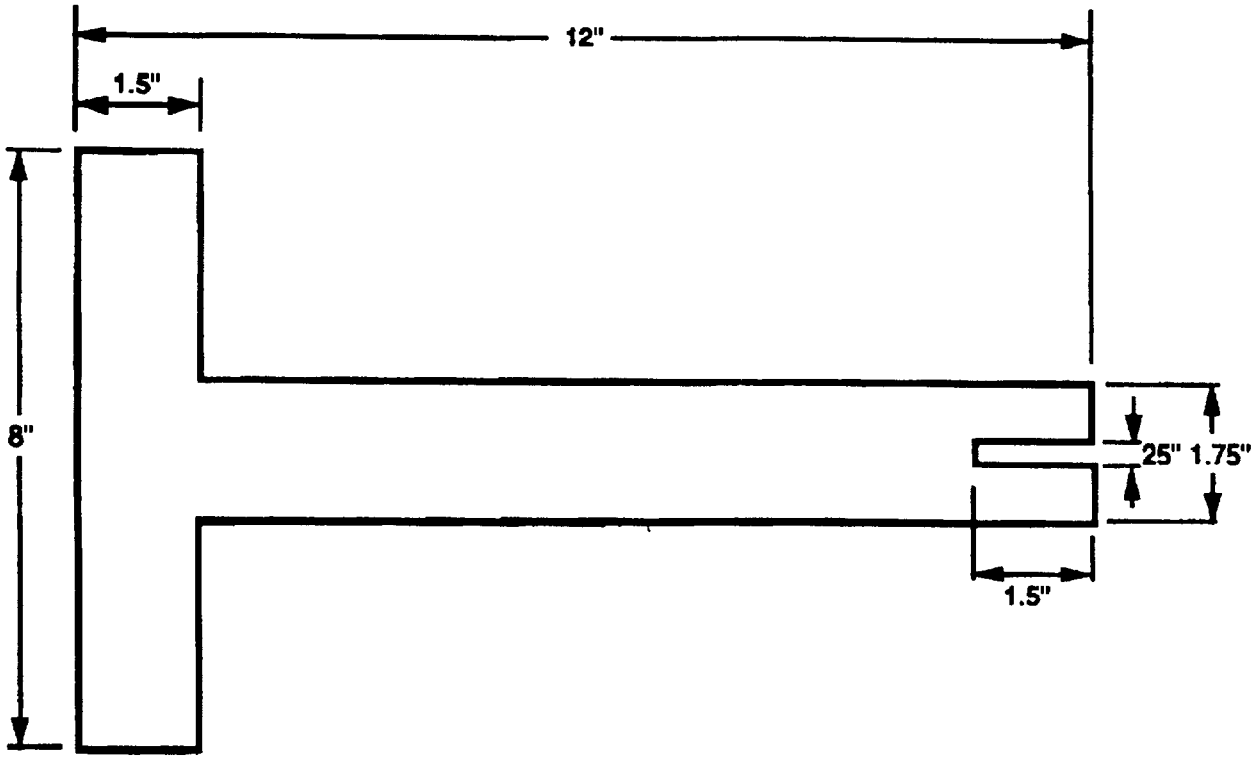
SPREADING GUN TEST FIXTURE - ST86-0064-3

Figure 1. Servicing Tools and Equipment, Packing (Sheet 11 of 15)



6.2-5929

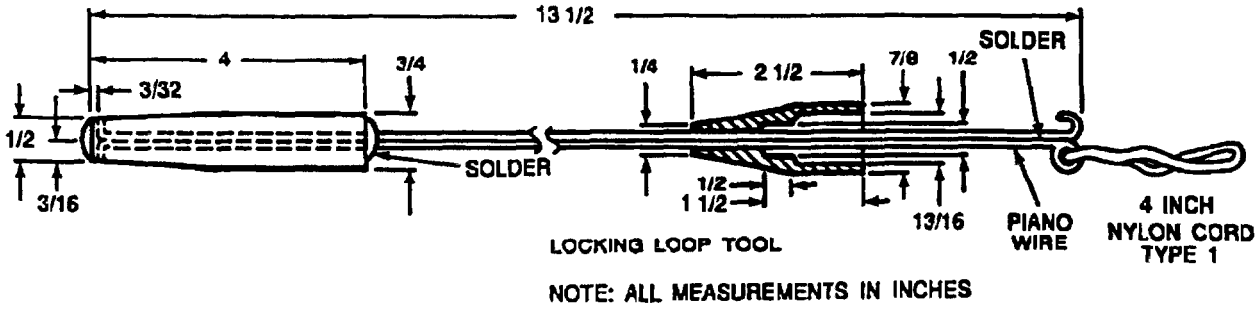
OPTIONAL



6.2-5929A

SPECIAL TOOLS FOR PACKING A/P22P-11
(Material Aluminum Alloy 6061-TO or Equivalent

Figure 1. Servicing Tools and Equipment, Packing (Sheet 12 of 15)

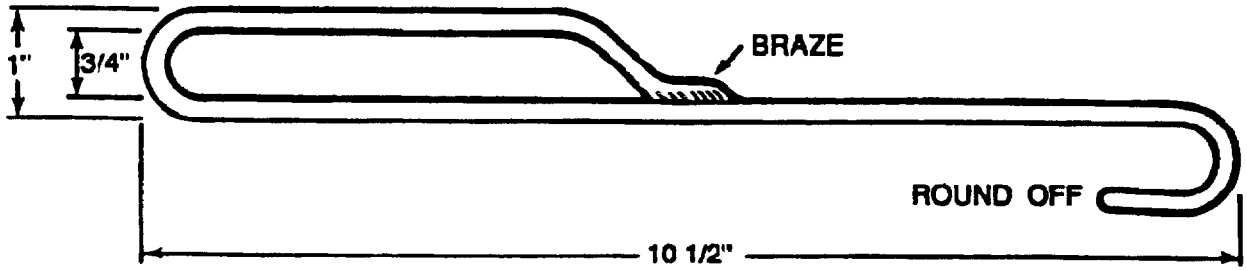


MATERIAL ALUMINUM ALLOY, SPEC QQ - A - 355.
DRILL THROUGH WITH NO. 30 DRILL.
USE 1/16 IN. PIANO WIRE, HEAT TO SPRING TEMPER

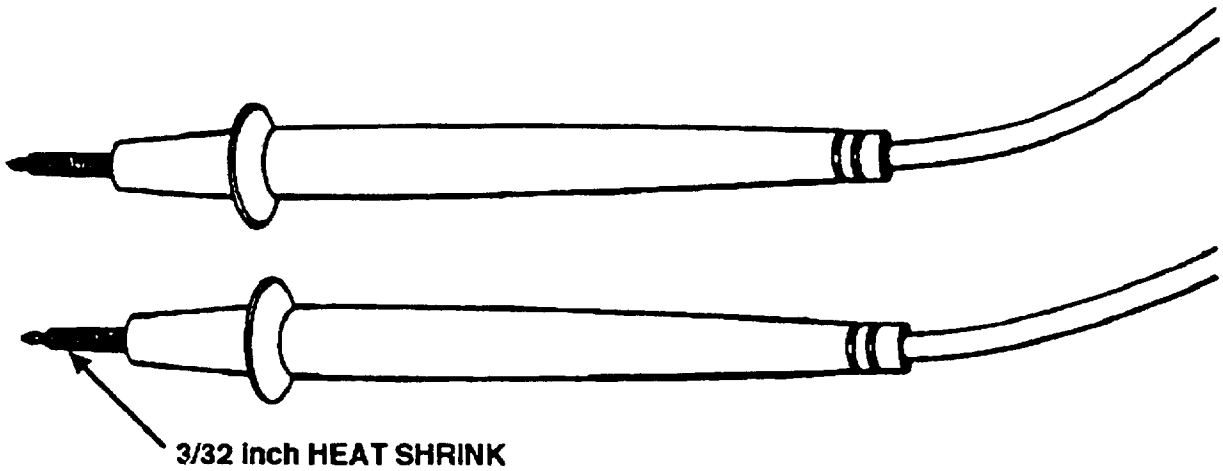
6.2-5930

SPECIAL TOOL FOR PACKING A/P28S-24

1/8 inch Stainless Steel



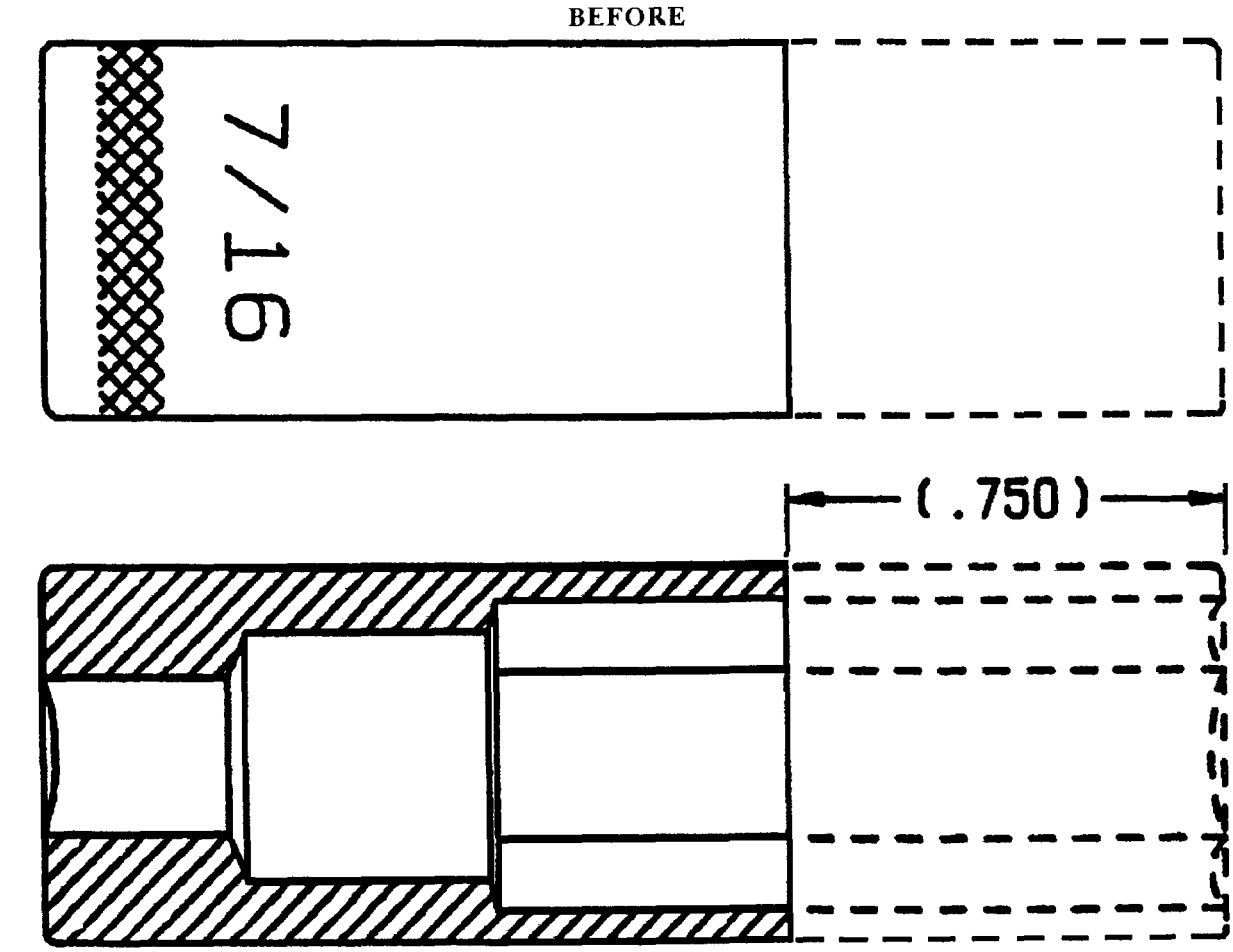
6.2-5930A



HEAT SHRINK ON PROBES

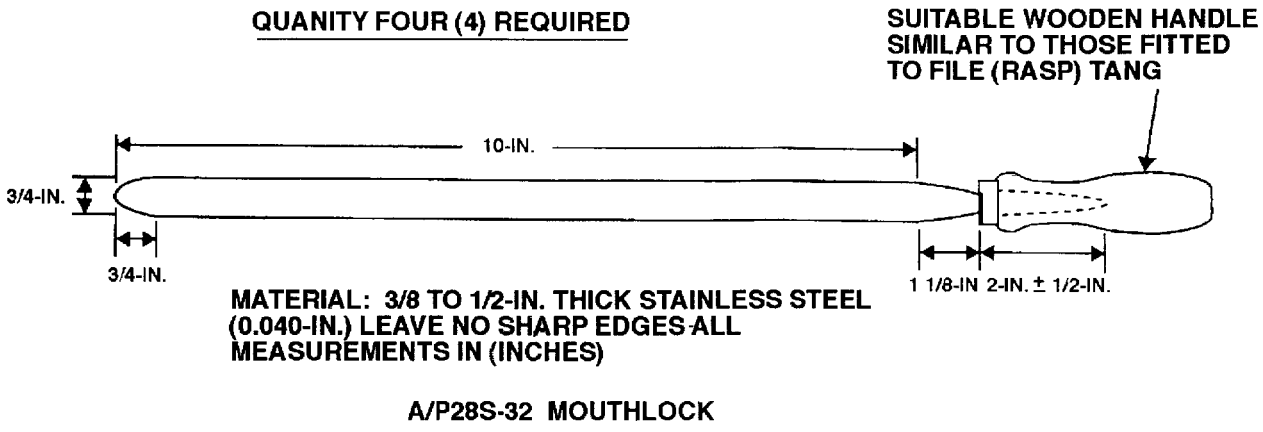
6.2-5930B

Figure 1. Servicing Tools and Equipment, Packing (Sheet 13 of 15)



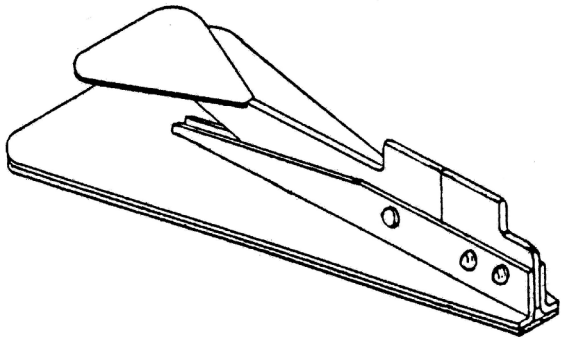
CROSS-SECTION
Modification of Hex Socket

6.2-5931

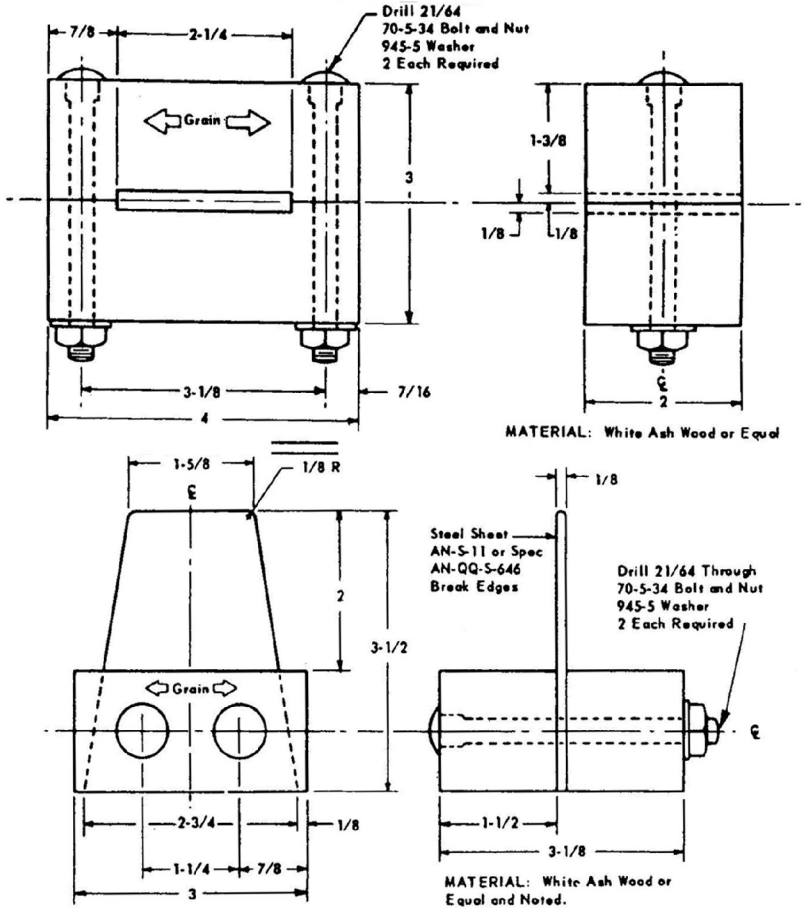


6.2-7104B

Figure 1. Servicing Tools and Equipment, Packing (Sheet 14 of 15)



Link Separator Tool



Link Separator Tool (Local Manufacture)

Figure 1. Servicing Tools and Equipment, Packing (Sheet 15 of 15)

ORGANIZATION AND INTERMEDIATE MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

PCU-17/P CREW RESTRAINT HARNESS ASSEMBLY

PART NO. 814AS900-1

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

PCU-17/P Crew Restraint Harness Assembly, Illustrated Parts Breakdown ..... WP 006 04

Alphabetical Index

Title	Page
Description	2
Aircraft Applications	2
Aircrew Systems Record	2
Configurations	2
General	2
Functions	2
Ordering and Reporting Information	2

Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
None				

1. DESCRIPTION.

2. GENERAL.

a. The Crew Restraint Harness Assembly, Part Number 814AS900-1, provides for integration of the (USAF) PCU-17/P Personnel Restraint Harness and the (USAF) HBU-6/P Safety Strap Assemblies, as the authorized USN Search and Rescue/Loadmaster crew safety/ restraint system.

b. The personnel restraint harness is mated with the safety strap by routing the quick ejector end of the HBU-6/P Safety Strap thru the backstrap retaining loop, at the junction of the diagonal back straps on the PCU-17/P Harness Assembly, and placing the connector link into the quick ejector snap and closing the latch on the quick ejector snap.

c. The service life of the Crew Restraint Harness Assembly (814AS900-1) is established at 13 years from the Date of Manufacture (DOM) of the independent subassemblies (PCU-17/P Harness or HBU-6/P Safety Strap).

3. AIRCRAFT APPLICATIONS.

a. To provide a crew restraint system when performing Search and Rescue kit/air drop duties from the P-3 and E-6 Aircrafts, and Loadmaster/air drop duties from the C-2 and C-130 Aircrafts.

4. CONFIGURATIONS.

a. This configured restraint harness is the only one authorized for use aboard applicable Navy Aircraft and shall not be used in conjunction with any Navy Emergency Personnel Parachute Assemblies or Systems (Figure 1).

5. FUNCTIONS.

a. The harness must fit the aircrew properly to provide the required restraint and protection. The length of the adjustment straps loose ends will vary due to the varying sizes of the crewmember. The locally fabricated webbing retainer, P/N 50B6868 will be used to secure the loose ends of the straps. An optional restraint line stowage pocket may be installed.

6. AIRCREW SYSTEMS RECORD.

a. Refer to OPNAVINST 4790.2 (series) for filling out the Aircrew Personnel Equipment Record (OPNAV 4790/159).

7. ORDERING AND REPORTING INFORMATION.

a. When ordering new assemblies (personnel restraining harnesses, safety straps and hardware), order part numbers and quantities specified in the Illustrated Parts Breakdown section Work Package 004 05. The top assembly configuration part number (814AS900-1) shall be reported when inspection or maintenance is performed throughout the service life of the Crew Restraint Harness Assembly.

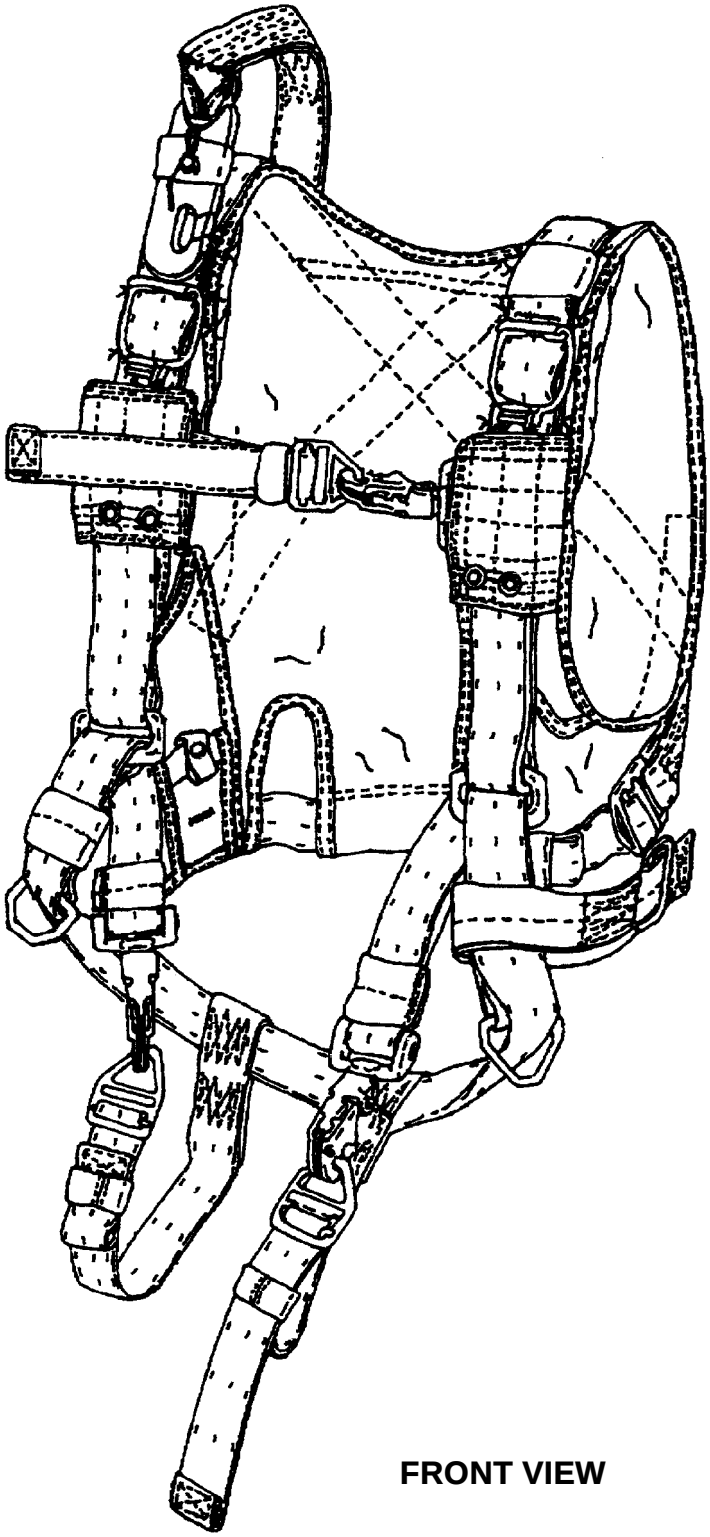

Figure 1. PCU-17/P Crew Restraint Harness Assembly (Sheet 1 of 3)

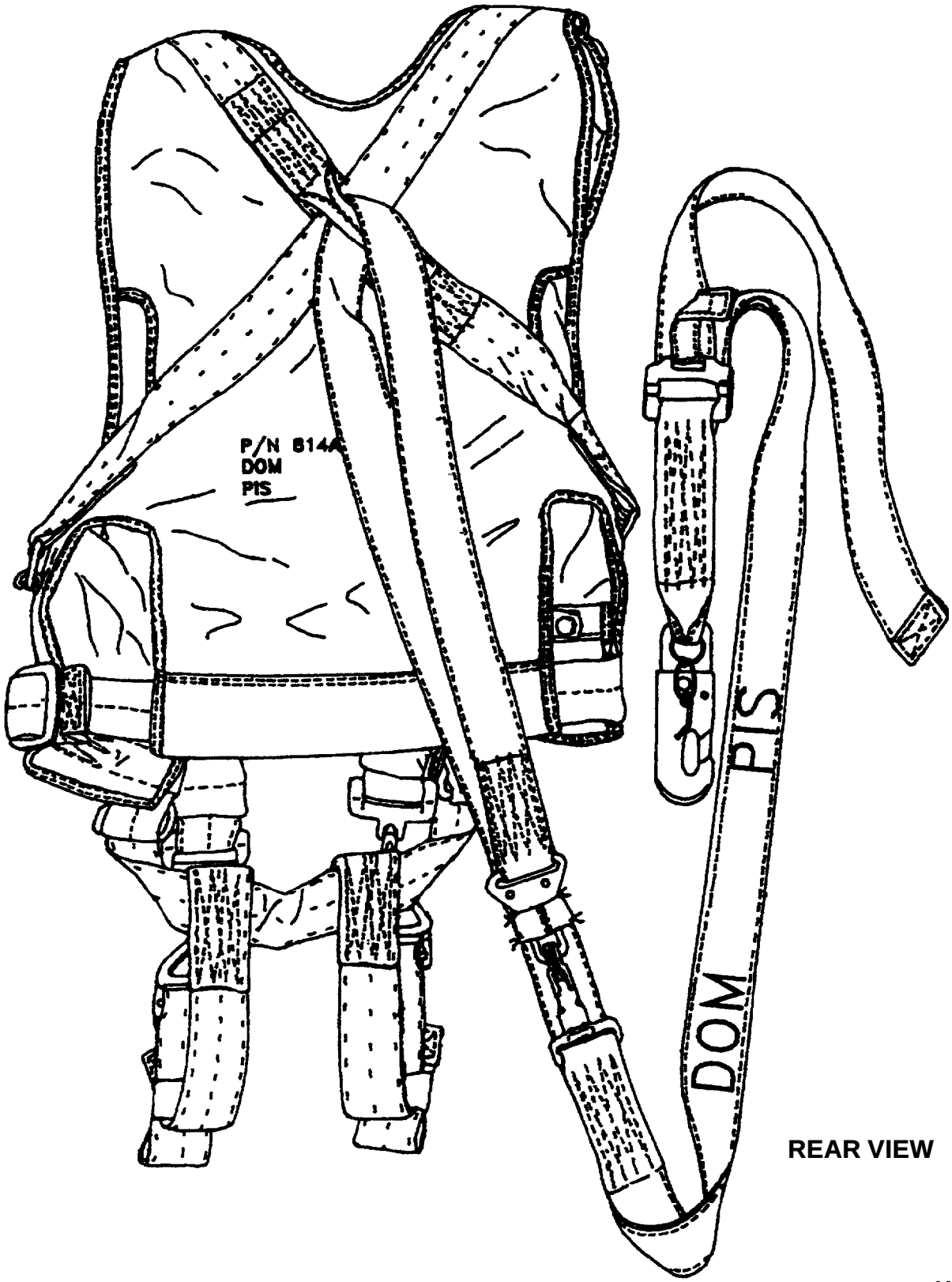

Figure 1. PCU-17/P Crew Restraint Harness Assembly (Sheet 2 of 3)

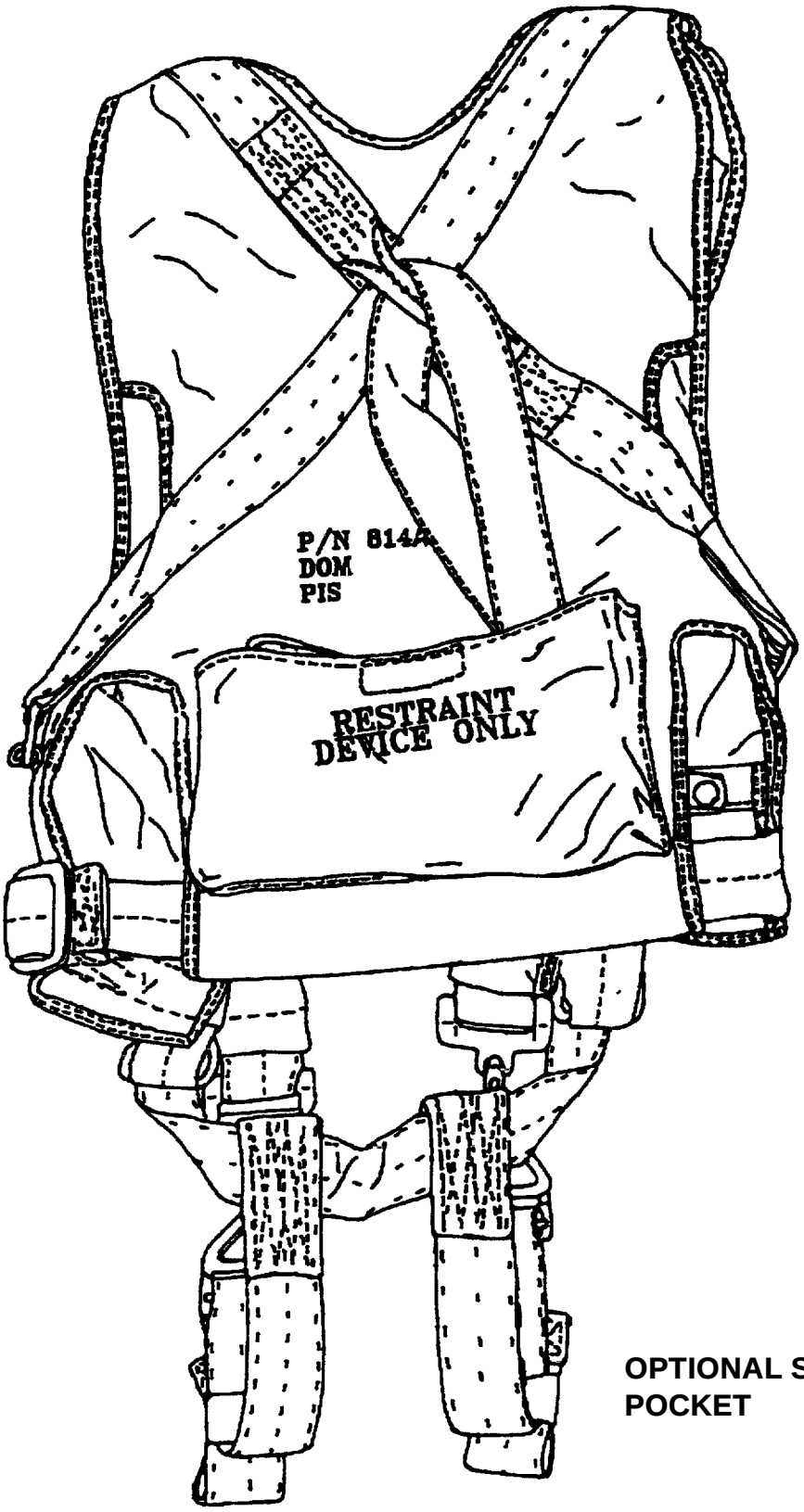

Figure 1. PCU-17/P Crew Restraint Harness Assembly (Sheet 3 of 3)

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ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE

ORIGINAL ISSUE RIGGING PROCEDURES

PCU-17/P CREW RESTRAINT HARNESS ASSEMBLY

PART NO. 814AS900-1

List of Effective Work Package Pages

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Illustrated Parts Breakdown, Crew Restrain Harness, PCU-17/P . . . . . WP 006 04
Parachute Loft Requirements/Administration . . . . . WP 003 00

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Title	Page
Attachment of Hardware	3
Attachment of Safety Strap	4
General	2
Fabrication of Safety Strap Stowage Pocket (Optional)	4
Marking	5
Preliminary Procedures	2
Removal of Canopy Release Cover and Latch Arm	2

Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date

None

1. GENERAL.

2. This Work Package (WP) provides rigging procedures for the original issue of the Crew Restraint Harness Assembly (PCU-17/P).

3. Quality Assurance (QA) points have been included in the rigging procedures. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Witnessing of QA steps may be delayed by QA if their satisfactory completion is verified in later steps.

4. PRELIMINARY PROCEDURES.

5. To prepare the crew restrain harness assembly for original issue rigging, do as follows:

Support Equipment Required

Specification or Part Number	Nomenclature
---	Punch, 3/32" Dia. or equivalent
---	Hot knife
MIL-S-22473	Sealing Compound Grade H
---	Straight Edge

Materials Required

Specification or Part Number	Nomenclature
68E417-10	Strap Assembly, Safety
68D33721-3	Snap, Quick Ejector (3)
MS27765-1	"V" Ring, Quick Fit (3)
A-A-59291	Ink Marking, Parachute, Light Blue
V-T-295	Thread, Nylon Size 6, Type I or II Class A
V-T-295	Thread, Nylon Size E, Type I or II Class A
MIL-C-7219	Cloth, Duck, Nylon Type III, Class 3
A-A-55126	Fastener Tape, Hook Type II, Class 1
A-A-55126	Fastener Tape, Pile Class 1

6. REMOVAL OF CANOPY RELEASE COVER AND LATCH ARM.

a. Open the canopy release cover.

b. Place fitting in a vice with the rolled edge of the cover pivot pin facing up (Figure 1).

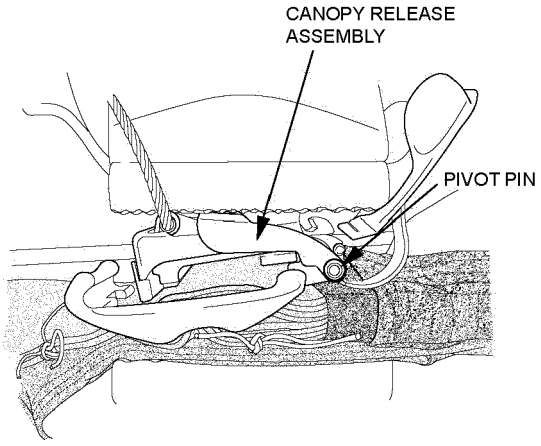

Figure 1. Removal of Canopy Release Assembly

c. Place punch into the rolled edge of the pivot pin (Figure 2).

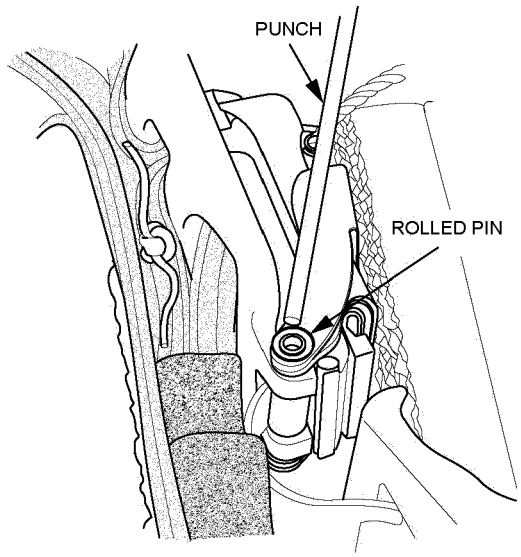

Figure 2. Removal of Rolled Edge of Rivet

d. Strike several sharp blows with 8 - 12 ounce hammer to break off riveted head of pin.

e. Drive out assembly pin.

f. Discard the canopy release cover and latch arm.

g. Remove the fitting/harness from vice (Figure 3).

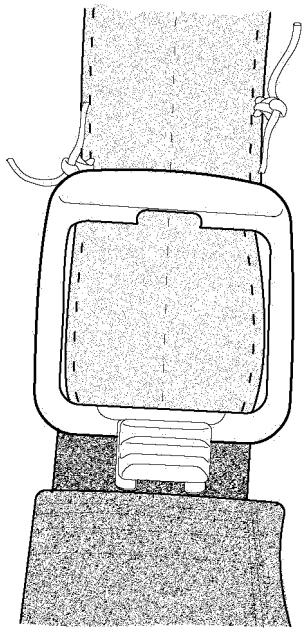

Figure 3. Cover and Latch Arm Removed

7. ATTACHMENT OF HARDWARE.

a. Using hot knife, cut split end off free ends of chest and leg adjustment straps (Figure 4).

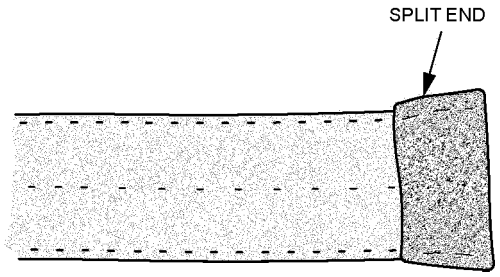

Figure 4. Split End

b. Install "V" Rings to the chest and leg straps (Figure 5).

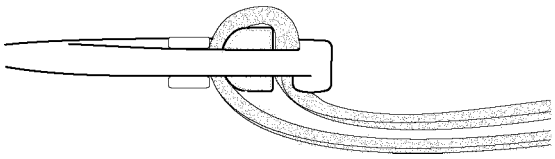

Figure 5. Routing of Leg and Chest Straps thru "V" Rings

c. Fold free ends of chest and leg adjustment straps over (two folds) 1 1/2-in. and box stitch with size 6 thread.

d. Remove roller sleeves from quick ejector and insert in chest (1) and leg (2) webbing loops (Figure 6).

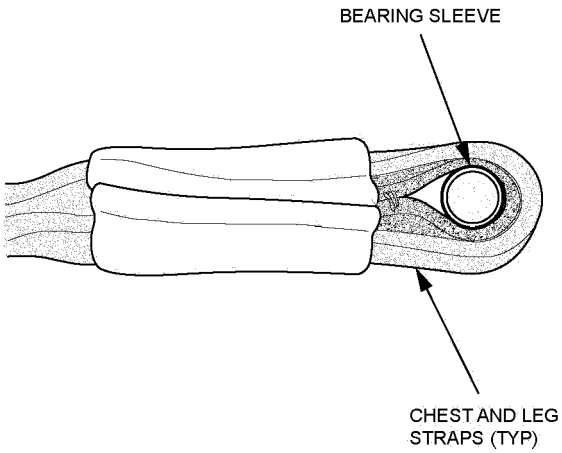

Figure 6. Bearing Sleeve Installation

e. Apply one drop of sealing compound, to first three threads of screw pin. Insert screw pin thru prongs and roller sleeve; tighten screw pin. (QA)

8. ATTACHMENT OF SAFETY STRAP.

a. Route the quick ejector end of the safety strap through the loop at the junction of the back strap (Figure 7).

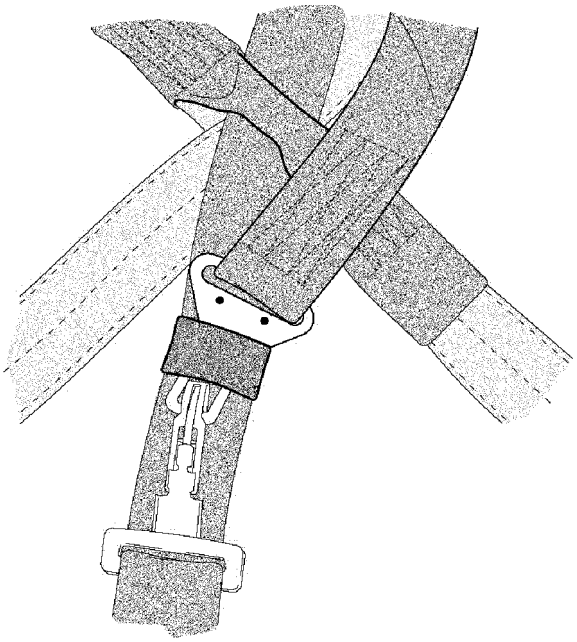

Figure 7. Safety Strap Routing

b. Place the connector link into the quick ejector snap lobe and latch the quick ejector.

9. FABRICATION OF SAFETY STRAP STOWAGE POCKET (OPTIONAL).

a. Lay out nylon cloth per figure 8.

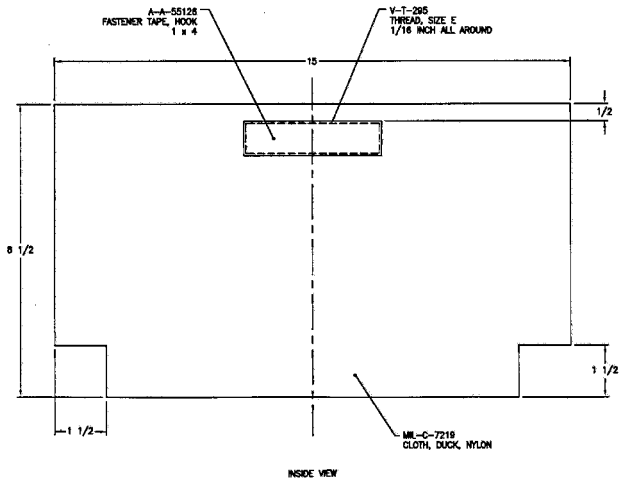

Figure 8. Stowage Pocket Layout

b. Using hot knife and straight edge, sear cut on lines drawn in step a.

c. Fold edges under 3/8-in. and sew using “E” thread.

d. Sew 1 x 4-in. fastener tap hook to inside top center of stowage pocket.

e. On the two bottom corners, fold the two inside edges together and sew using 3 rows of “E” thread.

f. Using completed pocket, mark location on harness assembly.

g. Mark location for 1 x 4-in. pile fastener and sew using “E” thread.

h. Sew pocket to harness.

WARNING

Do not sew thru harness webbing.

10. MARKING.

a. Stencil the following on back of harness, above stowage pocket (if installed):

P/N 814AS900-1
Date of Manufacturer (DOM)
Place in Service (PIS)

b. On stowage pocket (if installed) stencil the following:

RESTRAINT DEVICE ONLY

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ORGANIZATIONAL MAINTENANCE

REPAIR AND INSPECTION PROCEDURES

PCU-17/P CREW RESTRAINT HARNESS ASSEMBLY

PART NO. 814AS900-1

List of Effective Work Package Pages

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None

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Harness Inspection	3
Installation of HBU-6/P Safety Strap	3
Introduction	2
Replacement of Ejector Snap	2
Replacement of Elastic Retainer Webbing (50B6868 and 50B6873)	2
Replacement of Harness Tacking	2
Replacement of Safety Pin and Lanyard	3

Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date

None

1. INTRODUCTION.

a. This work package (WP) contains instructions for organizational level repair and inspection to ensure that the Crew Restraint Harness Assembly remains in ready-for-issue (RFI) status.

b. When performing repairs detailed in the WP, refer to these guidelines:

(1) Review all applicable instructions prior to starting repair.

(2) Ensure all necessary material and equipment are available prior to starting repair.

(3) When required, remove enough material from it's source for immediate use only. Assure material identification ticket/label remains with the source material at all times.

(4) A quality assurance (QA) inspector shall examine the finished work.

2. REPLACEMENT OF ELASTIC RETAINER WEBBING (50B6868 AND 50B6873).

Support Equipment Required

Part Number	Nomenclature
3233K83 McMaster-Carr 6100 Fulton Industrial Blvd. Atlanta, GA 30336-2852 www.mcmaster.com	Pot, Melting, Electric

Materials Required

Specification or Part Number	Nomenclature
MIL-W-5664	Webbing, Elastic, Cotton, Type I Class 2
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove damaged retainer from harness.

b. Cut a 5-in. length of 1-in. wide cotton elastic webbing for retainer 50B6868 or 1 1/2-in. wide for 50B6873. Dip ends in a wax melting pot to prevent raveling.

c. Fold webbing in half and wrap webbing around harness, and align ends. Sew a row of stitching 1/4-in. from the aligned ends, sewing the entire width of the webbing.

d. Turn retainer inside out, so ends are on the inside, and slide it into position.

3. REPLACEMENT OF HARNESS TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove damaged tacking from harness.

b. Hand tack shoulder pads with one turn of size 6 thread, doubled and waxed; tie off. Trim end to 1-in.

4. REPLACEMENT OF EJECTOR SNAP.

Materials Required

Specification or Part Number	Nomenclature
MIL-S-22473	Sealing Compound, Grade H

a. Inspect replacement hardware for damage, corrosion, security and ease of operation.

b. Install 68D37721-3 Parachute Harness Snap as follows:

(1) Remove screw pin of ejector snap allowing the roller sleeve to fall free (Figure 1).

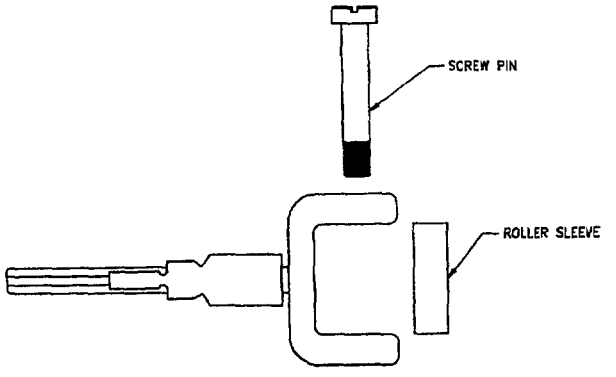


Figure 1. Ejector Snap 6.2-8004

(2) Insert roller sleeve thru loop in chest or leg strap.

NOTE

Ensure the ejector snaps are installed so that the latch arm mechanism opens outward.

(3) Apply one drop of sealing compound, to first three threads of screw pin. Insert screw pin thru prongs and roller sleeve; tighten screw pin. (QA)

5. INSTALLATION OF HBU-6/P SAFETY STRAP.

a. Route the quick ejector end of safety strap thru the backstrap retaining loop, at the diagonal junction of the backstraps, on the PCU-17/P Harness.

NOTE

Use either of the existing Elastic Retainers, P/N 50B6873, as an over the shoulder storage sheath for the MS70120 Snap Hook. The Elastic Retainers are located on the front of the PCU-17/P Restraint Harness and above the (male) canopy release hardware.

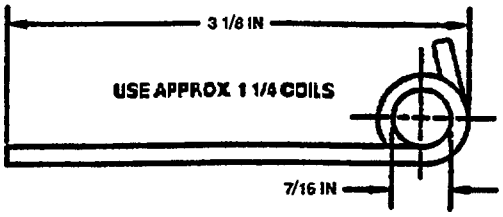
b. Place the connector link into the quick ejector snap and close the latch on the quick ejector snap.

6. FABRICATION OF SAFETY PIN AND LANYARD.

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon Type II or III
ASTM A580	Safety Wire 0.080-in.

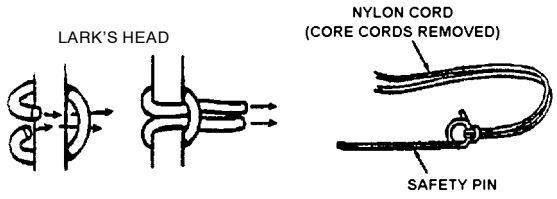
a. Cut a 5-in. length of 0.080-in. diameter corrosion resistant steel wire and form a 3 1/8-in. safety pin. Round off sharp edges with a file (Figure 2).



6.2-8010

Figure 2. Cut a Length of Safety Wire

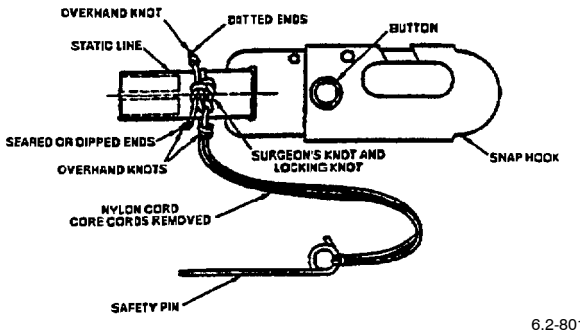
b. Remove core cords from a 20-in. length of Type II or III nylon cord. Fold cord in half and attach to safety pin with a Lark's Head (Figure 3).



6.2-8011

Figure 3. Attachment of Cord to Safety Pin

c. Tie an overhand knot in each end and sear ends. Tie an overhand knot in the cord no closer than 5-in. from safety pin. Run one end of the cord thru the static line loop where the snap hook is attached and secure on top of the static line with a surgeon's knot and a locking knot (Figure 4).



6.2-8012

Figure 4. Attachment of Cord to Static Line

7. HARNESS INSPECTION.

a. The Crew Restraint Harness Assembly used as in-flight safety/restraint device shall be given a special inspection every 224 days, plus or minus 30 days to concide with aircraft inspections.

b. Inspect harness and safety strap webbing for fraying, discoloration, cuts, tears, loose stitching, contamination, and general serviceability.

c. Inspect harness and safety strap hardware for damage, corrosion, security of attachment, ease of operation, and proper installation.

d. Each harness assembly will have serviceable elastic excess webbing keepers on each chest, back, and leg strap. If keepers are unserviceable or missing, they will be replaced.

e. Inspect ejector snaps:

(1) Inspect ejector snaps for alignment of guard with hook. Allowable positions of snap guard are between positions A and B where the top of the guard is aligned with the points of hook (position A) or the bottom of the guard is aligned with the point of the hook (position B) (Figure 5).

(2) Using "V" ring, insert into ejector snap. Ensure ejector snap safety guard closes.

(3) Perform pull force test on ejector snaps. Pull force required to release ejector snap should be 7 ± 2 lbs. The ejector snap lever may be adjusted (spread or crimped) to obtain the required pull (Figure 5).

(4) Ejector snaps failing the routine inspection shall be adjusted/removed from service. It shall be the responsibility of the routine inspection to remove and replace ejector snaps found defective during this inspection.

NOTE

When either the harness or safety strap lack legible date of manufacture or date place in service and a service/total life check cannot be verified, the applicable subassembly shall be considered not RFI and removed from service.

f. The total service life for each subassembly (harness or safety strap) is 13 years, computed from the date of manufacture.

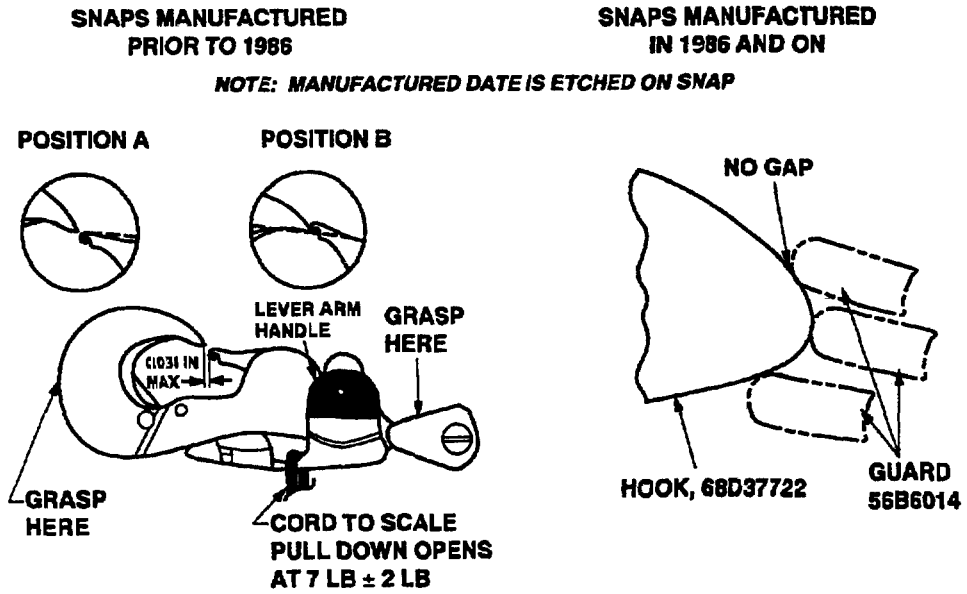


Figure 5. Hook and Guard Alignment

INTERMEDIATE MAINTENANCE

REPAIR PROCEDURES

PCU-17/P CREW RESTRAINT HARNESS ASSEMBLY

PART NO. 814AS900-1

List of Effective Work Package Pages

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Reference Material

Common Repairs . . . . . WP 004 00

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Cleaning	2
General	2
Comfort Pad Replacement (Optional)	4
Introduction	2
Parachute Harness Snap Installation	4
Repairs	2
General	2
Safety Strap Keeper Replacement	3

Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date

None

1. INTRODUCTION.

2. This work package (WP) contains instructions for intermediate level repair to ensure that the Crew Restraint Harness Assembly remains in a ready-for-issue (RFI) status.

3. When performing repairs detailed in this WP, refer to these guidelines:

a. Review all applicable instructions prior to starting repair.

b. Ensure all necessary material and equipment are available prior to starting repair.

c. To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

d. A quality assurance (QA) inspector shall examine the finished work.

4. REPAIRS.

5. GENERAL.

Materials Required

Specification or Part Number	Nomenclature
V -T-295	Thread, Nylon Size E, Type I or II Class A

a. Repair of restraint harness and safety strap is limited to cleaning, parts replacement specified herein, replacing of stitching and patching the vest material (MIL-C-7219) on the PCU-17/P harness assembly. Each assembly that has damaged webbing and its serviceability is questionable shall be removed from service and replaced with a new assembly.

NOTE

The primary concern in repairing an assembly is ensuring that the basic structural integrity designed into the assembly is maintained.

b. PCU-17/P Harness repair: Repair broken stitching that attaches the vest material to the harness webbing on the back portion only on the PCU-17/P Harness as follows:

(1) Remove the broken stitching only.

(2) Use size E thread to make repair.

(3) Following the existing stitch pattern, the repair stitching shall overlap the ends of existing stitching a minimum of 1 1/2-in. on each end.

6. CLEANING.

7. GENERAL. Cleaning of restraint harness and safety strap should be held to a minimum and performed only when necessary to avoid deterioration of the materials. Cleaning by hand washing should be attempted first. If hand washing does not clean the part; try machine wash. No harness shall be machine washed more than two times.

Support Equipment Required

Part Number	Nomenclature
P-S-1792	Laundry Soap
MIL-B-15319	Brush
CCC-C-458	Cloth, Flannel (Any Suitable)

a. Prepare a concentrated soap and water solution, using laundry soap. If hot water is used in preparing the soap solution, cool the solution to approximately 120°F (49°C), prior to applying to webbing.

b. Dampen a clean brush with the soap solution and rub lightly over the affected surface or, if available, a tumble type washing machine (without agitator) will be used. If machine washing, remove hardware. Wrap all nonremovable hardware in heavy flannel cloth.

c. Rinse with clear warm water.

d. Dry by hanging in a drying room or a similar ventilated room to facilitate drying.

NOTE

Do not expose the wet webbing to freezing temperatures or direct sunlight during cleaning, drying, or storage.

e. After machine cleaning, record date of machine wash on aircrew systems record. (QA)

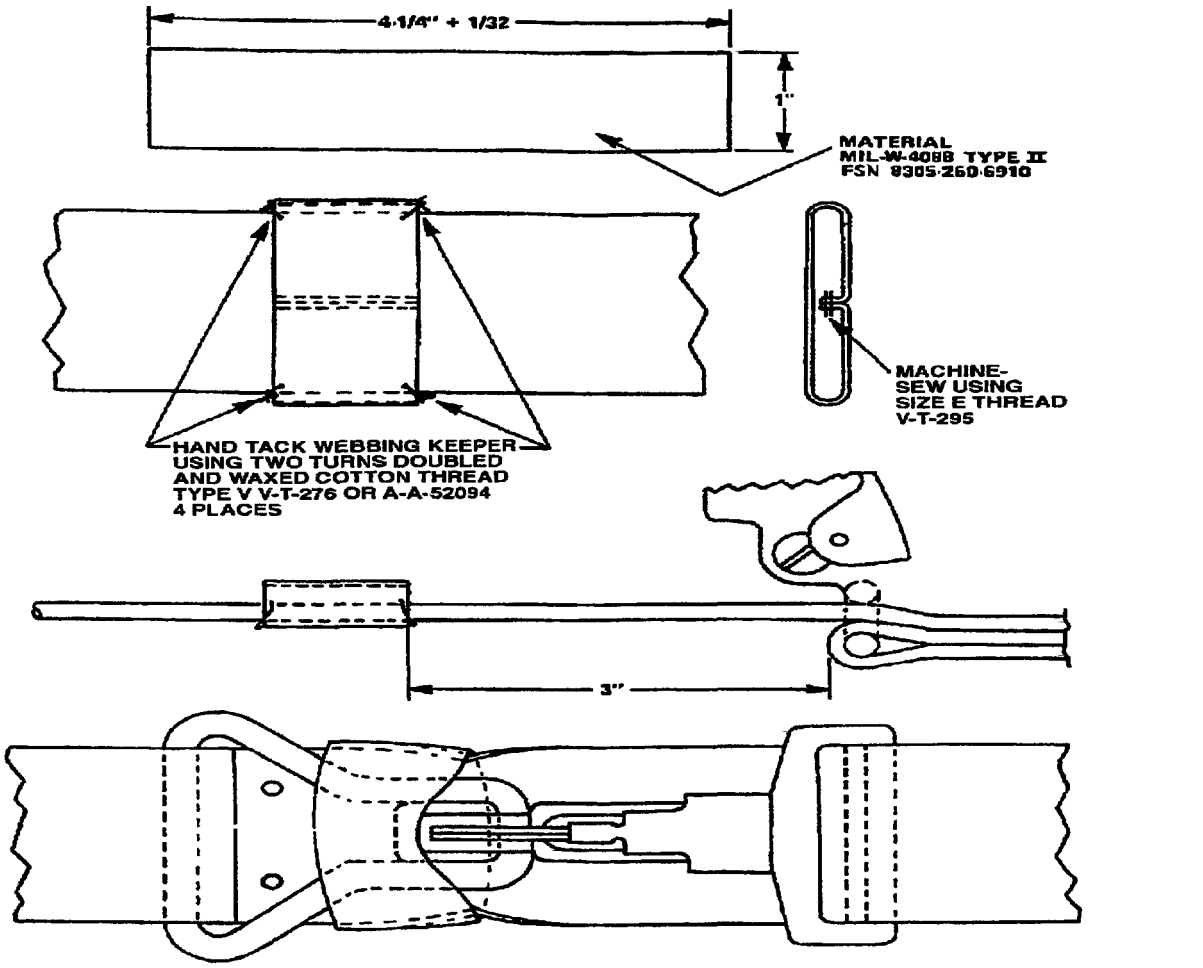


Figure 1. Safety Strap Keeper

8. SAFETY STRAP KEEPER INSTALLATION REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
MIL-W-4088	Webbing, Nylon Type II Class 1, 1A or 2
V-T-295	Thread, Nylon Size E, Type I or II Class A
V-T-276	Thread, Cotton Type V Size 8/7
A-A-52094	-or- Thread, Cotton Size 30/3, Red

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Use of locally fabricated keeper for safety strap, P/N 68E417-10 will prevent accidental opening of the ejector snap and shall be used.

b. Fabrication the keeper as follows:

(1) Cut a length of webbing 4 1/4-in. long, and sear ends (Figure 1).

(2) Position webbing around safety strap at the ejector snap and align ends of webbing together. Sew 1/8-in. from end with two rows of size E thread, backstitch a 1/2-in. (Figure 1)

(3) Turn inside out and position per (Figure 1).

(4) Tack safety strap keeper in four places with two turns of size 8/7 thread, doubled and waxed; tie off (Figure 1).

9. CHEST AND LEG ADJUSTMENT STRAPS V-RING REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon Size 6, Type I or II Class A
MS27765	V-Ring, Quick Fit

a. Cut the box stitching on the folded end of webbing strap and remove V-ring.

b. Install new MS27765 V-ring to the Chest and Leg adjustment straps as follows:

(1) Lace chest or leg straps thru V-ring. Observe that the slotted end of the moving bar in the V-ring is larger on one side of the slot and that there is a lip on one side of the straight end of the V-ring (Figure 2).

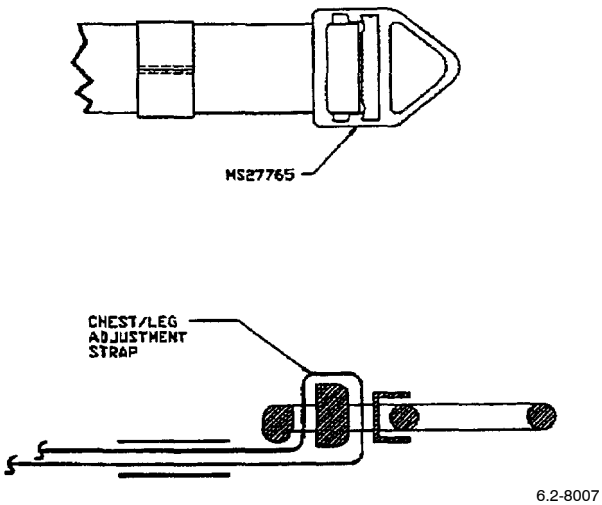


Figure 2. V-Ring

(2) Lace webbing over large side of moving bar, and webbing tensioner, and back over bar so that lip on V-ring frame is against webbing.

(3) Refold end of strap (two folds) 1 1/2-in. and machine cross box stitch in place, with size 6 thread.

10. PARACHUTE HARNESS SNAP REPLACEMENT.

a. Remove screw pin of ejector snap allowing roller to fall free.

b. Insert new roller thru loop in chest or leg strap (Figure 3 and 4).

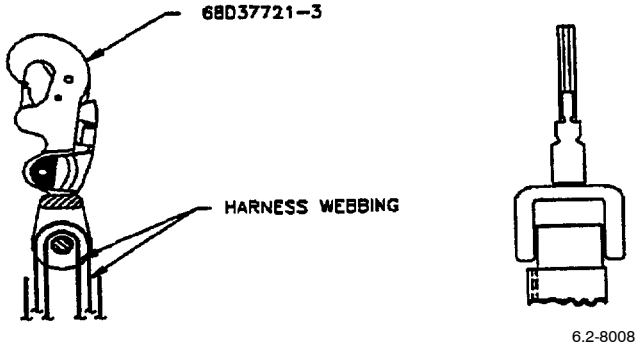


Figure 3. Routing of Quick Ejector Snap

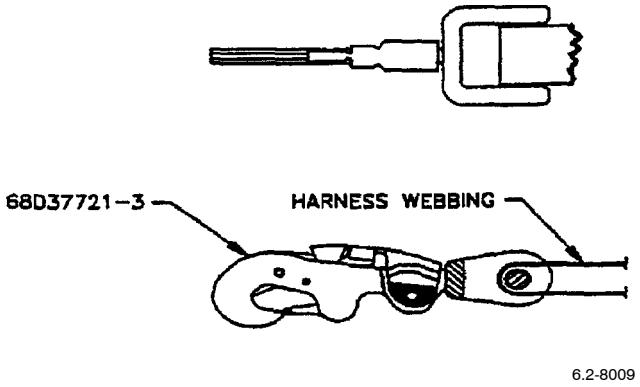


Figure 4. Routing of Quick Ejector Snap

c. Apply one drop of sealing compound for first three threads of screw pin. Insert screw pin thru ejector snap prongs and roller and tighten.

11. COMFORT PADS (OPTIONAL).

Materials Required

Specification or Part Number	Nomenclature
MIL-C-7219	Cloth, Duck, Nylon Type III, Class 3
MIL-R-5001	Rubber, Sheet, Cellular
V-T-295	Thread, Nylon Size E, Type I or II Class A

a. Cut comfort pad to fit.

b. Cut to size nylon cloth whereby it may be folded over the foam pad.

c. Fold and machine sew two sides with size E thread.

d. Turn inside out, slide foam pad in opening, and sew closed (Figure 5).

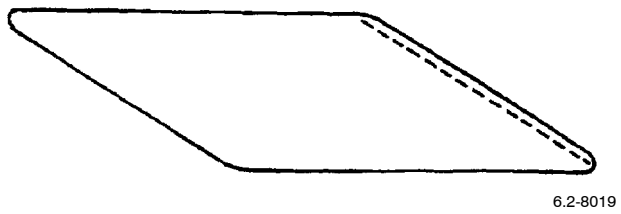


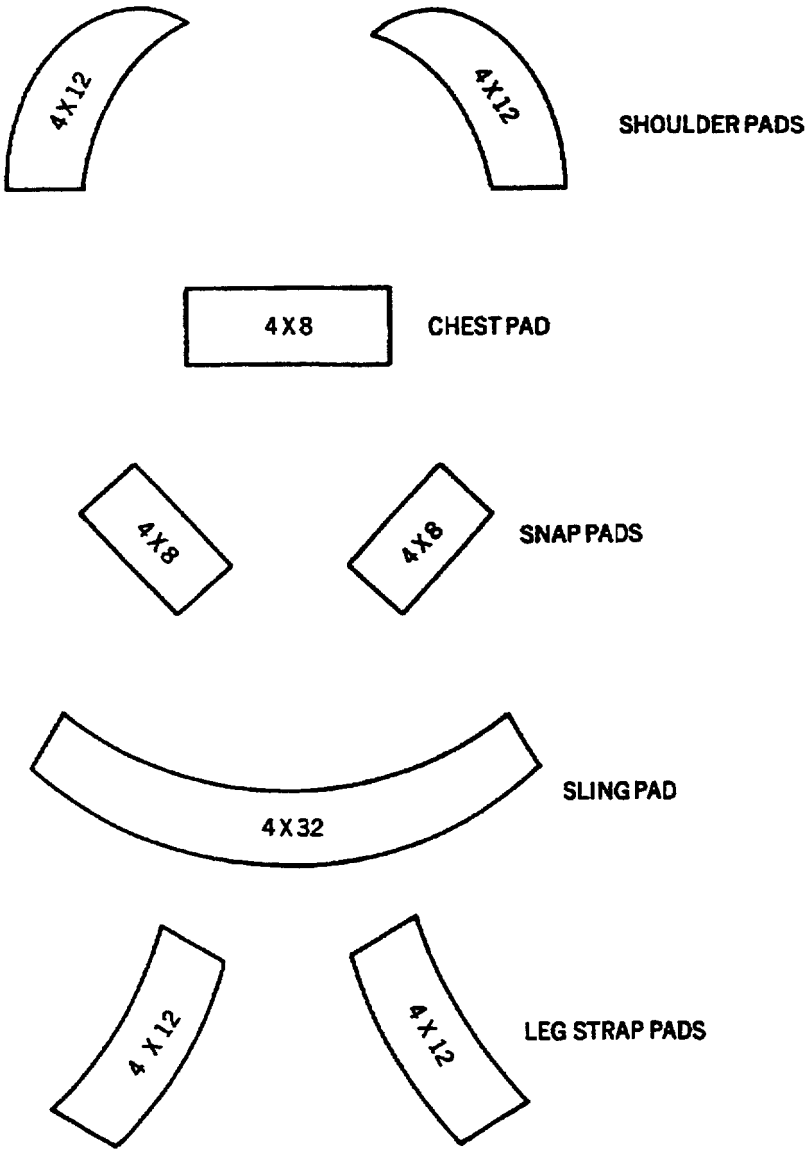
Figure 5. Turn Material Inside Out

e. Different sizes of comfort pads (optional) (Figure 6).

FOAM PADS REQUIRED (OPTIONAL)

USE ANY SUITABLE FOAM PAD MATERIAL

1 EACH 4 X 32 INCHES
4 EACH 4 X 12 INCHES
3 EACH 4 X 8 INCHES



6.2-8016

Figure 6. Different Comfort Pads

ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

PCU-17/P CREW RESTRAINT HARNESS ASSEMBLY

PART NO. 814AS900-1

List of Effective Work Package Pages

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Reference Material

None

List of Figures

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Crew Restraint Harness Assembly	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

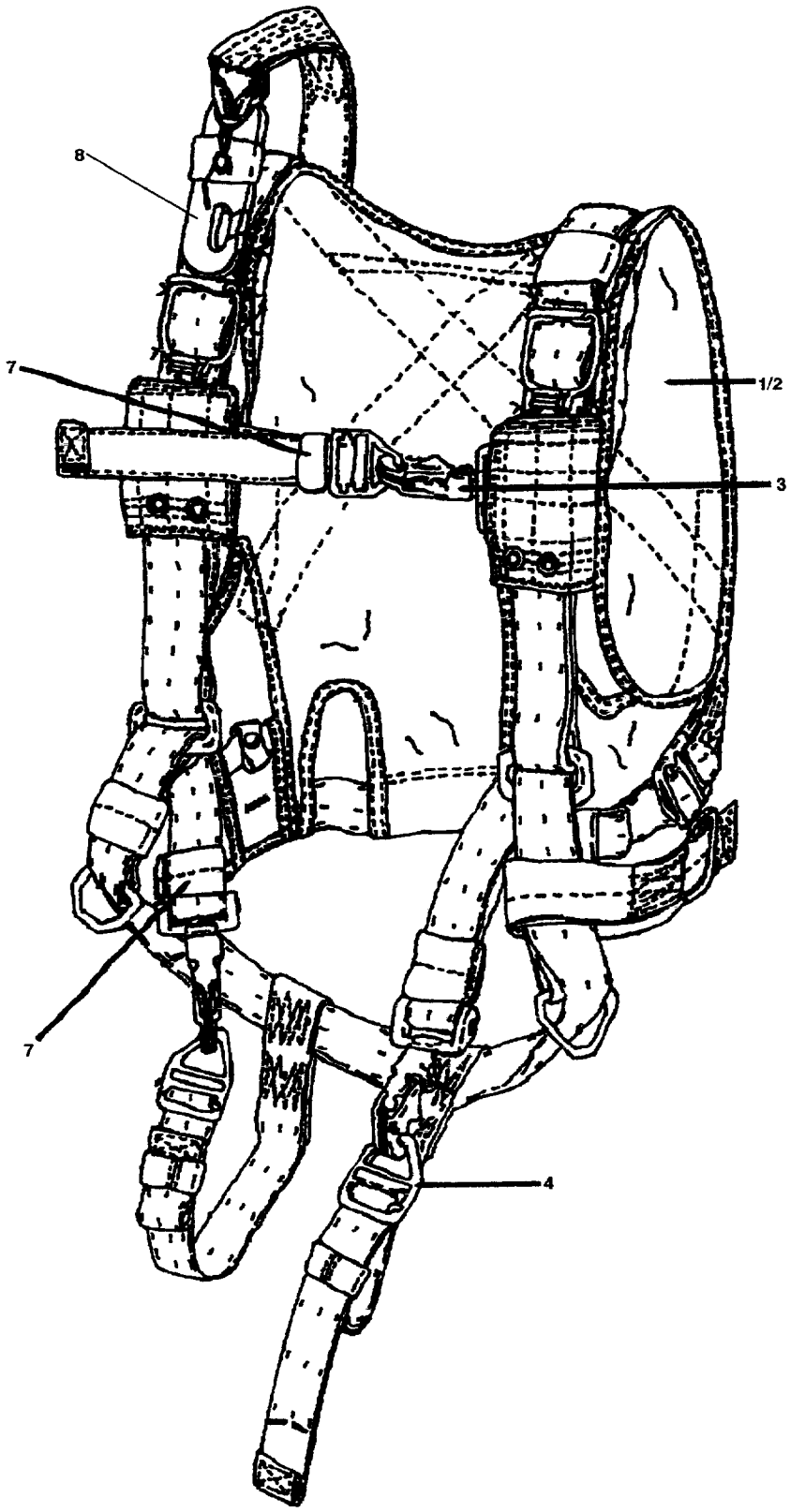
a. This Work Package (WP) contains information for ordering and indentifying parts for the Crew Restraint Harness Assembly (Figure 1).

2. USABLE ON CODES.

a. The usable on codes in this WP refer to aircraft application for the Crew Restraint Harness Assembly.

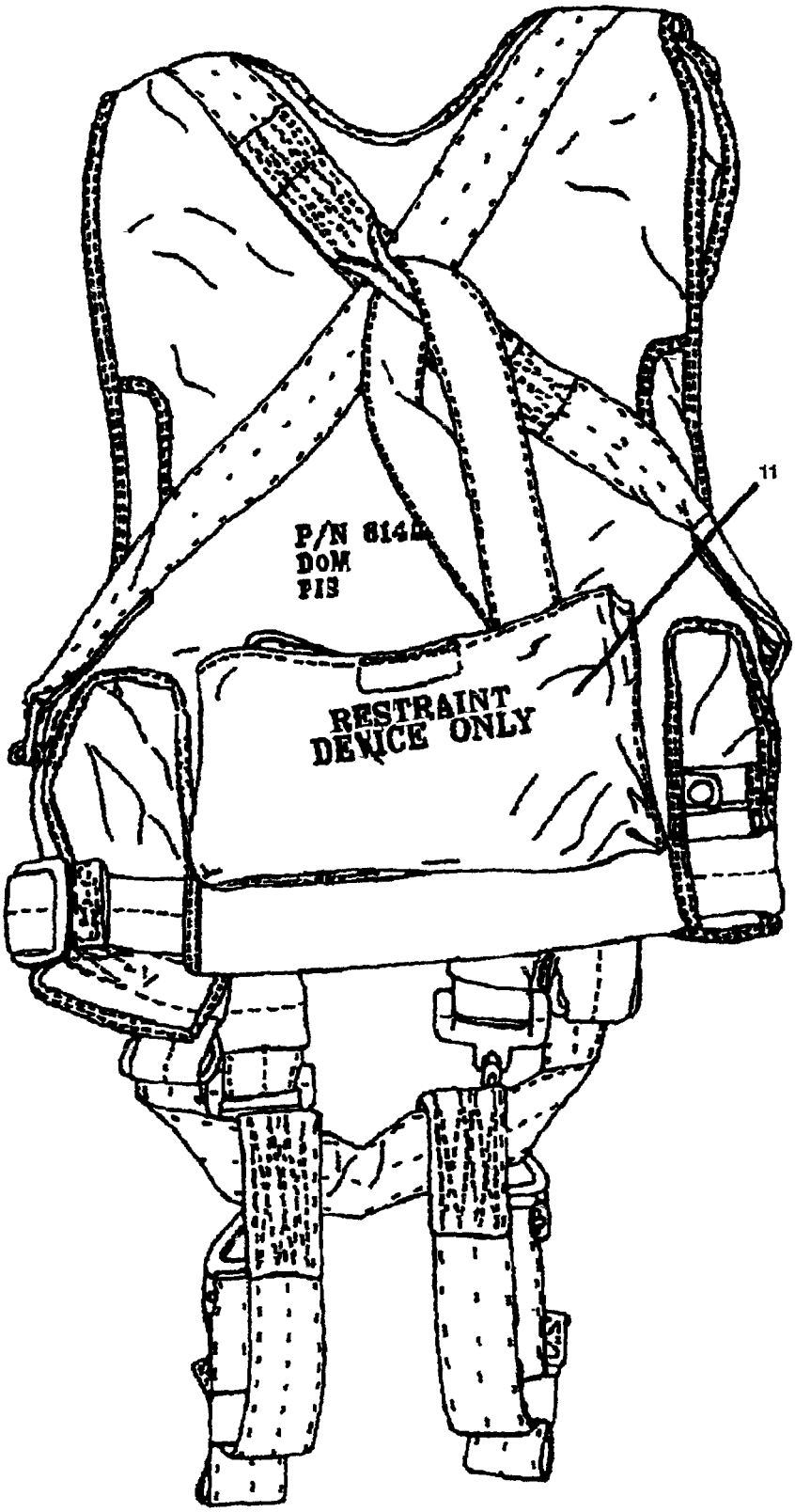
b. The following usable on code apply to this WP.

A – P-3, C-2, E-6, C-130



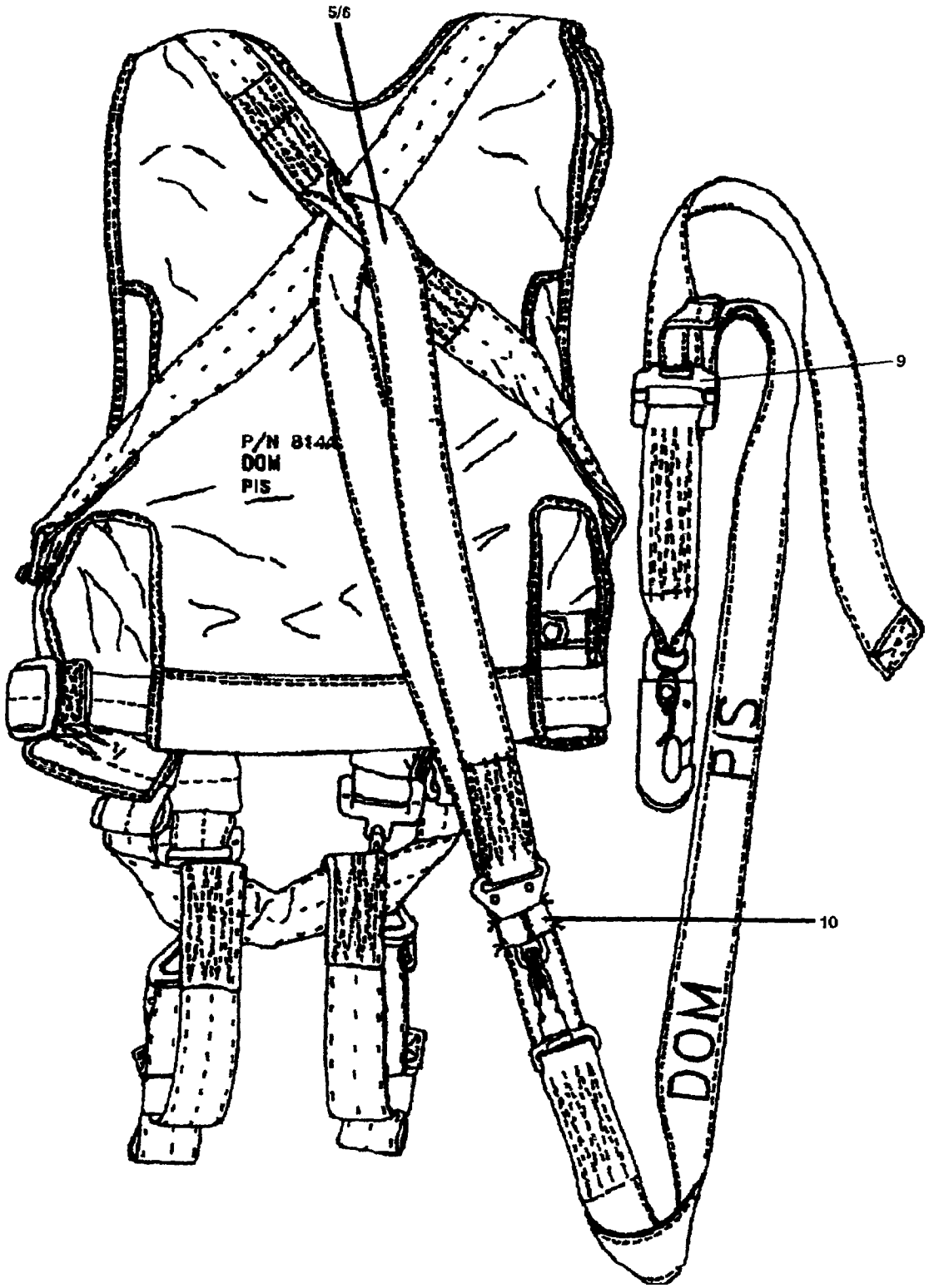
6.2-8013

Figure 1. Crew Restraint Harness Assembly (Sheet 1 of 4)



6.2-8014

Figure 1. Crew Restraint Harness Assembly (Sheet 2 of 4)



6.2-8015

Figure 1. Crew Restraint Harness Assembly (Sheet 3 of 4)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	814AS900-1	CREW RESTRAINT HARNESS ASSEMBLY	REF	A	AGOGG
1	814AS900-3	. RESTRAINT HARNESS ASSEMBLY			MGOGG
2	68J420-101	. . HARNESS ASSEMBLY, PCU-17/P	1		PGOGG
3	68D37721-3	. . EJECTOR SNAP, PARACHUTE	3		PAGZZ
4	MS27765	. . V-RING, QUICK FIT ADJUSTER	3		PAGZZ
5	814AS900-2	. STRAP, SAFETY, ASSEMBLY			MGOGG
6	68E417-10	. . STRAP, SAFETY, HBU-6/P	1		AGOGG
7	814AS900-7	. . . KEEPER, SAFETY STRAP			MGOGG
8	MS70120	. . SNAP ASSEMBLY, STATIC LINE			PAGZZ
9	MS22017	. . SNAP, QUICK FIT, ADJUSTER			PAGZZ
10	44B26454	. . LINK, SAFETY BELT, LATCH ..... FASTENER			PAGZZ
11	814AS900-4	. . STOWAGE POCKET	1		AAGZZ

Figure 1. Crew Restraint Harness Assembly (Sheet 4 of 4)

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ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

AIRCRAFT SAFETY HARNESS ASSEMBLY

PART NO. 1680EG033

List of Effective Work Package Pages

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Organizational and Intermediate Maintenance, Illustrated Parts Breakdown,
Aircraft Safety Harness Assembly ..... WP 006 07

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Aircrew Systems Record	2
Configurations	2
Functions	2
General	2

Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
None				

1. DESCRIPTION.

2. GENERAL.

a. The Aircraft Safety Harness Assembly, Part Number 1680EG033, is the authorized USN Search and Rescue/ Loadmaster crew safety/restraint system.

b. The service life of the Aircraft Safety Harness Assembly is established at 13 years from the Date of Manufacture (DOM).

3. AIRCRAFT APPLICATIONS.

a. To provide an aircrew restraint system when performing Search and Rescue kit or air drop duties from the P-3, C-130 and E-6 aircrafts, and loadmaster or air drop duties from the C-2 aircraft.

4. CONFIGURATIONS.

a. This configured restraint harness is one of the authorized harnesses for use aboard applicable Navy aircraft and shall not be used in conjunction with any Navy Emergency Personnel Parachute Assemblies or Systems (Figure 1).

5. FUNCTIONS.

a. The harness must fit the aircrew properly to provide the required restraint and protection. The length of the adjustment straps' loose ends will vary due to the varying sizes of the aircrew.

6. AIRCREW SYSTEMS RECORD.

a. Refer to OPNAVINST 4790.2 (series) for filling out the Aircrew Personnel Equipment Record (OPNAV 4790/159).

FRONT VIEW

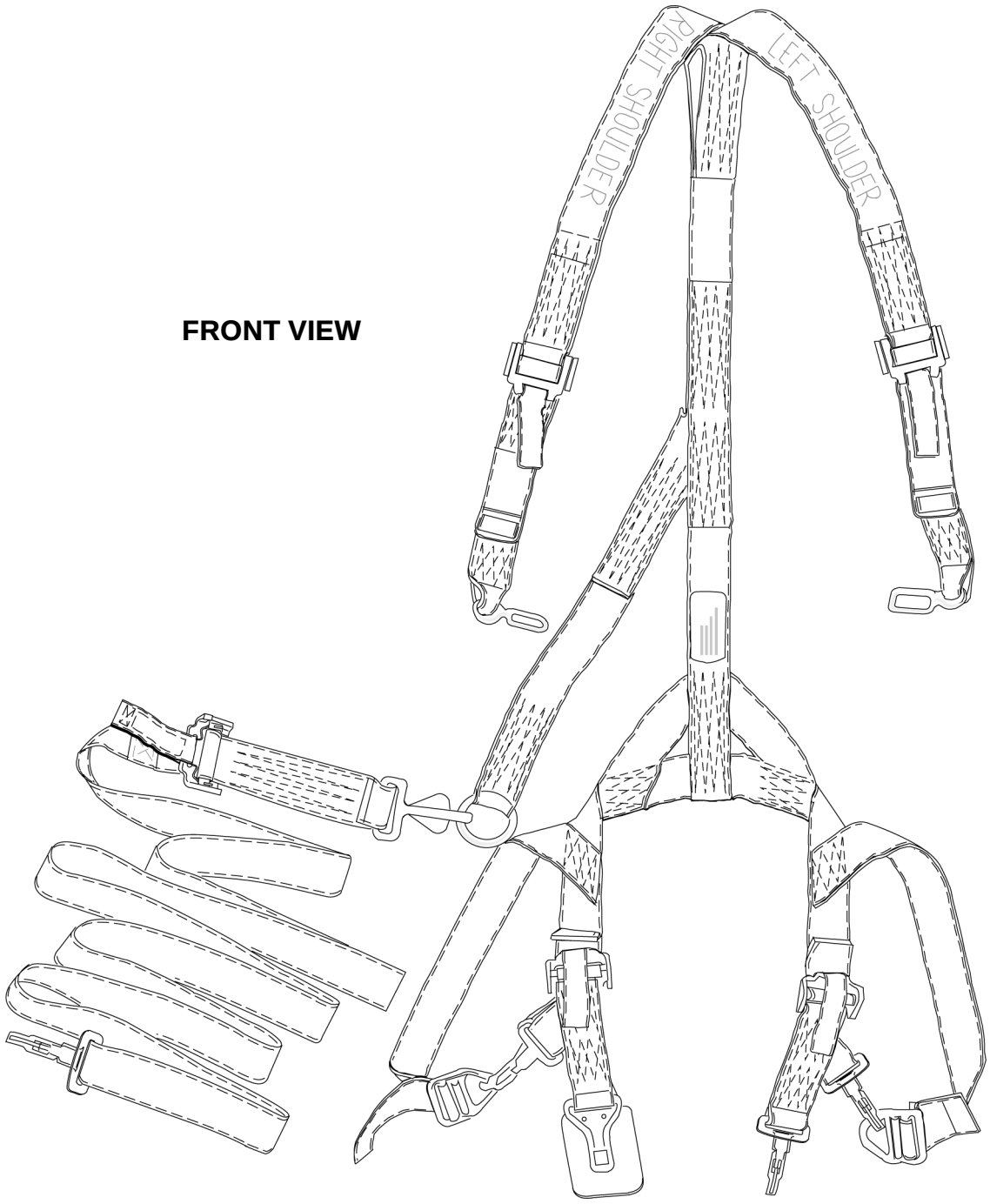
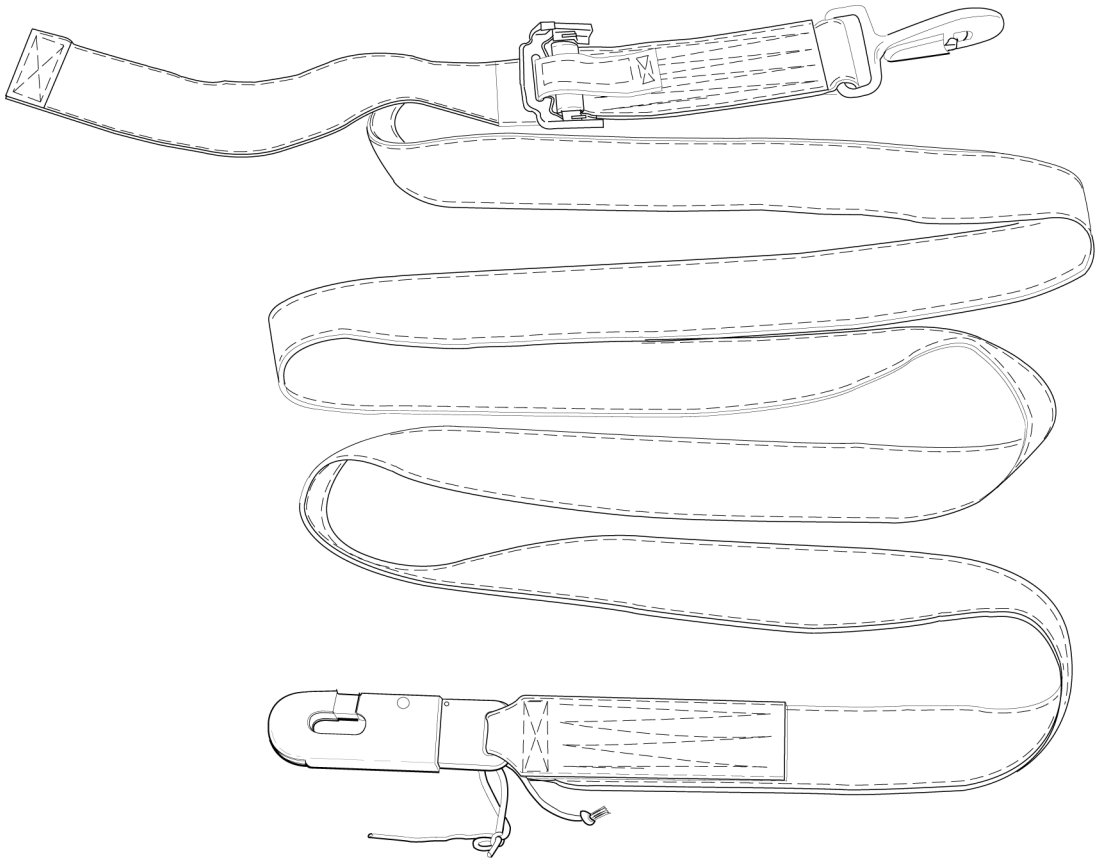


Figure 1. Crew Restraint Harness Assembly (Sheet 1 of 2)



AIRCRAFT SAFETY HARNESS ASSEMBLY
MODIFIED TIE DOWN STRAP

Figure 1. Crew Restraint Harness Assembly (Sheet 2 of 2)

INTERMEDIATE MAINTENANCE

REPAIR PROCEDURES

AIRCRAFT SAFETY HARNESS ASSEMBLY

PART NO. 1680EG033

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Reference Material

None

Alphabetical Index

Title	Page
Harness Inspection	2
Introduction	2
Tie Down Strap Modification	2

Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date

None

1. INTRODUCTION.

a. This work package (WP) contains instructions for intermediate level repair to ensure that the Aircraft Safety Harness Assembly remains in a ready-for-issue (RFI) status.

b. When performing repairs detailed in this WP, refer to these guidelines:

(1) Review all applicable instructions prior to starting repair.

(2) Ensure all necessary material and equipment are available prior to starting repair.

(3) To ensure conformity, all repair work shall be carefully inspected and compared to the applicable instructions at completion of work.

(4) A quality assurance (QA) inspector shall examine the finished work.

2. TIE DOWN STRAP MODIFICATION.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. Carefully cut tie down strap from snap parachute assembly P/N MS22017 (Figure 1). Remove snap parachute assembly and remove cut stitching.

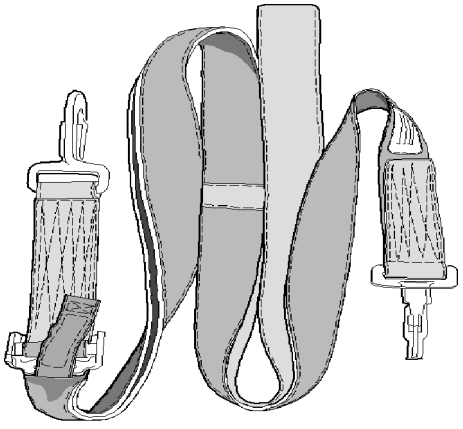


Figure 1. Removal of Quick Ejector Snap

b. Fabricate the modified tie down strap as follows:

(1) Reeve one end of the webbing thru the snap parachute assembly P/N MS70120.

(2) Fold webbing per Figure 2.

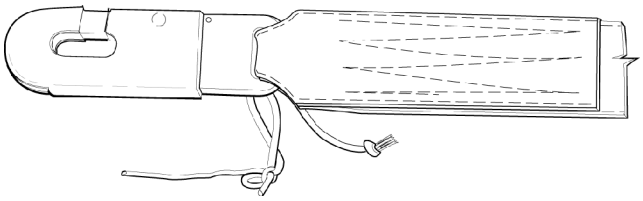


Figure 2. Folded Webbing

(3) Sew length wise with Size 6 thread, using 4 point cross-stitch pattern, 5-in. long (Figure 2). (QA)

(4) See pictorial of modified Tie Down Strap Assembly (Figure 3).

c. Connect snap assembly P/N MS70121-2 to ring (P/N RR-C-271) on main harness assembly.

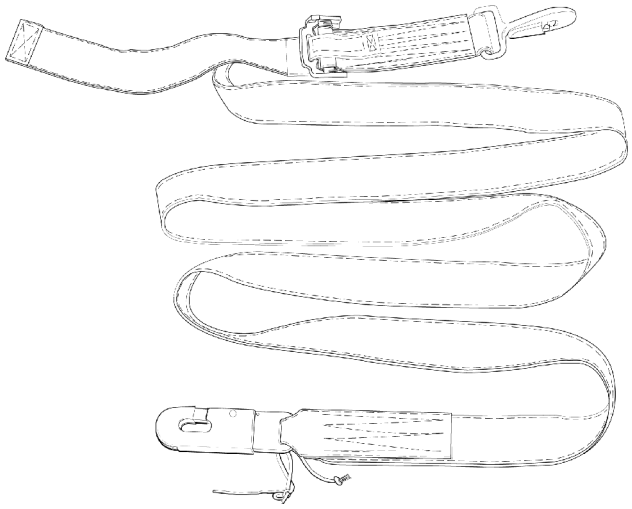


Figure 3. Modified Tie Down Strap Assembly

3. HARNESS INSPECTION.

4. The Crew Restraint Harness Assembly used as inflight safety/restraint device shall be given a special inspection every 224 days, plus or minus 30 days to coincide with aircraft inspections.

a. Inspect harness and safety strap webbing for fraying, discoloration, cuts, tears, loose stitching, contamination, and general serviceability.

b. Inspect harness and safety strap hardware for damage, corrosion, security of attachment, ease of operation, and proper installation.

c. Each harness assembly will have serviceable elastic excess webbing keepers on each chest, back, and leg strap. If keepers are unserviceable or missing, they will be replaced.

d. Inspect ejector snaps:

(1) Inspect ejector snaps for alignment of guard with hook. Allowable positions of snap guard are between positions A and B where the top of the guard is aligned with the points of hook (position A) or the bottom of the guard is aligned with the point of the hook (position B) (Figure 4).

(2) Using "V" ring, insert into ejector snap. Ensure ejector snap safety guard closes.

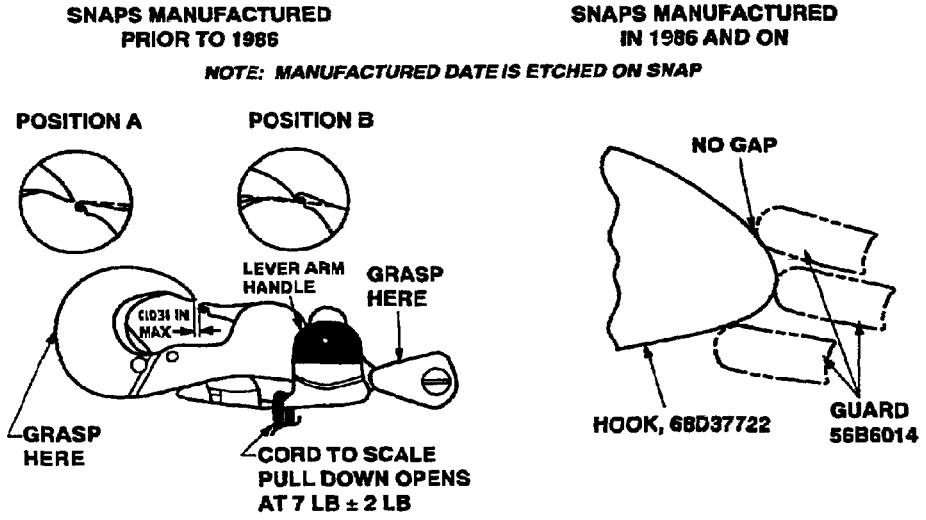
(3) Perform pull force test on ejector snaps. Pull force required to release ejector snap should be 7 ± 2 pounds. The ejector snap lever may be adjusted (spread or crimped) to obtain the required pull (Figure 4).

(4) Ejector snaps failing the routine inspection shall be adjusted/removed from service. It shall be the responsibility of the routine inspection to remove and replace ejector snaps found defective during this inspection.

NOTE

When either the harness or safety strap lack legible date of manufacture or date place in service and a service/total life check cannot be verified, the applicable subassembly shall be considered not RFI and removed from service.

e. The total service life for each subassembly (harness or safety strap) is 13 years, computed from the date of manufacture.



6.2-8020

Figure 4. Hook and Guard Alignment

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ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

AIRCRAFT SAFETY HARNESS ASSEMBLY

PART NO. 1680EG033

List of Effective Work Package Pages

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Reference Material

Organizational and Intermediate Maintenance, Description and Principles of Operation, Aircraft Safety Harness Assembly ..... WP 006 05

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Usable on Codes	1

List of Figures

Title	Page
Aircraft Safety Harness Assembly	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and indentifying parts for the Aircraft Safety Harness Assembly (Figure 1).

2. USABLE ON CODES.

a. The usable on codes in this WP refer to aircraft application for the Crew Restraint Harness Assembly.

b. The following usable on code apply to this WP.

A – P-3, C-2, E-6, C-130

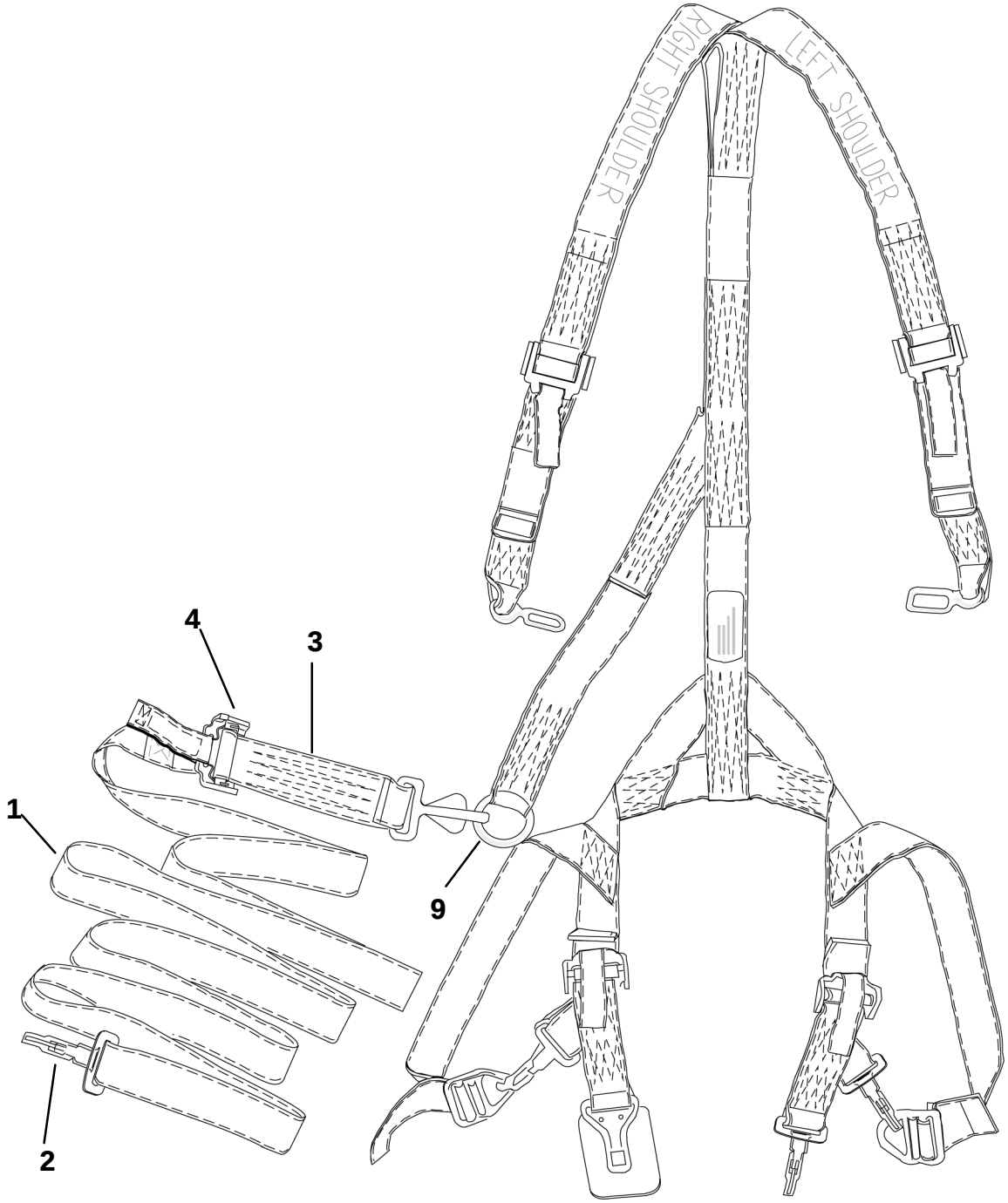

Figure 1. Aircraft Safety Harness Assembly (Sheet 1 of 3)

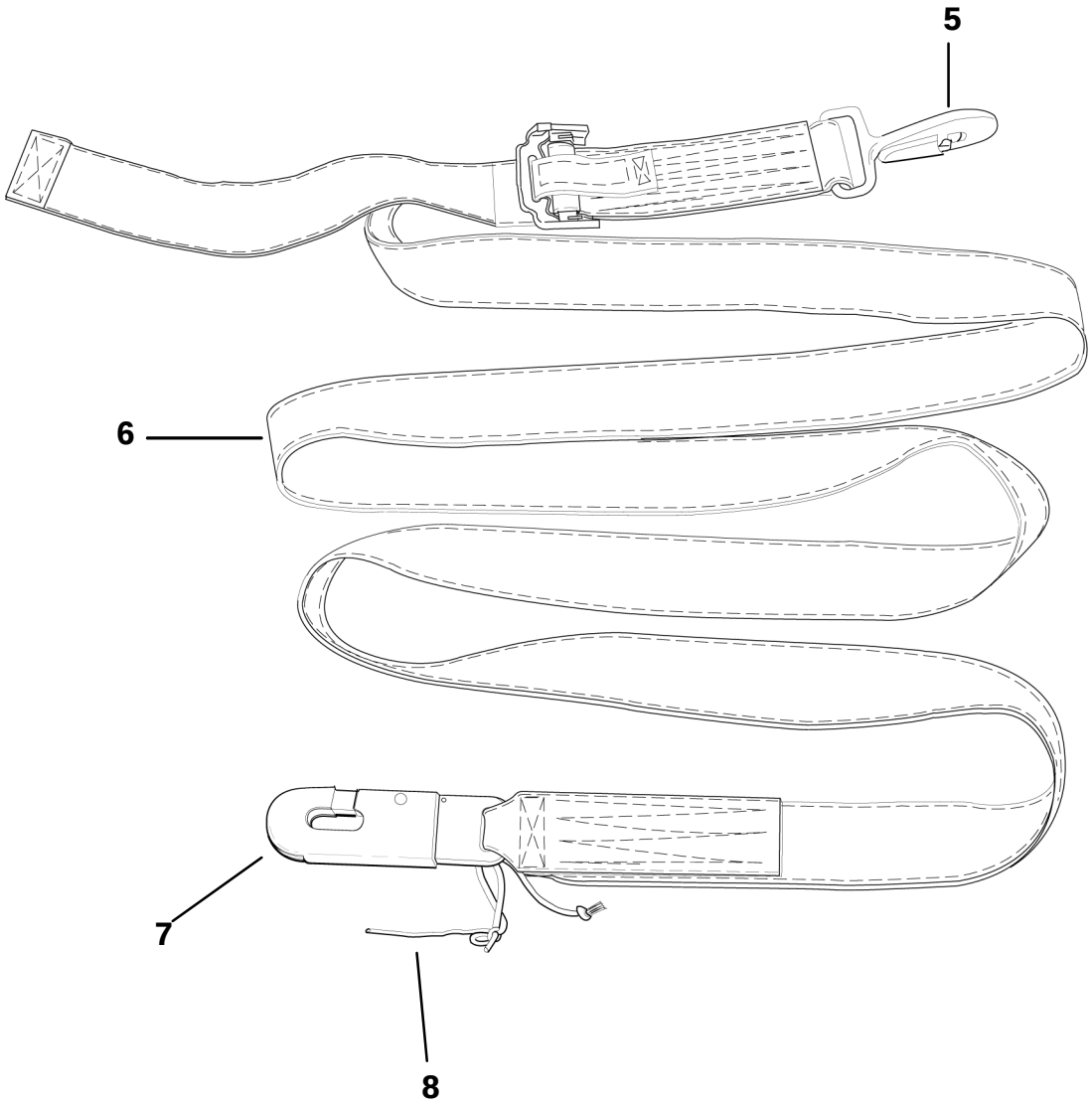

Figure 1. Aircraft Safety Harness Assembly (Sheet 2 of 3)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	1680EG033	AIRCRAFT SAFETY HARNESS ASSEMBLY	REF	A	PAOZZ
1	1680EG033-20	. RESTRAINING STRAP ASSEMBLY	1		XAOZZ
2	MS22017	. . SNAP, PARACHUTE ASSEMBLY	1		XAOZZ
3	1680EG033-9	. .TIE DOWN STRAP ASSEMBLY	1		XAOZZ
4	MS22007-2	. . ADJUSTER ASSEMBLY	5		PAOZZ
5	MS70121-2	. SNAP ASSEMBLY	1		PAOZZ
6	814AS900-7	. .TIE DOWN STRAP ASSEMBLY (MODIFIED) (Note 1)	1		MDGZZ
7	MS70120	. .SNAP, PARACHUTE ASSEMBLY	1		PAGZZ
8	55B6261	. .PIN, SAFETY (Note 2)	2		MDGZZ
9	RR-C-271	. .RING, CONNECTING	1		PAGZZ
		NOTES:			
		1. Modified in accordance with WP 006 06. The Modified assembly was originally P/N 1680EG033-9.			PAGZZ
		2. Make from Wire, Steel, P/N QQ-W-423, Composition 430 CO Type 2, OG.			PAGZZ

Figure 1. Aircraft Safety Harness Assembly (Sheet 3 of 3)

ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

PCU-26/P PERSONNEL PARACHUTE TORSO SUIT HARNESS ASSEMBLY

PART NO. 814AS101-1

AND

HBU-18/A AIRCRAFT SAFETY LAP BELT ASSEMBLY

PART NO. 814AS105-1

List of Effective Work Package Pages

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Reference Material

Organizational and Intermediate Maintenance, Illustrated Parts Breakdown, PCU-26/P Personnel Parachute Torso Suit Harness Assembly and HBU-18/A Aircraft Safety Lap Belt Assembly . . . . . WP 007 02

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Record of Applicable Technical Directives

None

1. DESCRIPTION.

2. GENERAL.

a. The PCU-26/P Torso Harness Assembly and the HBU-18/A Lap Belt Assembly are designed for the aircrew to don in the aircraft. An aircrew wearing the harness is attached to the parachute by mating the canopy release body assemblies to the parachute adapter assemblies on the parachute risers, then fastening the HBU-18/A Lap Belt latch and adjusting the webbing strap ends, while seated in the aircraft.

NOTE

The PCU-26/P Torso Harness Assembly and HBU-18/A Lap Belt assembly are exclusively designed for use by the US Navy Blue Angels, flight demonstration aircrew only.

3. AIRCRAFT APPLICATIONS.

a. To provide aircrew and integrated restraint system during flight demonstration and an emergency bailout capability. This configured PCU-26/P Harness and the HBU-18/A Lap Belt is the authorized intergrated aircrew system for use by the Blue Angels, aboard the flight demonstration F/A-18 aircraft and shall not be used with any other parachute assembly or aircraft system.

4. CONFIGURATIONS.

a. The PCU-26/P Torso Harness consists of a lightweight, flexible, nylon framework mounted on a nylon vest and utilizing a sectional main sling. There are three-quick adjustment, two secondary side adjusters, two cinch strap and two canopy release adjustment points (Figures 1, 2 and 3). The HBU-18/A Lap Belt Assembly consist of a medium weight, flexible, nylon webbing sewn to metal hardware and two adjustable attachment straps (Figures 1 and 4).

5. FUNCTIONS.

a. The harness and lap belt must fit the aircrew member properly to provide the required restraint and protection. When aboard the aircraft and seated, the aircrew attaches the canopy release fittings on the parachute risers to the fittings on the harness, fastens the lap belt hardware assembly and then adjusts the adjustable strap ends.

6. AIRCREW SYSTEMS RECORD.

a. Refer to OPNAVINST 4790.2 (series) for filling out the Aircrew Personnel Equipment Record (OPNAV 4790/159).

7. ORDERING AND REPORTING INFORMATION.

a. Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106 is the Cognizance Field Activity (CFA) and point of contact for manufacturing the PCU-26/P Torso Harness, part number 814AS101-1 and HBU-18/A Lap Belt Assembly, part number 814AS105-1.

b. The top assembly configuration part number (814AS101-1 or 814AS105-1) shall be reported when inspection or maintenance is performed, as applicable.

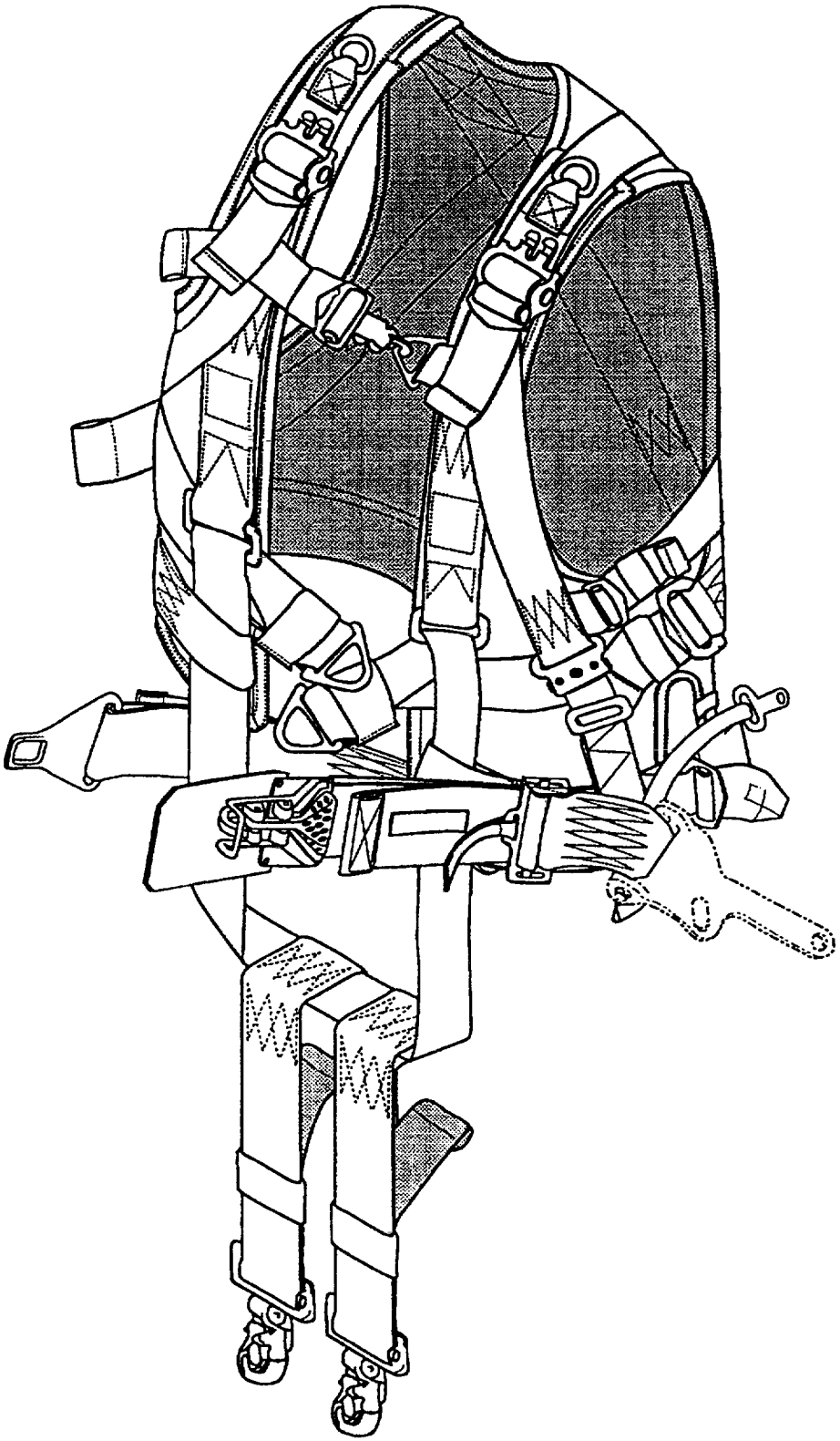

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Figure 1. PCU-26/P Personnel Parachute Torso Suit Harness Assembly and HBU-18/A Aircraft Safety Lap Belt Assembly

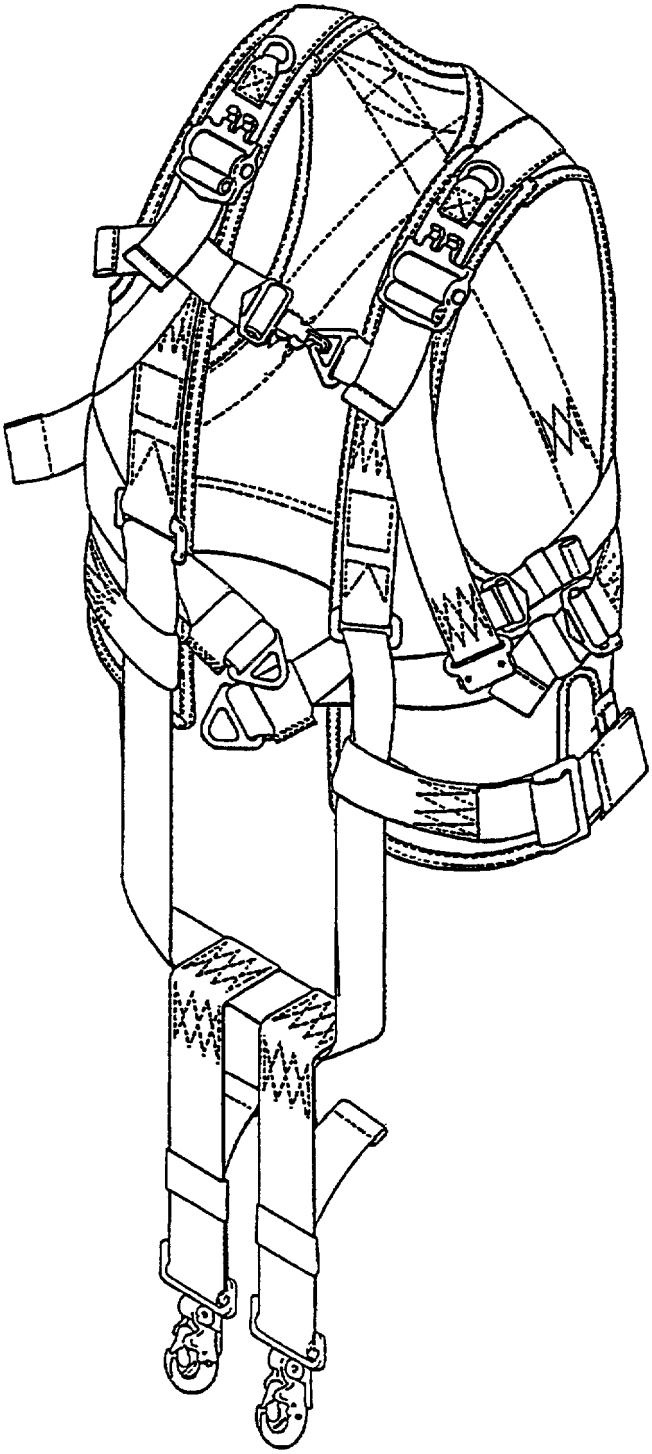

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Figure 2. PCU-26/P Personnel Parachute Torso Suit Harness Assembly (Front View)

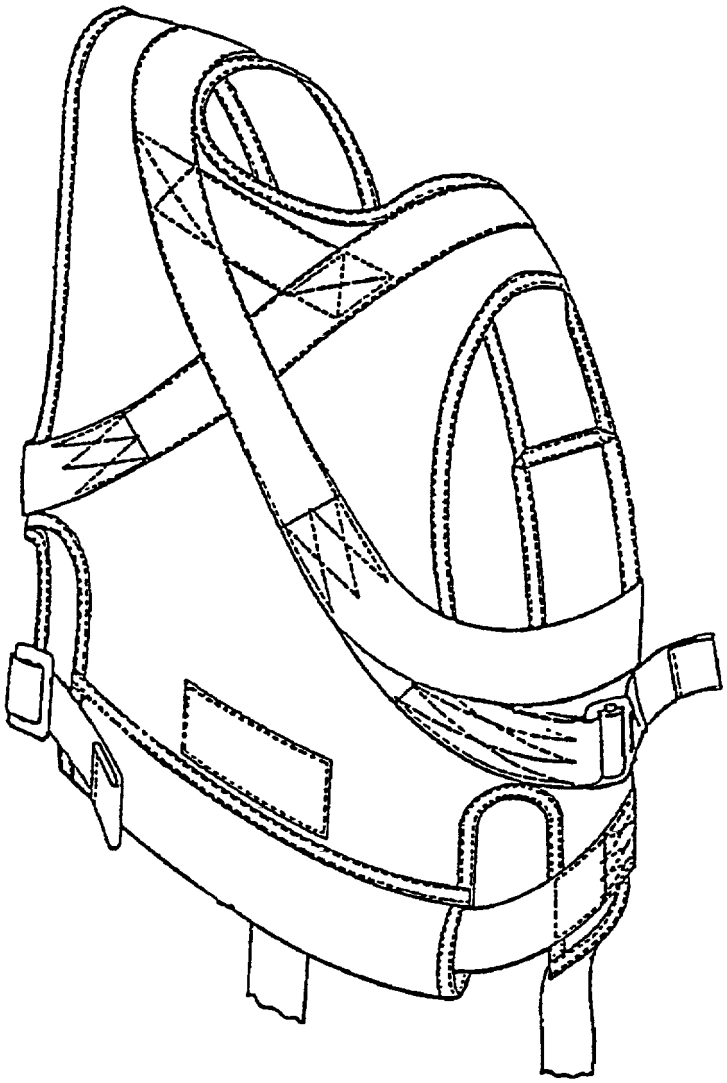

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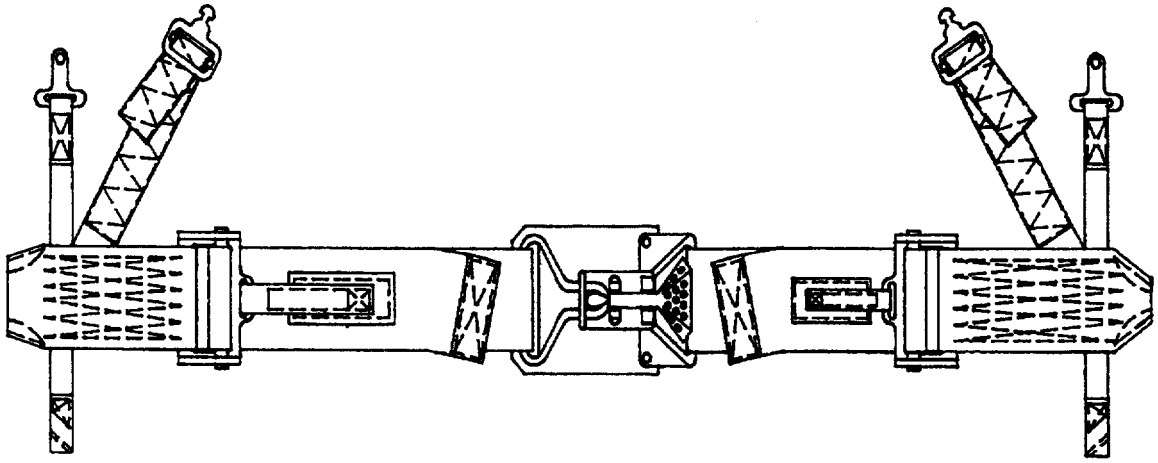
Figure 3. PCU-26/P Personnel Parachute Torso Suit Harness Assembly (Back View)



6.2-261

Figure 4. HBU-18/A Aircraft Safety Lap Belt Assembly

ORGANIZATIONAL MAINTENANCE

INSPECTION AND REPAIR PROCEDURES

PCU-26/P PERSONNEL PARACHUTE TORSO SUIT HARNESS ASSEMBLY

PART NO. 814AS101-1

AND

HBU-18/A AIRCRAFT SAFETY LAP BELT ASSEMBLY

PART NO. 814AS105-1

List of Effective Work Package Pages

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Reference Material

Parachute Loft Requirements/Administration . . . . . WP 003 00
Support Equipment . . . . . WP 005 00

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Record of Applicable Technical Directives

None

1. INTRODUCTION.

2. GENERAL.

a. This work package (WP) contains in-structions for organizational level repair and inspection to ensure that the Personnel Parachute Torso Suit PCU-26/P Assembly Harness and HBU-18/A Lap Belt Assembly remains in ready-for-issue (RFI) status.

b. When performing repairs detailed in the WP, refer to these guidelines:

(1) Review all applicable instructions prior to starting repair.

(2) Ensure that all necessary material required and support equipment are available prior to starting repair.

(3) When required, remove enough material from its source for immediate use only. Ensure that material identification ticket/label remains with the source material at all times.

(4) Quality Assurance (QA) points have been included in the procedures. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Witnessing of QA steps may be delayed by QA if their satisfactory completion is verified in later steps.

3. PRELIMINARY PROCEDURES.

a. To prepare the crew restraint harness assembly for original issue proceed as follows:

Support Equipment Required

Part Number	Nomenclature
—	Needle, Sewing
PX-0	Pen, Marking
3233K83 McMaster-Carr 6100 Fulton Industrial Blvd. Atlanta, GA 30336-2852 www.mcmaster.com	Pot, Melting, Electric
—	Screwdriver

Materials Required

Specification or Part Number	Nomenclature
990065-1 -or- 015-710001-1	Adjuster Assembly, Strap
MIL-L-63460	Cleaner, Lubricant (Breakfree)
MIL-A-9962	Mat, Abrasive
MS22018	Snap Parachute Harness, Quick-Fit Ejector
MIL-S-22473	Sealing, Compound
122-10935-3	Setscrew
H-B-491	Soft Brush
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
PIA-T-5038	Tape, Nylon, Type III, 1-in. Wide, Class 1 or 1A
F-900 Torque Seal (Color Optional)	Sealing Compound
MIL-W-5664	Webbing, Elastic, Cotton, Type I, Class 2

4. APPLICATION OF MARKINGS.

a. When a harness or lap belt assembly is placed in service, the month/year of opening manufacturer's individual shipping container shall be stenciled on the applicable subassembly.

b. Verify correctness of all markings. (QA)

c. Record on Aircrew Systems Record (OPNAV 4790/138), date of manufacture and date placed in service.

5. RIGGING.

6. ATTACHMENT OF CANOPY RELEASE ADAPTER.

WARNING

Harness webbing must be properly routed thru release adapter.

a. Place canopy release adapter on harness with notch facing outward.

b. Form a loop in adjustment strap and place loop thru adapter from back to front.

WARNING

Insure friction slide bar is correctly installed, the word stamped FRONT will face outboard (same direction as notches).

c. Place friction slide bar thru loop of adjustment strap (word FRONT forward) and turn to an angle to allow insertion into adapter.

d. Form loop in main sling harness webbing, using two forward layers. Place loops thru adapter above adjustment strap loop (Figure 1).

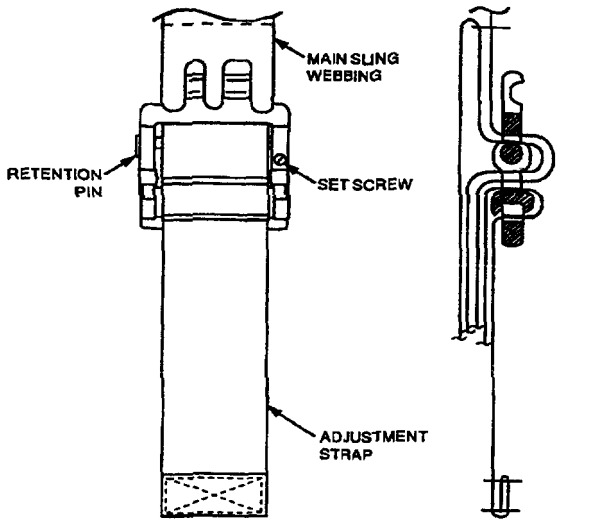

Figure 1. Attachment of Canopy Release Adapter

NOTE

Setscrew is a one time use item (if a new setscrew is not available reuse of a setscrew shall require application of sealing compound MIL-S-22473 Grade A to threads).

e. Install retention pin and setscrew. (QA)

f. Apply torque seal to screwhead. (QA)

7. REPLACEMENT OF CHEST STRAP EJECTOR SNAP.

a. Remove stitching at end of adjustment strap, using care not to damage webbing.

b. Remove defective ejector snap by unreeving chest strap from adapter and ejector snap.

c. Inspect replacement ejector snap for proper function, corrosion, sharp edges, and damage.

d. Reeve chest strap thru adapter and ejector snap (Figure 2). Ejector snap must be facing wearer.

NOTE

Ensure the ejector snaps are installed so that the latch arm mechanism opens outward.

8. REPLACEMENT OF LEG STRAP EJECTOR SNAP.

a. Remove stitching at end of adjustment strap, using care not to damage webbing.

b. Remove defective ejector snap by unreeving leg strap from adapter and ejector snap.

c. Inspect replacement ejector snap for proper function, corrosion, sharp edges, and damage.

d. Reeve leg strap thru adapter and ejector snap. Ejector snap must be facing wearer.

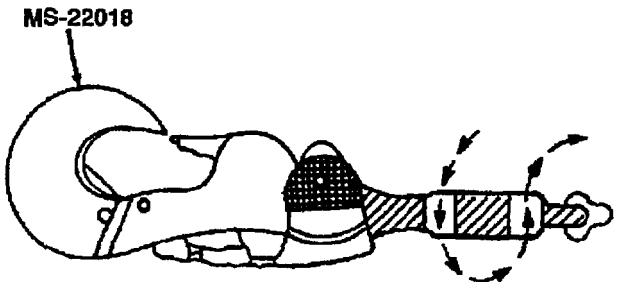

Figure 2. Leg Strap Ejector Snap Replacement

NOTE

Ensure the ejector snaps are installed so that the curvature of male end conforms to crewmembers torso. Also, verify that the latch arm mechanism opens outward.

9. REPLACEMENT OF ELASTIC RETAINER WEBBING.

a. Remove damaged elastic retainer from harness.

b. Cut a 5-in. length of 1-in. wide cotton elastic webbing for retainer. Dip ends in a wax melting pot to prevent raveling.

c. Fold webbing in half and wrap webbing around harness, and align ends. Sew a row of stitching 1/4-in. from the aligned ends, sewing the entire width of the webbing.

d. Turn retainer inside out, so ends are on the inside, and slide it into position.

10. REPLACEMENT OF HARNESS TACKING.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove damaged tacking from harness.

b. Hand tack with one turn of size 6 thread, doubled and waxed; tie off. Trim end to 1-in.

11. FITTING AND ADJUSTMENT PROCEDURES.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

12. GENERAL.

a. The harness is designed so that any-one can adjust them. Proper fit, however, depends on knowing how a harness should look and feel as well as how it is adjusted. This is especially important with the torso harness since they are integrated into the upper torso restraint system. To prefit or size the harness means primarily to determine the proper mainsling length for the aircrew torso.

b. There are three quick-adjustment points. In addition, two secondary adjusters are provided adjacent to the hip links. Normally about 4-in. of the seat sling webbing will extend thru these adjusters.

c. If the user is of very small stature, it may by necessary to extend the seat sling thru these adjusters as much as 8-in. In this event, it may be better to use the smaller size harness. Size adjustment guides are indicated on the mainsling webbing at points near the ends of the sectional seat sling webbing that passes thru the secondary adjusters.

d. Slip harness over shoulders.

e. Assume a forward leaning stance.

f. Take up sling adjustment webbing uniformly at each secondary adjuster until seat sling is tight against buttocks. Ensure that size adjustment guides are set identically on both secondary adjusters.

NOTE

Take particular care to avoid excessive length in the lower sling. If the length is excessive, the sling slides so far under the buttocks that it loosens excessively as the body bends to a seated position and the adjusters are less effective in tightening the sling for best upper torso restraint.

g. Check mainsling, legstraps and hardware for twists and improper positioning.

h. Fasten chest strap and leg straps and adjust as required.

i. Stow all excess webbing ends in elastic keepers provided.

j. Adjust horizontal backstrap webbing so it is snug against lumbar region of back. Route webbing thru buckle, tackings can be made thru two piles of webbing, tack in two places with one turn size 6 thread, doubled and waxed (Figure 3); tie off.

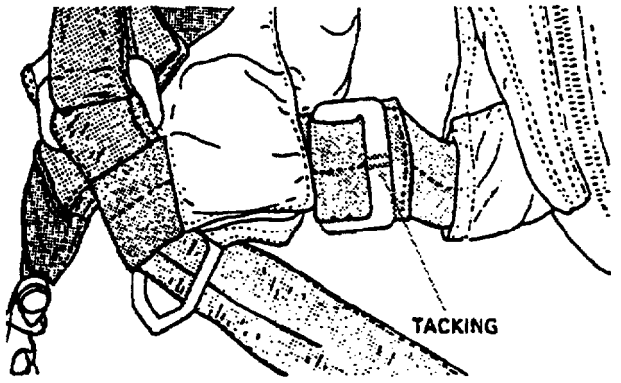

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Figure 3. Tacking at Buckle

13. SERVICE LIFE CHECK.

a. The service/total life for the restraint harness and lap belt is 5 years from date it was placed in service or 15 years from the date of manufacture, whichever occurs first.

NOTE

When harness is removed from service, all parachute and lapbelt adapter hardware shall be removed and screened, if still serviceable retain for future use.

b. Check markings for completeness, legibility and agreement with assembly records.

c. Compare configuration of restraint harness assembly to that presented in WP 007 02 Illustrated Parts Breakdown.

14. HARNESS INSPECTION.

a. The Torso Suit Harness Assembly used as in-flight safety/restraint device shall be given a special inspection every 90 days, plus or minus 30 days to coincide with aircraft inspections.

b. Inspect harness webbing for fraying, discoloration, cuts, tears, loose stitching, contamination, and general serviceability.

c. Inspect harness hardware for damage, corrosion, security of attachment, ease of operation, and proper installation.

d. Each harness assembly will have serviceable elastic excess webbing keepers on each chest, back, and leg strap. If keepers are unserviceable or missing, they will be replaced.

e. Life preserver retention system for cuts, rips, frayed or weakened webbing, security of stitching.

f. LPA D-Ring attachment tabs for proper installation, condition and security of attachment.

g. Webbing for cuts, tears, fraying, contamination, deterioration and security of stitching.

NOTE

When the harness lacks a legible date of manufacture or date place in service and a service/total life check cannot be verified, the harness shall be considered not (RFI) and removed from service.

15. GUSSET TEAR REPAIRS.

a. Cut a length of 1-in. Type III nylon tape, 2-in. long and sear ends.

b. Fold nylon tape in half, place folded material on either side of tear, in gusset and sew with a 1-in. box-X stitch, backstitch 1/2-in. (Figure 4).

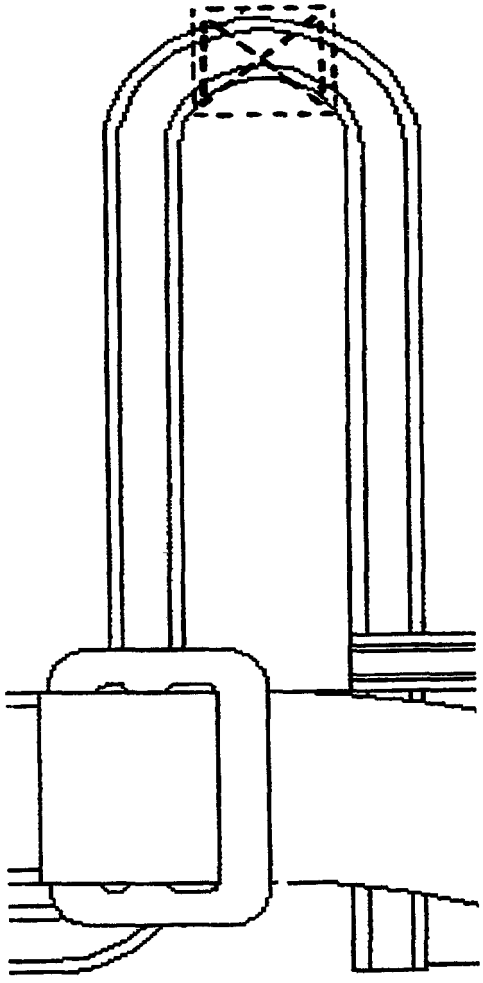

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Figure 4. Folding of Nylon Tape Around Gusset

16. ATTACHMENT OF LPU-36 FLOTATION COLLAR TO PCU-26/P.

Materials Required

Part Number	Nomenclature
PIA-T-5038	Tape, Nylon Type IV, Class 1 1-in. Wide
PIA-T-5038	Tape, Nylon Type IV, Class 1 1 1/2-in. Wide
PIA-W-4088	Webbing, Nylon Type IV, 3-in. Wide Class 1, 1A, or 2
PIA-W-5664	Webbing, Elastic Cotton, 1-in., Type 1 Class 2
V-T-295	Thread, Nylon Size E, Type I or II Class A
V-T-295	Thread, Nylon Size 6, Type I or II Class A
- or -	
A-A-52080-B-2	Tape, Lacing And Tying Finish B, Size 2, Type I Black
Open Purchase	Bar Slide, Single, 1-in. (See Note) Item Number H2053Quantity (4)

NOTE: Para-Gear Equipment Co., Inc.
3839 West Oakton St.
Skokie, IL 60076-3438
(847) 679-5905
Order Desk Toll Free: 877-272-4327 or 800-323-0437
www.para-gear.com (all lower case)

a. Modification and layout for the attachment of the LPU-36 life preserver.

(1) Lay out torso harness with the outside back surface facing up.

(2) Using a white pencil or equivalent, mark a centerline on the back of the harness.

(3) Mark the intersecting points of the back and shoulder cross straps.

(4) Mark parallel lines both to the left and right of the centerline measuring 3 3/4-in. from the line (Figure 5).

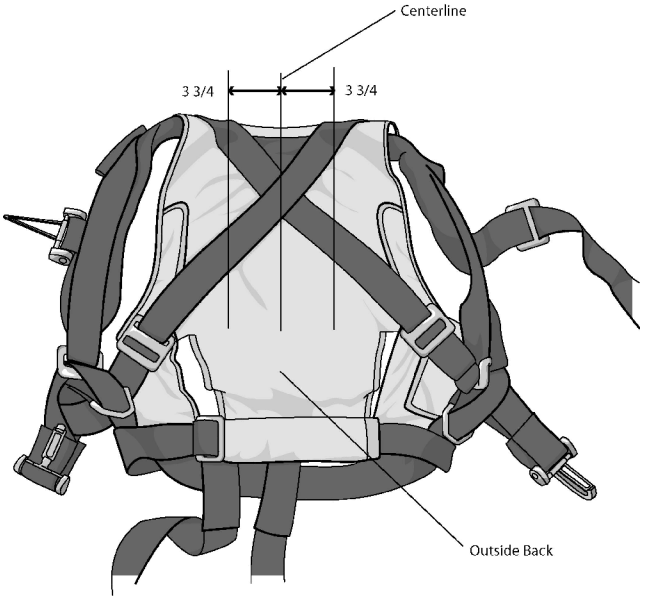

Figure 5. Marking Location of Outer Guide Straps

(5) Turn harness over with the inside back surface facing up.

(6) Using a white pencil or equivalent, mark a centerline on the inside surface.

(7) Mark the intersecting points of the back and shoulder cross-straps.

(8) Mark parallel lines both to the left and right of the centerline measuring 3 3/4-in. from the line (Figure 6).

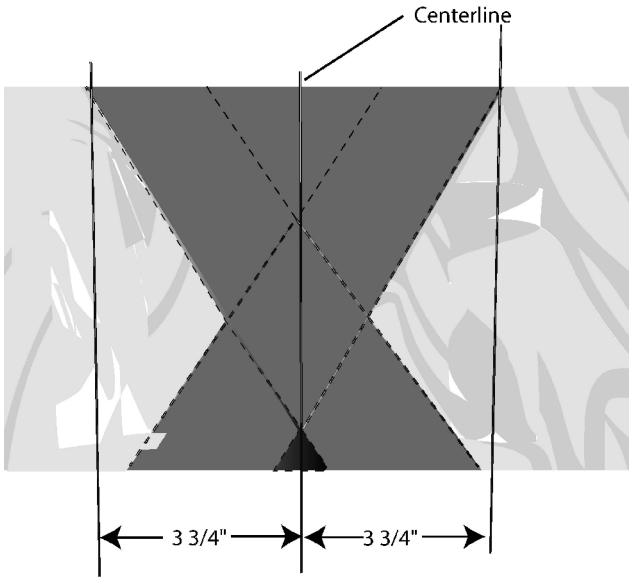

Figure 6. Marking Location of Inside Reinforcement Patches

(9) Measure and sear cut four pieces of nylon tape (PIA-T-5038, Type IV, Class 1A, 1 1/2-in. wide) 4 3/8-in. long.

(10) Using a white pencil or equivalent, mark a centerline (3/4-in. on center) through the length of each piece of nylon webbing.

(11) Position the harness with the outside back facing up.

(12) Position the centerline of back strap guide on the layout mark, with the inboard corners approximately touching the harness webbing (Figure 7).

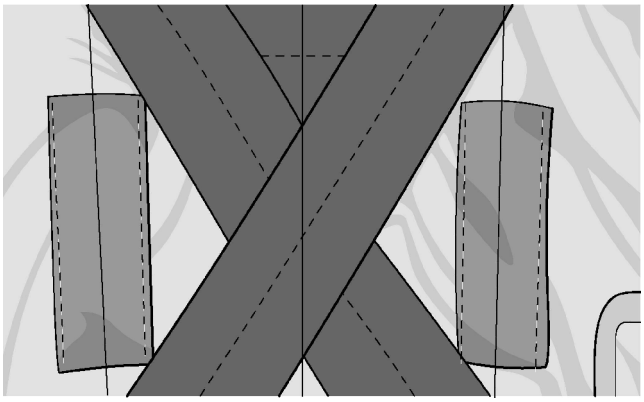

Figure 7. Location of Back Strap Guides

(13) Sew down the edges of the back strap guide. Leaving the top and bottom open, repeat for other side.

(14) Lay torso harness with the inside of the back facing up.

(15) Position the centerline of two reinforcement patches on the layout marks, sew down the edges of the back strap reinforcement patch. Ensure that reinforcement patches are located in same position as the back strap guides on the back of the harness (Figure 8).

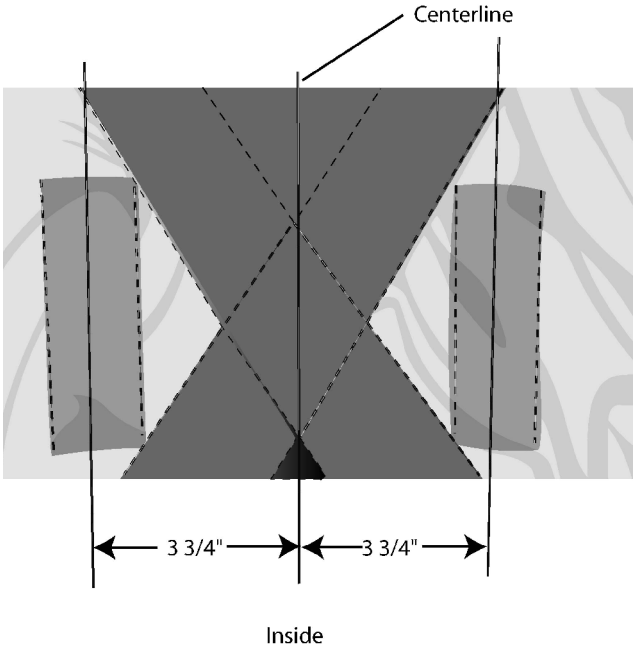

Figure 8. Attachment of Reinforcement Patches

(16) Measure and sear cut 4 pieces of 1-in. wide nylon webbing (PIA-T-5038, Type IV, Class 1A) 4-in. long.

(17) Route a piece of nylon webbing around the center bar of a single bar slide, aligning the seared ends of the webbing.

(18) Sew a tack stitch 1/8-in. from the aligned ends on each bar slide sub-assembly.

(19) Using a white pencil or equivalent, mark a centerline (1/2-in. on center) through the length of each piece of nylon webbing (Figure 9).

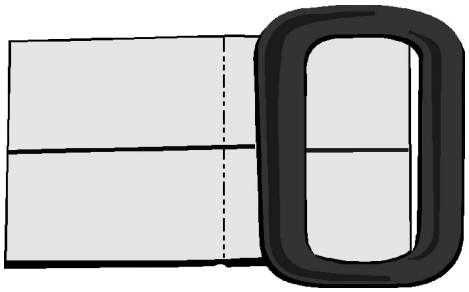

Figure 9. Single Bar Slide

(20) With the outside back facing up, align the centerline of the single bar slide assemblies with the centerline of the back strap guides. Sew in place approximately as shown in Figure 10.

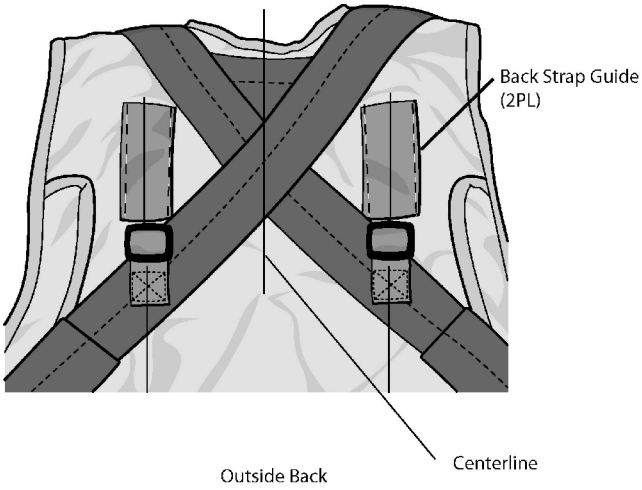

Figure 10. Attachment of Single Slide Bars

(21) Sear cut 2 pieces of 3-in. webbing 3 1/2-in. long.

(22) Fold length wise, creating the shoulder strap guide.

(23) Measure 2 1/4-in. up from the chest strap and sew shoulder strap guide to binding tape of harness garment (Figure 11).

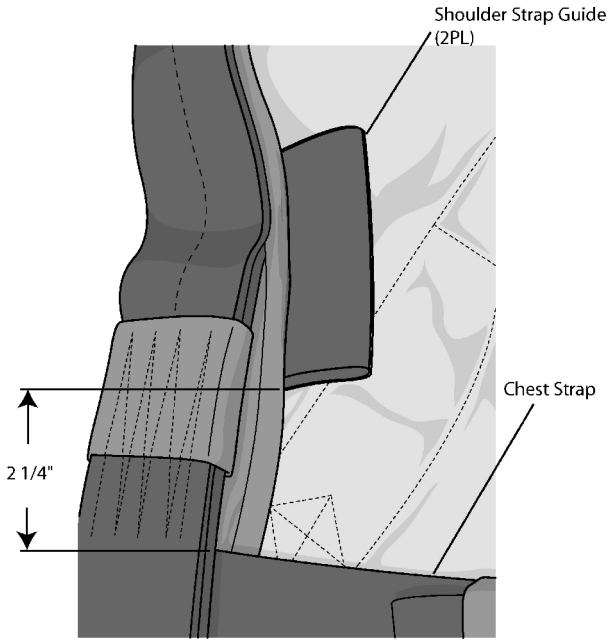

Figure 11. Attachment of Shoulder Strap Guides

(24) Repeat procedure on other side.

(25) On front of harness measure and mark 5-in. up from harness D-Ring, repeat for other side.

(26) Slightly angle (approximately 30 degrees) the front lower single bar slides with the inside corner of the webbing on the 5-in. mark. Sew in place with a 3/4-in. box X stitch (Figure 12).

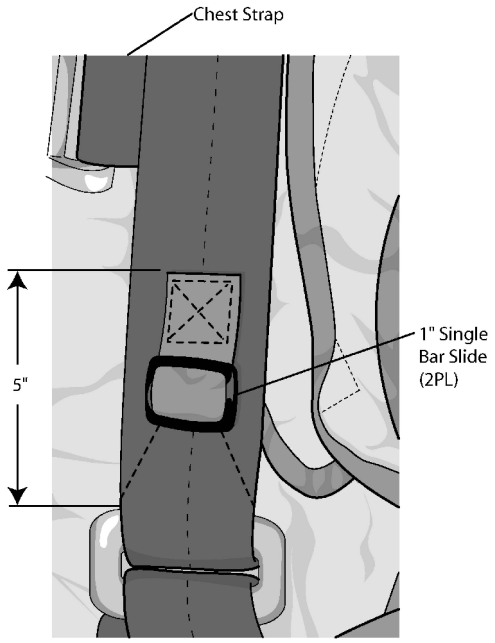

Figure 12. Attachment of Front Lower Single Slide Bars

(27) Cut one piece of 1-in. elastic webbing 4 1/2-in. long.

(28) Wrap elastic retainer around harness webbing on right side, above D-Ring but below single bar slide.

(29) Align edges of elastic webbing and sew 1/8-in. from the edge.

(30) Turn elastic webbing inside out, placing seam on inside (Figure 13).

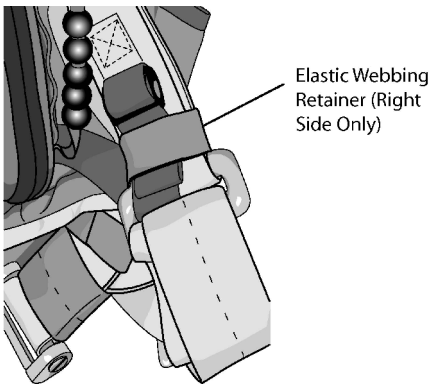

Figure 13. Elastic Retainer Webbing

b. Attachment of the LPU-36 to the PCU-26 torso harness.

(1) Align the LPU-36 with the top of the PCU-26 harness with harness front down and collar label up (Figure 14).

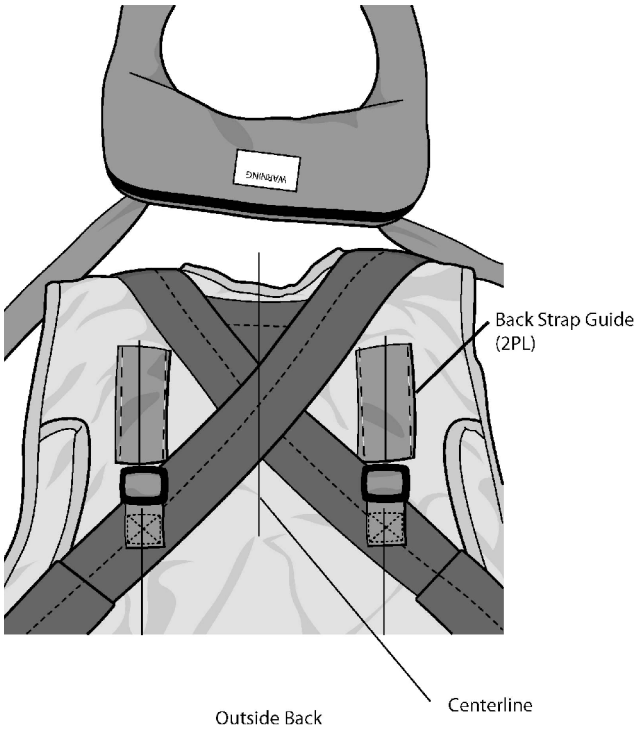

Figure 14. LPU-36 Layout

(2) Using a packing fid or equivalent, thread left hand LPU-36 strap through left back guide strap. Pull the left strap LPU-36 until grommet on preserver is tight against back guide strap (Figure 15).

Figure 15. LPU-36 Back Attachment

(3) Route through single bar slide as shown (Figure 16).

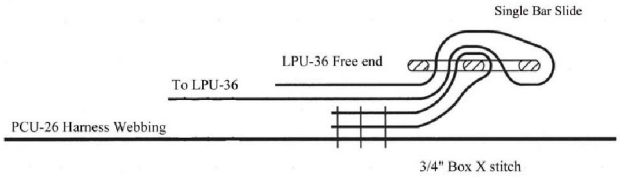

Figure 16. Single Bar Slide Routing

(4) Repeat for right side.

(5) Turn harness over. Unsnap left attachment strap on LPU-36. Using a fid or equivalent, route attachment strap up through shoulder strap guide and re-snap.

(6) Repeat for right side.

(7) Attach lower left hand attachment strap of the LPU-36 by routing the strap from the inside, through D-ring (Figure 17).

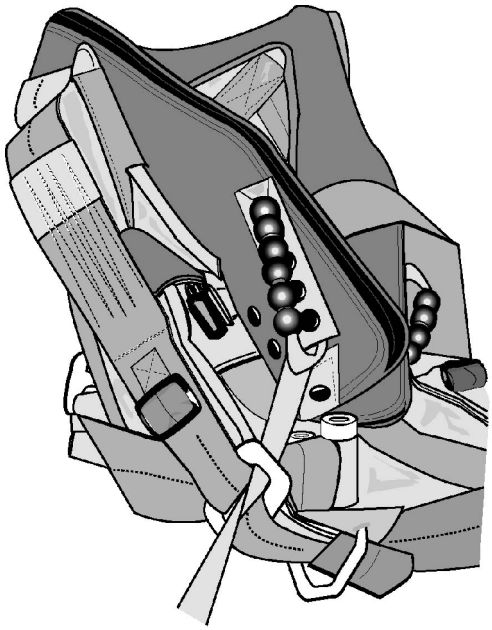

Figure 17. LPU-36 Front Attachment Strap Routing

(8) Route through single bar slide as shown in (Figure 16). Leave slack in strap. This will be adjusted during fitting of the harness/LPU-36.

(9) Repeat for the right side.

c. Fitting of the LPU-36 to aircrew.

(1) Have aircrew don harness and adjust harness for proper fit.

(2) Adjust the length of the left side front LPU-36 attachment strap until all slack is removed. The attachment strap should be snug but not tight.

(3) Repeat for right side.

NOTE

A properly fitted life preserver should not interfere with helmet or the aircrew's ability to move head/neck in the full range of motion. Adjust as necessary.

(4) Carefully remove harness from aircrew without disturbing the four adjustment straps.

(5) Using a curved needle, tack the four adjustment webbings with one turn of 6 cord or lacing tape single. Tacking shall pass from the back of single bar slide and up through all layers of strap and back down through. Knots will be on the inside, towards harness webbing. Do not pierce harness. Tie off with a surgeons knot followed by a square knot, trim ends.

(6) Fold and stow excess strap under elastic keepers on right side.

(7) On the left side, fake excess webbing and tack both ends.

ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

PCU-26/P PERSONNEL PARACHUTE TORSO SUIT HARNESS ASSEMBLY

PART NO. 814AS101-1

AND

HBU-18/A AIRCRAFT SAFETY LAP BELT ASSEMBLY

PART NO. 814AS105-1

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

Organizational and Intermediate Maintenance Description and Principle of Operation, PCU-26/P Personnel Parachute Torso Suit Harness Assembly, and HBU-18/A Aircraft Safety Lap Belt Assembly . . . . . WP 007 00

Alphabetical Index

Title	Page
Introduction	1
Usable On Codes	1

List of Figures

Title	Page
PCU-26/P Personnel Parachute Torso Suit Harness Assembly	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

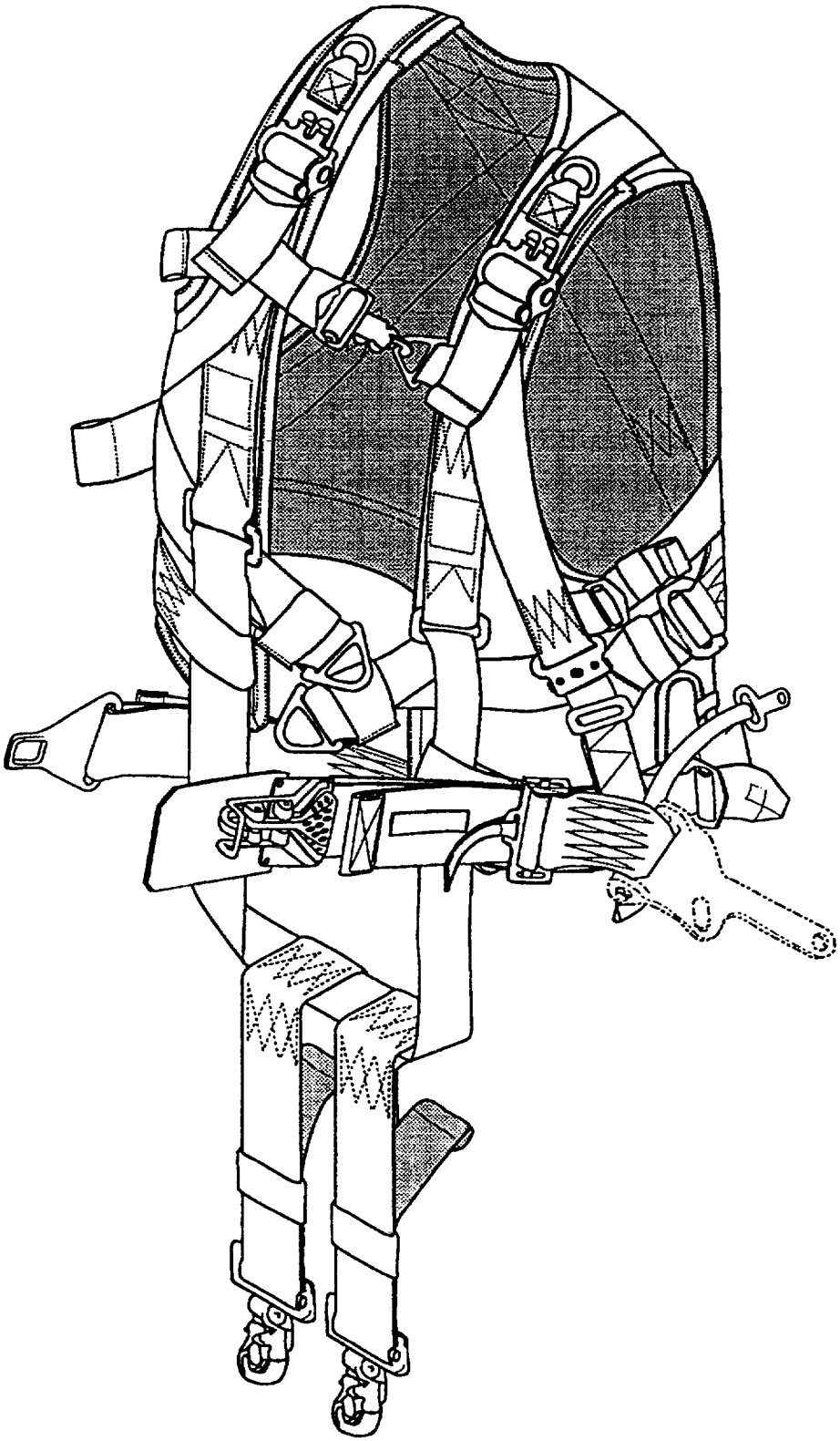
a. This Work Package (WP) contains information for ordering and indentifying parts for the PCU-26/P Parachute Restraint Harness and HBU-18/A Aircraft Safety Lap Belt (Figure 1).

2. USABLE ON CODES.

a. The usable on codes in this WP refer to aircraft application for the Parachute Restraint Harness and Lap Belt.

b. The following usable on code apply to this WP.

A – F/A-18A/B (Blue Angels Only)



6.2-263

Figure 1. PCU-26/P Personnel Parachute Torso Suit Harness Assembly (Sheet 1 of 4)

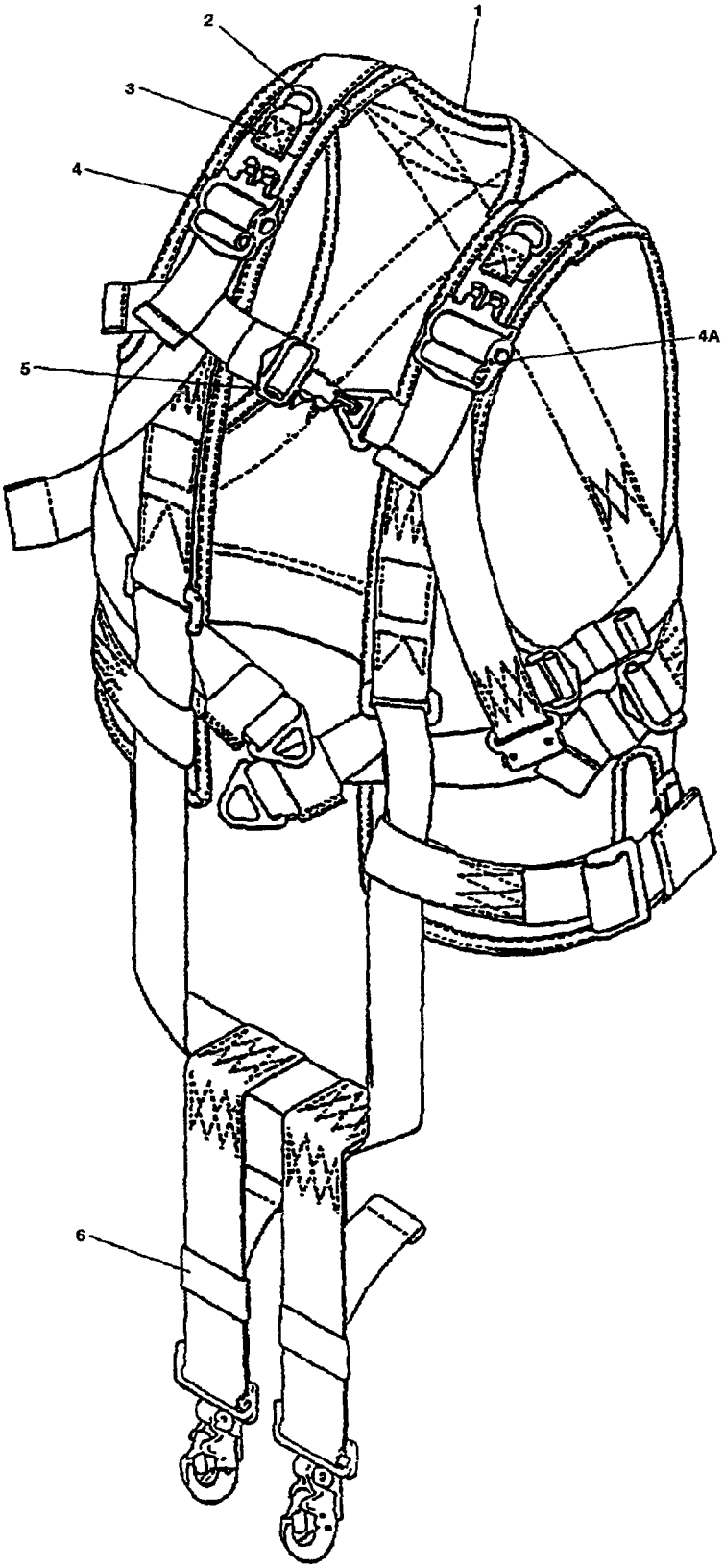
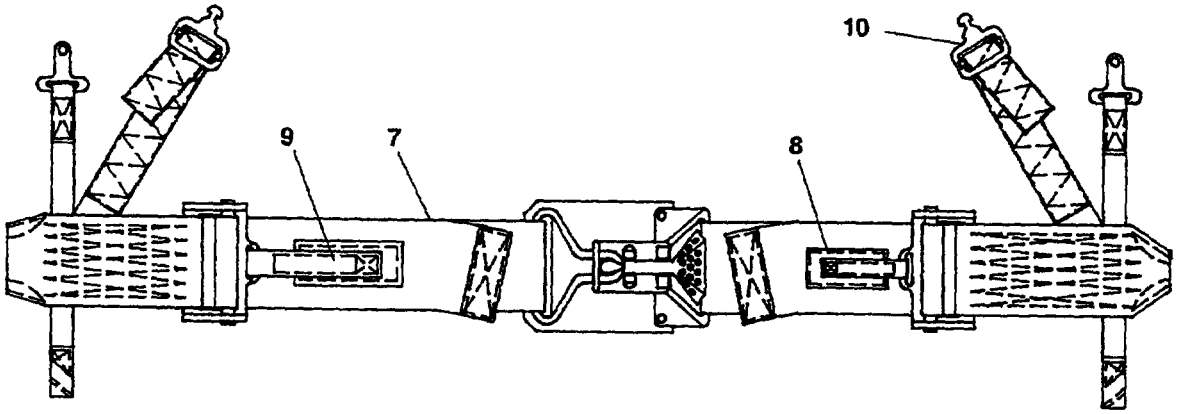


Figure 1. PCU-26/P Personnel Parachute Torso Suit Harness Assembly (Sheet 2 of 4)



6.2-265

Figure 1. PCU-26/P Personnel Parachute Torso Suit Harness Assembly (Sheet 3 of 4)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
1	814AS101-1	. HARNESS ASSEMBLY PCU-26/P (Note 1)	2	A	PFOOO
2	814AS101-22	. . D-RING	2		PAGZZ
3	814AS101-15	. . LOOP	2		MGOOO
4	990065-1	. . ADJUSTER ASSEMBLY, STRAP	2	*	PAOGG
	015-710001-1	. . ADAPTER ASSEMBLY, CANOPY RELEASE	2	*	PAOGG
4A	122-10935-3	. . SCREW	2		PAOGG
5	MS22018	. . SNAP PARACHUTE HARNESS QUICK FIT EJECTOR	3		PAGZZ
6	814AS101-19	. . KEEPER, ELASTIC	7		MGOOO
7	814AS105-1	. BELT (Note 1)	1		PFOOO
8	676AS100-1	. . LABEL	2		PAGZZ
9	814AS105-10	. . PULL TAB ADJUSTMENT	2		PAGZZ
10	MBEU69389	. . QUICK RELEASE (MALE)	2		PAGZZ

NOTE: 1. Not a Stock Item.

Figure 1. PCU-26/P Personnel Parachute Torso Suit Harness Assembly (Sheet 4 of 4)

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ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

PCU-33/P SERIES PARACHUTE RESTRAINT HARNESS ASSEMBLY

PART NO. 829AS100

List of Effective Work Package Pages

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3	7						

Reference Material

Intermediate Maintenance, Repair Procedures, PCU-33/P Series Parachute Restraint Harness Assembly . . . . . WP 008 03

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Custom-Fit (CF) Procurement Procedures for Aircrew	12
Description	2
Aircraft Applications	2
Configurations	2
General	2
Function	2
Ordering and Reporting Information	12
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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 623	14 Feb 96	Riser Restraint Keeper (RAMEC P-08-95)	1 Jul 96	31 Dec 03

1. DESCRIPTION.

2. GENERAL.

a. The PCU-33/P series Parachute Restraint Harness Assemblies provide for integration of the aircrew's parachute harness, lap belt assembly and shoulder restraint harness. Harness webbing is reeved thru the torso garment to retain it in a position to help easy donning and doffing. The harness provides the mobility to the aircrew while providing restraint in the seat and serves as a parachute harness in case of aircraft ejection or bail-out.

b. The PCU-33/P series parachute restraint harness consists of nylon webbing encased in a nylon fabric channel and is configured into a sleeveless, legless, torso garment available in 16 stock sizes, extra small to extra-extra large long. In addition to these stocked sizes a custom-fit harness is available to those aircrew who are unable to be properly fitted with the available stock sizes. Shoulder restraint adjustable straps with canopy release adapters provide attachment of the parachute riser. A lap belt with quick-release adapters is attached to lap belt alignment webbing. The lap belt provides attachment to ejection seat, survival seat kit and parachute assembly. Two lap belt support straps are attached to the main sling on both sides of the harness near the chest strap channel and extending down forming a loop around and secured to the lap belt adjacent to the release fitting adapters. These straps provide support in carrying the weight of the seat kit transmitted thru the harness during parachute opening shock preventing damage to the abdominal area. Anti-rotation cinch straps are installed on front leg straps to ensure proper harness alignment while suspended and to improve overall fit of the harness. Webbing bands are incorporated at waist area for attaching a life preserver in event a survival vest is not used and allowing for various configurations as authorized. The garment is closed by a slide fastener at the front. Hook and eyelets are installed under slide fastener to reduce strain on slide fastener when closing. An adjustable chest strap provides final one point adjustment of parachute restraint harness to the wearer. The chest strap is secured by a reversible adapter and hook and pile tape. A D-Ring with gate is attached to right shoulder adjustable strap interweaved with canopy release adapter. The D-Ring with gate is for attaching a helicopter hoist hook during rescue.

NOTE

Functions, inspection and maintenance instructions apply equally to all approved configurations except as may be noted.

3. AIRCRAFT APPLICATIONS.

a. The subassemblies listed in Figure 1 make up PCU-33/P parachute restraint harness.

4. CONFIGURATIONS.

a. The only authorized configurations are shown in Figures 2 thru 7.

5. FUNCTION.

NOTE

The harness must fit aircrew properly to provide the most restraint and protection. For use with bulkier winter flight clothing, it may be necessary to use a larger size harness.

a. The harnesses are worn by aircrew aboard an aircraft fitted with a parachute designed for the integrated system.

b. These harnesses are attached to the parachute as follows:

(1) When aboard the aircraft and seated, the aircrew attaches the canopy release to the harness release adapters.

(2) The lap belt is attached to Seat Kit Unit (SKU), Rigid Seat Survival Kit (RSSK), or Standard Soft Pack (SSP) by attaching the respective lap belt adapters.

6. SIZING AND FITTING.

a. The PCU-33/P series parachute restraint harness must fit the aircrew properly to provide protection and comfort. The proper size harness must be identified and fit of the selected size must be observed. Also, the fit must be observed with aircrew in the ejection seat to ensure that best restraint is provided. Lastly, aircrew must be suspended in the harness and distribution of weight and body shift observed. To fit the PCU-33/P restraint harness to the aircrew, do as follows:

(1) Select an initial harness size from range of stock sizes by observing the body build and height of aircrew. The size initially selected may not prove to be the best fit for the aircrew. A large or smaller size harness is tried until best fit is achieved. The parachute restraint harness is illustrated in (Figure 8) with nomenclature of harness parts requiring attention in sizing and fitting. To find the best fitting harness see the following when the aircrew is donning and adjusting the harness.

AIRCRAFT HARNESS APPLICATION CHART

AIRCRAFT									
AV-8B, TAV-8B	X		X	X			X	
TA-4	X	X	X			X	X	
EA-6	X	X	X			X	X	
E-2	X		X			X	X	X
F-4	X	X	X			X	X	
F-14	X	X	X			X	X	
F/A-18	X	X	X			X	X	
T-45	X	X	X			X	X	
S-3	X	X	X		X		X	
T-2C	X	X	X			X	X	
HARNESS PART NUMBER	829AS100-7	829AS100-36	829AS100-10	829AS100-37	829AS100-26	829AS100-38	829AS100-39	829AS100-28
HARNESS TYPE DESIGNATOR	PCU-33/P	PCU-34/P	PCU-36/P	PCU-39/P	PCU-50/P	PCU-51/P	PCU-52/P	PCU-55/P
HARNESS CONFIGURATION DESCRIPTION	BASIC HARNESS	POCKETS. EQUIP. LPA	BASIC. SV-2 STRAPS	POCKETS. EQUIP. LPA OBOGS	POCKETS. EQUIP. LPA. DILUTER REG	POCKETS. EMPTY	POCKETS. EMPTY. SV-2	HEED POCKET, SURVIVAL ITEM

6.2-5510B

Figure 1. Aircraft Harness Application Chart

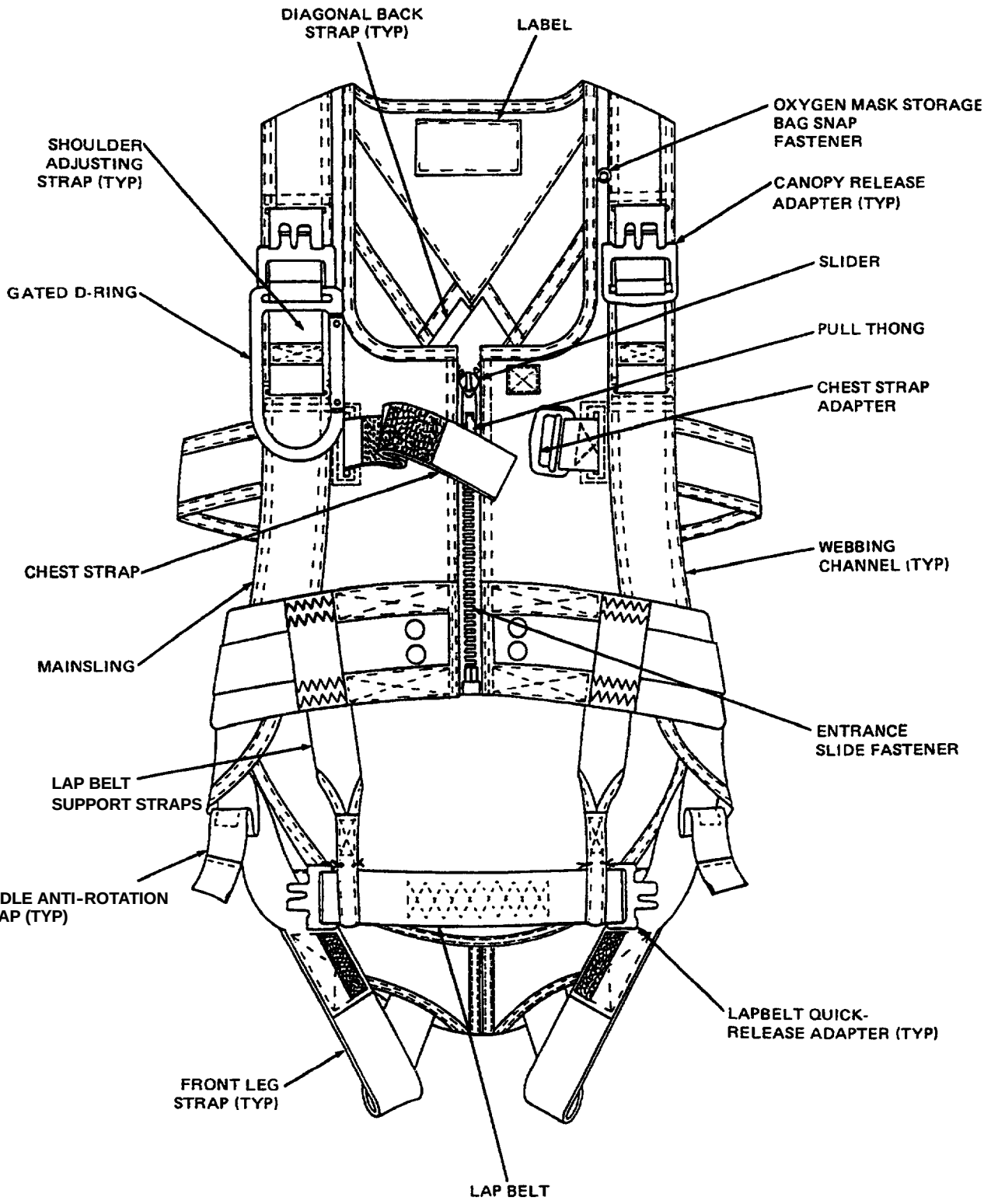
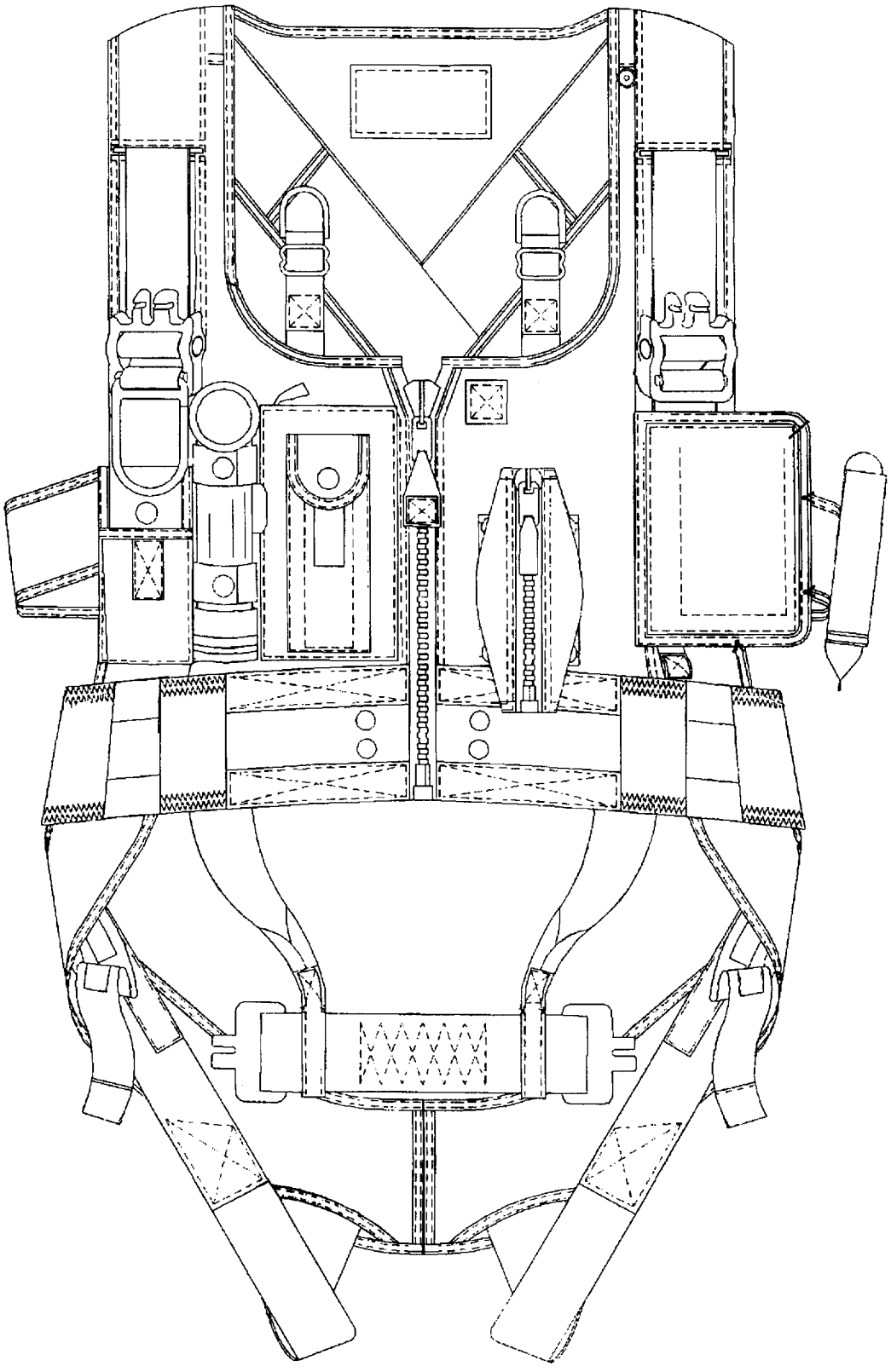
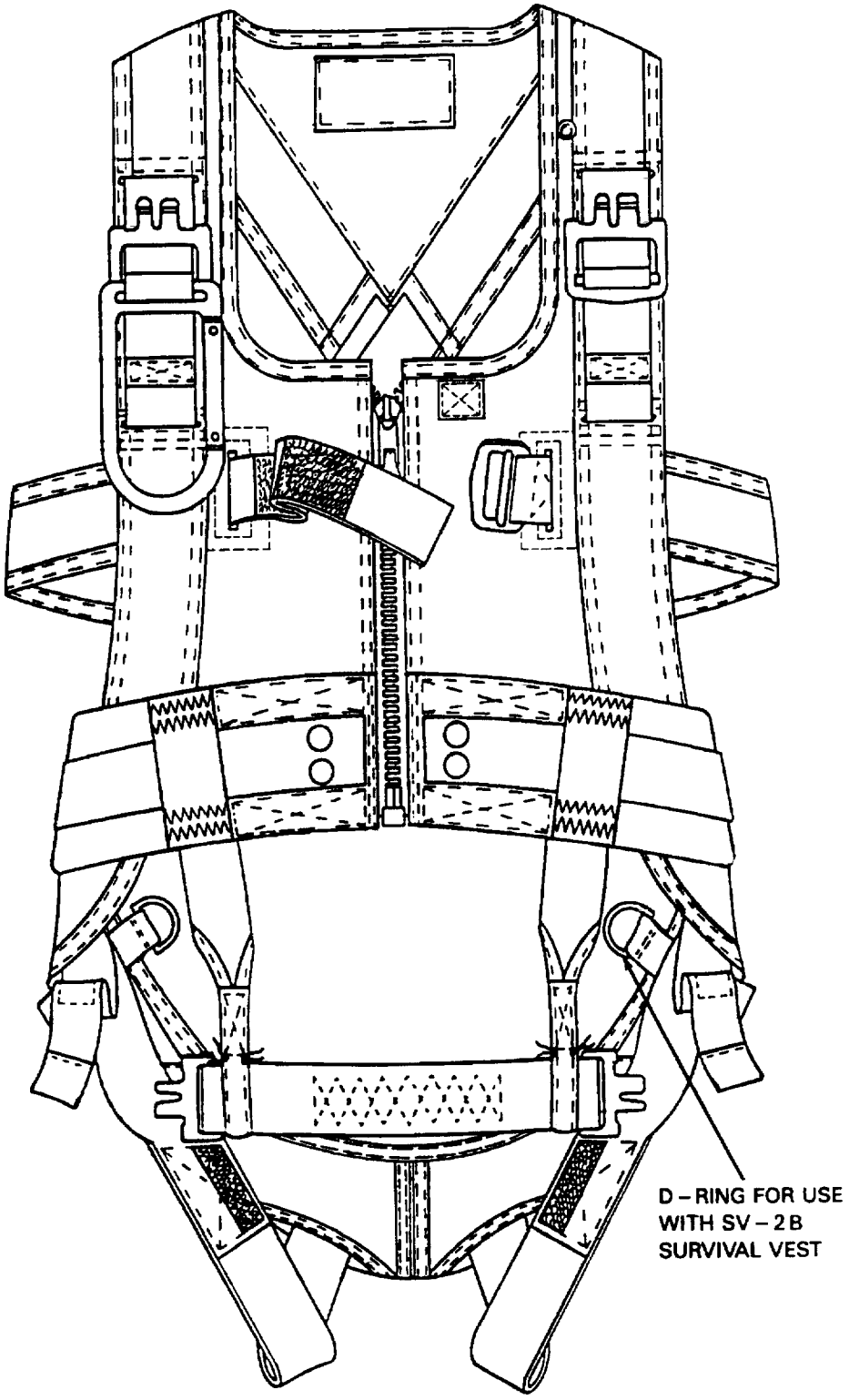


Figure 2. PCU-33/P, 829AS100-7 Parachute Restraint Harness Assembly



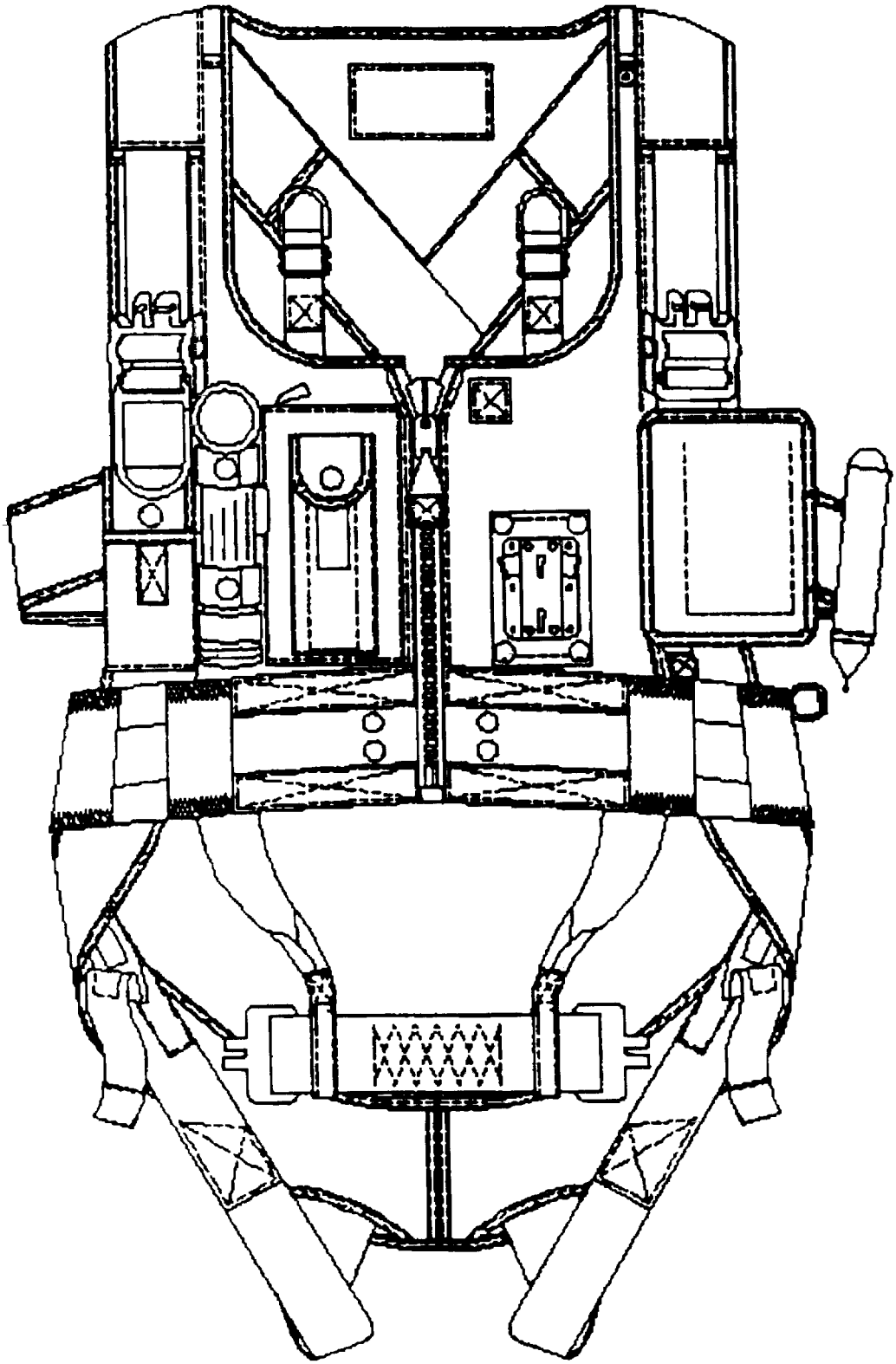
6.2-5003A

Figure 3. PCU-34/P, 829AS100-36 Parachute Restraint Harness Assembly (PCU-51/P, 829AS100-38 Same as Above With Empty Pockets and No Flashlight)



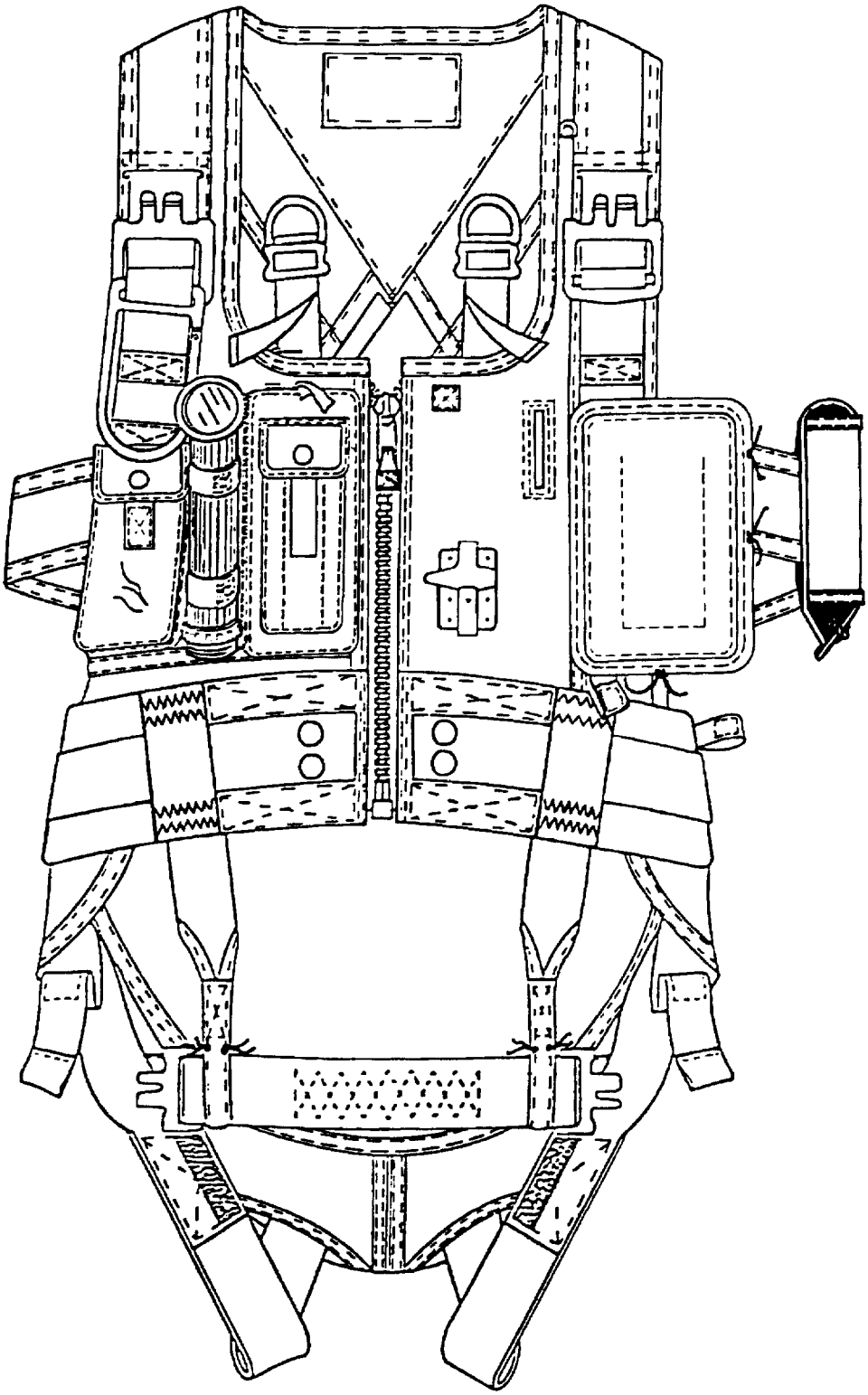
6.2-5558

Figure 4. PCU-36/P, 829AS100-10 Parachute Restraint Harness Assembly (With D-Rings Attached)



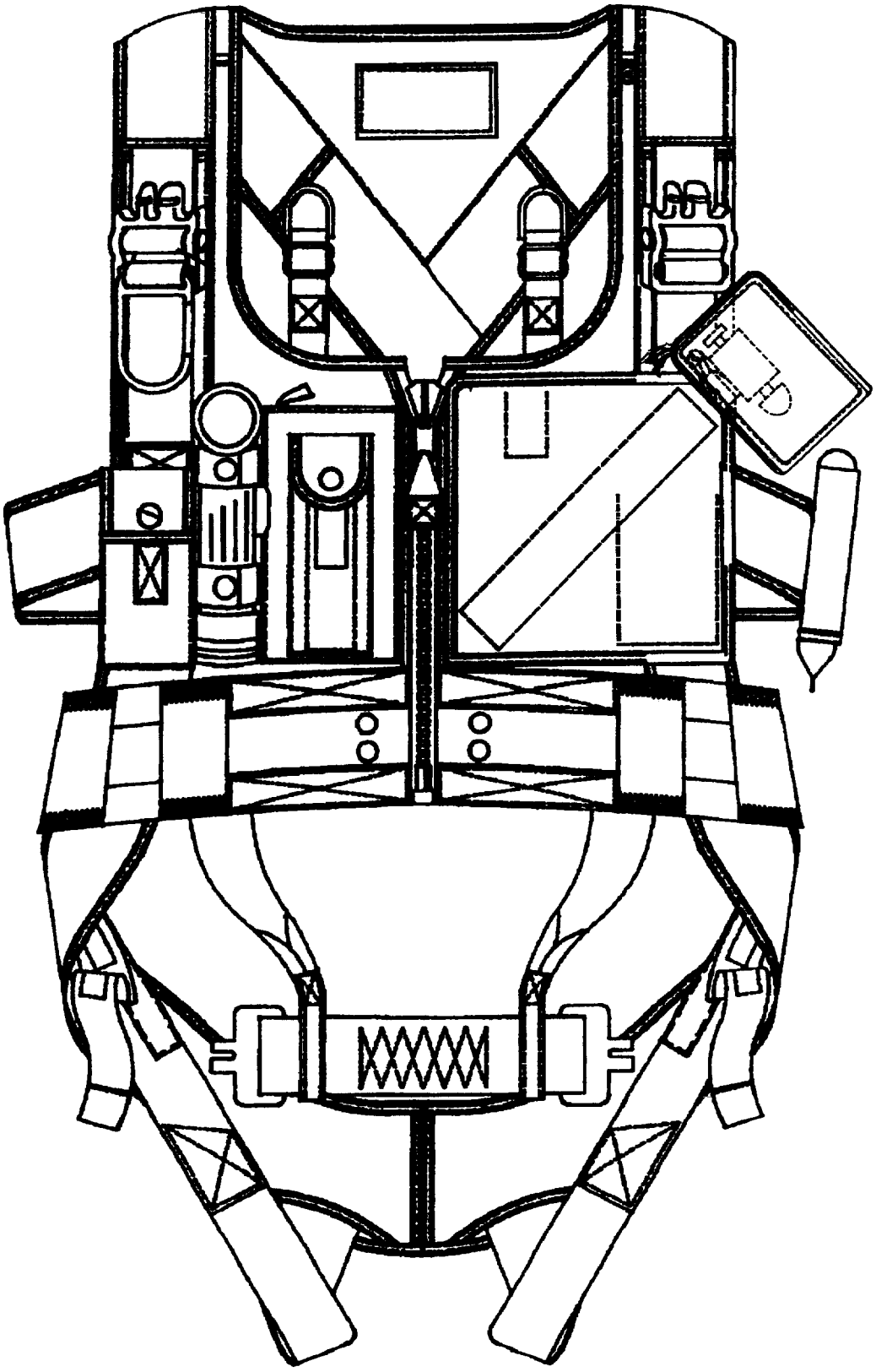
6.2-7077A

Figure 5. PCU-39/P, 829AS100-37 Parachute Restraint Harness Assembly (With Stowage Pockets, Equipment, LPU, OBOGS)



6.2-7078A

Figure 6. PCU-50/P, 829AS100-26 Parachute Restraint Harness Assembly (With Stowage Pockets, Equipment, LPU and Diluter Regulator)



6.2-7078B

Figure 7. PCU-55/P, 829AS100-28 Parachute Restraint Harness Assembly (With Helicopter Emergency Egress Device (HEED) Pocket)

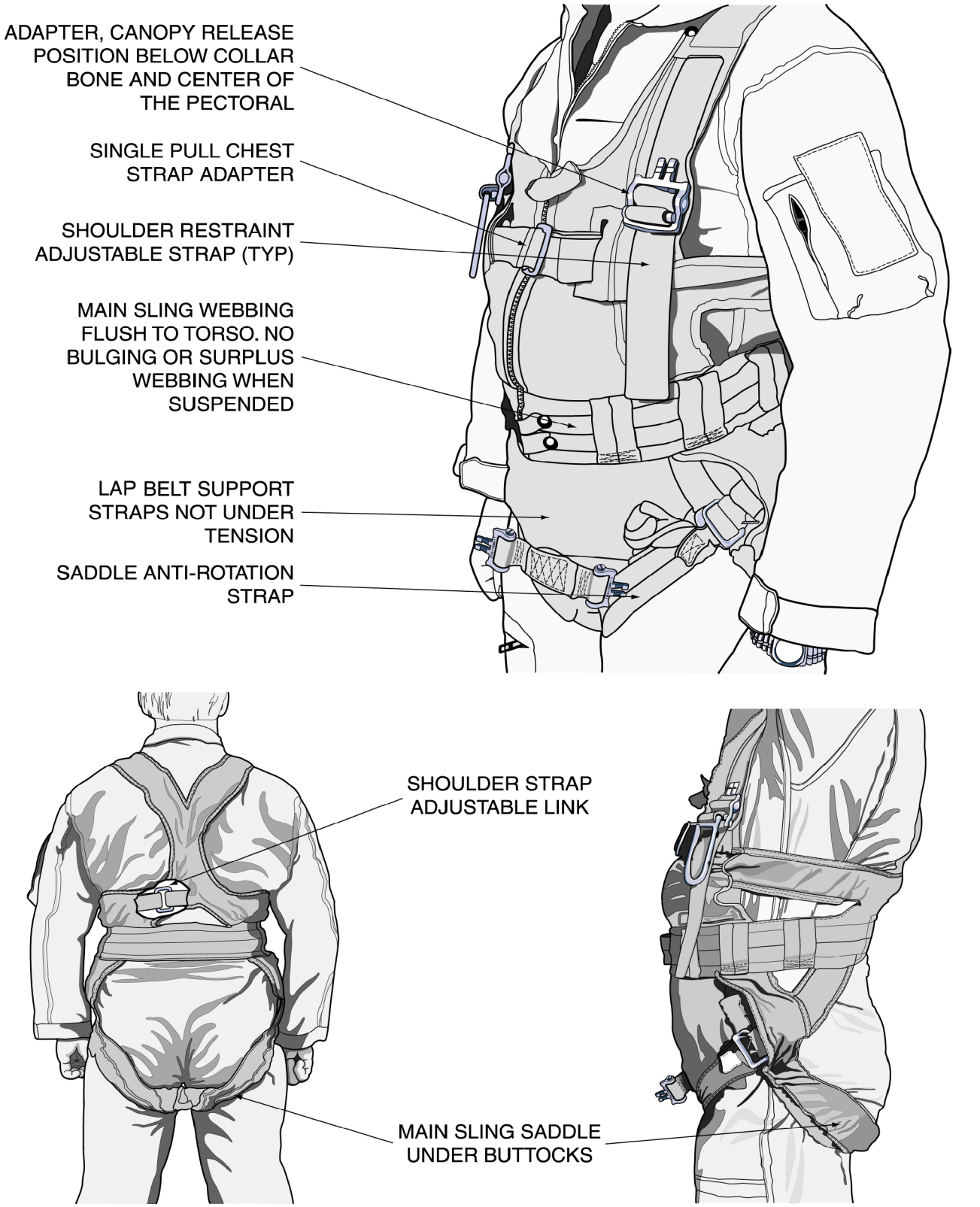


Figure 8. PCU-33/P Restraint Harness Sizing and Fitting

(a) Canopy Release Adapter. The ideal location of the adapter is in the cavity/hollow below the collarbone when the harness is properly fitted/adjusted and the aircrew is standing or sitting. The adapter may be adjusted lower to accomplish proper seat restraint. However, ideal location of each individual may vary from beneath the collar bone to the full down position, depending on individual body build.

(b) Main Sling Webbing. The main sling webbing is that portion of the main sling located between the rear leg strap and the chest strap. The main sling webbing should be as close as possible to the torso under suspended condition with no bulging or surplus webbing evident.

(c) Chest Strap. The chest strap should cross the torso at breast level when the aircrew is standing and should not be below the "center of mass" of the breast of the female aircrew. However, "best restraint" should be the deciding factor, such that (positive tension is achieved from the inertial reel) when retracted. The reversible adapter shall be about centered on the chest. If the adapter is off center to the right after final adjustment of the chest strap, the adapter may be relocated. Hook and pile tape must also be added to the chest strap after final fit.

(d) Shoulder Strap Adjustment Link. Inspect the adjustment links and ensure that they are positioned at the same height and are equally spaced from the center of the back.

(e) Lap Belt Support Straps. One end of each strap is attached to the main sling webbing inside the harness near the chest strap channels. The other end of each strap has a loop. The respective ends of the lap belt go thru the respective loops and the loops are tacked 1/8-in. above the lap belt in four places. The purpose of the support straps is to carry the opening shock loads of the survival kit.

(f) Main Sling Saddle. The main sling saddle is that portion of the main sling, located below the leg strap channels, which goes under the buttocks (preferable below the gluteral fold). The main sling saddle supports the weight of the body and absorbs the opening shock loads.

(g) Saddle Anti-Rotation Straps. The saddle anti-rotation straps are adjustable straps, one on each leg strap, just below the attachment point of the lap belt strap. Two sleeve subassemblies with reversible adapters are located above the point where each leg strap passes through the lower channel of the main sling. The adjustable straps are routed through their respective reversible adapters to provide a tightening adjustment, with the free end of each strap being retained by hook and pile fasteners. The hook and pile fasteners are attached to the saddle anti-rotation straps per WP 008 03. The saddle anti-rotation straps reduce harness misalignment and improve the harnesses overall fit on the aircrew. During parachute development, the main sling of the harness will remain vertical to the upper torso of the aircrew, allowing the main sling saddle to remain under the buttocks. Parachute canopy opening shock loads will then be transmitted throughout the saddle and main sling with little or no upper torso rotation or shift. Also the canopy release fittings will remain lower, reducing the likelihood of striking the head. After the aircrew has donned and adjusted the harness in a standing position, the straps are pulled snug, not tight. The hook and pile fasteners are mated together while in this position. Do not retighten when seated.

(2) The next assessment of a properly fitted harness is determine that optimum seat restraint is afforded. The following is required:

(a) Lap Belt. With aircrew seated in an ejection seat, lap belt fittings shall be connected and lap belt adjusted until snug. There shall be no slack in lap belt.

(b) Shoulder Harness. The canopy release shall be connected. With aircrew seated shoulders back in the ejection seat and shoulder harness retracted, there should be no slack in the shoulder harness restraint. If slack exists, adjust harness canopy release adapters in a downward direction until slack is removed. If adapters have been adjusted to the full down position and there is still slack in the shoulder harness, the aircrew may have an improperly sized harness or may need a custom harness. If proper retention cannot be achieved, revaluation of the aircrew's anthropometric compatibility with assigned aircraft maybe necessary.

NOTE

Personnel whose harnesses do not meet the above fit criteria should be further evaluated in PCU-33/P parachute restraint harnesses of other sizes until a best fit is achieved. Aircrew unable to be fitted with a stock harness may be considered candidates for a custom-fit harness.

(3) The final assessment of a properly fitted harness is made with the aircrew suspended so the harness bears the full weight of the aircrew. Two riser assemblies with 16-in. cross-connector straps and canopy release assemblies are required to suspend the aircrew. The aircrew should wear his/her own flight helmet, don and properly adjust the harness including snugging the cinch straps in the same manner as when preparing for a flight.

(a) Attach the harness to the riser assemblies. Prior to suspending the aircrew, observe the location of the canopy release assemblies.

(b) Suspend the aircrew above the deck and simulate mild opening shock by having the aircrew pull him/herself up by the risers to about 12 to 15-in. dropping back into the harness to induce settling while observing the change (rise) in location of the canopy release assemblies. If the harness is properly sized, fitted and adjusted, with full body weight of the aircrew supported by the main sling saddle, the change (rise) of the canopy release assemblies will be minimal and equal on both sides. Final position of canopy release should not be higher than the aircrew's jaw bone nor indicate a loose fit of the harness. A major change (rise) may indicate that the body weight is not supported by the main sling saddle, the harness is not the proper size, or the harness has been improperly adjusted.

(c) Inspect the chest strap, main sling webbing, shoulder strap adjustment links and main sling saddle for proper position. Closely observe the aircrew's weight distribution in the harness. When properly positioned the main sling saddle supports the body weight much like sitting in a swing. Weight stress is carried from the main sling saddle up thru the main sling webbing to the canopy releases and riser assemblies. When the harness fit is best, there will be minimal tension on the lap belt support straps or cinch straps. Observe that the aircrew's body has not shifted out of the main sling saddle, allowing the body weight to be supported by the leg, shoulder, chest, cinch, or support straps.

7. CUSTOM-FIT (CF) PROCUREMENT PROCEDURES FOR AIRCREW.

a. The local Aviation Physiologist or Aviation Medical Safety Officer, with aid of a locally assigned Aircrew Survival Equipmentman, will verify need for each custom-fit harness candidate. If these personnel are not on board, direct liaison with Naval Air Warfare Center Weapons Division (NAVAIRWARCENWPNDIV) is authorized.

b. Complete the custom-fit PCU-33/P Harness Data Sheet (Figure 9). Ensure that the data sheet is exactly completed and that all entries are legible. Any unacceptable ratings in Paragraph 6 shall be elaborated on in the comments section. Send a copy of the data sheet to:

Commander
Code 461000D
NAVAIRWARCENWPNDIV
1900 N Knox Road Stop 6206
China Lake, CA 93555-6106

NOTE

The Custom-Fit PCU-33/P Harness Data Sheet (Figure 9) may be locally reproduced.

c. Send a naval message to NAVAIRWARCENWPNDIV China Lake, CA. //461000D// Info: COMNAVAIRSYSCOM Patuxent River, MD.//PMA202// Give the candidates Name, Rank/Rate, Social Security Number and Branch of Service. State the candidate has been verified as a custom fit harness candidate by Aviation Survival Training Center (ASTC) or Aviation Medical Safety Officer (AMSO). Provide a point of contact to arrange the custom fit scheduling.

d. Send Custom Fit PCU-33/P Harness Data Sheet and photographs depicting unacceptable abnormalities to NAVAIRWARCENWPNDIV. This should be done well in advance of candidates arrival.

e. Following receipt of the data sheet, date record (NAVMED 6410/9) and data verification message, the individual or the point of contact will be notified by NAVAIRWARCENWPNDIV and scheduled for PCU-33/P custom-fitting.

f. The individual's command will be responsible for providing travel orders to NAVAIRWARCENWPNDIV for custom-fitting. Five working days at NAVAIRWARCENWPNDIV will be required to complete the harness. As transportation is limited, a commercial rental car should be authorized.

8. AIRCREW SYSTEM RECORDS.

a. Refer to OPNAVINST 4790.2 (series) for filling out of the Aircrew Personal Equipment Record (OPNAV 4790/159) and Aircrew Systems Record (OPNAV 4790/138).

9. ORDERING AND REPORTING INFORMATION.

a. When ordering a new integrated parachute harness, order part number 829AS142-XXX (By Size). The harness is then configured for the specific aircraft/mission and reported into the 3M system as 829AS100-XX in the removed and installed blocks of the VIDS/MAF. The top assembly configuration part number (829AS100-XX) shall be reported when inspection/maintenance is performed throughout the service life of the harness.

CUSTOM-FIT PCU-33/P PARACHUTE RESTRAINT HARNESS DATA SHEET

NAME _____ SSN _____ DATE _____

GRADE/RATE _____ COMMAND _____ SEX _____

AVIATION STATUS _____ (Aviator,NFO,Enlisted Aircrew, Civilian, Parachutist, Flight Surgeon, Aviation Physiologist/Psychologist)

1. HEIGHT _____ INCHES

2. WEIGHT _____ POUNDS

3. PCU-33/P HARNESS EVALUATION

		Comments
MAIN SLING WEBBING	(acceptable/unacceptable)	
MAIN SLING SADDLE	(acceptable/unacceptable)	
LAP RESTRAINT	(acceptable/unacceptable)	
SHOULDER RESTRAINT	(acceptable/unacceptable)	
CHEST STRAP	(acceptable/unacceptable)	

SIGNATURES _____ (ASTC/AMSO) _____ (PR)

Information contact

Address to: Commander
Code 461000D
NAVAIRWARCENWPNDIV
1900 N Knox Road Stop 6206
China Lake, CA 93555-6106

Print or type names _____ (ASTC/AMSO) _____ (PR)

DSN number _____ (ASTC/AMSO) _____ (PR)

and EXTENSION _____ (ASTC/AMSO) _____ (PR)

COMMENTS: _____

Figure 9. Custom-Fit PCU-33/P Harness Data Sheet

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ORGANIZATIONAL MAINTENANCE

INSPECTION AND REPAIR PROCEDURES

PCU-33/P SERIES PARACHUTE RESTRAINT HARNESS ASSEMBLY

PART NO. 829AS100

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Rescue and Survival Equipment . . . . . NAVAIR 13-1-6.5
Aircrew Personal Protective Equipment (A/P22P-18(V)) . . . . . NAVAIR 13-1-6.7-4
Introduction . . . . . WP 002 00

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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 623	14 Feb 96	Riser Restraint Keeper (RAMEC P-08-95)	1 Jul 96	31 Dec 2003

1. INTRODUCTION.

2. This work package (WP) contains instructions for organizational level repair to ensure that the harness remains in ready-for-issue (RFI) status.

3. When performing repairs detailed in this WP, do per these guidelines:

a. Review all applicable instructions prior to starting repair.

b. Ensure that all necessary support equipment and materials required are available prior to starting repair.

c. When required, remove enough material from it's source for immediate use only. Ensure that material identification ticket remains with the source material at all times.

d. A quality assurance (QA) inspector shall examine the finished work.

4. HOOK AND PILE FASTENER TAPE ON CHEST STRAP REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, 1 1/2-in. Wide, Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 1 1/2-in. Wide, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Properly fit harness to aircrew.

b. Mark chest strap webbing 1-in. from friction bar on both the free end and portion attached to harness (Figure 1).

NOTE

Placement of the hook and pile fastener tape may be reversed (aircrew option).

c. Attach a 2-in. strip of hook fastener tape on outer surface of chest strap and a 2-in. strip of pile fastener tape on inner surface of free end. Machine stitch around edges of hook and pile fastener tape. Backstitch a minimum of 1/2-in. Leave a minimum of 10-in. of webbing from chest strap friction bar after fitting to aircrew. Trim and sear. Avoid forming sharp edges while hot knifing and searing (Figure 1). (QA)

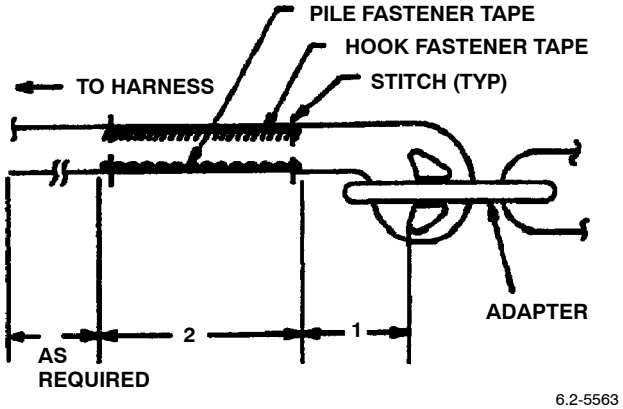

Figure 1. Addition of Hook and Pile Fastener Tape to Chest Strap

d. When donning, aircrew shall align hook and pile tape patches and press together firmly.

5. CANOPY RELEASE ADAPTER REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
990065-1 -or- 015-710001-1	Adjuster Assembly, Strap
F-900 Torque Seal (Color Optional)	Sealing Compound
122-10935-3	Setscrew

NOTE

Setscrew is a one time use only part.

a. Remove setscrew and retention pin. Discard setscrew.

b. Remove adapter from harness main sling webbing.

c. Turn friction slide bar at an angle within the frame to allow removal from adapter. Crowding of adjustment strap webbing to one side is necessary to allow enough clearance for friction slide bar to be removed.

d. Remove adapter from adjustment strap. Gated D-Ring will weave thru adapter without difficulty. Removal of stitched end boxstitch is not necessary unless gated D-Ring is also being replaced.

WARNING

Harness webbing must be properly routed thru canopy release adapter (Figure 2).

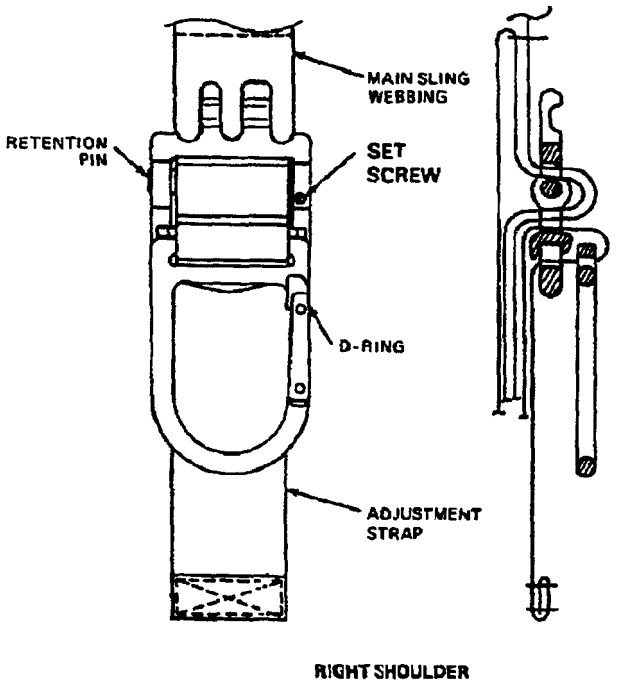

Figure 2. Replacement of Canopy Release Adapter

e. With retention pin and friction slide bar removed, place new canopy release adapter on harness with notch facing outward.

f. Form a loop in adjustment strap and place loop thru adapter from back to front.

WARNING

Insure friction slide bar is correctly reinstalled; word stamped FRONT will face outboard (same direction as notches).

g. Place friction slide bar thru loop of adjustment strap (word FRONT forward) and turn to an angle to allow reinsertion into adapter.

h. Form loop in main sling harness webbing, using two forward layers. Place loops thru adapter above adjustment strap loop (Figure 2).

i. Install retention pin and new setscrew.

j. Apply torque seal to screwhead. (QA)

6. LAPBELT QUICK RELEASE ADAPTER REPLACEMENT.

Support Equipment Required

Part Number	Nomenclature
990070-1 -or- 1979AS838-1 -or- 015-11366-1	Adapter Assembly, Lapbelt

Materials Required

Specification or Part Number	Nomenclature
MIL-S-22473	Sealing Compound, Grade H

CAUTION

Do not pinch webbing with tools when removing or installing lap belt adapters.

a. Remove two securing screws.

b. Remove adapter from lapbelt.

c. Slide pin from lapbelt webbing loop.

d. Install replacement slide pin in webbing loop of lapbelt.

e. Align replacement adapter, with notched side of prongs inboard toward wearer, on slide pin.

f. Apply sealing compound to threads of two shoulder screws. Install screws thru holes in release adapter.

g. Thread securing screws into slide pin.

h. Tighten securing screws.

7. SNAP FASTENER ON FLOTATION ATTACHMENT PANEL REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
PIA-T-5038	Tape, Textile Reinforcing Nylon, Type IV, 1-in., Sage Green, Class 1 or 1A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MS27983-1	Snap, Fastener, Button
MS27983-2N	Socket, Snap Fastener
MS27983-3	Stud, Snap Fastener
MS27983-4	Snap, Fastener, Eyelet

a. Remove snap fastener, using care not to damage webbing.

b. If any attachment point is damaged, sew a piece of reinforcement tape over damaged area using a box-X stitch pattern. Backstitch 1/2-in.

c. Punch new hole, if required; mate button and socket or stud and eyelet together, as required. Orient button dots closest to the securing belt free ends.

d. Install new fastener. Ensure that fastener is securely mated and that release direction is toward slide fastener.

8. INBOARD OXYGEN MASK STORAGE BAG ATTACHMENT SNAP FASTENER PLACEMENT (AIRCREW OPTION).

Materials Required

Specification or Part Number	Nomenclature
MS27980-7B	Stud, Snap Fastener
MS27980-8B	Snap, Fastener, Eyelet
PIA-T-5038	Tape, Textile, Reinforcing Nylon, Type IV, 1-in., Sage Green, Class 1 or 1A

a. Remove old fastener, using care not to damage garment.

b. If attachment point is damaged, sew a piece of reinforcement tape to underside of damaged area, using a box-X stitch pattern. Backstitch 1/2-in.

c. Punch new hole, if required. Mate eyelet, tape, and stud.

d. Install new fastener. Ensure that fastener is securely mated.

9. OUTBOARD OXYGEN MASK STORAGE BAG ATTACHMENT SNAP FASTENER PLACEMENT (AIRCREW OPTION).

Materials Required

Specification or Part Number	Nomenclature
MS27980-7B	Stud, Snap Fastener
MS27980-8B	Snap, Fastener, Eyelet
PIA-T-5038	Tape, Textile Reinforcing Nylon, Type IV, 1-in., Class 1 or 1 A

a. Punch a 3/32-in. new hole, 1/2-in. plus or minus 1/8-in., from outboard edge of garment material, above top stitching of webbing channel and 5/8-in. plus or minus 1/8-in. from edge of harness binding tape.

b. Install new snap fastener. Ensure that snap fastener is securely mated.

c. Carefully remove inboard located snap fastener in accordance with Paragraph 8.

10. EYELET AND HOOK REPLACEMENT.

Support Equipment Required

Part Number	Nomenclature
GGG-S-00278	Shears, Straight
—	Needle, Sewing

Materials Required

Specification or Part Number	Nomenclature
60A113C28-1	Eye
60A113C28-2	Hook
V-T-295	Thread, Nylon, Size 3, Type I or II, Class A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

Hook and eye may be reversed for left hand installation. Removal of hook and eye is at aircrew's discretion.

NOTE

Optional to machine stitch with size E thread, using nine single stitches per grouping in lieu of two turns doubled.

a. Carefully remove damaged eyelet and hook.

b. Attach new eyelet or hook as required in same location as removed eyelet or hook. Sew in place with thread, waxed and doubled; tie off. (Figure 3).

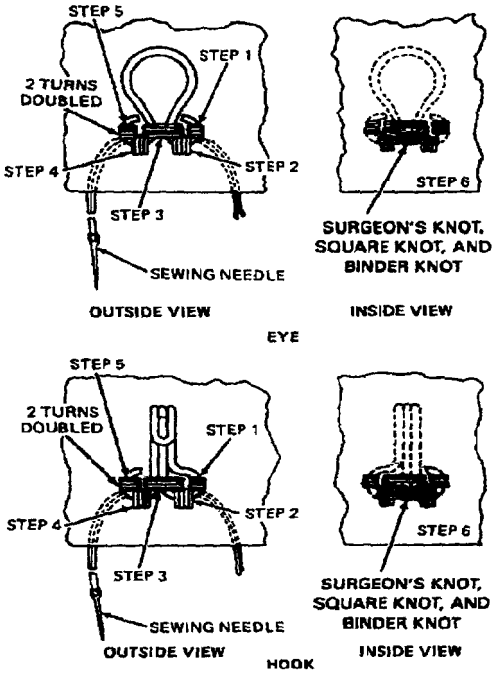

Figure 3. Replacement of Eyelet and Hook

c. Ensure that eyelet or hook is properly aligned.

11. SLIDE FASTENER REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-F-106	Slide Fastener, Type IV, Style #8, Size MH, Brass with Black Chemical Finish, Sage Green Tape Available from: Lenzip Manufacturing 1900 W. Kinzie St. Chicago, IL 60622-6243 Style #1031
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove entrance slide fastener.

b. Remove two hooks and eyelets at entrance.

c. Remove damaged slide fastener and protective flap to at least 1-in. below retention system. Retain protective flap for reuse.

d. Attach replacement slide fastener as shown using size E thread. Slide fastener shall not run over edges of fabric panels (Figure 4).

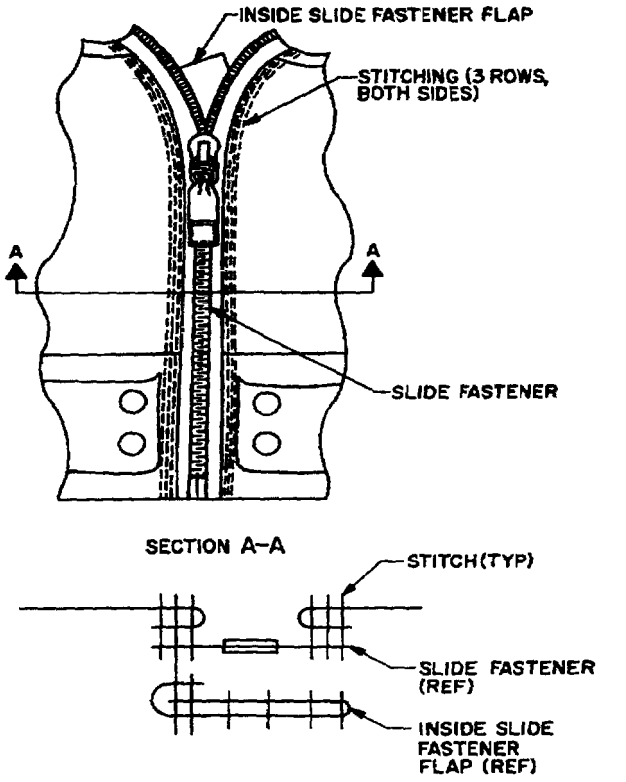

Figure 4. Replacement of Slide Fastener

12. SLIDER PULL THONG REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
PIA-T-5038	Tape, Nylon, Type III, Class 1 or 1A, 3/4-in. Wide
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove and discard worn pull thong.

b. Cut a 4 3/4-in. length of nylon tape. Sear both ends.

c. Weave new pull thong thru eye in slider pull tab. Place sides together with ends even and stitch together at end using a 3/4-in. long box stitch pattern. (QA)

d. Add fastener tape per Paragraph 13.

13. PILE FASTENER TAPE ON HARNESS PULL THONG REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Pile, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Sew a 3/4-in. length of pile fastener tape to nylon tape using a 3/4-in. long box stitch (Figure 5).

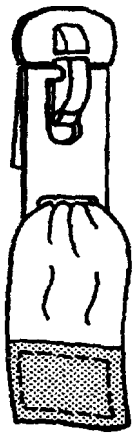

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Figure 5. Replacement of Slider Pull Thong

14. SLIDER PULL THONG ON SURVIVAL EQUIPMENT POCKETS REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
PIA-T-5038	Tape, Nylon, Type III, Class 1 or 1A 3/4-in. Wide
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Cut a 4-in. length of nylon tape. Sear ends to be cut on a 45-degrees bias to tape selvage edge. Remove and discard worn pull thong.

b. Insert new pull thong thru eye in slider pull tab. Place sides together with ends even and secure in place with 2 to 3 rows of 1/2-in. stitch pattern using size E thread.

15. HOOK FASTENER TAPE ON LEFT SIDE OF HARNESS FOR SECURING PULL THONG REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, Type II, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove old hook tape carefully.

b. Cut a 1x1-in. piece of hook fastener tape. Sew hook fastener tape on left side of harness 1 1/2-in. from edge of harness zipper and bottom portion of hook fastener tape from top edge of harness material.

c. Sew hook fastener tape with size E thread in a box-X stitch pattern (Figure 6).

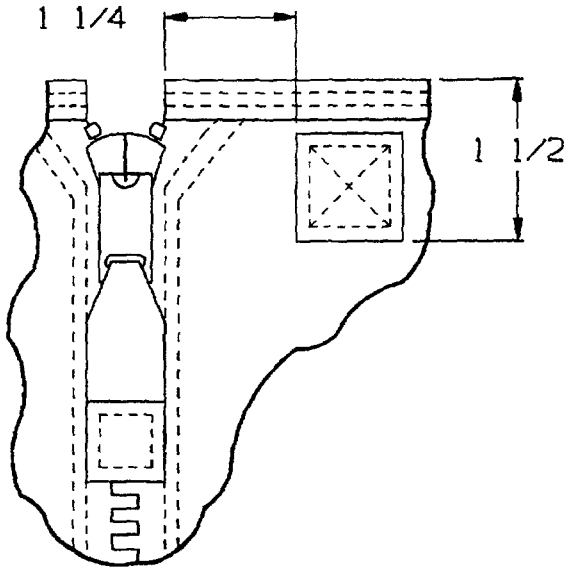

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Figure 6. Hook Tape Replacement on Harness

16. REPAIR OF HARNESS CLOTH.

Materials Required

Specification or Part Number	Nomenclature
MIL-C-508	Cloth, Oxford, Nylon, Sage Green
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

WARNING

Do not stitch thru harness webbing.

a. Cut a patch sufficiently large to cover damage and overlap 1-in. on all sides.

b. Sear edges of patch and damaged area.

c. Fold patch under 1/4-in. on all sides and stitch in place, using size E thread, 1/8-in. from fold in patch. Backstitch 1/2-in. minimum.

d. Turn suit inside out and stitch 1/8-in. from edge of damage. Backstitch 1/2-in. minimum.

17. TACKING FOR LAPBELT SUPPORT STRAPS REPLACEMENT.

Material Required

Specification or Part Number	Nomenclature
A-A-52080-B-2	Tape, Lacing and Tying Finish B, Size 2, Type I, Black
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove damaged tacking from lapbelt support strap.

b. Hand tack support strap loop together with one turn size 6 thread or lacing tape, doubled and waxed. Tack webbing as snug as possible to lapbelt to prevent movement, do not tack thru lapbelt. Tie off. Trim end to 1/2-in. (Figure 7).

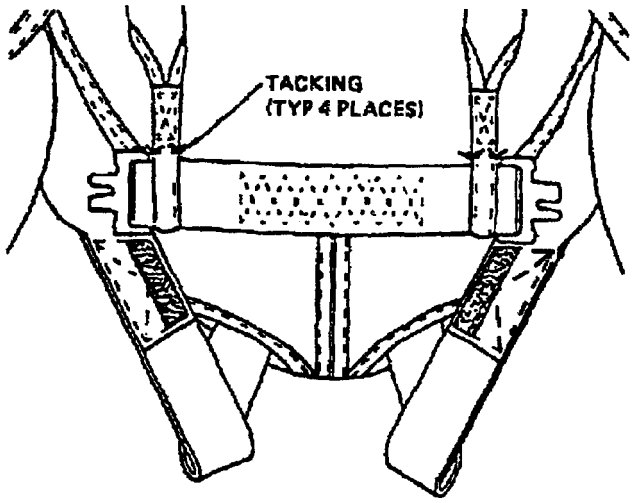


Figure 7. Lapbelt Support Strap Tacking 6.2-5594

18. SADDLE ANTI-ROTATION STRAP HOOK AND PILE FASTENER REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, 1-in. Wide, Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 1-in. Wide, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Mark existing placement of tape, before removing old tape from upper adjustment strap. Carefully remove old fastener tape from cinch strap.

b. Cut a 4-in. length of hook and pile fastener tape.

c. Lay hook fastener tape lengthwise over inside portion of 4-in. trapezoidal box-X stitch pattern.

d. Sew hook fastener tape over inside portion of trapezoidal box-X stitch pattern. Cut top narrow end of hook fastener tape to match angled end of each trapezoidal box-X stitch.

e. Sew pile fastener tape within stitch pattern marks.

19. MOUNTING BRACKET REPLACEMENT FOR ON BOARD OXYGEN GENERATING SYSTEM (OBOGS).

Materials Required

Specification or Part Number	Nomenclature
829AS165-2	Kit Bracket Assembly, Oxygen Regulator
829AS159-2	Bracket Assembly Oxygen Regulator (Component of 829AS165-2)
829AS163-1	Oxygen Regulator Mounting Plate (Component of 829AS165-2)
MS20427F4-9	Rivet, Solid
829AS152-13	Oxygen Regulator and Hose Retention Pocket
MMM-A-121	Adhesive
MS27983-1	Snap, Fastener, Button
MS27983-2N	Socket, Snap Fastener
MIL-F-21840	Fastener Tape, Hook, 2-in. Wide, Type II, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
PIA-W-4088	Webbing, Nylon, Type IX, Class 1, 1A or 2

a. If require, remove the OBOGS bracket assembly from the harness assembly.

CAUTION

Avoid damaging harness material when removing the rivets.

b. Hot knife one piece of webbing 7-in. long, and sear both ends. Avoid forming sharp edges while hot knifing and searing.

c. Fold both ends, top and bottom, about 1/2-in. and stitch 1/4-in. from folded edges. Backstitch 1/2-in. using size E thread (Figure 8).

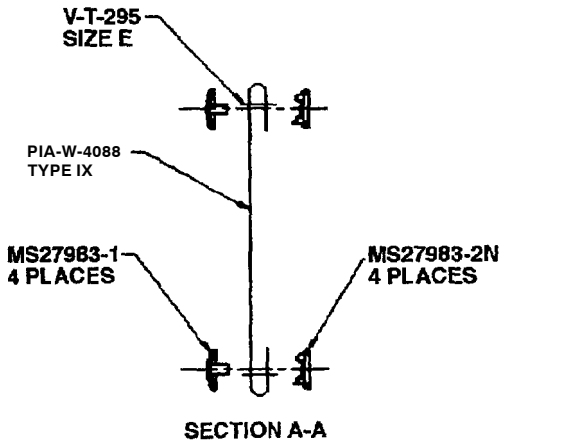


Figure 8. Fold Both Ends

d. Position the OBOGS bracket centered lengthwise on one side of the 7-in. piece of webbing and the mounting plate on the back side (Figure 9).

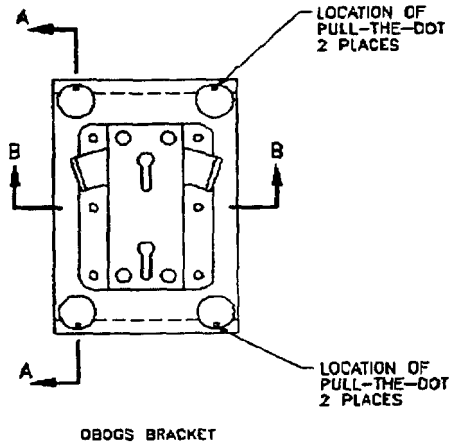


Figure 9. OBOGS Bracket

e. Rivet the bracket, webbing and plate together (Figure 10).

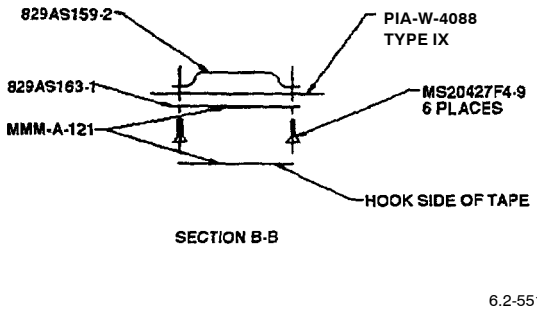


Figure 10. Rivet Bracket, Webbing, and Plate Together

f. Use template to center the four snap fasteners location (Figure 11).

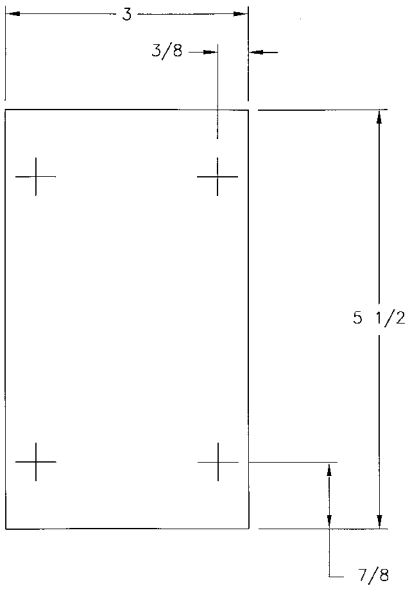


Figure 11. Template

NOTE

The pull-the-dots on the buttons shall be located per Figure 9.

g. Cut a 3-in. length of 2-in. wide hook fastener tape. Apply a thin layer of MMM-A-121 adhesive to the back side of the hook fastener tape and the mounting plate, between the six rivets. After applying the adhesive, allow it to become tacky. Center the 2-in. width of the hook fastener tape to the 2 1/4-in. width of the mounting (back) plate (Figure 12).

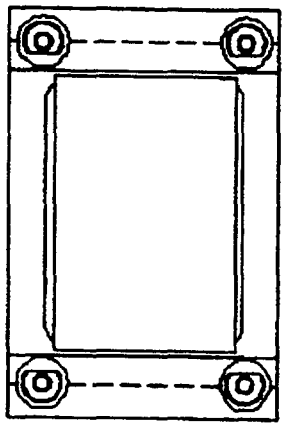


Figure 12. Back View

h. Make proper entries on Aircrew Personal Equipment Record (OPNAV 4790/159). (QA)

20. REMOVABLE MINI REGULATOR REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
829AS165-2	Kit Bracket Assembly, Oxygen Regulator
829AS159-2	Bracket Assembly Oxygen Regulator (Component of 829AS165-2)
829AS163-1	Oxygen Regulator Mounting Plate (Component of 829AS165-2)
MS20427F4-9	Rivet, Solid
829AS152-13	Oxygen Regulator and Hose Retention Pocket
MMM-A-121	Adhesive
MS27983-1	Snap, Fastener, Button
MS27983-2N	Socket, Snap Fastener
MIL-F-21840	Fastener Tape, Hook, 2-in. Wide, Type II, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
PIA-W-4088	Webbing, Nylon, Type IX, Class 1, 1A or 2

a. Remove the buttons and sockets from the mini regulator pocket. Avoid damage to the pocket.

b. Remove the hook fastener tape from the mini regulator pocket. Avoid damage to the pocket.

c. Cut a 4 1/2-in. length of 2-in. wide hook fastener tape and position lengthwise on one side of the webbing. Stitch the hook fastener tape to the webbing, using a box-X stitch, 1/8-in. from edge, using size E thread.

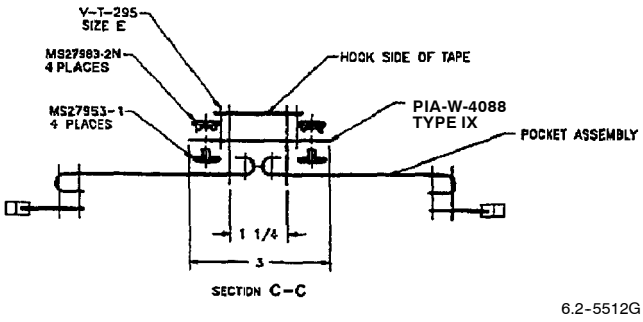
d. Hot knife one piece of webbing 4 1/2-in. sear both ends. Avoid forming sharp edges.

e. Use template to center the four snap fasteners and install snap fasteners (Figure 11).

NOTE

The pull-the-dots on the buttons shall be located per Figure 9.

f. Position the webbing, centered vertically on the outer back side of the mini regulator pocket, stitch webbing to the pocket, using about 1 1/4 x 4 1/4-in. box-X stitch, with size E thread (Figure 13).



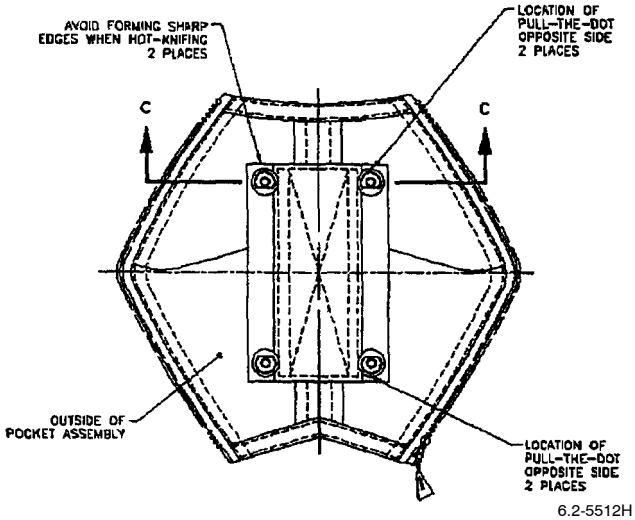


Figure 13. Positioning of Webbing

21. REMOVEABLE OBOGS AND MINI REGULATOR PILE TAPE FASTENER ATTACHMENT.

Materials Required

Specification or Part Number	Nomenclature
MS27983-3	Stud, Snap Fastener
MS27983-4	Snap, Fastener, Eyelet
MIL-F-21840	Fastener Tape, Pile 2-in. Wide, Type II, Class 1
PIA-W-4088	Webbing, Nylon Type IX, Class 1, 1A and 2

NOTE

Ensure the addition of backing, webbing material is accomplished prior to proceeding.

a. Cut 2 pieces of 2-in. wide pile tape fastener 4 1/2-in long. Overlap the two lengths until a 3-in. width is obtained and sew together, using size E thread, back stitch 1/2-in.

b. Position the pile tape fastener, vertically on the harness outside left chest panel. The specified vertical position shall be directed by the aircrew. Stitch pile tape fastener to the harness panel, using size E thread, sew 1/8-in. from edge, back stitch 1/2-in.

c. Use template to center the four snap fasteners location in Figure 11.

NOTE

When combined with the removable OBOGS bracket and the removable mini regulator, all four pull-the-dot snap fasteners must be fully engaged.

d. Make proper entries on Aircrew Personal Equipment Record (OPNAV 4790/159). (QA)

22. FABRICATION OF GARMENT EXTENDER PANEL.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, 2-in. Wide, Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 2-in. Wide, Type II, Class 1
PIA-T-5038	Tape, Binding 3/4-in. Wide, Type III, Class 1 or 1A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-F-106	Slide Fastener, Type IV, Style #8, Size MH, Brass with Black Chemical Finish, Sage Green Tape Available from: Lenzip Manufacturing 1900 W. Kinzie St. Chicago, IL 60622-6243 Style #1031
PIA-W-4088	Webbing, Nylon, Type IV, Class 1 or 1A
	-or-
PIA-T-5038	Webbing, Nylon, Type VIII, Class 1 or 1A

a. Measure webbing and match the length of existing slide fastener (1 23/32-in. webbing or 3-in. webbing), and add 3/4-in. for 3/8-in. turn under at each end.

b. Existing slider may be placed as necessary (on right or left hand side) to match existing slide fastener.

c. Sear exposed ends of nylon webbing. Avoid forming sharp edges while hot knifing and searing.

d. Permissible to use 1 23/32-in. webbing in place of 3-in. webbing. To make the garment extender panel, 2 or 3 pieces of 1 23/32-in. webbing may be sewn together using E thread, two rows, back stitch 1/2-in.

e. Center zipper, full length of panel and stitch to panel (Figures 14, 15, and 16).

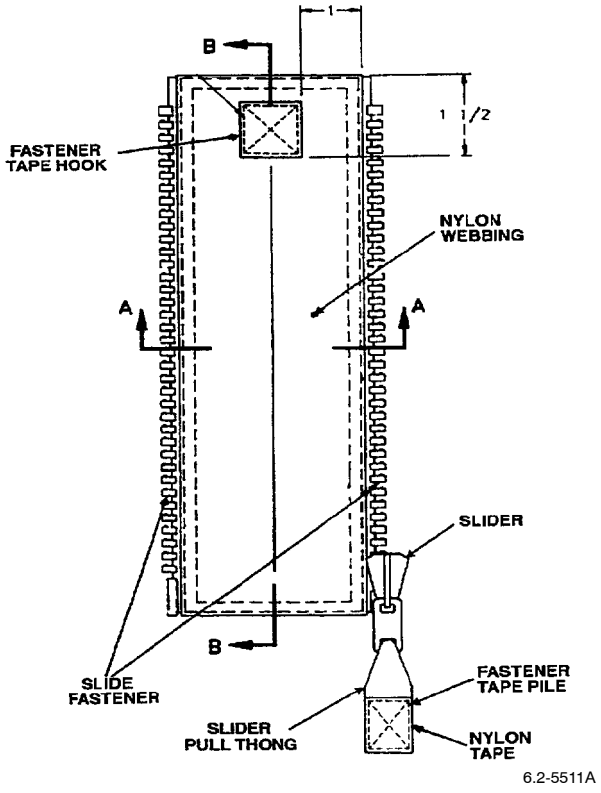


Figure 14. Center Zipper

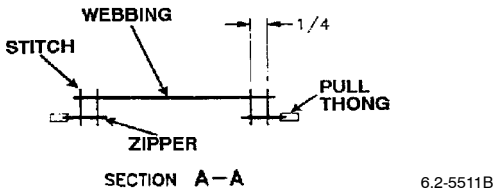


Figure 15. Stitch to Panel

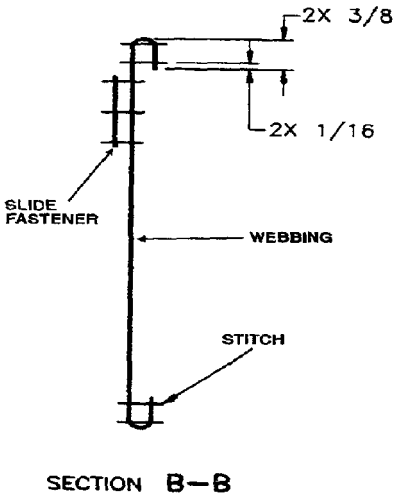


Figure 16. Alignment of Zipper

f. Cut a 7/8 x 7/8-in. piece of hook tape. Sew hook tape on panel 1-in. from edge of harness zipper and bottom edge of hook tape 1 1/2-in. from top of panel (Figure 14).

g. Sew hook tape with size E thread in a box-X stitch pattern (Figure 14).

h. Cut a 3/4 x 4 3/4-in. length nylon tape. Sear both ends.

i. Weave new pull thong thru eye in slider pull tab. Place sides together with ends even and stitch together at end using 3/4-in. long box-X stitch pattern including a 3/4-in. length of pile tape (Figure 15).

j. Install garment extender (Figure 17).

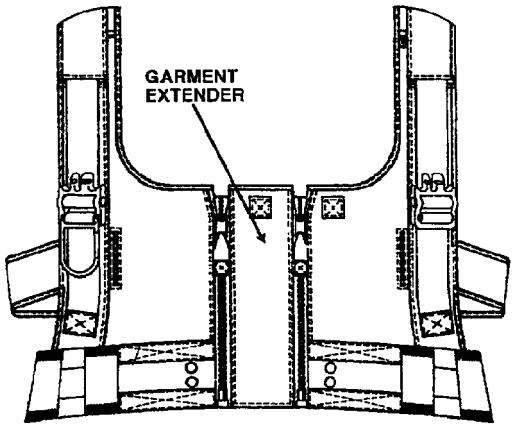


Figure 17. Garment Extender

23. ATTACHMENT OF SURVIVAL ITEMS TO STOWAGE POCKETS.

Material Required

Specification or Part Number	Nomenclature
MIL-C-5040	Cord, Nylon, Type I or IA
A-A-131	Rubber Band
MIL-C-23070	Cloth, Laminated
1791A10	Tape, Duct
A-A-1799	Bag, Plastic (2)
--	Aluminum, 0.090-in. thick ±0.010-in., Any Grade

a. Attach survival items to stowage pockets (Figure 18).

NOTE

Fake securing lines along individual survival items (excluding bandolier cord) and secure with light weight rubber band.

b. To attach Smoke and Illumination Marine Signal, cut 80-in. length of nylon cord sear ends. Tie an overhand knot in one end. Wrap end of cord two turns around one end of signal flare and tie with surgeon's knot. Turns of cord shall overlap with all knots positioned snugly against each other. Route cord to opposite end signal flare and tie in same manner as above. Cord between ties shall be drawn tight. Secure free end cord to grommet in personnel distress signal kit pocket, with a bowline knot and an overhand knot on free end.

c. To attach MK-79 signal kit, cut a 12-in. length of nylon cord and sear ends. Tie an overhand knot in one end and then a bowline knot to hole provided in one end of bandolier and then tie other free end of nylon cord to grommet in personnel distress signal kit pocket with a bowline knot followed by an overhand knot. Cut a 48-in. length of nylon cord and sear ends. Tie an overhand knot in one end, then pass thru hole in bandolier and tie off with a bowline knot. Pass other end of nylon cord thru end of personnel distress signal kit's pen gun, tie an overhand knot in end, then tie a bowline knot.

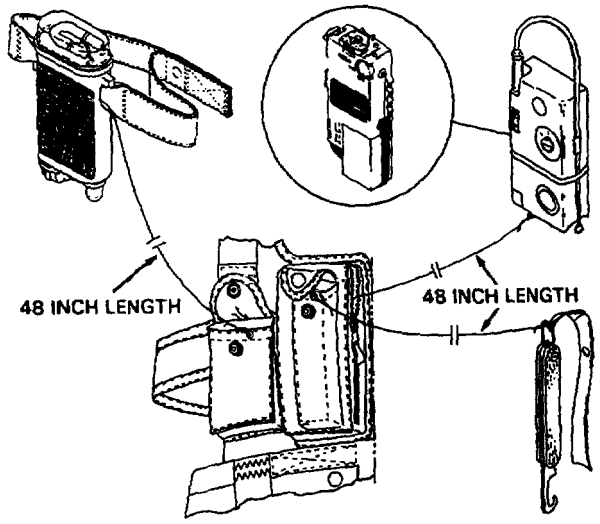
d. Secure remaining survival items, by cutting a 48-in. length of nylon cord. Tie an overhand knot in one end, then a bowline knot to survival items and then secure to grommet in pockets with a bowline followed by an overhand knot. (QA)

e. Attach items in the HEED survival items pocket as in previous paragraphs except for the HEED bottle. Secure one end of bottle with a 24-in. length of Type I nylon cord using a surgeon's knot followed by a square knot and a bowline knot. Secure the other end to a snap hook using surgeon's knot followed by a square knot and a bowline knot. Then secure snap hook to the D-Ring on the outside of the HEED survival items pocket.

f. Cut a 48-in. length of MIL-C-5040, Type I, nylon cord with strands removed or MIL-C-5040, Type IA (Coreless), nylon cord and sear ends of cord.

g. Secure one end of the nylon cord to the radio/knife pocket grommet forming a 2-in. loop through the grommet and tie off using an overhand knot in one end, then tie a bowline knot.

h. Secure the other end of the nylon cord to the AN/PRC-112 series radio webbing of "V" ring using a 2-in. loop around webbing or "V" ring and tie off using an overhand knot in one end, then tie a bowline knot.



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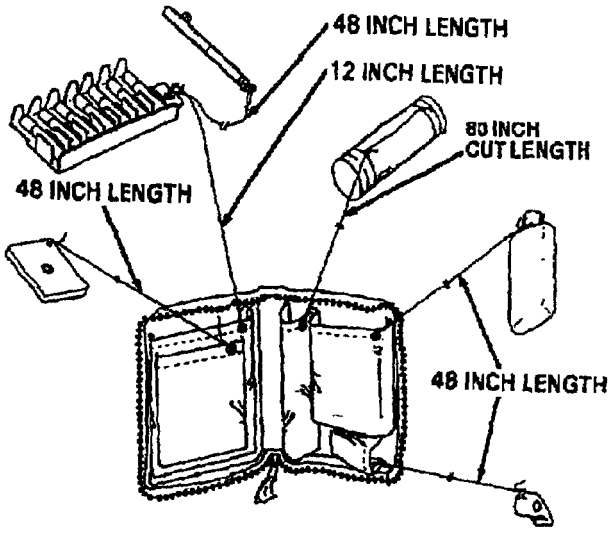

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Figure 18. Attachment of Survival Items to Stowage Pockets

i. Place AN/PRC-112 series Radio in a 12-in. x 12-in. zip-lock plastic bag.

NOTE

For AN/PRC-112B, see Paragraph 24.

j. Remove as much trapped air as possible from the ziplock bag and tape over the closed ziplock closure using a 2-in. length of duct tape.

NOTE

The Type I or IA nylon cord can exit the bag at any location on the seal line. Location of the exit point is not critical.

A bagged radio with excessive trapped air will be difficult to stow into radio/knife pocket. If difficulty is encountered during stowage continue to press radio into pocket until sufficient air escapes to permit radio/knife pocket zipper closing.

k. Place the bagged radio into a second ziplock bag and seal closure using duct tape as in step j above.

l. Cut a 7 x 14-in. piece of laminated cloth and wrap around the bagged AN/PRC-112 series radio and secure with a rubber band.

m. Stow radio in radio/knife pocket. (QA)

n. Close zipper in radio/knife pocket. (QA)

NOTE

AN/PRC-112 series radios and batteries are currently undergoing rework/redesign to eliminate water leakage.

Bagging of the radio will not make it waterproof only water resistant.

Aircrew should not remove the radio from the ziplock bag until after they are in the raft.

24. BACKING PLATE FOR AN/PRC-112B.

a. Cut a 1-in. x 2 3/8-in. +1/8-in. -0-in. plate from a sheet of any grade aluminum 0.090-in. thick ±0.010 in.

b. Radius the corners and deburr all edges.

c. Cut 2 lengths, both 2 3/8-in. x 3/4-in. of duct tape, and center lengthwise along the outboard edge of the 2 3/8-in. side of the plate, 1 on each side of the 2 3/8-in. sides and fold.

d. Cut 1 length of duct tape 6 1/2-in. long x 1-in. wide and fold one end back on itself, 1-in., to create pull tab.

e. Place the length of tape made in step d on a table with the adhesive side facing up and folded end to your right. Measure in from the right 2 inches and place the plate made in steps a through d on the adhesive to the left at the 2 inch measurement (you will have adhesive areas of tape on both sides of the plate).

NOTE

Do not cover the antenna with the tape.

f. With the AN/PRC-112B radio buttons facing up and the word "talk" closest to you and to the right, place plate made in steps a through e over the buttons with the folded edge of the tape on the right side of the radio just below the push to talk button. Fold and press the tape on to the right side of the radio body.

g. Fold and press the left side of the plate tape on to the left side of the radio body.

h. Cut a 48-in. length of MIL-C-5040, Type I, nylon cord with strands removed or MIL-C-5040, Type IA (Coreless), nylon cord and sear ends of cord.

i. Secure one end of the nylon cord to the radio/knife pocket grommet forming a 2-in. loop through the grommet and tie off using an overhand knot in one end, then tie a bowline knot.

j. Secure the other end of the nylon cord to the AN/PRC-112B radio webbing of "V" ring using a 2-in. loop around webbing or "V" ring and tie off using an overhand knot in one end, then tie a bowline knot.

k. Place AN/PRC-112B radio in a 12-in. x 12-in. ziplock plastic bag.

l. Remove as much trapped air as possible from the ziplock bag and tape over the closed ziplock closure using a 2-in. length of duct tape.

NOTE

The Type I or IA nylon cord can exit the bag at any location on the seal line. Location of the exit point is not critical.

A bagged radio with excessive trapped air will be difficult to stow into radio/knife pocket. If difficulty is encountered during stowage continue to press radio into pocket until sufficient air escapes to permit radio/knife pocket zipper closing.

m. Place the bagged radio into a second ziplock bag and seal closure using duct tape as in step l above.

n. Cut a 7 x 14-in. piece of laminated cloth and wrap around the bagged AN/PRC-112B radio and secure with a rubber band.

o. Stow radio in radio/knife pocket. (QA)

p. Close zipper in radio/knife pocket. (QA)

NOTE

AN/PRC-112B radios and batteries are currently undergoing rework/redesign to eliminate water leakage.

Bagging of the radio will not make it waterproof only water resistant.

Aircrew should not remove the radio from the ziplock bag until after they are in the raft.

25. HARNESS INSPECTION.

26. GENERAL. The harnesses shall be inspected upon initial issue and at intervals coinciding with inspection of personal protective equipment.

27. PCU-33/P PARACHUTE RESTRAINT HARNESS ASSEMBLY 90-DAY INSPECTION.

a. The 90 day inspection shall include a service life check and a parachute restraint harness inspection.

b. Make proper entries in the remarks section on Aircrew Systems Record (OPNAV 4790/138). (QA)

28. AIRCREW RESTRAINT HARNESS 360-DAY INSPECTION.

a. The 360 day inspection shall include a service life check, a parachute harness inspection, and a suspended aircrew fit check of the restraint harness assembly.

b. Make proper entries in the remarks section on Aircrew Systems Record (OPNAV 4790/138). (QA)

29. PARACHUTE RESTRAINT HARNESS SUSPENDED FIT CHECK.

a. Suspend the aircrew above the deck and simulate mild opening shock by having the aircrew pull him/herself up by the risers to about 12 to 15-in. dropping back into the harness to induce settling while observing the change (rise) in location of the canopy release assemblies. If the harness is properly sized, fitted and adjusted, with full body weight of the aircrew supported by the main sling saddle, the change (rise) of the canopy release assemblies will be minimal and equal on both sides. Final position of the canopy release should not be higher than the aircrew's jaw bone nor indicate a loose fit of the harness. A major change (rise) may indicate that the body weight is not supported by the main sling saddle, the harness is not the proper size, or the harness has been improperly adjusted.

30. SERVICE LIFE CHECK.

NOTE

Service life shall begin when harness is first placed in service. When assembly reaches its service life limit, it shall be removed from service and forwarded to supply for disposition. When an inservice harness lacks start of service date, service life shall expire 12 years from date manufacture. When harness assembly lacks legible date of manufacture or date placed in service and a service/total life check cannot be verified by the Aircrew Systems Record (OPNAV 4790/138), the harness assembly shall be considered non-RFI and removed from service.

a. The service/total life of PCU-33/P parachute restraint harness is 12 years from date it was placed in service or 15 years from date of manufacture, whichever occurs first.

NOTE

When harness is removed from service, all parachute and lapbelt adapter hardware shall be removed and screened, if still serviceable retained for future use.

b. Check markings for completeness, legibility and agreement with assembly records.

c. Compare configuration of restraint harness assembly to that presented in WP 008 04 Illustrated Parts Breakdown and Record of Technical Directives.

31. PARACHUTE RESTRAINT HARNESS INSPECTION.

a. Shoulder canopy release adapter for corrosion, distortion, presence of slide bar, sharp edges, routing of webbing and security of pin and setscrew, and presence of torque seal.

b. Riser restraint keeper for proper installation, security and attachment.

c. Gated D-Ring at right shoulder for corrosion, distortion, cracks, sharp edges and proper installation (gate inboard).

d. Box-X stitching on end of right shoulder strap (must be doubled rolled and machine stitched. Hand tacking is not acceptable).

e. Chest strap friction adapter(s) for corrosion, distortion, cracks, presence of slide bar, sharp edges and security of attachment.

f. Chest strap for proper installation, security and attachment of hook and pile tape.

g. Pull thong for proper installation, security and attachment of hook and pile tape.

h. Harness links at rear inside of suit for corrosion, distortion, cracks, sharp edges, proper routing and condition of harness webbing.

i. Slide fastener for corrosion, missing teeth, presence of slider, security of attachment, pull thongs and ease of operation.

j. Oxygen Regulator Mounting Bracket and Plate for corrosion, security, attachment of rivets, distortion, cracks, sharp edges and proper installation.

k. Removable OBOGS/Bracket/Mini Regulator mount for corrosion, security, attachment of rivets and snap fasteners, distortion, cracks, sharp edges and proper installation.

l. Survival Items Stowage Pockets for corrosion on slide fasteners, security of attachment, tackings, pull thongs for ease of operation.

m. Survival Items inspect per NAVAIR 13-1-6.5.

n. Life preserver retention system for cuts, rips, frayed or weakened webbing, security of stitching and presence and condition of snap fasteners.

o. Lapbelt support strap loop tackings for security. Tackings (4 places) shall be 1/8-in. above lapbelt.

p. Lapbelt quick-release adapter for corrosion, distortion, sharp edges and security of attachment.

q. Hooks and eyelets for damage and security of attachment (If installed).

r. Saddle anti-rotation straps for proper installation, security and proper placement of hook and pile tape and tackings.

s. Saddle anti-rotation adapter tabs for cuts, tears, fraying, deterioration, contamination and security of stitching and tackings.

t. Pockets, attachment of survival items.

u. Mask storage bag for cuts, tears, contamination and condition of snap fastener (If installed).

v. (If required) Check for proper installation, condition and security of LPU D-Ring attachment tabs.

w. Fabric panels for cuts, tears, fraying, deterioration, contamination and security of stitching.

x. Webbing for cuts, tears, fraying, contamination, deterioration and security of stitching.

32. 90-DAY INSPECTION OF HELICOPTER EMERGENCY EGRESS DEVICE (HEED) SRU-36/P.

a. Inspect per NAVAIR 13-1-6.7-4.

33. RISER RESTRAINT KEEPER INSTALLATION (AIRCREW OPTION).

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon, 2 ft., Type VIII
MIL-F-21840	Fastener, Tape, Hook, 2-in. Wide, Type II, Class 1
MIL-F-21840	Fastener, Tape, Pile, 2-in. Wide, Type II, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Sear two pieces of webbing, 11-in. long. Avoid forming sharp edges after searing the ends of the webbing.

b. Cut two pieces of hook fastener tape and two pieces of pile fastener tape 1-in. long.

c. Position one piece of hook and pile fastener tape (faced up) on opposite ends of each 11-in. webbing.

NOTE

The 1-in. cut length of hook and pile fastener tape shall be positioned on the webbing width.

d. Machine stitch around edge of hook and pile fastener tapes with a box stitch.

e. Fold the keepers in half to match the hook and pile fastener tapes together.

f. Custom fit the restraint riser keepers to the aircrew members harness assembly as follows:

(1) Insure that the keepers are installed in two places, sewn to the harness garment vertical binding tape and positioned above the canopy release adapter (Figure 19).

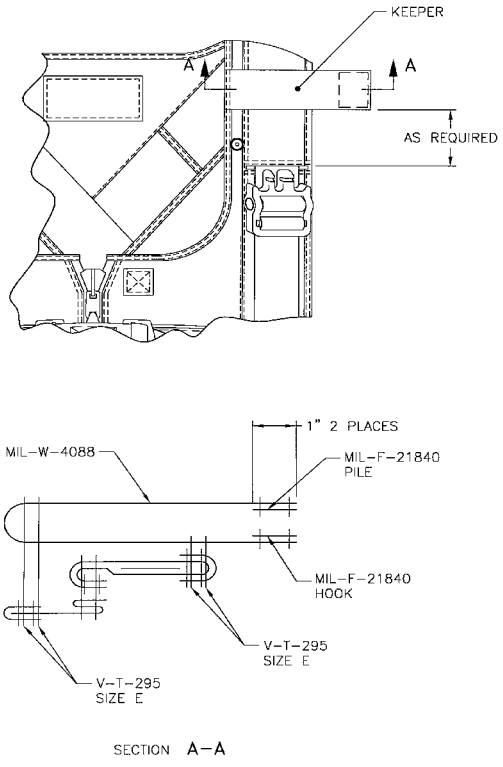

Figure 19. Riser Restraint Keeper

CAUTION

Avoid stitching across the harness webbing or garment channel.

(2) The opening ends of the left and right riser restraint keepers shall be outboard.

g. After the aircrew connects the PHSRU, he then places the left and right risers between the applicable keeper and fastens the hook and pile fastener tapes.

h. Make proper entries on Aircrew Systems Record (OPNAV 4790/138). (QA)

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ORGANIZATIONAL MAINTENANCE

ORIGINAL ISSUE RIGGING PROCEDURES

PCU-33/P SERIES PARACHUTE RESTRAINT HARNESS ASSEMBLY

PART NO. 829AS100

List of Effective Work Package Pages

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Reference Material

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Support Equipment ..... WP 005 00

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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 623	14 Feb 96	Riser Restraint Keeper (RAMEC P-08-95)	1 Jul 96	31 Dec 2003
ACC 633 Rev A	13 Sep 00	Replacement of LPU-23/P Floatation Device and LPU-33/P LPFC with LPU-36/P on PCU-33/P (Series) and PCU-56/P (Series) Integrated Parachute Restraint Harnesses (96A30) (ECP-16387)	1 Jan 01	30 Jun 2008

1. GENERAL.

2. This work package (WP) provides rigging procedures for the original issue of the PCU-33/P Parachute Restraint Harness Assembly.

3. Quality Assurance (QA) points have been included in the rigging procedures. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Witnessing of QA steps may be delayed by QA if their satisfactory completion is verified in later steps.

4. All stitching shall use size E thread.

5. PRELIMINARY PROCEDURES.

6. To prepare the parachute restraint harness assembly for original issue rigging, do as follows:

Support Equipment Required

Part Number	Nomenclature
—	Needle, Sewing
—	Stamp Pad
—	Rubber Stamp Kit
	-or-
—	Adjustable Metal Stencil
	-or-
Style No. 8	Printing Set
	-or-
GG-P-655	Printing Set

Materials Required

Specification or Part Number	Nomenclature
1979AS838-1 -or- 015-11366-1	Adapter Assembly, Lapbelt
990065-1 -or- 015-710001-1	Adjuster Assembly, Strap
A-A-52080-B-2	Tape, Lacing and Tying Finish B, Size 2, Type I, Black
MIL-C-12369	Cloth, Ballistic Class I
MIL-C-7219	Cloth, Nylon Duck, Type III, Class 3
MIL-C-5040	Cord, Nylon, Type I or IA
MS51925-4	Dee-Ring
MIL-F-21840	Fastener Tape, Hook, 1-in. Wide, Type II, Class 1
MIL-F-21840	Fastener Tape, Hook, 1 1/2-in. Wide, Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 1-in. Wide, Class 1
MIL-F-21840	Fastener Tape, Pile, 1 1/2-in. Wide, Class 1
MS27983-1	Fastener, Button
MS27983-2N	Fastener, Socket
MS27983-3	Fastener, Stud
MS27983-4	Fastener, Eyelet
MIL-I-6903	Ink, Marking, Light Blue
TT-I-1795	Ink, Marking, Black
F-900 Torque Seal (Color Optional)	Sealing Compound
A-A-131	Rubber Band
122-10935-3	Setscrew
MIL-A-46106	RTV 102/732
M43770/12	Snap Hook
PIA-T-5038	Tape, Nylon, Type III, Class 1 or 1A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
MIL-W-4088	Webbing, Nylon, Type IV, 3-in. Wide, Class 1, 1A or 2
MIL-W-5664	Webbing, Textile, Elastic, Type I, Class 1 or 1A

7. APPLICATION OF MARKINGS.

8. When a harness assembly is placed in service, the month/year of opening manufacturer's individual shipping container shall be stenciled on harness lapbelt and label as follows:

a. When using a stamp pad, moisten pad with ink. Pad must be evenly coated and free of clots.

b. Make a test impression to determine correctness of marking and inking.

c. Mark date placed in service (month/year) on center of lapbelt strap outer surface using 1/2-in letters and on label in 1/4-in. letters.

d. Verify correctness of all markings. (QA)

e. Allow markings to dry for 20 to 30 min.

f. Record in remarks section of Aircrew Systems Record (OPNAV 4790/138), date of manufacture, date placed in service, the top assembly part number of the configured assembly and size by part number.

9. RIGGING.

10. ATTACHMENT OF CANOPY RELEASE ADAPTER.

WARNING

Harness webbing must be properly routed thru release adapter.

a. Place canopy release adapter on harness with notch facing outward.

b. Form a loop in adjustment strap and place loop thru adapter from back to front.

WARNING

Insure friction slide bar is correctly installed, the word stamped FRONT will face outboard (same direction as notches).

c. Place friction slide bar thru loop of adjustment strap (word FRONT forward) and turn to an angle to allow insertion into adapter.

d. Form loop in main sling harness webbing, using two forward layers. Place loops thru adapter above adjustment strap loop (Figure 1).

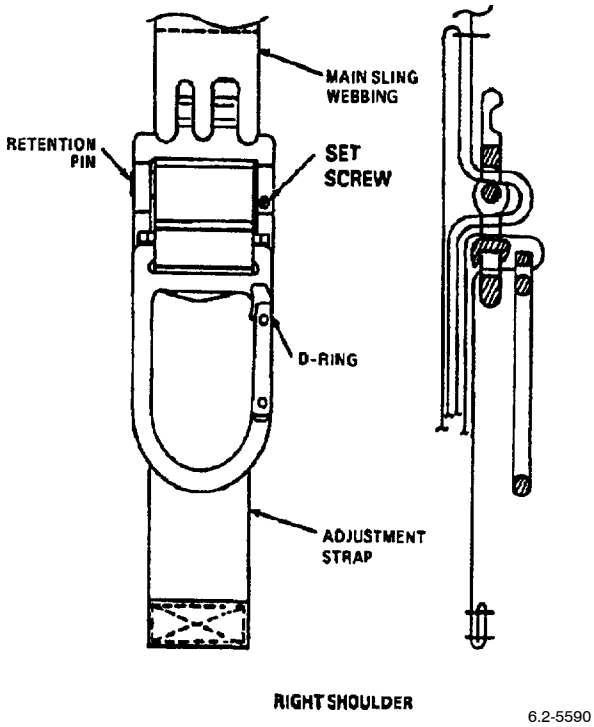

Figure 1. Attachment of Canopy Release Adapter

NOTE

Setscrew is a one time use item (if a new setscrew is not available reuse of a setscrew shall require application of sealing compound MIL-S-22473 Grade A to threads).

e. Install retention pin and setscrew.

f. Apply torque seal to screwhead. (QA)

11. GATED D-RING INSTALLATION.

Materials Required

Specification or Part Number	Nomenclature
823AS100-1	D-Ring with Gate
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Install gated D-Ring (gate inboard) and reeve back thru adapter (Figure 1).

b. Leave 8-in. of webbing from bottom of canopy release adapter to end of webbing, cut and sear end.

Avoid forming sharp edges while hot knifing and searing. Fold free end of webbing and box-X stitch with size E thread, backstitch 1/2-in. Folded stitched webbing must face outward (Figure 1). (QA)

12. ATTACHMENT OF LAPBELT ADAPTER.

CAUTION

Do not pinch webbing with tools when removing or installing lapbelt adapters.

a. Install slide pin in webbing loop of lapbelt.

b. Align replacement adapter with notched side of prongs inboard toward wearer, on slide pin.

c. Apply sealing compound to threads of the two shoulder screws. Install screws thru holes in release adapter.

d. Thread securing screws into slide pin.

e. Tighten securing screws. (QA)

13. ATTACHMENT OF SURVIVAL VEST TAB AND DEE-RING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MS51925-4	Dee-Ring (2)
PIA-T-5038	Tape, Nylon, Type IV, Class 1 or 1A, 1-in. Wide, 6 1/4-in. Long

a. Cut a length of nylon tape 6 1/4-in. and sear ends of webbing. Avoid forming sharp edges while hot knifing and searing.

b. Reeve nylon webbing thru Dee-Ring and fold in half. Sew tape together with double row of stitching 3/8-in. from Dee-Ring. Back stitch 1/4-in. (Figure 2).

NOTE

The Dee-Ring and tab should be located above the lapbelt.

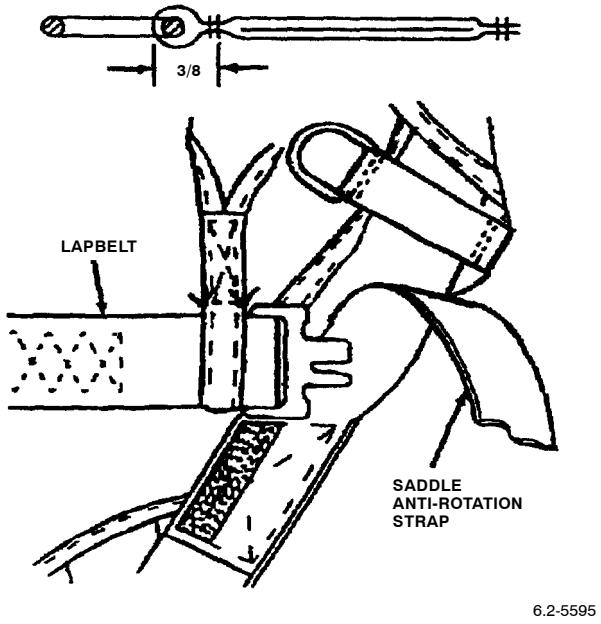

Figure 2. Attachment of Tab with Dee-Ring to Harness

c. Place Dee-Ring and tab around harness groin strap webbing and sew ends together 1/8-in. from end with a double row of stitching. Backstitch 1/4-in. Ensure that stitching does not pass thru harness webbing (Figure 2). (QA)

14. ATTACHMENT OF SURVIVAL STOWAGE POCKETS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MIL-W-4088	Webbing, Nylon, Type III, Class 1, 1A or 2, 3-in. wide
MIL-C-7219	Cloth, Nylon Duck, Type III, Class 3
MIL-C-12369	Cloth, Ballistic, Class I
829AS146-1	Pockets, Radio and Knife
829AS145-1	Pocket, Strobe Light
829AS147-20	Pocket, Survival Item Stowage
814AS805-1	Pocket, HEED Survival Item Stowage

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

Survival item pockets are authorized on all size harnesses. A local determination of acceptability must be made on the smaller size (including custom made) harnesses. Additionally, small stature aircrew who have difficulty with the placement of the chest strap, should use a survival vest vice pockets.

a. On left panel, center webbing, full length of panel and stitch to panel before stitching to the harness (Figure 3).

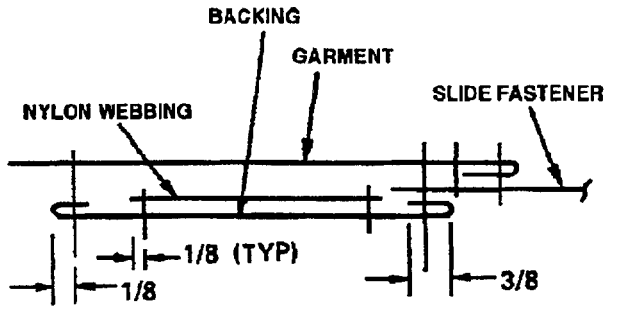

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Figure 3. Cross Section of Backing Panel

b. Add backing material to inside surface of harness left and right front panels. Fold the backing material 3/8-in. on edges of left and right panels and stitch to garment 1/8-in. from edge (Figure 4).

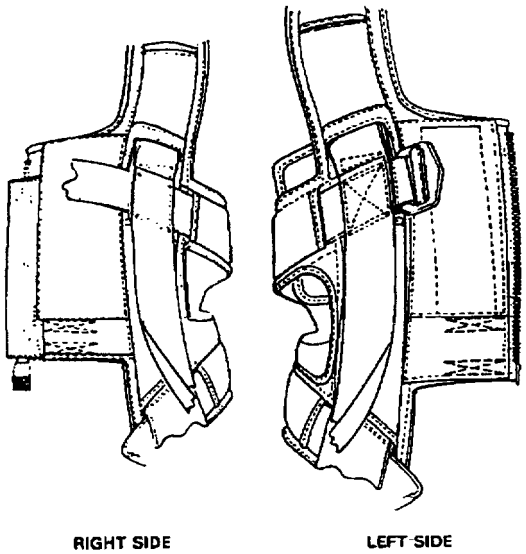

Figure 4. Addition of Backing Material 6.2-7085

c. Install radio/knife pocket on right side of harness, align bottom of pocket with harness securing webbing assembly for LPU and along slide fastener fold line (Figure 5). (QA)

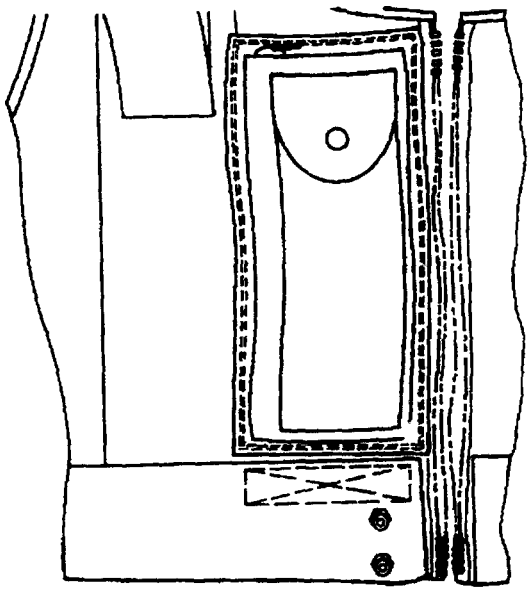

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Figure 5. Attachment of Radio/Knife Pocket

WARNING

Do not stitch thru harness shoulder straps or thru fabric channels that encase the straps. Do not stitch thru the chest strap.

d. Sew a double row of stitching around pocket 1/8-in. from edge. Do not stitch into channel area.

NOTE

Bound edges of strobe light pocket and radio/knife pocket may overlap on small size harnesses.

e. Install strobe light pocket, align pocket binding tape with channel fold line, align bottom of strobe light pocket 1-in. above edge of webbing. Overlap pocket binding tape on top of radio/knife pocket binding tape and double stitch 1/8-in. from edge (Figure 6). (QA)

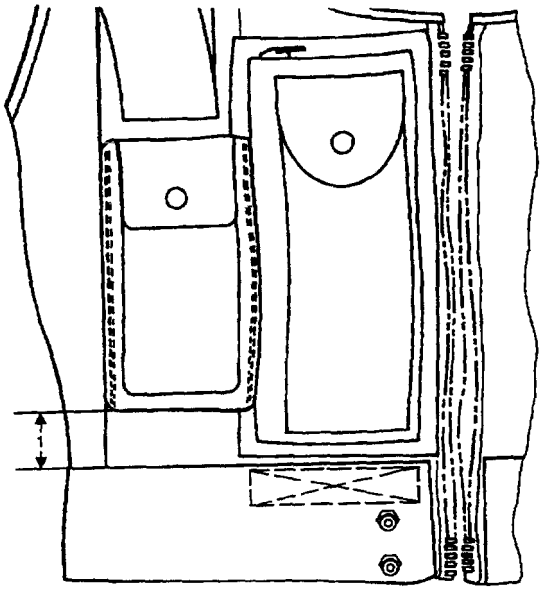

Figure 6. Attachment of Strobe Light Pocket

NOTE

Do not stitch over webbing channel.

f. Cut two pieces tape 4 1/2-in. also two pieces hook and pile tape. Sew one piece hook tape to nylon tape in a box stitch 1/8-in. from edge, turn nylon tape over and sew pile tape on opposite end in same manner.

g. Position oxygen hose securing tab to bottom right edge survival items stowage pocket and bar tack. Position second oxygen hose securing tab to life preserver securing belt 1/4-in. from top and centered between second and third loops on left side.

h. (OBOGS) Position of oxygen securing tab(s) to life preserver securing belt 1/4-in. from top and located in a position for each aircrew's preference. To keep the oxygen hose from blocking access to the left aircraft console.

NOTE

Additional tabs may be added as required to obtain a comfortable routing of oxygen hose

i. Attach survival items stowage pocket to harness, align pocket edge 4 1/4-in. from edge front panel material (medium size harness and smaller align on seam). Pocket needs to be 4 1/4-in. for OBOGS and Diluter Demand. Sew a double row stitches 1/8-in. from edge of pocket, sew pocket on webbing channel fold line (Figure 7). (QA)

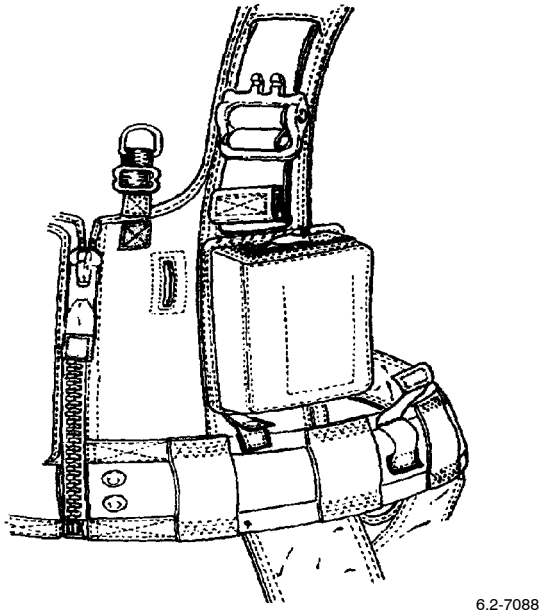

Figure 7. Attachment of Survival Items Stowage Pocket

WARNING

Do not stitch thru harness webbing, or over webbing channel.

j. Tack survival pocket to main sling, to right of oxygen securing tab with size 6 thread, doubled and waxed; tie off (Figure 8). (QA)

k. Hand tack pocket to left side of harness with two turns of size 6 thread, single and waxed; tie off. (QA)

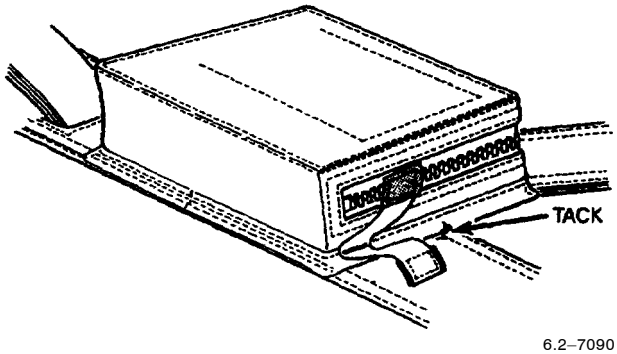

Figure 8. Tacking of Survival Items Stowage Pocket to Main Sling

l. Hand stitch pocket over webbing channel with size 6 thread doubled and waxed. Start stitch with two overhand knots followed by a whip stitch and secure with two overhand knots (Figure 9). (QA)

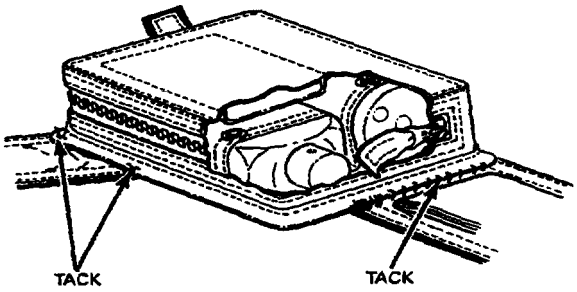

Figure 9. Hand Stitch Pocket Over Webbing

15. ATTACHMENT OF LPU STRAPS.

Materials Required

Specification or Part Number	Nomenclature
MS51940-3S	Loop, Slide (2)
MS51925-4	Dee-Ring (2)
PIA-T-5038	Tape, Nylon, Type IV, Class 1 or 1A, 1-in. Wide, 18-in. Long

a. Cut two lengths of nylon webbing 1-in wide and 9-in. long, and sear ends of webbing. Avoid forming sharp edges while hot knifing and searing.

b. Sew one length of webbing on the left panel back side, above the zipper stop 1 1/4-in. from top of panel and 1 1/4-in. from edge of zipper, with a box-X stitch 3/4 x 3/4-in. (Figure 10).

c. Sew the other length of webbing on right panel back side, above zipper stop 1 1/4-in. from top of panel and 1 1/4-in. from edge of zipper, with a box-X stitch 3/4 x 3/4-in. (Figure 10).

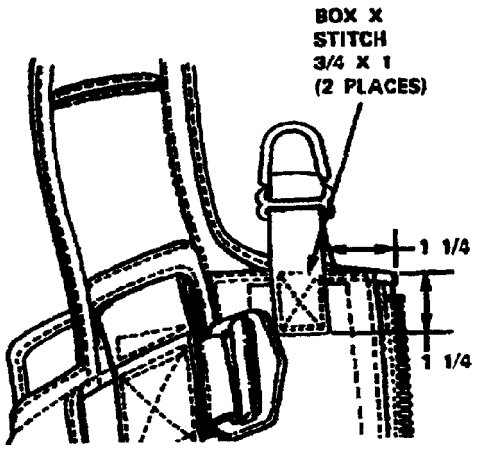

Figure 10. Attachment of LPU Straps

d. To attach the slide loop and Dee-Ring. Pass the end of webbing thru the slide loop, around the Dee-Ring and back thru the slide loop (Figure 11).

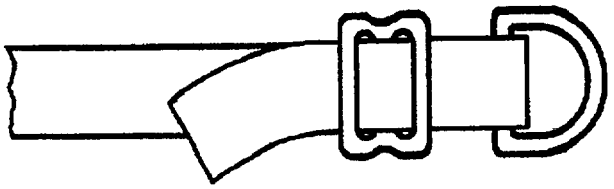

Figure 11. Attachment of Slide Loop and Dee-Ring

e. Adjust to the aircrew for proper fit. Cut excess webbing; fold over 1-in. and box-X stitch 3/4 x 3/4-in. (Figure 12).

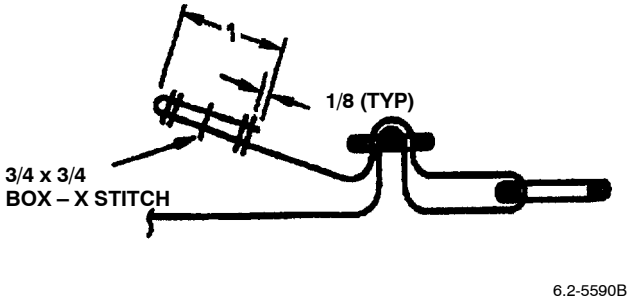

Figure 12. Adjust to Aircrew

16. ATTACHMENT OF HEED SURVIVAL STOWAGE POCKET.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Align the pocket with the outer edge of channel and 2 7/8-in. from bottom of floatation belt. Attach pocket with a double row of stitching along channel (do not stitch thru channel) from the bottom of the pocket up to the slot where the main sling webbing exits the garment (Figure 13).

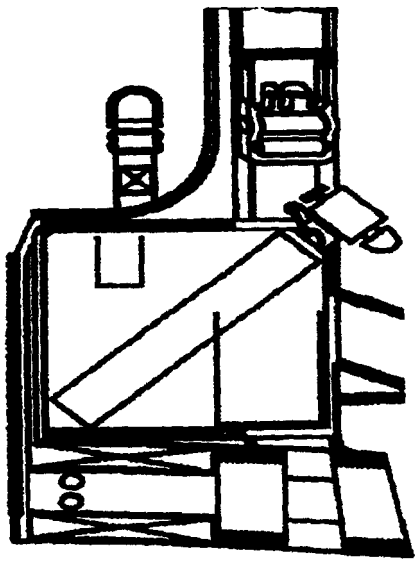

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Figure 13. Attachment of HEED Pocket

b. On the inside (towards slider), attach the pocket to the garment with a double row of stitching and around the top and bottom of the pocket up to the main sling webbing (Figure 13).

c. Make proper entries on Aircrew Systems Record (OPNAV 4790/138). (QA)

17. ATTACHMENT OF RETENTION LOOPS FOR GOOSENECK FLASHLIGHT.

Materials Required

Specification or Part Number	Nomenclature
MIL-W-5664	Webbing, Textile, Elastic, Type I, Class 2
PIA-T-5038	Tape, Nylon, Type III, Class 1 or 1A
MIL-W-4088	Webbing, Nylon, Type I, Class 1, 1A or 2
MS27983-1	Snap, Fastener, Button
MS27983-2N	Socket, Snap Fastener
MS27983-3	Stud, Snap Fastener
MS27983-4	Snap, Fastener, Eyelet
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Cut two pieces of elastic webbing 9 1/2-in.

b. On each piece of webbing, fold back 1 1/4-in. on each end and stitch this doubled over end using a 1-in. box X-stitch. Stitches should be within 1/8-in. of webbing (Figure 14).

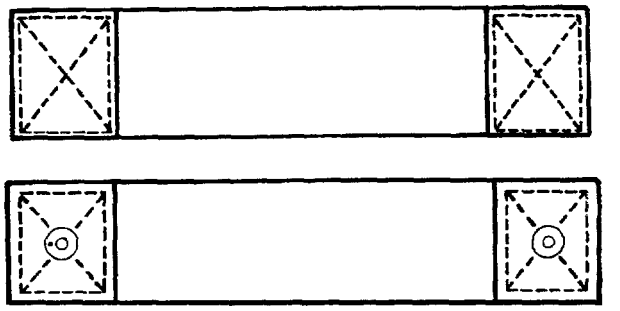

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Figure 14. Retention Strap and Installation of Snaps

c. At intersection of diagonal stitch on box X stitch of each piece webbing, install cap/socket on fold and stud/post on opposite fold. Ensure these are installed so they snap around the gooseneck flashlight (Figure 14). (QA)

d. Mount flashlight on right side of harness between strobe light and radio/knife pocket. Mounting will be accomplished to ensure base of flashlight is flush with bottom of radio/knife pocket. Mount so stud/eyelet is on same side as strobe light pocket.

e. Find center of first piece of elastic webbing. Place top of one piece of elastic webbing 2 1/4-in. below top of radio/knife pocket upper edge binding. Ensure stud/post is facing strobe light.

f. Stitch center of elastic webbing with four continuous rows of vertical stitches about 1/16-in. apart, directly over radio/knife pocket edge. Stitch no closer than 1/8-in. from edge of webbing.

WARNING

Do not stitch thru harness webbing straps.

g. Find center of second piece of webbing. Place top of second piece of webbing 1 3/4-in. below the bottom of the first piece.

h. Cut a piece of tape 10 1/2-in. long and turn under 1-in. and align tape with top binding tape of radio/knife pocket, sew around edge of tape. Bottom end of tape turned under 1/2-in. in aligning of flashlight retention straps, sew 1/8-in. around edge of tape, backstitch 1/2-in. (Figure 15). (QA)

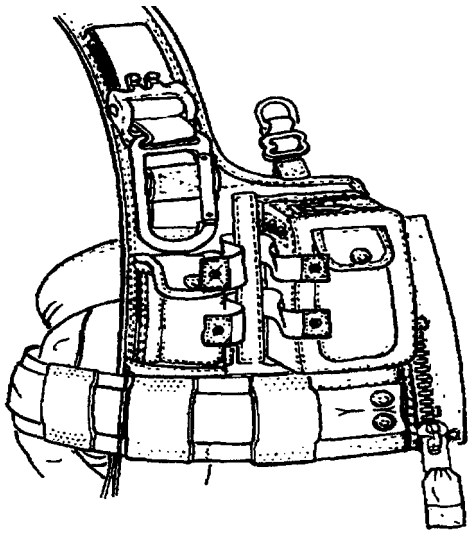

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Figure 15. Installation of Flashlight Holder

i. Top elastic webbing should surround flashlight between gooseneck and top of light switch. Bottom elastic webbing should surround flashlight above upper lip of battery access cover. (QA)

18. ATTACHMENT OF HOOK AND PILE FASTENER TAPE TO CHEST STRAP.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, 1 1/2-in. Wide, Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 1 1/2-in. Wide, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Properly fit harness to aircrew.

b. Mark chest strap webbing 1-in. from friction bar on both free end and portion attached to harness. (QA)

NOTE

Placement of the hook and pile fastener tape may be reversed (aircrew option).

c. Attach a 2-in. strip of hook fastener tape on outer surface of chest strap and a 2-in. strip of pile fastener tape on inner surface of free end. Machine stitch around edges of hook and pile fastener tape. Backstitch a minimum of 1/2-in. Leave a minimum of 10-in. of webbing from chest strap friction bar after fitting to aircrew. Trim and sear. Aviod forming sharp edges while hot knifing and searing (Figure 16). (QA)

d. When donning, aircrew shall align hook and pile tape patches and press together firmly.

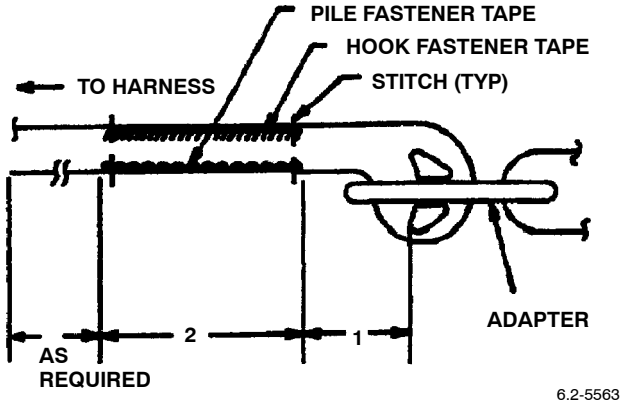

Figure 16. Attachment of Hook and Pile Tape to Chest Strap

19. ATTACHMENT OF HOOK AND PILE FASTENER TAPE TO ANTI-ROTATION STRAPS.

NOTE

Production harness will be supplied with 1-in. or 5/8-in. wide hook and pile fastener tape.

Placement of the hook and pile fastener tape may be reversed (aircrew option).

a. Properly size and fit parachute restraint harness to aircrew.

b. Lay each hook tape lengthwise over inside portion of each 4-in. Trapezoidal box-X stitch pattern that attaches anti-rotation adjustment straps to left and right leg straps. Cut top narrow end of each hook tape to match angled end of each trapezoidal box-X stitch pattern. Sew each hook tape over inside portion of each trapezoidal box-X stitch pattern (Figure 17).

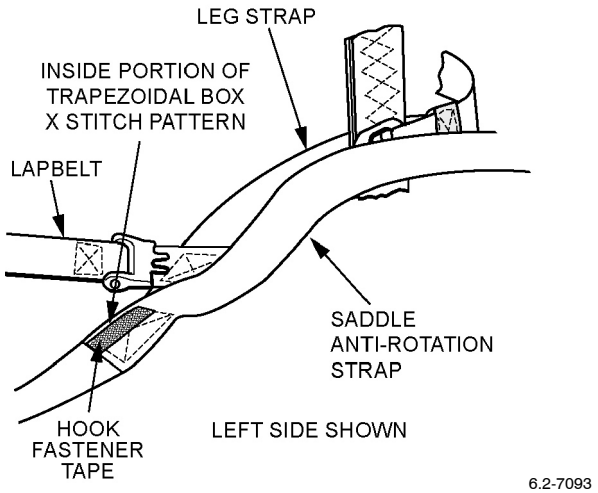

Figure 17. Lay Each Hook Tape Lengthwise

c. Route free ends of adjustment straps thru their respective reversible adapter.

d. Aircrew shall don harness, adjust chest strap and anti-rotation adjustment straps to a snug but not tight position. Lay free ends of upper portions of adjustment straps flat over lower parts of adjustment straps. On bottom side of each upper adjustment strap mark location of hook fastener tape.

e. Sew pile tape within stitch pattern marks made on upper adjustment straps (Figure 18).

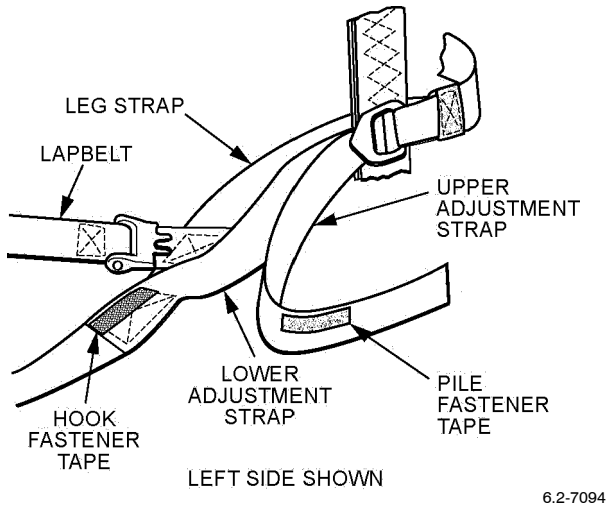

Figure 18. Sew Pile Tape to Adjustment Straps

f. Measure 5-in. from ends of pile tapes toward free ends of adjustment straps and mark. Use a hot knife to sear away excess strap at 5-in. marks (Figure 19).

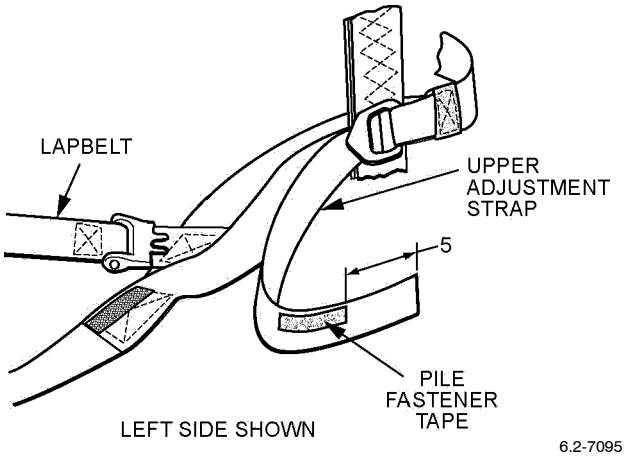

Figure 19. Measure 5-in. From Ends of Pile Tape

g. Triple roll 3/4-in. of free end of each adjustment strap to side opposite that of pile tapes and sew together with single row of stitchings 5/8-in. from rolled end (Figure 20).

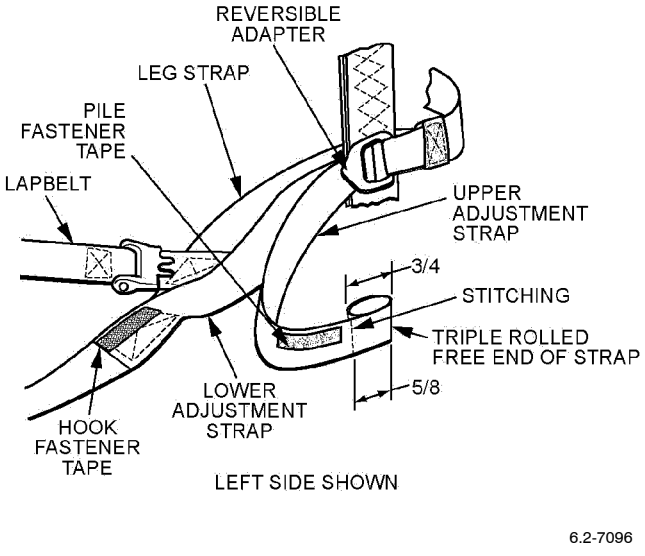

Figure 20. Triple Roll 3/4-in. of Free End

h. Tack reversible adapter on sleeve side thru webbing and as close as possible to hardware. Tack with one turn size FF thread double and waxed; tie off (Figure 21).

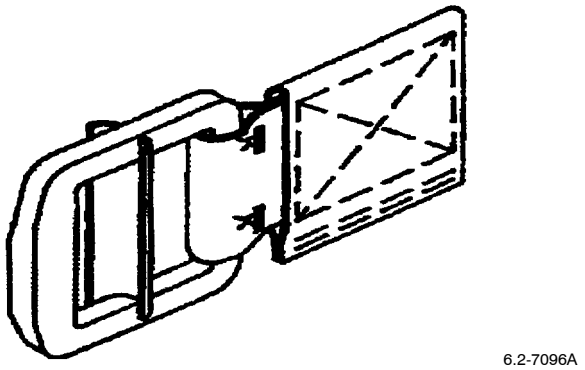

Figure 21. Tack Reversible Adapter

i. When donning harness, aircrew shall tighten adjustment straps to a snug position and shall then align hook and pile fastener tapes, pressing firmly together.

20. ATTACHMENT OF SURVIVAL ITEMS TO STOWAGE POCKETS.

Materials Required

MIL-C-23070	Cloth, Laminated
MIL-C-5040	Cord, Nylon, Type I or IA (Coreless)
1791K10	Tape, Duct
A-A-1799	Bag, Plastic
—	Aluminum 0.090-in. thick ±0.010-in. Any Grade

NOTE

Fake securing lines along individual survival items (excluding bandolier cord) and secure with light weight rubber band.

a. Attach a Smoke and Illumination Marine Signal (flare), cut 80-in. length of nylon cord and sear ends. Tie an overhand knot in one end. Wrap end of cord two turns around one end of signal flare and tie a surgeon's knot. Turns of cord shall overlap all knots positioned snugly against each other. Route cord to apposite end of signal flare and tie in same manner as above. Cord between ties shall be tight. Secure free end of cord to grommet in distress flare pocket, with bowline knot and a overhand knot on free end (Figure 22).

b. To attach MK-79 bandolier signal kit, cut a 12-in. length of nylon cord and sear ends. Tie overhand knot in one end and then pass end thru hole provided in bandolier and tie a bowline knot. Tie an overhand knot in other end and pass nylon cord thru grommet in signal kit pocket, then tie off with a bowline knot (Figure 22).

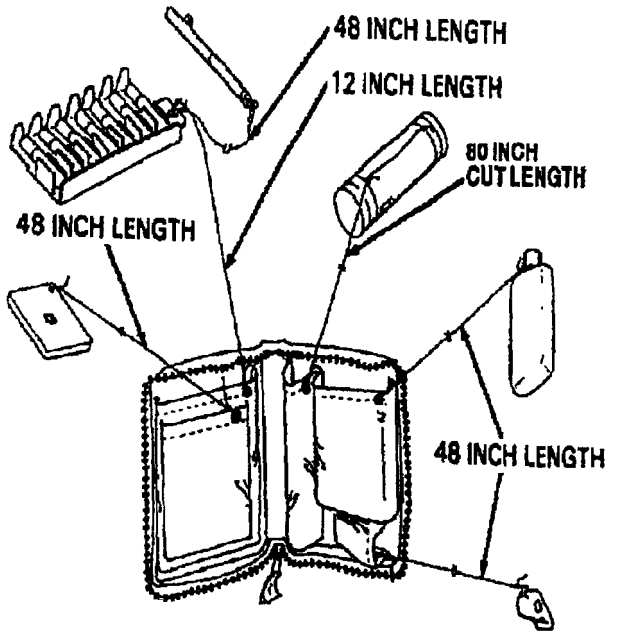

Figure 22. Attachment of Smoke and Illumination Signal and MK-79 Signal Kit

c. Cut a 48-in. length of nylon cord and sear ends. Tie an overhand knot in both ends, pass one end thru hole in bandolier and secure with a bowline knot. Pass other end of nylon cord thru end of pen gun and secure with a bowline knot (Figures 22 and 23).

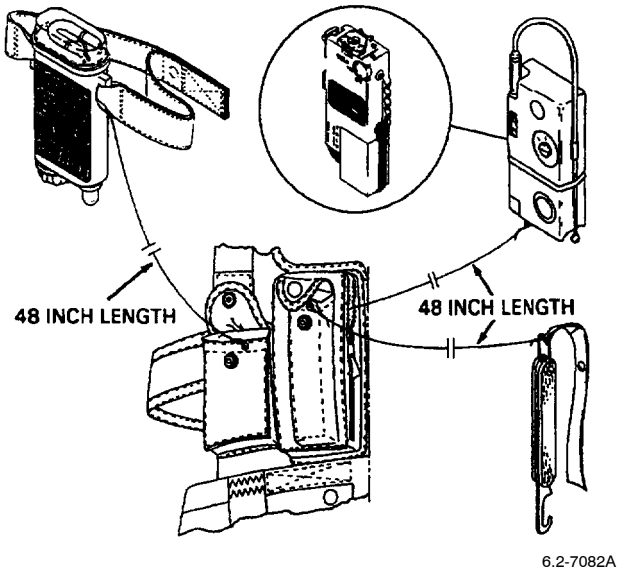

Figure 23. Secure Remaining Survival Items

d. Secure remaining survival items with a 48-in. length of nylon cord, sear ends and tie and overhand knot in ends followed by a bowline knot. (QA)

NOTE

If AN/PRC-112 (V) or AN/PRC-112B survival radios are used install and stow as follows.

e. AN/PRC-112 (V) radios do not require this packing plate.

f. Cut a 1-in. by 2 3/8-in. plus 1/8-in. minus 0-in. plate from a sheet of any grade aluminum 0.090-in. thick plus or minus 0.010-in.

g. Radius the corners and deburr all edges.

h. Cut two lengths of duct tape, both 2 3/8-in. by 3/4-in, and center lengthwise along the 2 3/8-in. side of the plate, one on each side of the 2 3/8-in. sides and fold to the tape.

i. Cut one length of duct tape 6 1/2-in. long by 1-in. wide and fold one end back on itself 1-in. to create a pull tab.

j. Place the length of tape made in paragraph i above, on a table with the adhesive side facing up and folded end to your right. Measure in from the right 2-in and place the plate in paragraphs f thru g above, on the adhesive to the left at the 2-in. measurement (you will have adhesive areas of tape on both sides of the plate).

NOTE

Do not cover the antenna with the tape.

k. With the AN/PRC-112 series radio buttons facing up and the word "talk" closest to you and to the right, place plate made in paragraphs f thru i above, over the buttons with the folded edge of the tape on the right side of the radio just below the push to talk button. Fold and press tape on to the right side of radio body.

l. Fold and press the left side of the plate tape on to left side of radio body.

m. Cut a 48-in length of nylon cord with strands removed or (coreless) nylon cord and sear ends of cord.

n. Secure one end of the nylon cord to radio/knife pocket grommet forming a 2-in. loop thru grommet. Tie off.

o. Secure other end of nylon cord to AN/PRC-112 radio webbing of "V" ring using a 2-in. loop around webbing or "V" ring. Tie off.

p. Place AN/PRC-112 radio in a 12 x 12-in. ziplock plastic bag.

q. Remove as much trapped air as possible from the ziplock bag and tape over the closed ziplock closure using a 2-in. length of duct tape.

NOTE

The Type I or IA nylon cord can exit the bag at any location on the seal line. Location of the exit point is not critical.

A bagged radio with excessive trapped air will be difficult to stow into the radio/knife pocket. If difficulty is encountered during stowage continue to press radio into pocket until sufficient air escapes to permit radio/knife pocket zipper closing.

r. Place the bagged radio into a second ziplock bag and seal closure using duct tape as in paragraph p, above.

s. Cut a 7 x 14-in. piece of laminated cloth and wrap around the bagged AN/PRC-112 radio and secure with a rubber band.

t. Stow radio in radio/knife pocket. (QA)

u. Close zipper in radio/knife pocket. (QA)

NOTE

AN/PRC-112 radios and batteries are currently undergoing rework/design to eliminate water leakage.

Bagging of the radio will not make it waterproof only water resistant.

Aircrew should not remove the radio from the ziplock bag until after they are in the life raft.

21. ATTACHMENT OF SURVIVAL ITEMS IN HEED POCKET.

a. Cut a 24-in. length of nylon cord and sear ends. Attach one end of line at neck of HEED bottle, and secure with a bowline knot. Attach the other end to the snap hook, with a bowline knot and attach snap hook to Dee-Ring installed on HEED pocket (Figure 24).

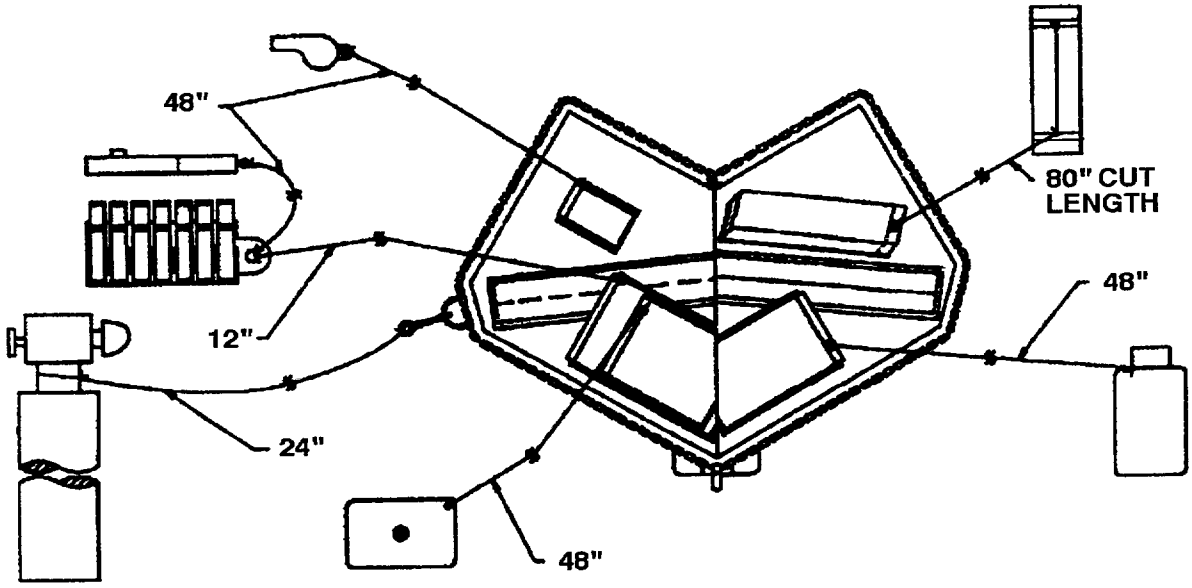

Figure 24. Attachment of Survival Items in HEED Pocket

b. Install protective cover over HEED bottle, after it is placed into survival item pocket, by placing cover over mouth piece and valve closing hook and pile fastener around neck of HEED pocket.

NOTE

The protective cover for the HEED is to be removed before flight. The cover is intended to protect the HEED when not in use. The beads are on the inside of the pocket to serve as a "Hand-Hold" to enable a ditched aircrew with wet hands who has forgotten to remove the pocket to easily grasp the top of the pocket for quick removal. Stow cover in flightbag.

Do not tether to vest.

Care should be taken not to pull bottle out of pocket. Zippers are to be fully closed around neck of HEED but not enough to restrict HEED from being removed by pulling on the regulator head.

22. ATTACHMENT OF PARACHUTE RESTRAINT HARNESS HOLSTER (AIRCREW OPTION).

a. Attach per Figures 25 and 26.

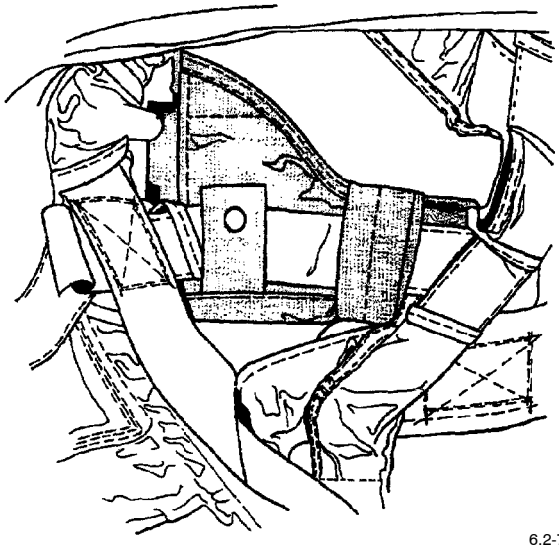

Figure 25. Attachment of Harness Holster

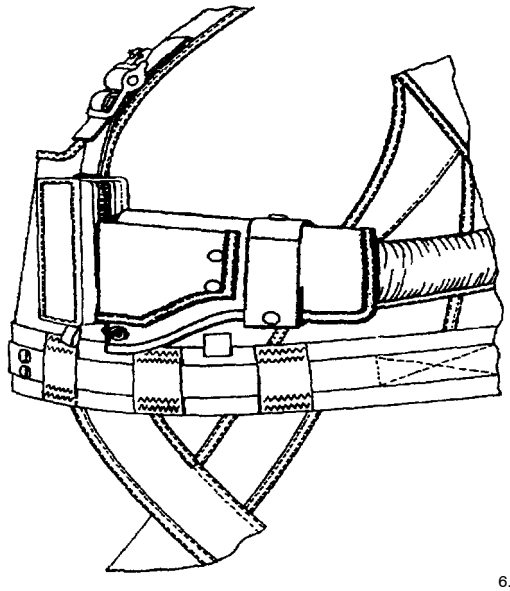

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Figure 26. Attachment of Parachute Restraint Harness Holster

23. ATTACHMENT OF ANTI-ROTATION STRAP ADAPTER TAB.

Materials Required

Specification or Part Number	Nomenclature
MIL-W-4088	Tape, Nylon, Type II, Class 1 or 1A, Sage Green or Yellow
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

a. Cut a length of tape 5-in. long and sear ends.

b. Pass one end of the tape around the friction adapter, turn ends under 1/4-in. and sew with a 1-in. box-X stitch, backstitch 1/2-in. (Figure 27).

c. Tack webbing to center and as close as possible to friction adapter to prevent movement. Hand tack with size FF thread waxed and doubled one turn. Tie off.

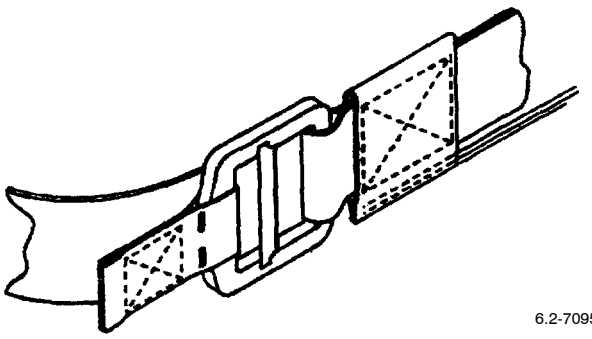

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Figure 27. Attachment of Anti-Rotation Strap Tab

24. ATTACHMENT OF THE LPU-36/37 FLOTATION COLLAR HARDWARE.

Material Required

Specification or Part Number	Nomenclature
MIL-W-4088	Webbing, Nylon 1 inch wide, Type II, Color Optional, 5 inches
MIL-W-5664	Webbing, Elastic 1 inch wide, Color Optional, 17 inches
MS51925-4	Dee-Ring (8)
PIA-T-5038	Tape, Nylon 1 inch wide, Type III, Color Optional, 50 inches
V-T-295	Thread, Nylon, Size E
V-T-295	Thread, Nylon, Size 3

NOTE

Tie off all tackings with a surgeons knot topped with a square knot, topped with a binder knot per WP 002 00. Trim excess leaving 1/2-in.

a. Carefully remove LPU tabs and Dee-Rings (Figure 28).

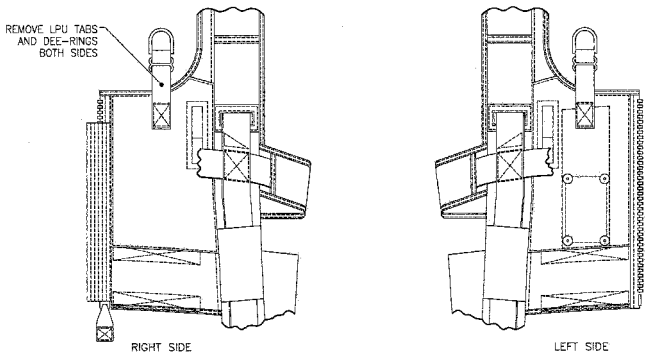

Figure 28. LPU Tab and Dee-Ring Removal

WARNING

Do not stitch thru harness webbing.

b. Cut four pieces of 1-in. wide PIA-T-5038, Type III, Nylon Tape, approximately 6 1/2-in. long. Fold each piece of webbing in half and insert two Dee-rings. Place each piece around harness garment and webbing. Stitch to harness garment (4 places) with size E thread (Figures 29).

c. Cut one length of 1-in. wide, MIL-W-4088, Type II, Nylon Webbing, approximately 4 1/2 inches. Sew piece of webbing on backside of harness using size E thread (Figure 30).

d. Cut two pieces of 1-in. wide PIA-T-5038, Type III, Nylon Webbing, 3 1/2-in. long. Measure and mark 1 1/2-in. above webbing channel. Sew webbing (horizontal straps) in place at the 1 1/2-in. mark, folding under 1/4-in. with three rows of size E thread (Figure 31).

NOTE

Use of Riser keepers in accordance with WP 008 01 is permissible in lieu of horizontal straps.

e. Cut four pieces of 1-in. wide, MIL-W-5664, Elastic Webbing, 3 1/2-in. long. Fold in half and sew 1/4-in. from the edge (Figure 32).

f. On the right side it may be required to relocate the radio pocket and the Standard Right Angle Two Cell Flashlight (Gooseneck) to a lower position to allow the LPU-36/37 attachment straps to be threaded through the slots. If necessary, elongate slots in backing material of harness garment (Figure 33).

NOTE

On smaller harnesses the chest strap slots on the right side may not be accessible, even after lowering the radio pocket and flashlight holder. If this happens proceed to step g.

g. Sew a 1-in. wide PIA-T-5038, Type III, Nylon Webbing, 1 1/2-in. long on the inside and outside, as near as possible to the existing slot, sew using a box X stitch. Make sure slot is located below bottom of LPU-36/37. Hot knife a 3/4-in. long slot in the center of the webbing, through both pieces of webbing, including garment. The same process shall be done to the left side to maintain even mounting of the LPU-36/37.

25. ATTACHMENT AND FITTING OF THE LPU-36/37 FLOTATION COLLAR TO AIRCREW.

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E
V-T-295	Thread, Nylon, Size 3

NOTE

Tie off all tackings with a surgeons knot topped with a square knot, topped with a binder knot per WP 002 00. Trim excess leaving 1/2-in.

WARNING

It is important that the LPU-36/37 be properly fitted to each individual aircrew.

NOTE

To ensure complete range of motion of the head and neck, all aircrew shall be fitted while wearing their issued helmet.

a. Install elastic keepers on to the LPU-36/37 attachment straps.

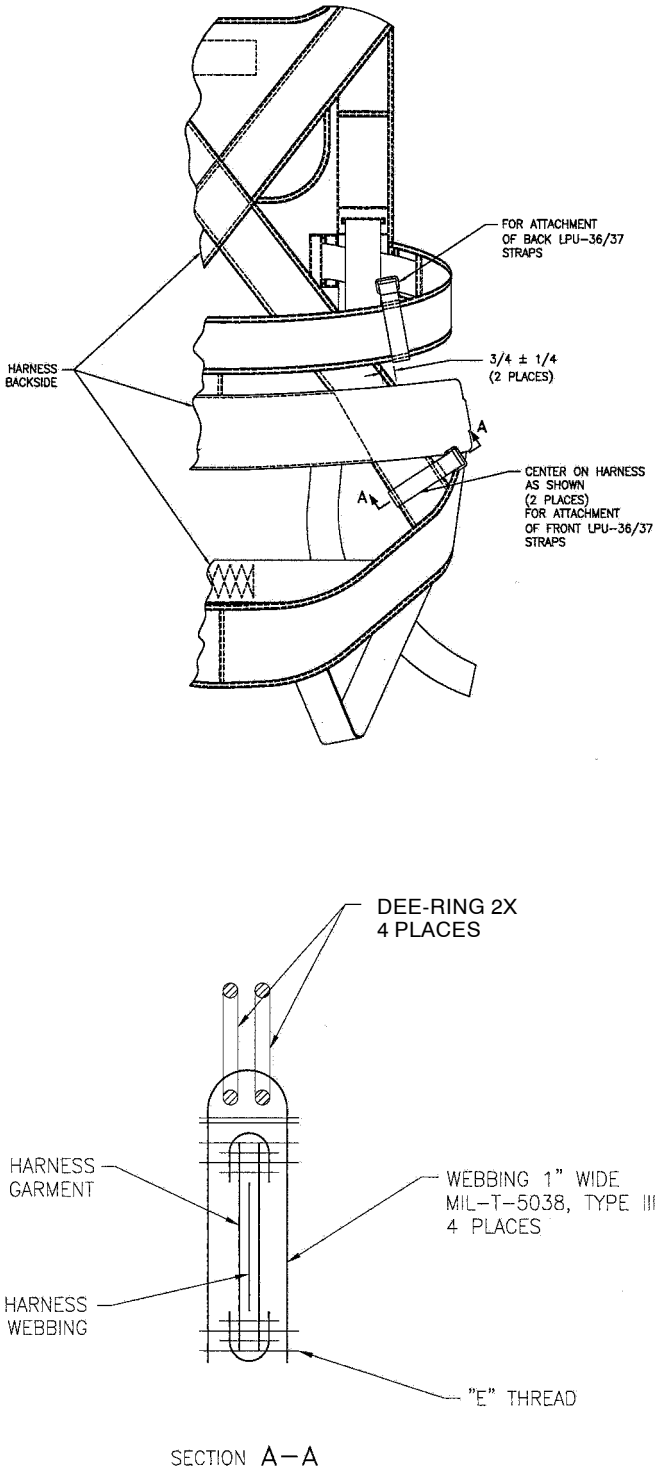

Figure 29. Front and Back Attachment Strap Location

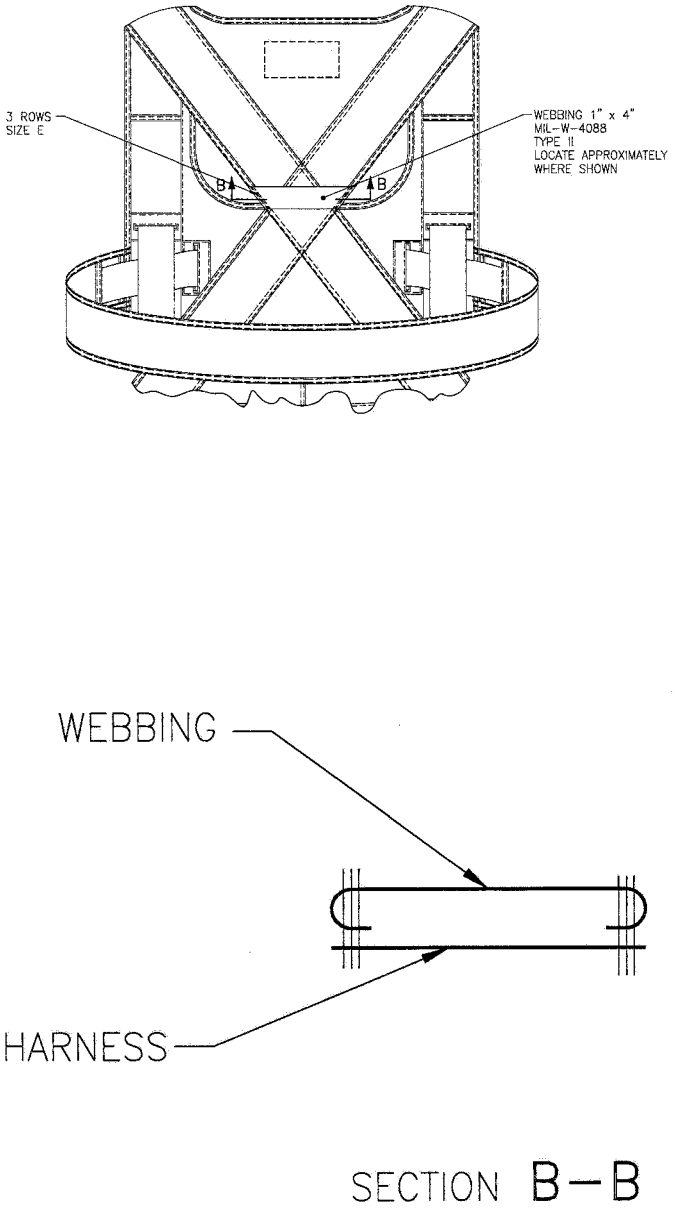

Figure 30. Back Strap Location

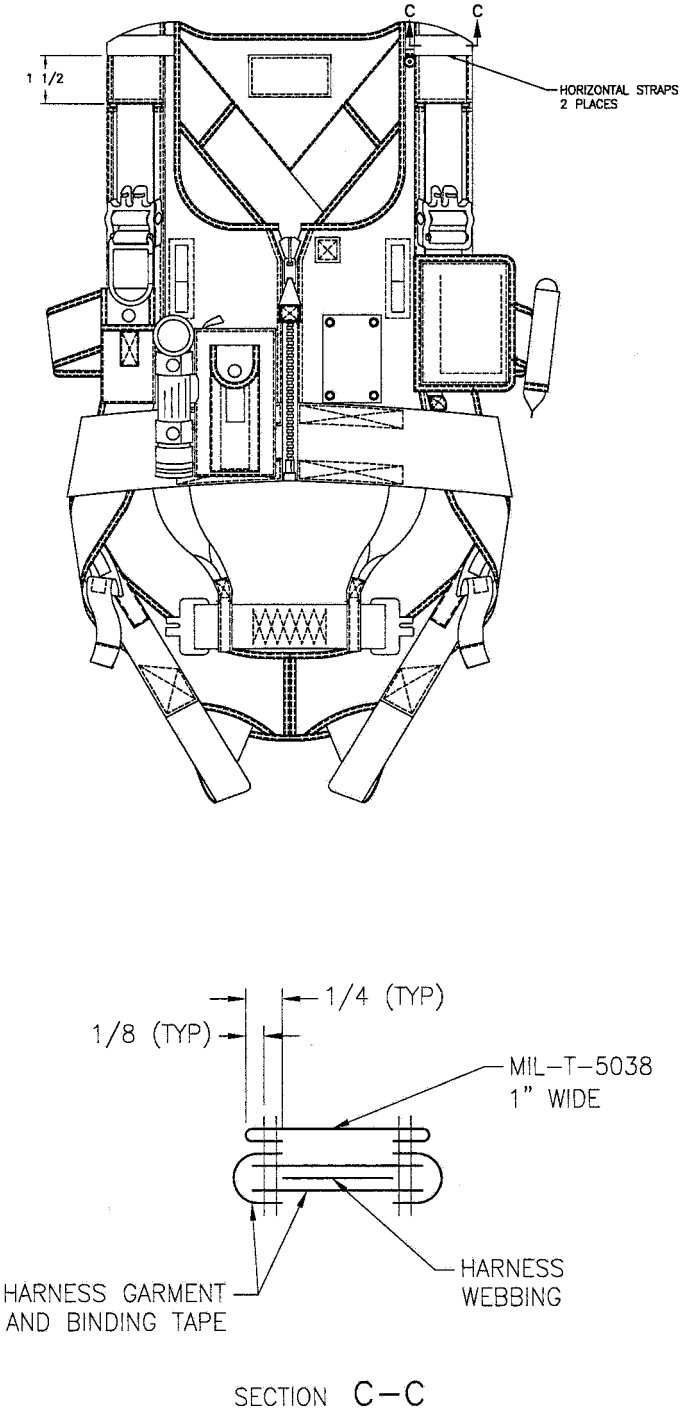

Figure 31. LPU-36/37 Horizontal Strap

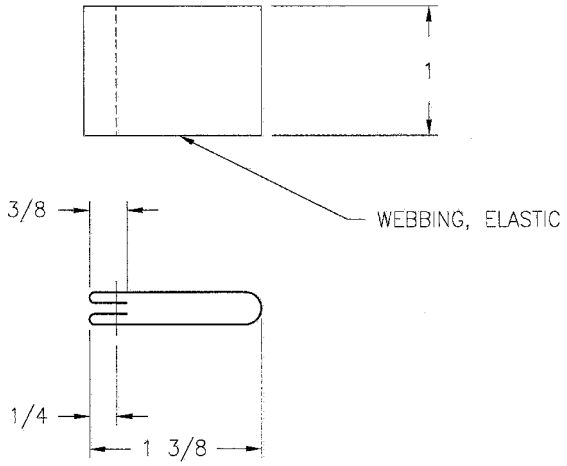

Figure 32. Keepers

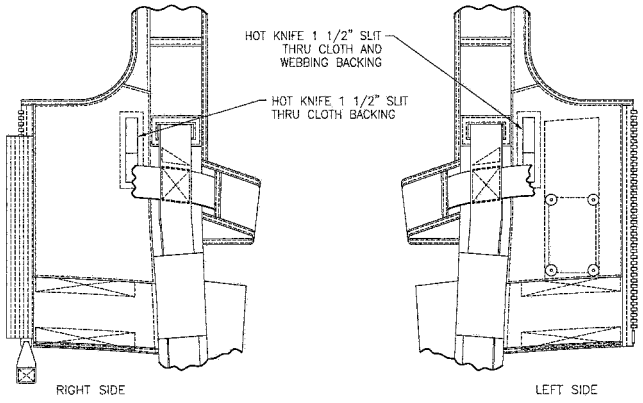

Figure 33. Front Attachment Strap Slots

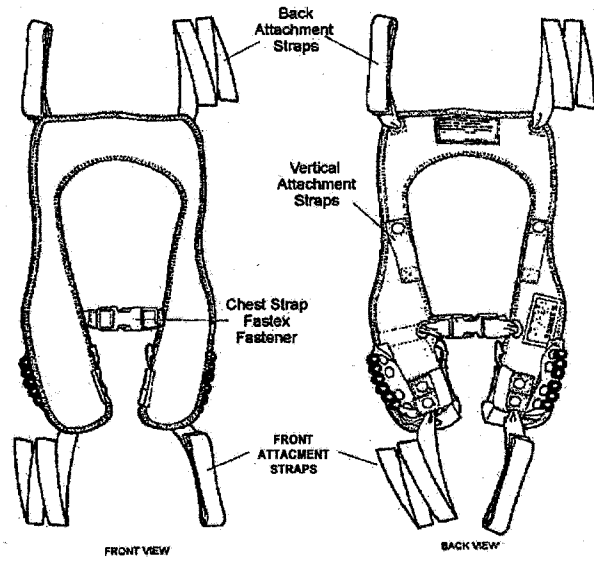

Figure 34. LPU-36/37 Low Profile Flotation Collar

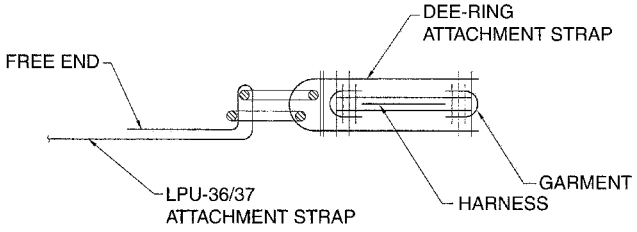

Figure 35. Proper Routing of Attachment Straps

b. Secure the collar vertical straps to the harness horizontal straps or riser keepers (if installed) (Figure 34).

c. With helmet on, place the LPU-36/37 around the aircrew's neck and close the Fastex fastener on the front of the LPU-36/37. With the aircrew holding the front collar lobes in place, fold the back collar lobe over the aircrew's shoulder. The inside of the collar lobe should be close, but not touching, the aircrew's helmet while looking up (checking 12). The aircrew should have complete range of motion at this point. If not, adjust the gap between the back collar and neck.

d. While aircrew continues to hold collar in place, route the back attachment straps through the back guide webbing, crossing the straps and thread them through the Dee-Rings (Figure 35).

e. Pull the free end of the back attachment straps through the Dee-Rings and remove all slack. All slack has been removed if the back portion of the collar remains conformed to the radius of the shoulder and the front portion of the collar has not moved while being held in place. Tie a half hitch in each back attachment strap to prevent slippage. Do not tack at this time.

f. Thread the LPU-36/37 front attachment straps through the harness chest strap slots/extended slots on the garment. Route the LPU-36/37 attachment straps over the harness vertical main sling webbing and insert through outside opening of harness garment. Thread front attachment straps thru Dee-Rings from the inside of harness. Remove all slack from attachment straps and tie a half hitch. If the front collar lobes are lower than the chest strap slots in the garment, it will be necessary to loosen the back attachment straps and pull the back lobe down. All slack is removed when the

LPU-36/37 is not able to move or pull away from the body and complete range of motion is maintained (Figure 36).

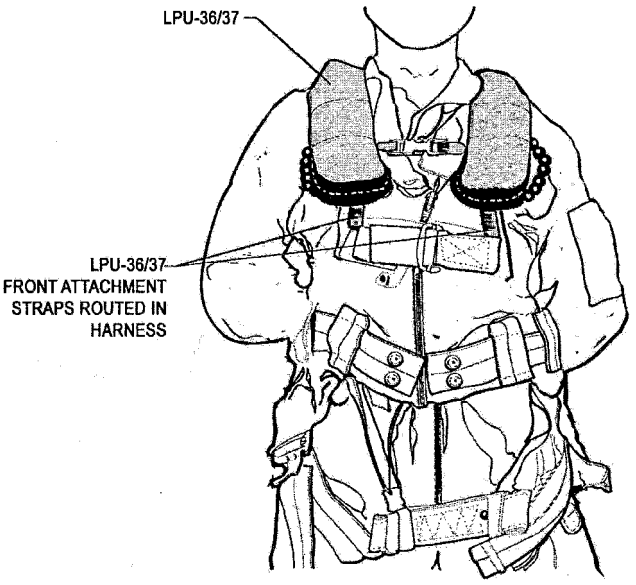

Figure 36. Front Attachment Strap Routing

g. Ensure that half hitches are present on all four attachment straps and remove harness from aircrew. Without disturbing adjustments, tack free end of attachment strap, above half hitch, with two-turns of waxed size 3 cord (Figure 37).

CAUTION

Do not trim excess LPU-36/37 attachment straps.

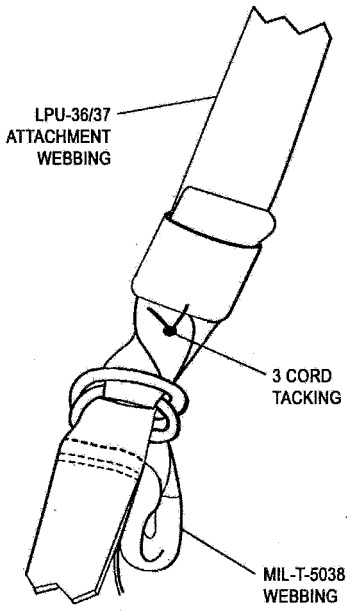

Figure 37. Tack Free End Above Larks Head

h. Secure excess front and back attachment strap webbing by folding and placing them in the elastic keepers.

i. Attachment straps should be re-inspected and adjusted (if necessary) after 5-10 sorties.

26. SDU-5/E DISTRESS LIGHT LANYARD FABRICATION.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MIL-W-4088	Webbing, Nylon, Type II, 1-in. Yellow, Class 1, 1A or 2

a. Cut two lengths of webbing 16-in. and sear ends.

b. Pass one end of webbing thru slot on the distress light. Folding the webbing in half, sew all around 1/8-in. from edge and 1-in. from slot on the distress light. Do the same on the opposite side of light (Figure 38).

c. Join both pieces of webbing together and sew a crossbox stitch 3/4 x 1 1/2-in. Sear a 5/8-in. diameter hole 1/2-in. from crossbox stitch and box stitch around 5/8-in. diameter seared hole (Figure 38).

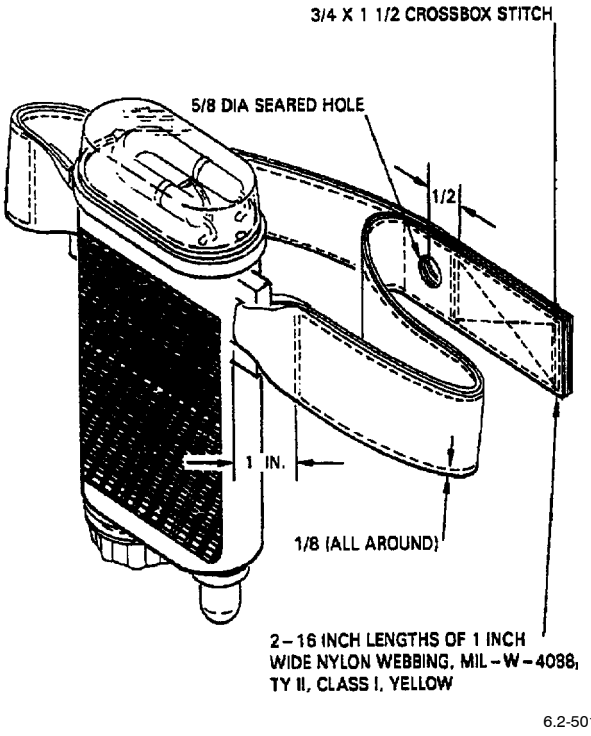

Figure 38. Distress Light Lanyard

27. POCKET HOOK BLADE AND SNAP BLADE MC-1 KNIFE LANYARD FABRICATION.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon Size E, Type I or II Class A
MIL-W-4088	Webbing, Nylon Type II, 1-in. Yellow Class 1, 1A or 2

a. Cut and sear a 9-in. length of webbing.

b. Pass one end of webbing thru knife D-Ring, a 2-in. length and double stitch 1/8-in from edge (Figure 39).

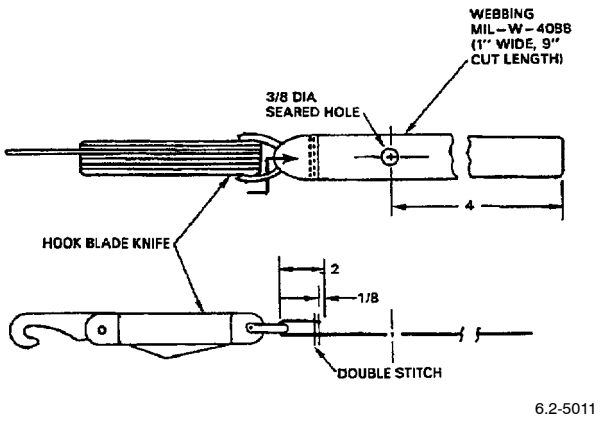

Figure 39. Attachment of Hook Blade Knife Lanyard

c. Sear a 3/8-in. diameter hole in webbing 4-in. from end (Figure 39).

INTERMEDIATE MAINTENANCE

REPAIR PROCEDURES

PCU-33/P SERIES PARACHUTE RESTRAINT HARNESS ASSEMBLY

PART NO. 829AS100

List of Effective Work Package Pages

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2 thru 4	8	13	8	16	8		

Reference Material

Common Repairs . . . . . WP 004 00
Introduction . . . . . WP 002 00
Organizational and Intermediate Maintenance, Description and Principles of Operation, PCU-33/P Series Parachute Restraint Harness Assembly . . . . . WP 008 00
Organizational Maintenance, Repair Procedures, PCU-33/P Series Parachute Restraint Harness Assembly . . . . WP 008 01
Parachute Loft Requirements/Administration . . . . . WP 003 00
Support Equipment . . . . . WP 005 00

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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 623	14 Feb 96	Riser Restraint Keeper (RAMEC P-08-95)	1 Jul 96	31 Dec 2003
ACC 633	14 Sep 98	Replacement of LPU-23/P Floatation Device with the Low Profile Floatation Collar (LPFC) On PCU-33/P (Series) and PCU-56/P (Series) Integrated Parachute Restraint Harnesses (96A30) (ECP-16341R1)	1 Jan 00	31 Dec 2006

DELETED

1. INTRODUCTION.

2. This work package (WP) contains instructions for intermediate level repair to ensure that the harness remains in ready-for-issue (RFI) status.

3. When performing repairs detailed in this WP, do per these guidelines:

a. Review all applicable instructions prior to starting repair.

b. Ensure that all necessary support equipment and materials required are available prior to starting repair.

c. To ensure conformity, all repair/fabrication work shall be carefully inspected and compared to applicable instructions at the completion of work.

d. A quality assurance (QA) inspector shall examine the finished work.

4. HARNESS ASSEMBLY.

5. HOOK AND PILE FASTENER TAPE TO CHEST STRAP REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, 1 1/2-in. Wide, Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 1 1/2-in. Wide, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Placement of the hook and pile fastener tape may be reversed (aircrew option).

a. Properly fit the harness to aircrew.

b. Mark chest strap webbing 1-in. from friction bar on both the free end and portion attached to harness (Figure 1).

c. Attach a 2-in. strip of hook fastener tape on outer surface of chest strap and a 2-in. strip of pile fastener tape on inner surface of free end. Machine stitch around edges of hook and pile fastener tape. Backstitch a minimum of 1/2-in. Leave a minimum of 10-in. of webbing from chest strap friction bar after fitting aircrew. Trim and sear. Avoid forming sharp edges while hot knifing and searing (Figure 1). (QA)

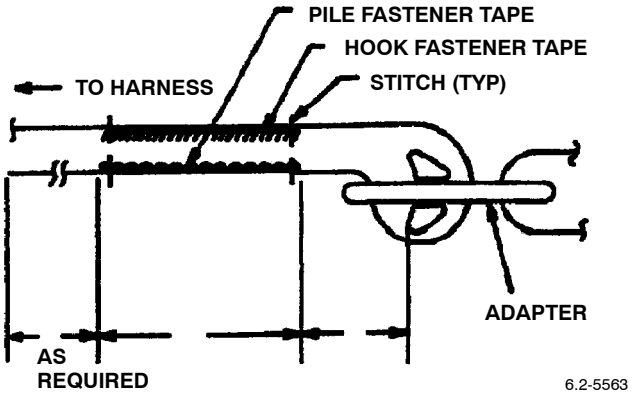


Figure 1. Replacement of Hook and Pile Fastener Tape to Chest Strap

d. When donning, aircrew shall align hook and pile fastener tape patches and press together firmly.

6. HOOK AND PILE FASTENER TAPE TO HARNESS ANTI-ROTATION STRAPS REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, 1-in. Wide, Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 1-in Wide, Type II, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Placement of the hook and pile fastener tape may be reversed (aircrew option).

a. Carefully remove old hook and pile.

b. Lay each hook fastener tape lengthwise over inside portion of each 4-in. Trapezoidal box-X stitch pattern that attaches anti-rotation adjustment straps to left and right leg straps. Cut top narrow end of each hook fastener tape to match angled end of each trapezoidal box-X stitch pattern. Sew hook fastener tape over inside portion of each trapezoidal box-X stitch pattern (Figure 2).

c. Route free ends of adjustment straps thru their respective reversible adapter.

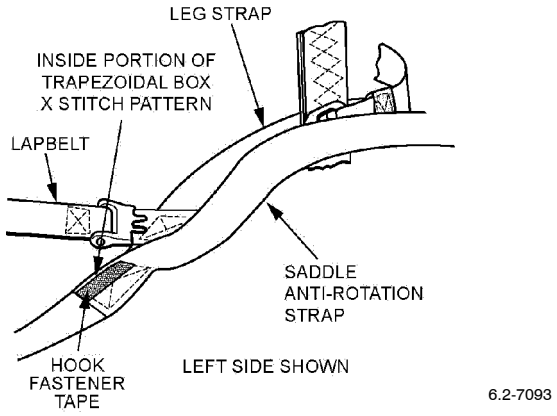


Figure 2. Lay Each Hook Fastener Tape Lengthwise

d. The aircrew shall don harness, adjust chest strap and anti-rotation adjustment straps to a snug but not tight position. Lay free ends of upper portions of adjustment straps flat over lower portions of adjustment straps. On bottom side of each upper adjustment strap, mark location of hook tape.

e. Sew each pile fastener tape within stitch pattern marks made on upper adjustment straps (Figure 3).

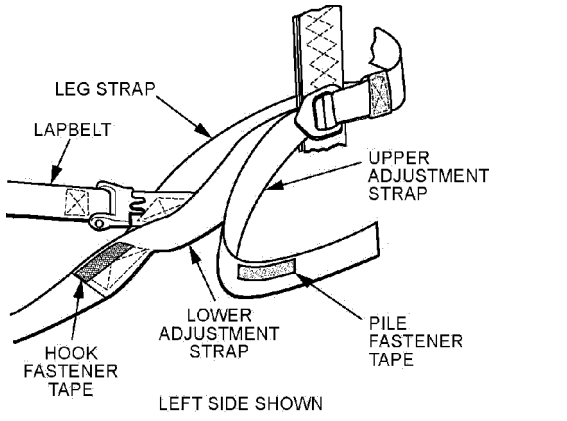


Figure 3. Sew Pile Fastener Tape to Adjustment Straps

f. Measure 5-in. from ends of pile fastener tape toward free ends of adjustment straps and mark. Use a hot knife to sear away excess strap at 5-in. marks (Figure 4).

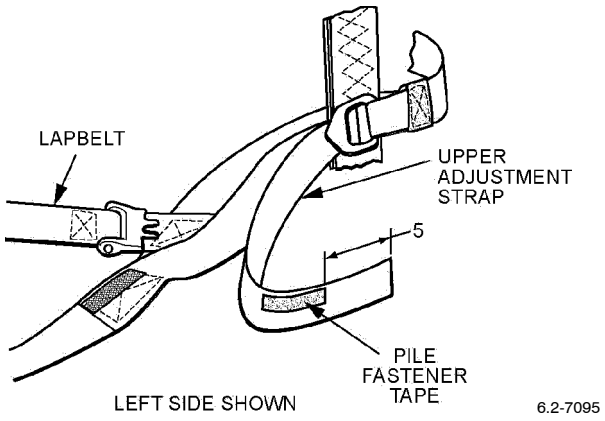


Figure 4. Measure 5-in. From Ends of Pile Fastener Tape

g. Triple roll 3/4-in. of free end of each adjustment strap to side opposite that of pile fastener tapes and sew together with single row of stitchings 5/8-in. from rolled end (Figure 5).

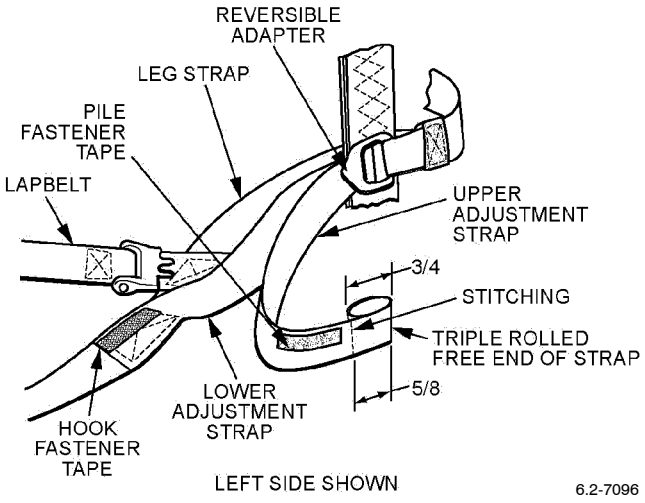


Figure 5. Triple Roll 3/4-in. of Free End

h. Tack reversible adapter on sleeve side thru webbing and as close as possible to hardware. Tack with one turn of size FF thread doubled and waxed; tie off (Figure 6).

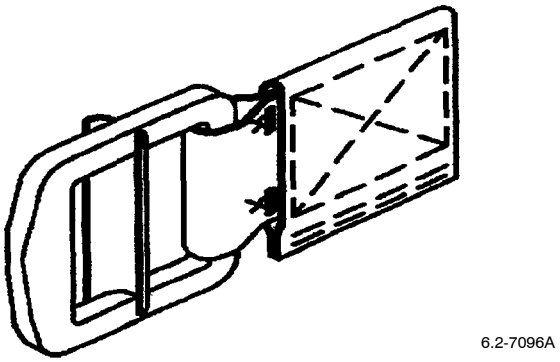


Figure 6. Tack Reversible Adapter

i. When donning harness, aircrew shall cinch adjustment straps to a snug position and shall then align hook and pile tapes, pressing firmly together to retain adjustment straps in place.

7. SADDLE ANTI-ROTATION STRAP REPLACEMENT.

Support Equipment Required

—	Hot Knife

Materials Required

V-T-295	Thread, Nylon, Size E, Type I or II, Class A
PIA-W-4088	Webbing, Nylon, Type III, 25 1/2-in.

CAUTION

Avoid damaging harness material when removing the old anti-rotation straps.

a. Remove the trapezoidal box-X stitchings from the anti-rotation strap carefully.

b. Using a hot knife cut two lengths of nylon webbing 25 1/2-in. long.

c. From the bottom outboard points where the lap belt attaches to the left and right leg straps, measure down 4-in. toward the saddle and mark (Figure 7).

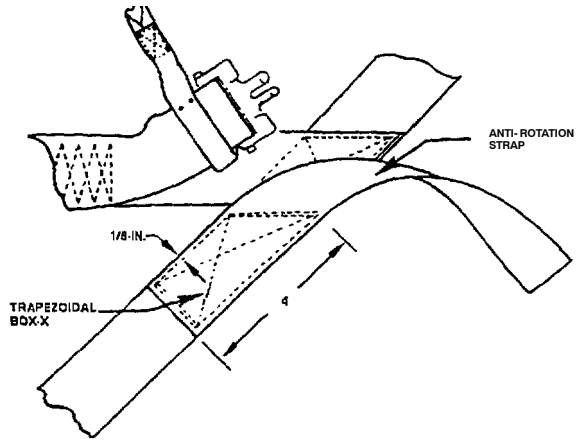


Figure 7. Attachment Point for Left and Right Leg Straps

d. Position the new left leg strap, seared end of the adjustment strap on the 4-in. mark with the free end of the strap toward the lap belt strap, sew new strap in place, with a trapezoidal box-X stitch pattern. Follow the same procedure for the right leg (Figure 7).

e. Route free end of the anti-rotation strap thru the respective friction adapter (Figure 8).

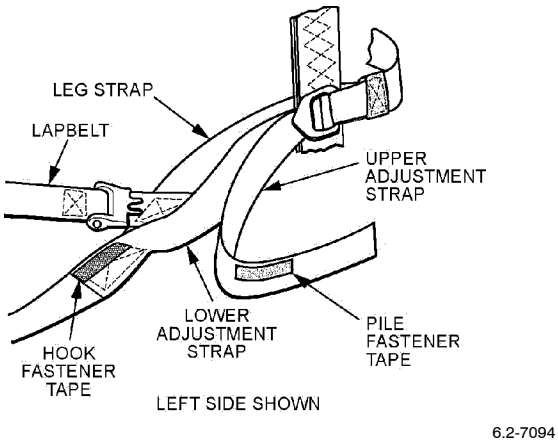


Figure 8. Routing of Anti-Rotation Strap

f. The aircrew shall don the restraint harness and adjust the chest strap and anti-rotation strap for a snug (but not tight) fit. Position the free ends of the adjustment strap flat over the lower attachment ends of the adjustment straps.

g. Mark on each upper strap the corresponding location of the hook fastener tape attached to the lower strap.

h. For attachment of the hook and pile fastener tape refer to Paragraph 6.

i. Measure 5-in. from ends of the pile fastener tape towards the free ends of the adjustment straps. Use a hot knife to cut any excess adjustment strap webbing at the 5-in. marks.

j. Triple roll 3/4-in. of each free end of the adjustment straps to the inboard side, opposite that of the pile fastener tape and sew together with a single row of stitching 5/8-in. from rolled end. Backstitch both ends of the strap 1/2-in. (Figure 5).

8. SADDLE ANTI-ROTATION STRAP ADAPTER TAB REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon, Yellow, 1-in. Wide, 5-in. Long, Type II, Class 1, 1A or 2
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

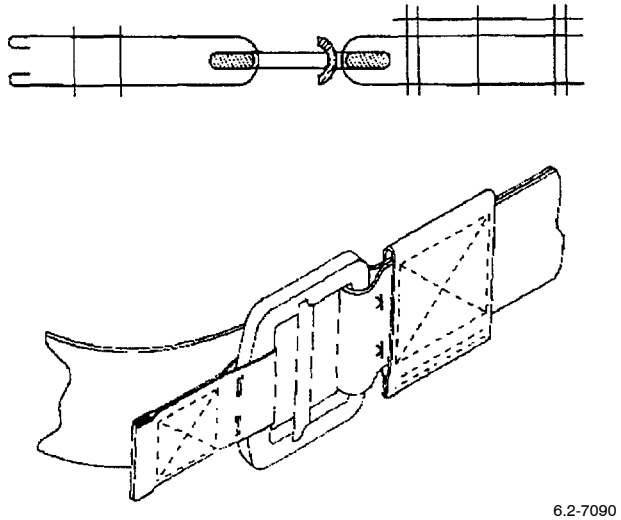
NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove old nylon tape from cinch adapter.

b. Cut a length of tape 5-in. and sear ends.

c. Pass end of nylon webbing thru friction adapter, turn ends under 1/4-in. and sew with a 1-in. box-X stitch, 1/8-in. from edge (Figure 9).



6.2-7090

Figure 9. Tacking of Anti-Rotation Strap Tab to Adapter

d. Tack webbing to center and as close as possible to friction adapter to prevent movement. Tack with one turn of size FF thread, doubled and waxed; tie off (Figure 9).

9. GATED D-RING REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
823AS100-1	D-Ring Assembly, Snaplink, Rescue (Gated D-Ring)
- or -	
1979AS975-1	Ring Assembly, Snaplink, Rescue (Gated D-Ring)
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove stitching at end of main sling webbing, using care not to damage webbing.

b. Remove webbing main sling webbing from lower portion of damaged gated D-Ring.

c. Install replacement gated D-Ring (gate inboard) and reeve back thru adapter (Figure 10).

d. Leave 8-in. of webbing from bottom of canopy release adapter to end of webbing, cut and sear end. Avoid forming sharp edges while hot knifing and searing. Fold free end of webbing and box-X stitch with size E thread, backstitch 1/2-in. Folded stitched webbing must face outward (Figure 10). (QA)

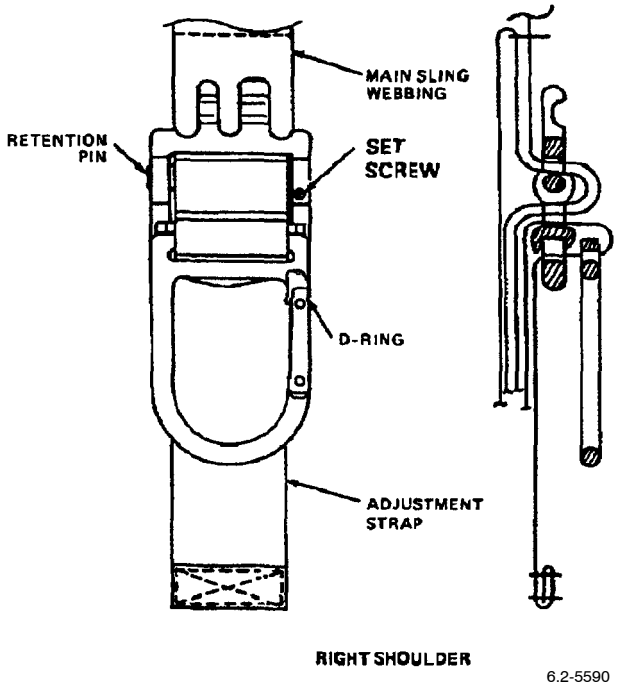


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Figure 10. Replacement of Gated D-Ring

10. CHEST STRAP ADAPTER RELOCATION.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. Center the chest strap adapter. If off centered to the right, do as follows:

(1) Properly fit harness to aircrew per WP 008 00.

(2) Mark desired location for adapter.

(3) Carefully remove existing stitching. From center mark, allow 3-in. and sear off excess webbing. Position adapter in place and machine stitch (Figure 11).

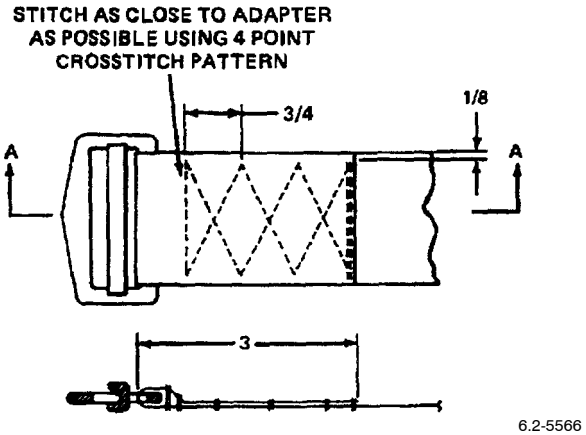

Figure 11. Relocation of Chest Strap Adapter

11. CHEST STRAP EXTENSION FABRICATION.

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon, Type XXVII, Class I or IA
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

This extension is applicable to both the chest strap and the chest strap adapter.

a. Remove free end of chest strap from garment channel located between the right front and back panels. Reroute chest strap so that it passes thru the channel in the mainsling webbing and the slit in front garment panel (Figure 12).

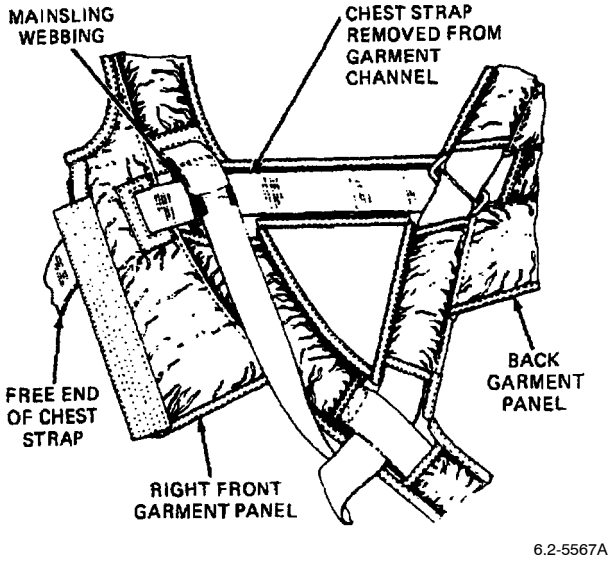

Figure 12. Remove Free End of Chest Strap

b. Adjust harness on aircrew and mark center of chest strap between the right front and back garment panels. (QA)

c. After aircrew has removed harness, lay out harness and cut chest strap 2-in. from centerline toward free end of chest strap (Figure 13). (QA)

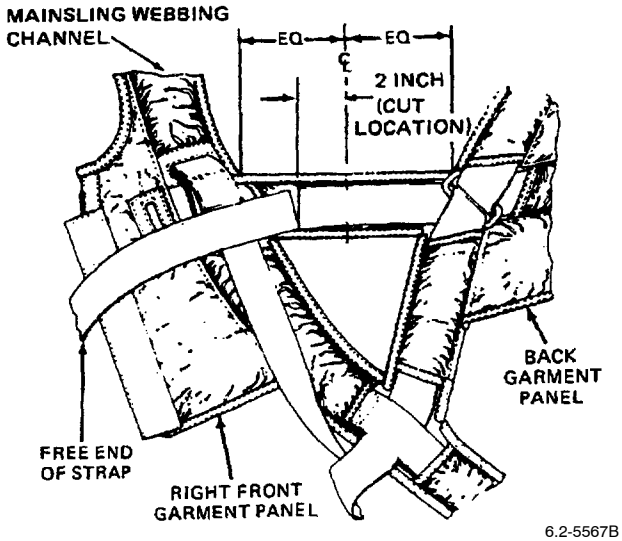

Figure 13. Layout Harness and Cut Chest Strap

d. Obtain a length of webbing 12-in. longer than the portion of the chest strap previously removed. Sew new webbing to the end of chest strap remaining on harness. Overlap webbing 4-in. stitch in a four-point W-W pattern (Figure 14). (QA)

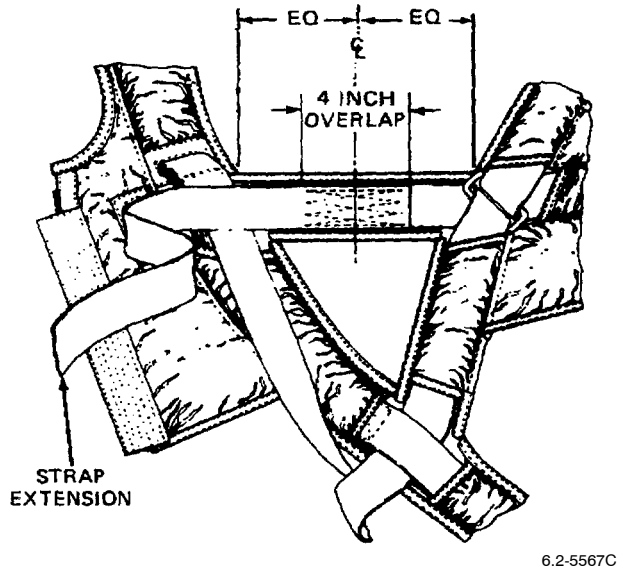

Figure 14. Obtain Length of Webbing 12-in. Longer

e. Insert modified chest strap into same garment channel as removed, thru channel in mainsling and thru slit in front garment panel (Figure 15).

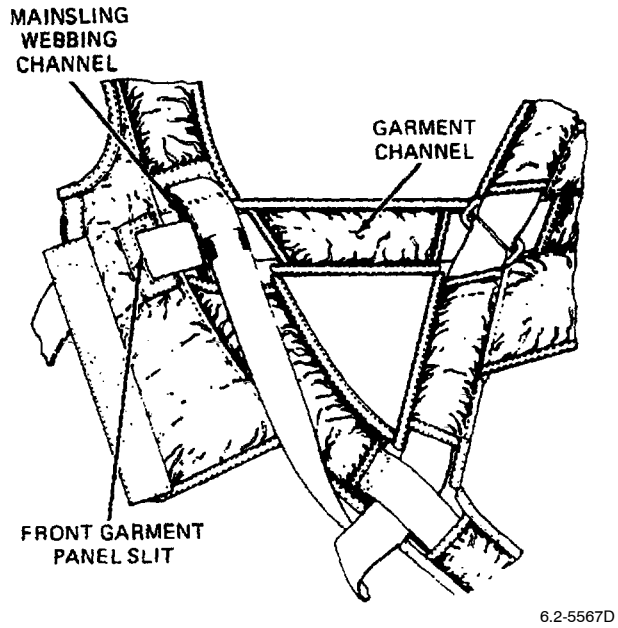

Figure 15. Insert Modified Chest Strap

12. MOUNTING BRACKET REPLACEMENT FOR DILUTER DEMAND REGULATOR.

Materials Required

Specification or Part Number	Nomenclature
67A100C30-1	Bracket, Mounting
AN470AD-4-8	Rivets (6)
PIA-W-4088	Webbing, Nylon, Type IV, Class 1 or 1A
	-or-
MIL-C-12369	Cloth, Ballistic Class I

a. Remove rivets from mounting bracket.

b. Center mounting bracket 3-in. above harness securing belt and 1-in. away from zipper (Figure 16).

c. Install six rivets. (QA)

d. Smooth rivet heads flush with backing plate.

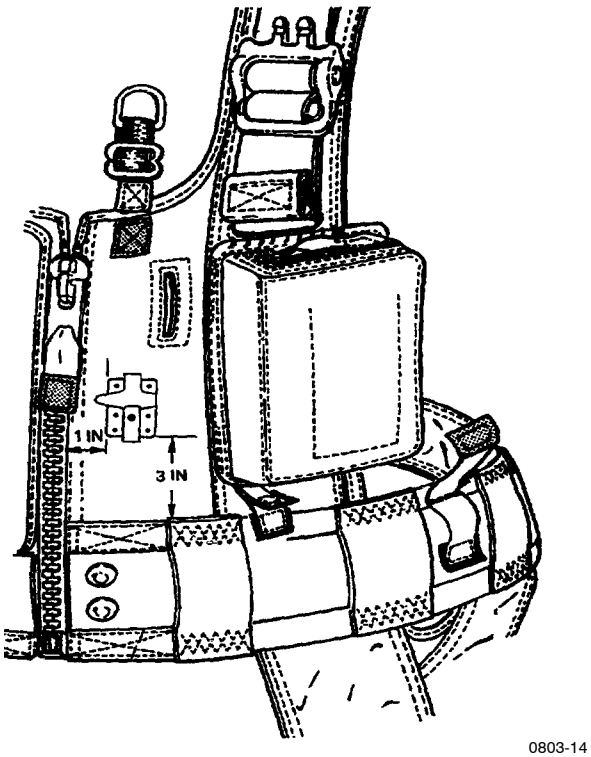

Figure 16. Replacement of Mounting Bracket

e. Make proper entries on Aircrew Personal Equipment Record (OPNAV 4790/159). (QA)

13. MOUNTING BRACKET REPLACEMENT FOR ON BOARD OXYGEN GENERATING SYSTEM (OBOGS).

Materials Required

Specification or Part Number	Nomenclature
829AS165-2	Kit Bracket Assembly, Oxygen Regulator
829AS159-2	Bracket Assembly Oxygen Regulator (Component of 829AS165-2)
829AS163-1	Oxygen Regulator Mounting Plate (Component of 829AS165-2)
MS20427F4-9	Rivet
829AS152-13	Oxygen Regulator and Hose Retention Pocket
MMM-A-121	Adhesive
MS27983-1	Snap, Fastener, Button
MS27983-2N	Socket, Snap Fastener
MIL-F-21840	Fastener Tape, Hook, 2-in. Type II, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
PIA-W-4088	Webbing, Nylon, Type IX

a. If require, remove the OBOGS bracket assembly from the harness assembly.

CAUTION

Avoid damaging harness material when removing the rivets.

b. Hot knife one piece of webbing 7-in. long, and sear both ends. Avoid forming sharp edges after hot knifing the ends.

c. Fold both ends, top and bottom, about 1/2-in. and stitch 1/4-in. from folded edges. Backstitch 1/2-in. using size E thread (Figure 17).

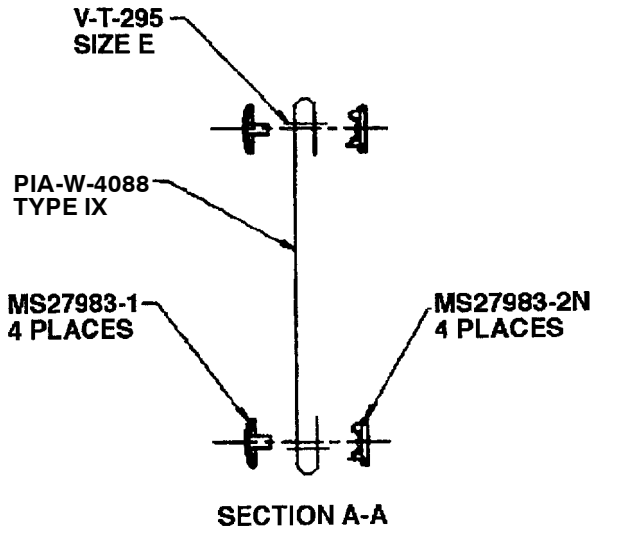

Figure 17. Fold Both Ends

d. Position the OBOGS bracket centered lengthwise on one side of the 7-in. piece of webbing and the mounting plate on the back side (Figure 18).

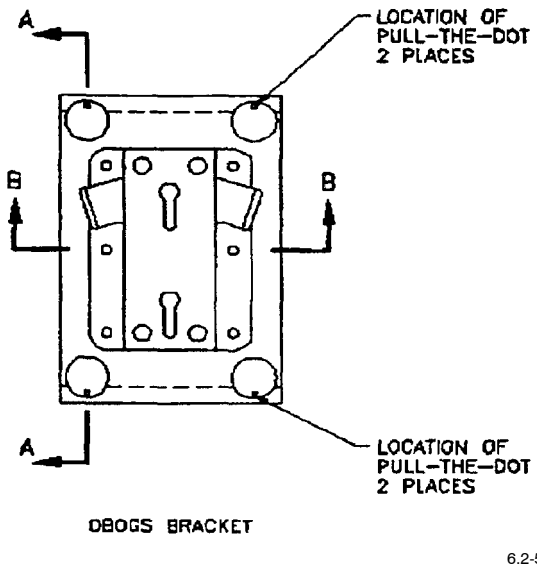

Figure 18. OBOGS Bracket

e. Rivet the Bracket, webbing and plate together. Using rivets (Figure 19).

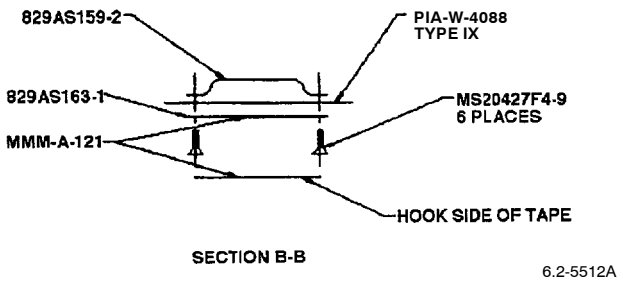

Figure 19. Rivet Backing, Webbing, and Plate Together

f. Use template to center the four snap fasteners and install snap fasteners (Figure 20).

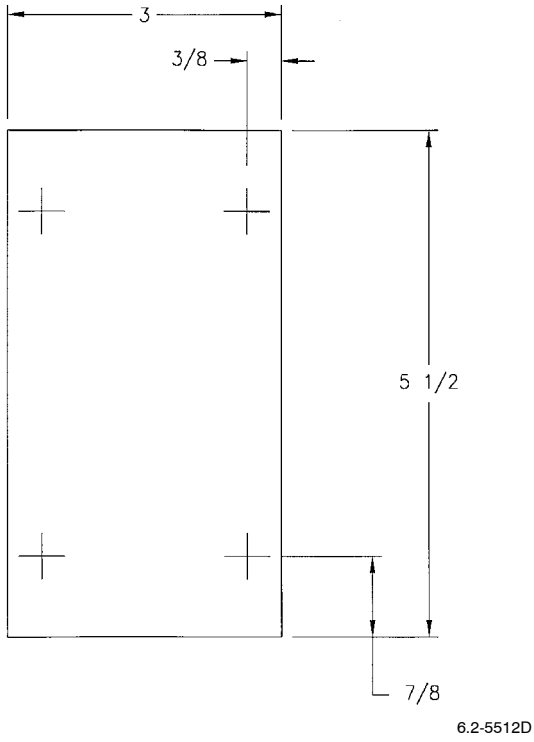

Figure 20. Template

NOTE

The pull-the-dots on the buttons shall be located per Figure 18.

g. Cut a 3-in. length of 2-in. wide hook fastener tape. Apply a thin layer of MMM-A-121 adhesive to the back side of the hook fastener tape and the mounting plate, between the six rivets. After applying the adhesive, allow it to become tacky. Center the 2-in. width of the hook fastener tape to the 2 1/4-in. width of the mounting (back) plate (Figure 21).

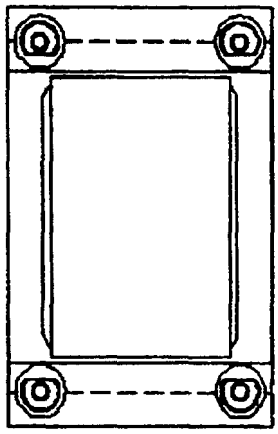

Figure 21. Back View

14. REMOVABLE MINI REGULATOR REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
829AS165-2	Kit Bracket Assembly, Oxygen Regulator
829AS159-2	Bracket Assembly Oxygen Regulator (Component of 829AS165-2)
829AS163-1	Oxygen Regulator Mounting Plate (Component of 829AS165-2)
MS20427F4-9	Rivet, Solid
829AS152-13	Oxygen Regulator and Hose Retention Pocket
MMM-A-121	Adhesive
MS27983-1	Snap, Fastener, Button
MS27983-2N	Socket, Snap Fastener

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, 2-in. Wide, Type II, Class 1
V-T-295	Thread, Nylon Size E, Type I or II, Class A
PIA-W-4088	Webbing, Nylon, Type IX, Class 1, 1A or 2

a. Remove the buttons and sockets from the mini regulator pocket. Avoid damage to the pocket.

b. Remove the hook fastener tape from the mini regulator pocket, avoid damage to the pocket.

c. Cut a 4 1/2-in. length of 2-in. wide hook fastener tape and position lengthwise on one side of the webbing. Stitch the hook fastener tape to the webbing, using a box-X stitch, 1/8-in. from edge, using size E thread.

d. Hot knife one piece of webbing 4 1/2-in. sear both ends. Avoid forming sharp edges.

e. Use template to center the four snap fasteners (Figure 20).

NOTE

The pull-the dots on the buttons shall be located per Figure 18.

f. Position the webbing, centered vertically on the outer back side of the mini regulator pocket, stitch webbing to the pocket, using about 1 1/4 x 4 1/4-in. box-X stitch, with size E thread (Figure 22).

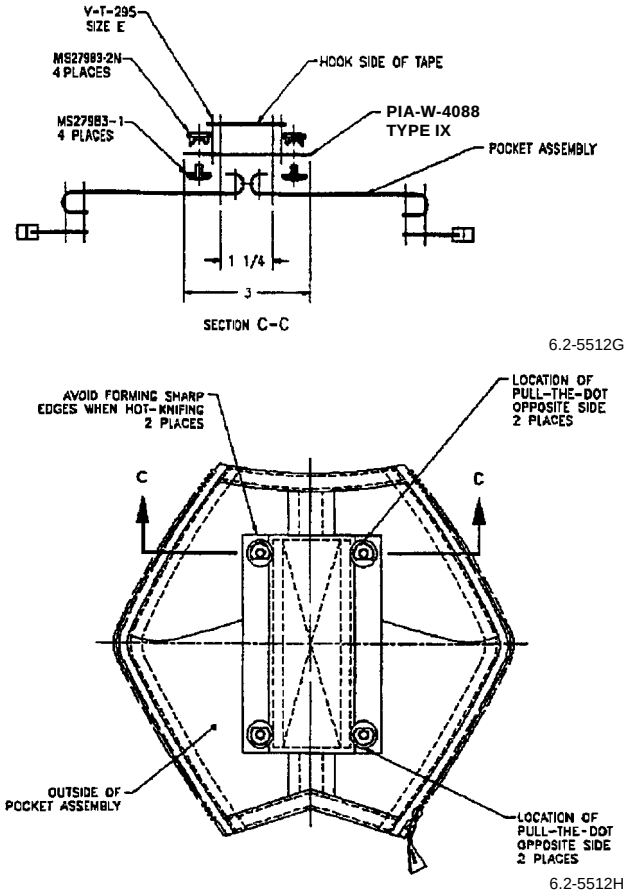

Figure 22. Positioning of Webbing

15. REMOVEABLE OBOGS AND MINI REGULATOR PILE TAPE FASTENER ATTACHMENT.

Materials Required

Specification or Part Number	Nomenclature
MS27983-3	Stud, Snap Fastener
MS27980-10B	Snap, Fastener, Eyelet
MIL-F-21840	Fastener Tape, Pile, 2-in. Wide, Type II, Class 1
PIA-W-4088	Webbing, Nylon, Type IX, Class 1, 1A or 2

NOTE

Ensure the addition of backing, webbing material is accomplished prior to proceeding.

a. Cut 2 pieces of 2-in. wide pile tape fastener 4 1/2-in long. Overlap the two lengths until a 3-in. width is obtained and sew together, using size E thread, back stitch 1/2-in.

b. Position the pile tape fastener, vertically on the harness outside left chest panel. The specified vertical position shall be directed by the aircrew. Stitch pile tape fastener to the harness panel, using size E thread, sew 1/8-in. from edge, back stitch 1/2-in.

c. Use template to center the four snap fasteners location per Figure 20.

NOTE

When combined with the removable OBOGS bracket and the removable mini regulator, all four pull-the-dot snap fasteners must be fully engaged.

d. Make proper entries on Aircrew Personal Equipment Record (OPNAV 4790/159). (QA)

16. SLIDE FASTENER REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-F-106	Slide Fastener, Type IV, Style #8, Size MH, Brass with Black Chemical Finish, Sage Green Tape Available from: Lenzip Manufacturing 1900 W. Kinzie St. Chicago, IL 60622-6243 Style #1031
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove entrance slide fastener.

b. Remove two hooks and eyelets at entrance.

c. Remove damaged slide fastener and protective flap at least 1-in. below lapbelt retention system. Retain protective flap for reuse.

d. Attach replacement slide fastener using size E thread. Slide fastener shall not run over edges of fabric panels (Figure 23). (QA)

e. Resew protective flap back in place.

f. Replace hooks and eyelets per WP 008 01.

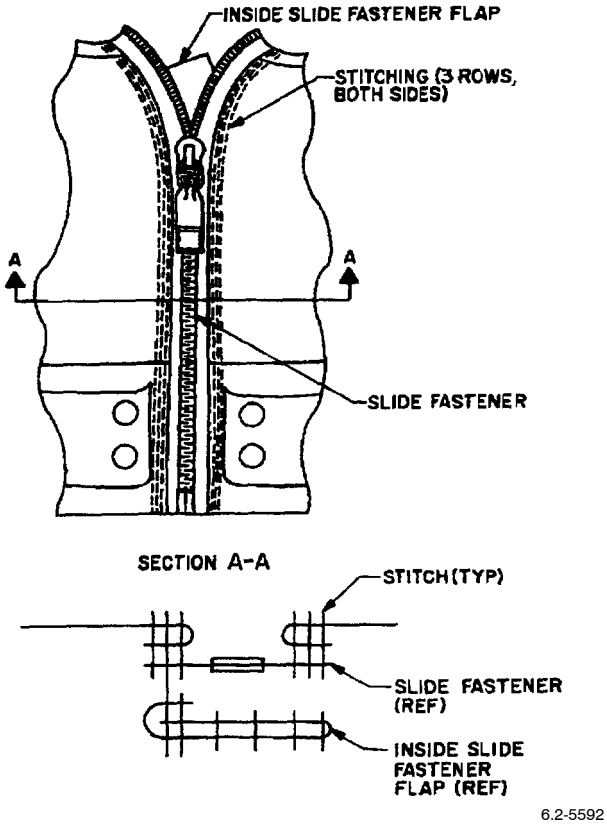

Figure 23. Replacement of Slide Fastener

17. SLIDER PULL THONG REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
PIA-T-5038	Tape, Nylon, Type III, Class 1 or 1A, 3/4-in. Wide
MIL-F-21840	Fastener Tape, Pile, 1-in., Wide Class 1
MIL-F-21840	Fastener Tape, Hook, 1-in. Wide, Type II, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove and discard worn pull thong.

b. Cut 4 3/4-in. length nylon tape. Sear both ends.

c. Weave new pull thong thru eye in slider pull tab. Place sides together with ends even and stitch together at end using 3/4-in. long box stitch pattern including a 3/4-in. length of 1-in. pile fastener tape (Figure 24).

6.2-5593

Figure 24. Replacement of Slider Pull Thong

18. REPAIR OF HARNESS CLOTH.

Materials Required

Specification or Part Number	Nomenclature
MIL-C-508	Cloth, Oxford, Nylon
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

WARNING

Do not stitch thru harness webbing.

a. Cut a patch sufficiently large to cover damage and overlap 1-in. on all sides.

b. Sear edges of patch and damaged area.

c. Fold patch under 1/4-in. on all sides and stitch in place, using size E thread 1/8-in. from fold in patch. Backstitch 1/2-in. minimum. (QA)

d. Turn suit inside out and stitch 1/8-in. from edge of damage. Backstitch 1/2-in. minimum. (QA)

19. SURVIVAL VEST TAB AND DEE-RING REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
MIL-R-3390	Dee-Ring
PIA-T-5038	Tape, Nylon, Type IV, Class 1 or 1A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Cut a 5 1/2-in. length of nylon tape and sear ends.

b. Reeve nylon tape thru Dee-Ring and fold in half. Sew tape together with double row of stitching 3/8-in. from Dee-Ring. Backstitch each end 1/4-in. and sear ends of tape.

NOTE

The Dee-Ring and tab should be located above lapbelt.

c. Place Dee-Ring and tab around harness groin strap webbing and sew ends together with double row of stitching. Ensure that stitching does not pass thru harness webbing. Backstitch each end 1/4-in. (Figure 25). (QA)

20. FLASHLIGHT RETENTION STRAPS REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
MIL-W-5664	Webbing, Textile,Elastic, Type I, Class 2, 19-in. long

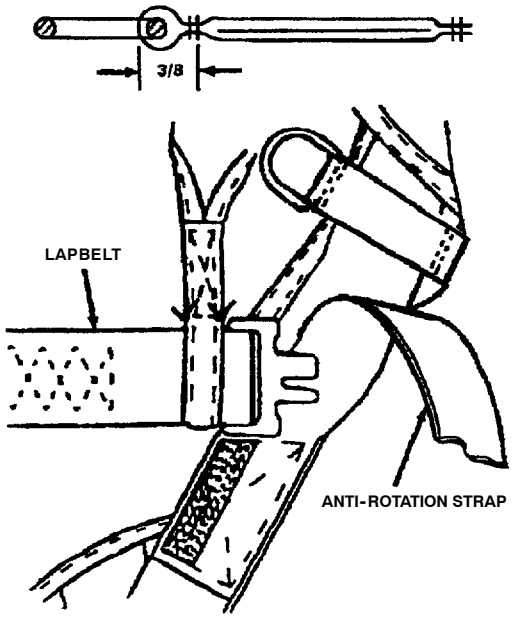

Figure 25. Attachment of Survival Vest Dee-Ring

Specification or Part Number	Nomenclature
PIA-T-5038	Tape, Nylon, Type III, Class 1 or 1A
PIA-W-4088	Webbing, Nylon, Type I, Class 1, 1A or 2
MS27983-1	Snap, Fastener, Button
MS27983-2N	Socket, Snap Fastener
MS27983-3	Stud, Snap Fastener
MS27983-4	Snap, Fastener, Eyelet
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Cut two pieces of elastic webbing 9 1/2-in.

b. On each piece of webbing, fold back 1 1/4-in. on each end and stitch this doubled over end using 1-in. wide box-X stitch. Stitches should come within 1/8-in. of edge of webbing (Figure 26). (QA)

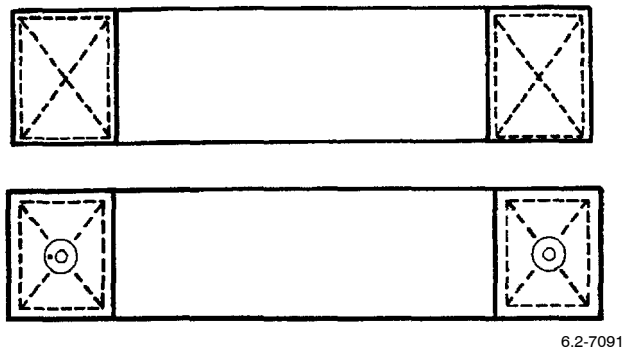

Figure 26. Retention Strap and Installation of Snaps

c. At intersection of diagonal stitch on box-X stitch of each piece of webbing, install a cap/socket on one fold and a stud/post on the opposite fold. Ensure these are installed so they will snap around the gooseneck flashlight (Figure 26).

d. Flashlight will be mounted on the rightside of restraint harness between the strobe light and the radio/knife pocket. Mounting will be accomplished to ensure base of flashlight is flush with the bottom of the radio/knife pocket. Mount so stud/eyelet is on same side as the strobe light pocket.

e. Determine center of first piece of elastic webbing. Place top of one piece of elastic webbing 2 1/4-in. below top of radio/knife pocket upper edge binding. Ensure stud/post is facing the strobe light pocket.

f. Stitch center of elastic webbing with four continous rows of vertical stitches about 1/16-in apart, directly over radio/knife pocket edge binding. Stitch no closer than 1/8-in. from edge of webbing.

WARNING

Do not stitch thru harness webbing straps.

g. Determine center of second piece of elastic webbing. Place top of second piece of elastic webbing 1 3/4-in. below the bottom of the first piece.

h. Cut a piece of tape 10 1/2-in. long and turn under 1-in. and align tape with top binding tape of radio/knife pocket, sew around the edge of the tape. Bottom end of tape is turned under 1/2-in. in aligning of flashlight retention straps, sew 1/8-in. around edge of tape, backstitch 1/2-in. (Figure 27). (QA)

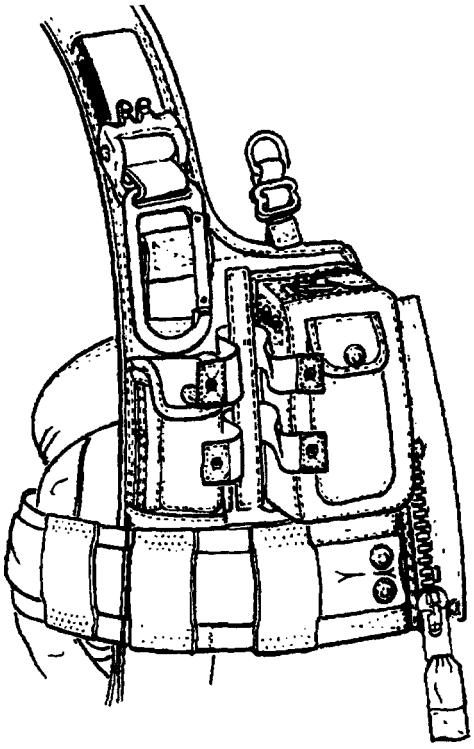

Figure 27. Attachment of Flashlight Holder

i. Top elastic webbing should surround flashlight between gooseneck and top of light switch. Bottom elastic webbing should surround flashlight above upper lip of battery access cover (Figure 27). (QA)

21. SURVIVAL STOWAGE POCKETS REPLACEMENT.

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
PIA-T-5038	Tape, Nylon, Type III, Class 1 or 1A
MIL-F-21840	Fastener Tape, Pile, 1-in. Wide, Class 1
MIL-F-21840	Fastener Tape, Hook, 1-in. Wide, Type II, Class 1

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

NOTE

Survival item pockets are authorized on all size harnesses. A local determination of acceptability must be made on extra small, small short harnesses. Custom made harnesses must use a survival vest. Additionally, small statured aircrew who have difficulty with the placement of the chest strap, must use a survival vest vice pockets.

a. Inspect backing material for possible replacement.

b. Install radio/knife pocket on right side of harness, align the bottom of the pocket with harness securing webbing for the LPU and along slide fastener fold line (Figure 28). (QA)

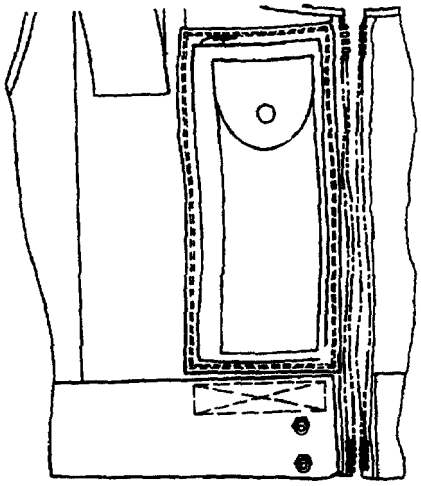

Figure 28. Attachment of Radio/Knife Pocket

WARNING

Do not stitch thru harness shoulder straps or thru fabric channels that encase the straps. Do not stitch thru the chest strap.

c. Sew a double row of stitching around pocket 1/8-in. from edge. Do not stitch into channel area.

NOTE

Bound edges of the strobe light pocket and radio/knife pocket may overlap on small size harnesses.

d. Install strobe light pocket, align pocket binding tape with channel fold line, align bottom of strobe light pocket 1-in. above edge of webbing. Overlap pocket binding tape on top of radio/knife pocket binding tape and double stitch 1/8-in. from edge (Figure 29). (QA)

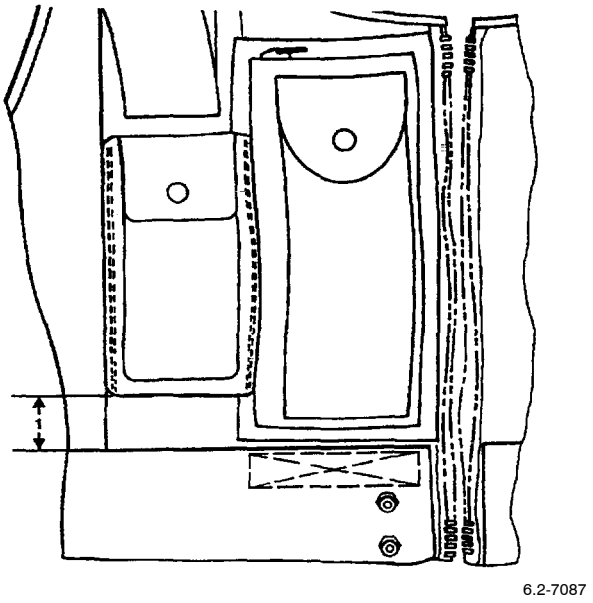

Figure 29. Attachment of Strobe Light Pocket

NOTE

Do not stitch over webbing channel.

e. Cut two pieces tape 4 1/2-in. also two pieces hook and pile tape. Sew one piece hook tape to nylon tape in a box stitch 1/8-in. from edge, turn nylon tape over and sew pile tape on opposite end in same manner.

f. (OBOGS) Position of oxygen securing tab(s) to life preserver securing belt 1/4-in. from top and located in a position for each aircrew's perference. To keep the oxygen hose from obscuring access to the left aircraft console.

NOTE

Additional tabs may be added as required to obtain a comfortable routing of oxygen hose.

g. Attach survival items stowage pocket to harness, align pocket edge 4 1/4-in. from edge front panel material (medium size harness and smaller align on seam). Sew a double row of stitching 1/8-in. from edge of pocket, sew pocket down on webbing channel fold line (Figure 30). (QA)

h. (OBOGS and Diluter Demand) Attach survival items stowage pocket to harness, align pocket edge 4 1/4-in. from edge front panel material (medium size harness and smaller align on seam). Sew a double row of stitching 1/8-in. from edge of pocket, sew pocket down on webbing channel fold line (Figure 30). (QA)

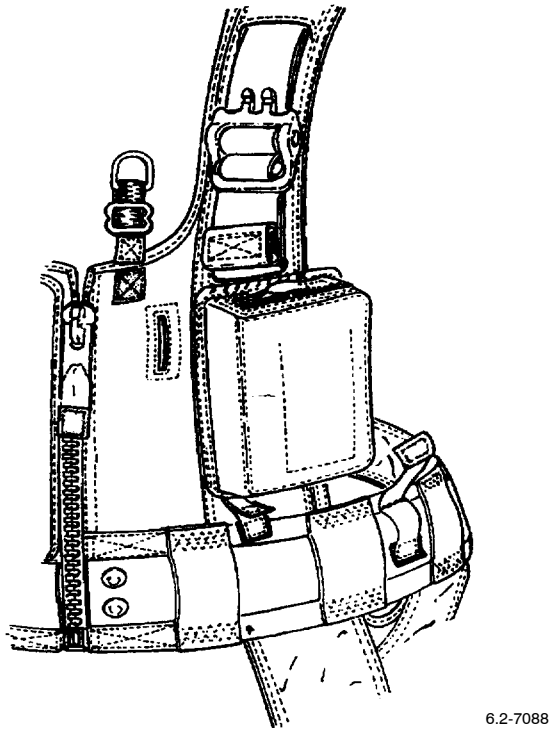

Figure 30. Attachment of Survival Items Stowage Pocket

WARNING

Do not stitch thru harness webbing, or over webbing channel.

i. Tack survival pocket to main sling, to right of oxygen securing tab with size 6 thread, doubled and waxed; tie off (Figure 31). (QA)

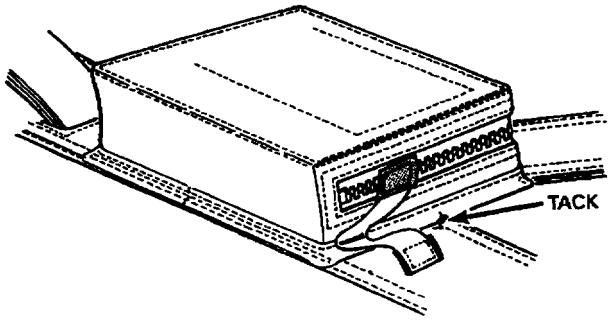

Figure 31. Tacking Survival Items Stowage Pocket to Main Sling

j. Hand tack pocket to left side of harness, with two turns of size 6 thread, single and waxed; tie off (Figure 32).

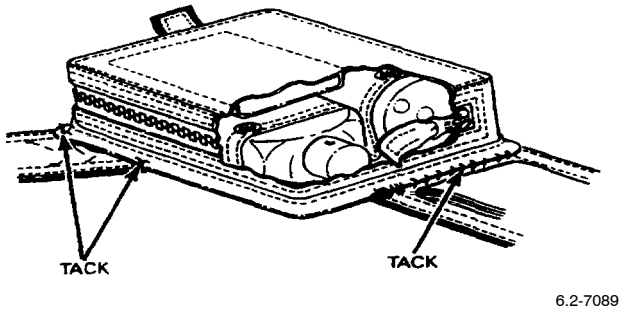

Figure 32. Hand Stitch Pocket Over Webbing

k. Hand stitch pocket over webbing channel with size 6, thread doubled and waxed. Start stitch with two overhand knots followed by a whip stitch and secure with two overhand knots. (QA)

22. HEED SURVIVAL STOWAGE POCKET REPLACEMENT.

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Carefully remove old stitching around HEED pocket.

b. Align the pocket with the outer edge of channel and 2 7/8-in. from bottom of floatation belt. Attach pocket with a double row of stitching along channel (do not stitch thru channel) from the bottom of the pocket up to the slot where the main sling webbing exits the garment (Figure 33).

c. On the inside (towards slider), attach the pocket to the garment with a double row of stitching and around the top and bottom of the pocket up to the main sling webbing (Figure 33).

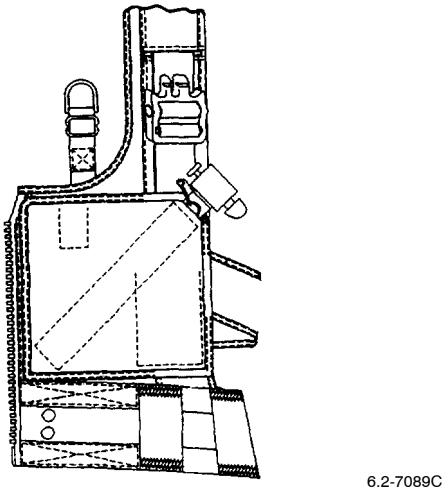

Figure 33. Attachment of HEED Pocket

23. MODIFICATION AND INSTALLATION OF RADIO/KNIFE POCKET TO STORE THE GPS RECEIVER.

Material Required

Specification or Part Number	Nomenclature
829AS146-1	Pockets, Radio and Knife
PIA-W-4088	Webbing, Nylon, Type VIII, 8-in.
PIA-T-5038	Tape, Nylon, Type III, Class 1 or 1A, 16-in.
MS27980-1B	Snap, Fastener, Button (4)
MS27980-6B	Socket, Snap Fastener (4)
MS27980-7B	Stud, Snap Fastener
MS27980-8B	Snap, Fastener, Eyelet
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
A-A-1799	Bag, Plastic

a. Cut one piece of nylon webbing 8-in. long and install on inside bottom of pocket and stitch all around 1/16 to 1/8-in. edge distance (Figure 34).

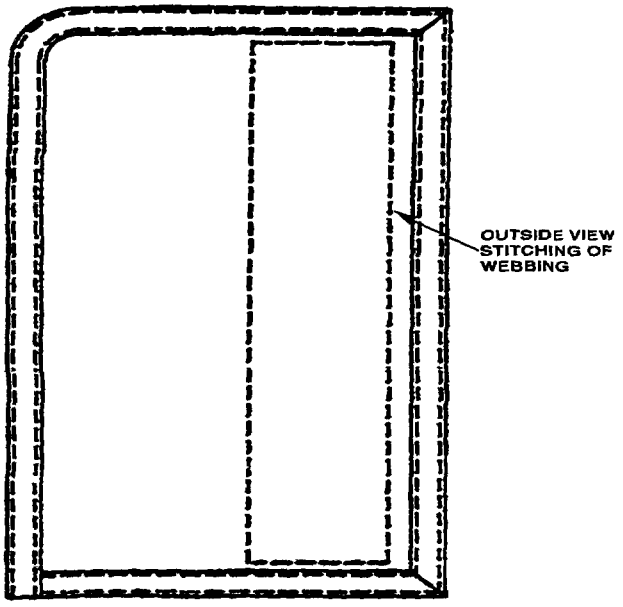

Figure 34. Installation of Webbing on Inside Bottom

b. Cut two pieces nylon tape 1-in. x 8-in. long and sew using a box-X stitch to attach to outside bottom of pocket. Place nylon as shown in Figure 35.

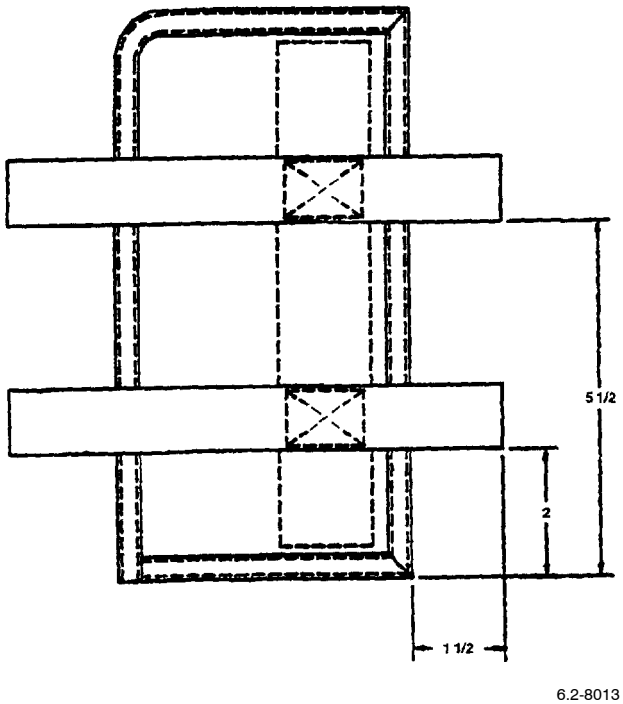

Figure 35. Installation of Tape on Outside Bottom

c. Install button, socket, stud, and eyelet fasteners as shown in Figure 36.

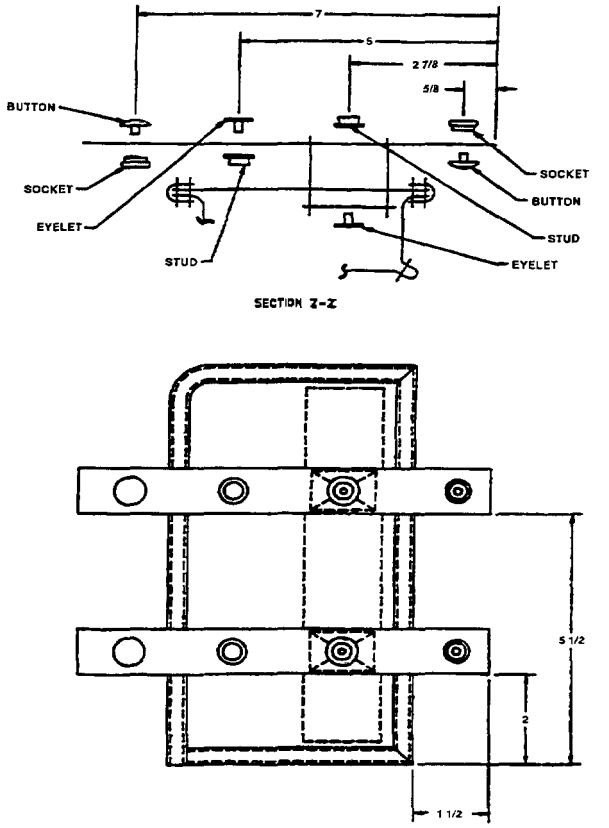

Figure 36. Installation of Snap Fasteners

d. Attach the GPS pocket to the PCU harness as follows:

(1) With the pocket slider facing down and the knife pocket facing forward, install the GPS pocket onto the right hand chest strap channel aft of the strobe light pocket.

(2) Place the long end of the GPS pocket straps around chest strap channel and snap to pocket mounted snap stud (both straps).

(3) Bring short end around and snap to pocket strap snap.

e. Install GPS device as follows:

(1) Ensure GPS is RFI per maintenance instruction.

(2) Place GPS devices in plastic bag and seal.

(3) Install bagged GPS device into pocket.

f. Maker proper entries on Aircrew Personal Equipment Record (OPNAV 4790/159).

ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

PCU-33/P SERIES PARACHUTE RESTRAINT HARNESS ASSEMBLY

PART NO. 829AS100

List of Effective Work Package Pages

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3	0	6	0	8 thru 11	0	13	0

Reference Material

Organizational and Intermediate Maintenance, Description and Principles of Operation, PCU-33/P Series Parachute Restraint Harness Assembly . . . . . WP 008 00

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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 623	14 Feb 96	Riser Restraint Keeper (RAMEC P-08-95)	1 Jul 96	31 Dec 2003

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the PCU-33/P Series Parachute Restraint Harness Assembly (Figure 1).

2. USABLE ON CODES.

a. The usable on codes in this WP refer to the aircraft application for the PCU-33/P Series Parachute Restraint Harness Assembly.

b. The following usable on codes apply to this WP.

A, B, D – T-2C, S-3, F/A-18, F-14
F-4, E-2, EA-6, TA-4, TAV/AV-8B, T-45

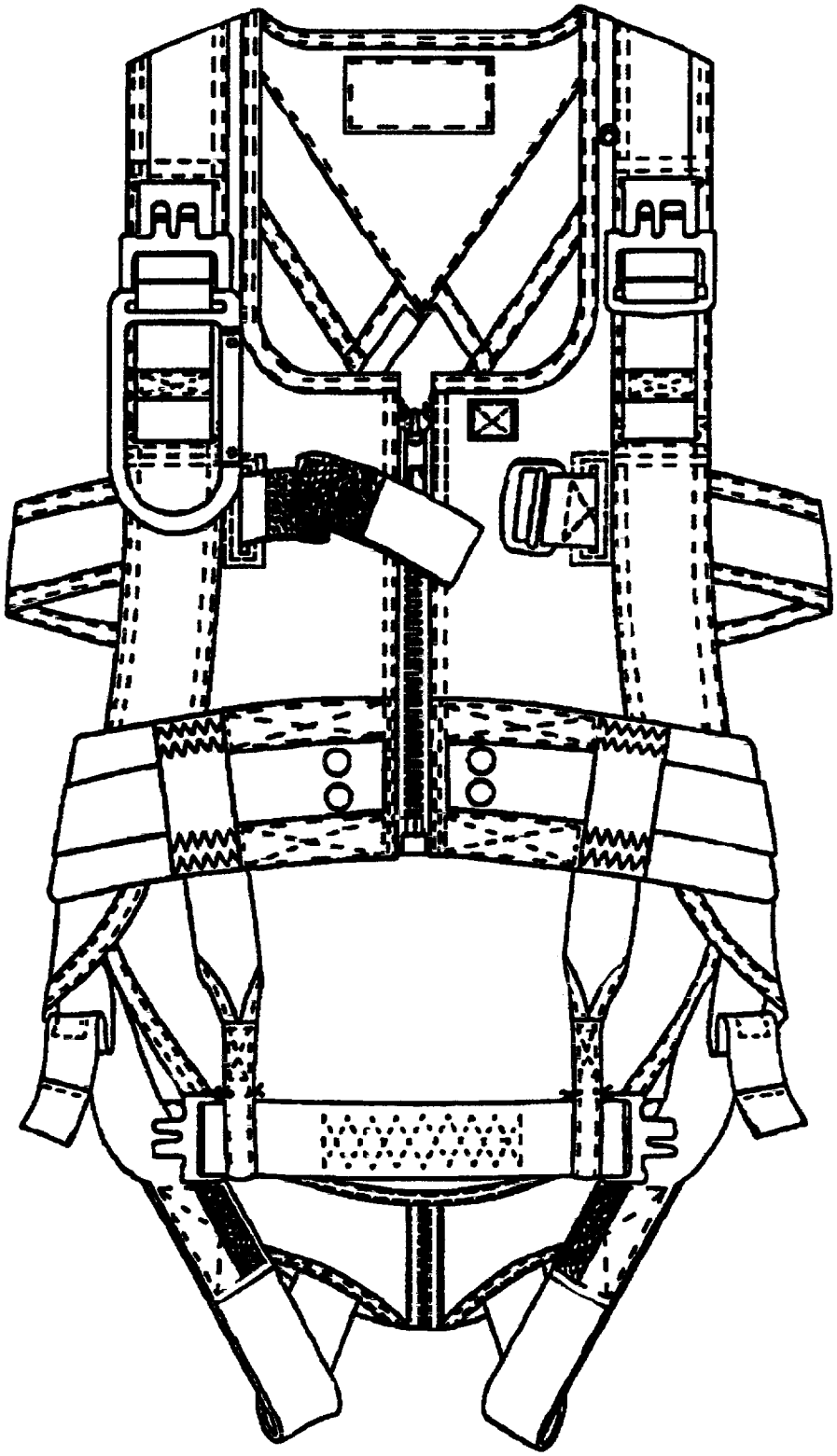
C – T-2C, F/A–18, F-14, F-4, E-2, EA-6, TA-4

E – T-2C, S-3, F/A-18, F-14, F-4, EA-6, TA-4

F – TAV/AV-8B, T-45, F/A-18, F-14

G – S-3

H – E-2



6.2-5597

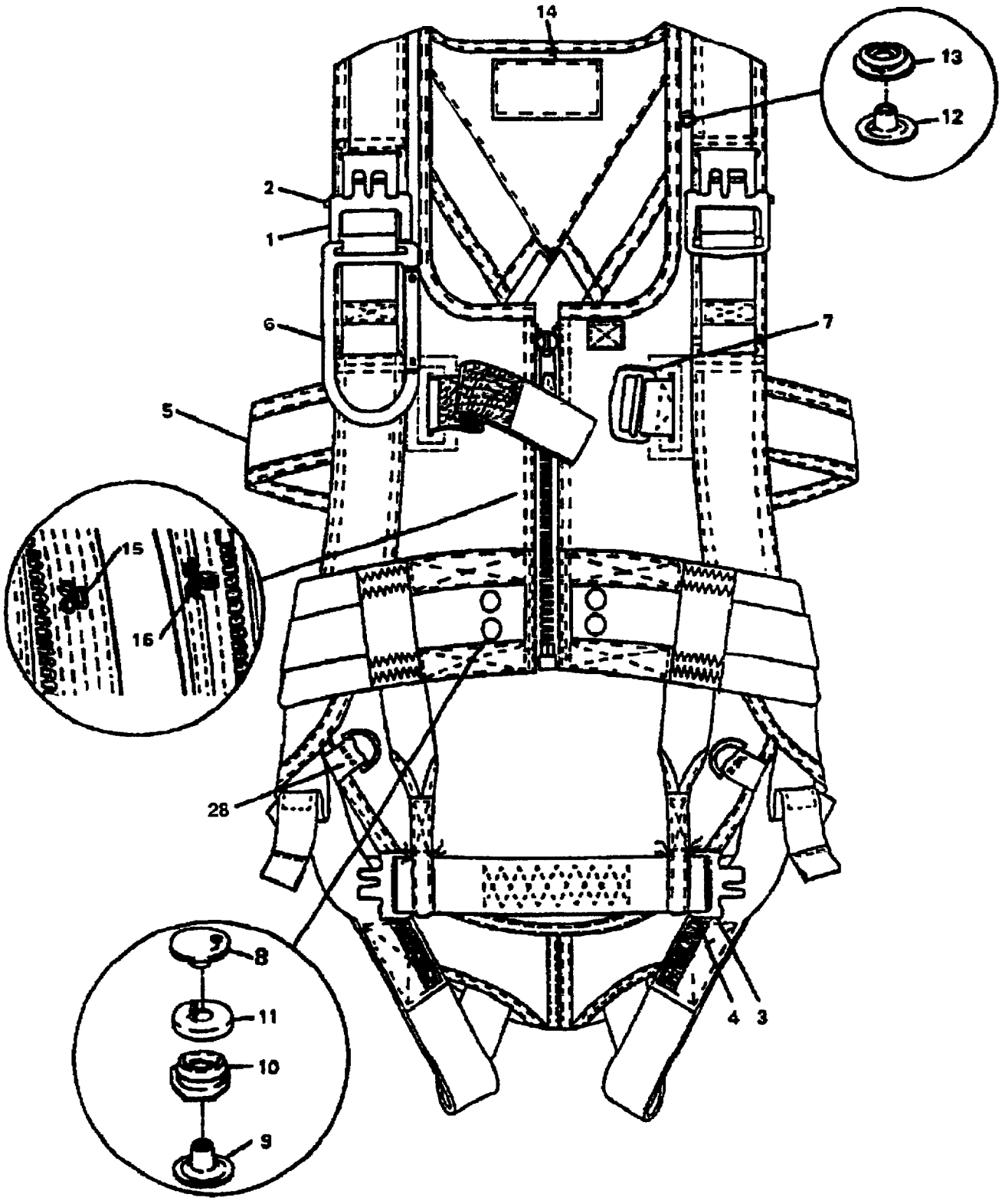
Figure 1. PCU-33/P Parachute Restraint Harness Assembly (Sheet 1 of 11)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	829AS100-7	HARNESS ASSEMBLY, PCU-33/P ..... PARACHUTE RESTRAINT	1	A	AGOGG
	829AS100-10	HARNESS ASSEMBLY, PCU-36/P ..... PARACHUTE RESTRAINT	1	B	AGOGG
	829AS100-38	HARNESS ASSEMBLY, PCU-51/P ..... PARACHUTE RESTRAINT	1	C	AGOGG
	829AS100-39	HARNESS ASSEMBLY, PCU-52/P ..... PARACHUTE RESTRAINT	1	D	AGOGG
	829AS100-36	HARNESS ASSEMBLY, PCU-34/P ..... PARACHUTE RESTRAINT	1	E	AGOGG
	829AS100-37	HARNESS ASSEMBLY, PCU-39/P ..... PARACHUTE RESTRAINT	1	F	AGOGG
	829AS100-26	HARNESS ASSEMBLY, PCU-50/P ..... PARACHUTE RESTRAINT	1	G	AGOGG
	829AS100-28	HARNESS ASSEMBLY, PCU-55/P ..... PARACHUTE RESTRAINT	1	H	AGOGG
1	015-710001-1	. ADAPTER ASSEMBLY, CANOPY RELEASE ...	2	*	PAOGG
	990065-1	. ADJUSTER ASSEMBLY, STRAP	2	*	PAOGG
2	122-10935-3	. . SCREW /99449/	1	*	PAOZZ
	50121	. . SCREW /26304/	1	*	PAOZZ
3	1979AS838-1	. ADAPTER ASSEMBLY, LAPBELT	2	*	PAOGG
	015-11366-1	. ADAPTER ASSEMBLY, LAPBELT	2	*	PAOGG
	990070-1	. ADAPTER ASSEMBLY, LAPBELT	2	*	PAOGG
4	1979AS837-1	. . SCREW	2	*	PAOZZ
	122-11614-1	. . SCREW	2	*	PAOZZ
5	814AS200-1	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, SMALL	1		PCOGG
	829AS142-1SS	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, SMALL SHORT (USE UNTIL EXHAUSTED)	1		PCOGG
	814AS400-1	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, MEDIUM	1		PCOGG
	829AS142-2SR	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, SMALL REGULAR (USE UNTIL EXHAUSTED)	1		PCOGG
	814AS400-1	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, MEDIUM	1		PCOGG
	829AS142-3SL	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, SMALL LONG (USE UNTIL EXHAUSTED)	1		PCOGG
	814AS400-1	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, MEDIUM	1		PCOGG

Figure 1. PCU-33/P Parachute Restraint Harness Assembly (Sheet 2 of 11)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	829AS142-4MS	. HARNESS ASSEMBLY, PARACHUTE ..... RESTRAINT, MEDIUM SHORT (USE UNTIL EXHAUSTED)	1		PCOGG
	814AS400-1	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, MEDIUM	1		PCOGG
	829AS142-5MR	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, MEDIUM REGULAR (USE UNTIL EXHAUSTED)	1		PCOGG
	829AS142-6ML	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, MEDIUM LONG	1		PCOGG
	829AS142-7LS	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, LARGE SHORT	1		PCOGG
	829AS142-8LR	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, LARGE REGULAR	1		PCOGG
	829AS142-9LL	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, LARGE LONG	1		PCOGG
	829AS142-10XS	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, X LARGE SHORT	1		PCOGG
	829AS142-11XR	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, X LARGE REGULAR	1		PCOGG
	829AS142-12XL	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, X LARGE LONG	1		PCOGG
	829AS142-15XXS	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, XX LARGE SHORT	1		PCOGG
	829AS142-16XXR	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, XX LARGE REGULAR	1		PCOGG
	829AS142-17XXL	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, XX LARGE LONG	1		PCOGG
	814AS200-1	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, EXTRA SMALL	1		PCOGG
	829AS142-18XS	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, EXTRA SMALL (USE UNTIL EXHAUSTED)	1		PCOGG
	814AS200-1	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, CUSTOM	1		XBOGG
	829AS142-21	. HARNESS ASSEMBLY PARACHUTE ..... RESTRAINT, CUSTOM (USE UNTIL EXHAUSTED)	1		XBOGG
6	1979AS975-1	. . RING ASSEMBLY, SNAPLINK, RESCUE ...	1		PAOZZ
	823AS100-1	. . D-RING WITH GATE (USE UNTIL EXHAUSTED)	1		PAOZZ
7	MS70101-1	. . ADAPTER, REVERSIBLE	3		PAOZZ
8	MS27983-1	. . BUTTON	9		PAOZZ
9	MS27983-4	. . EYELET	11		PAOZZ
10	MS27983-3	. . STUD	10		PAOZZ
11	MS27983-2N	. . SOCKET	10		PAOZZ
12	MS27980-8B	. . EYELET	1		PAOZZ

Figure 1. PCU-33/P Parachute Restraint Harness Assembly (Sheet 3 of 11)



6.2-5598

Figure 1. PCU-33/P Parachute Restraint Harness Assembly (Sheet 4 of 11)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
13	MS27980-7B	. . STUD	1		PAOZZ
14	829AS105-2	. . LABEL	1		MDGZZ
15	60A113C28-1	. . EYE	3		PAOZZ
16	60A113C28-2	. . HOOK	3		PAOZZ
17	829AS145-1	. POCKET, STROBE LIGHT	1	C,D,E, F,G,H	PAGZZ
18	829AS146-1	. POCKETS, RADIO AND KNIFE	1	C,D,E, F,G,H	PAGZZ
19	829AS147-20	. POCKET, SURVIVAL ITEM STOWAGE	1	C,D,E, F,G	PAGZZ
20	814AS805-1	. POCKET, HEED SURVIVAL ITEM STOWAGE	1	H	PAGZZ
21	MS51925-1	. . D-RING	1		PAGZZ
22	M43770-12-SIZE1	. SNAP HOOK	1	H	PAGZZ
23	814AS805-2	. COVER, HEED BOTTLE	1	H	PAGZZ
24	829AS106-1	. FLOTATION ATTACHMENT PANEL	2	C,D,E, F,G,H	MGGZZ
25	829AS152-13	. POCKET, OXYGEN REGULATOR AND HOSE	1	E	PAGZZ
26	829AS158-2	. TAB, OXYGEN HOSE SECURING	2	C,D,E, F,G	MGGZZ
27	829AS157-1	. STRAPS, FLASHLIGHT RETENTION	2	C,D,E, F,G,H	MGGZZ
28	829AS153-1	. SURVIVAL VEST ATTACHMENT TAB AND D-RING	2	B,D	MGGZZ
29	MS51925-4	. . D-RING	2	C,D,E, F,G,H	PAGZZ
	829AS151-24	. . D-RING	2	C,D,E, F,G,H	PAGZZ
30	MS51940-3S	. . LOOP, SLIDE	2	C,D,E, F,G,H	PAGZZ
31	829AS151-1	. LPU ATTACHMENT STRAP	2	B,D,E	PAOZZ
32	829AS165-2	. MOUNTING KIT, OXYGEN REGULATOR	1	F	PAGZZ
	237C100-3	. MOUNTING KIT, OXYGEN REGULATOR (USE UNTIL EXHAUSTED)/SEE NOTE 2/	1	F	PAGZZ
33	MS20427F4-9	. . RIVETS	6		PAGZZ
34	67A100C30-1	. BRACKET, MOUNTING/SEE NOTE 3/	1	G	PAGZZ
35	AN470AD-4-8	. . RIVETS	6		PAGZZ
36	MIL-L-38217	. LIGHT, DISTRESS SIGNAL, SDU-5/E	1	E,F,G,H	PAOZZ
37	MIL-K-25594	. KNIFE, POCKET HOOK BLADE AND SNAP BLADE	1	E,F,G,H	PAOZZ
38	AN/PRC-90	. RADIO SET/SEE NOTE 1/	1	E,F,G,H	PAOGG
	AN/PRC-112	. RADIO SET/SEE NOTE 1/	1		PAOGG
	AN/PRC-149	. RADIO SET/SEE NOTE 1/	1		PAOGG

Figure 1. PCU-33/P Parachute Restraint Harness Assembly (Sheet 5 of 11)

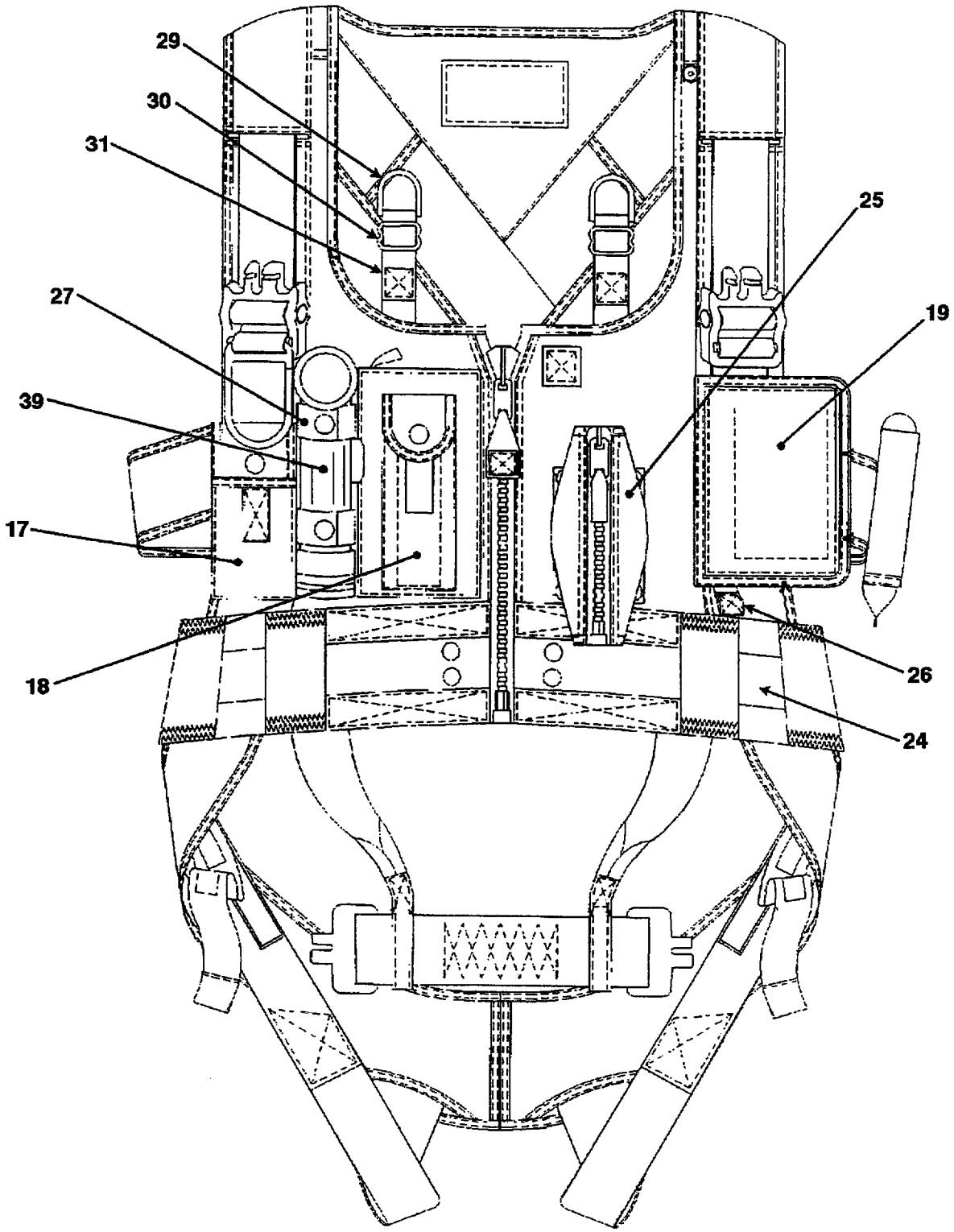


Figure 1. PCU-33/P Parachute Restraint Harness Assembly (Sheet 6 of 11)

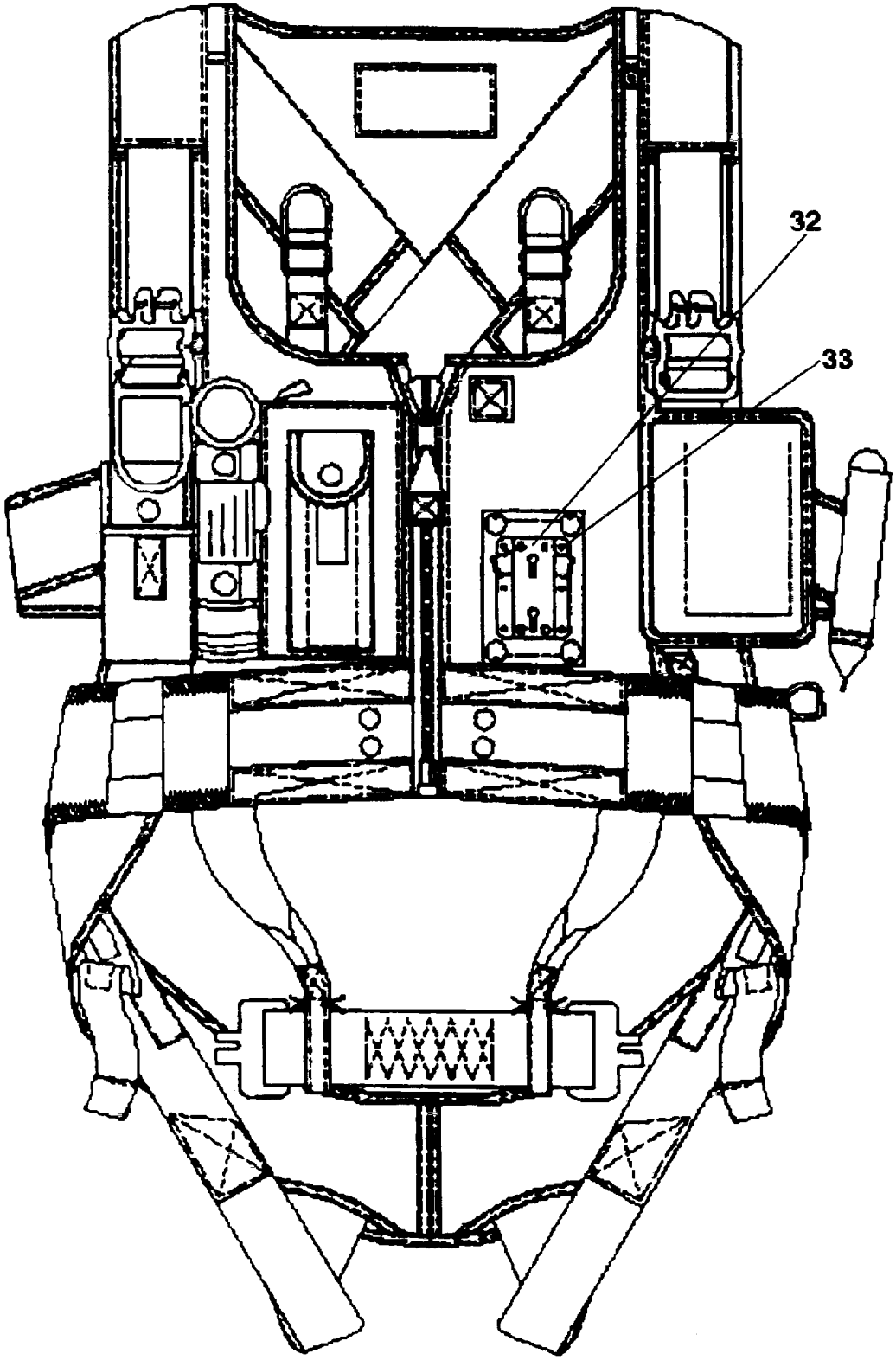


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Figure 1. PCU-33/P Parachute Restraint Harness Assembly (Sheet 7 of 11)

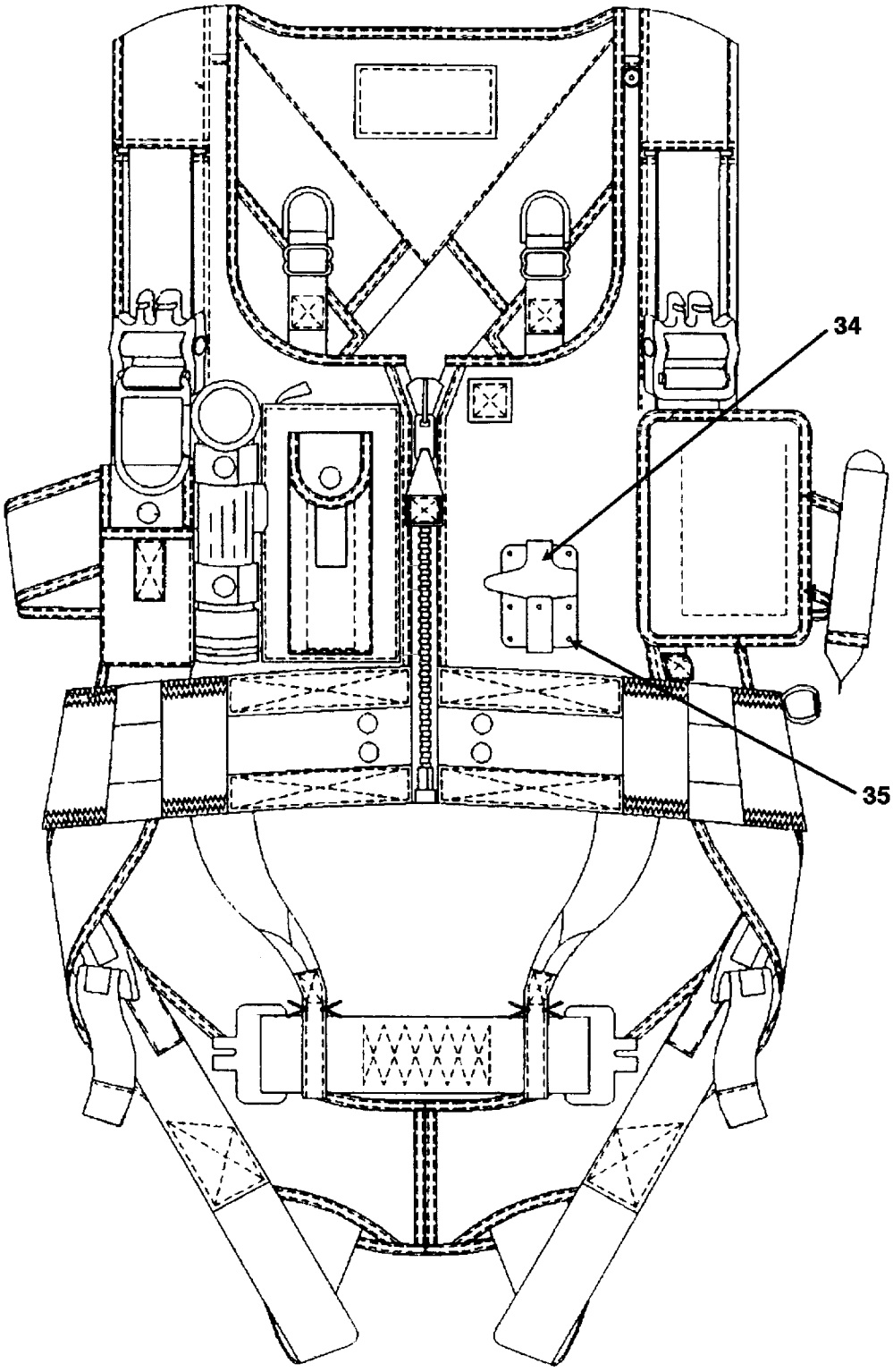
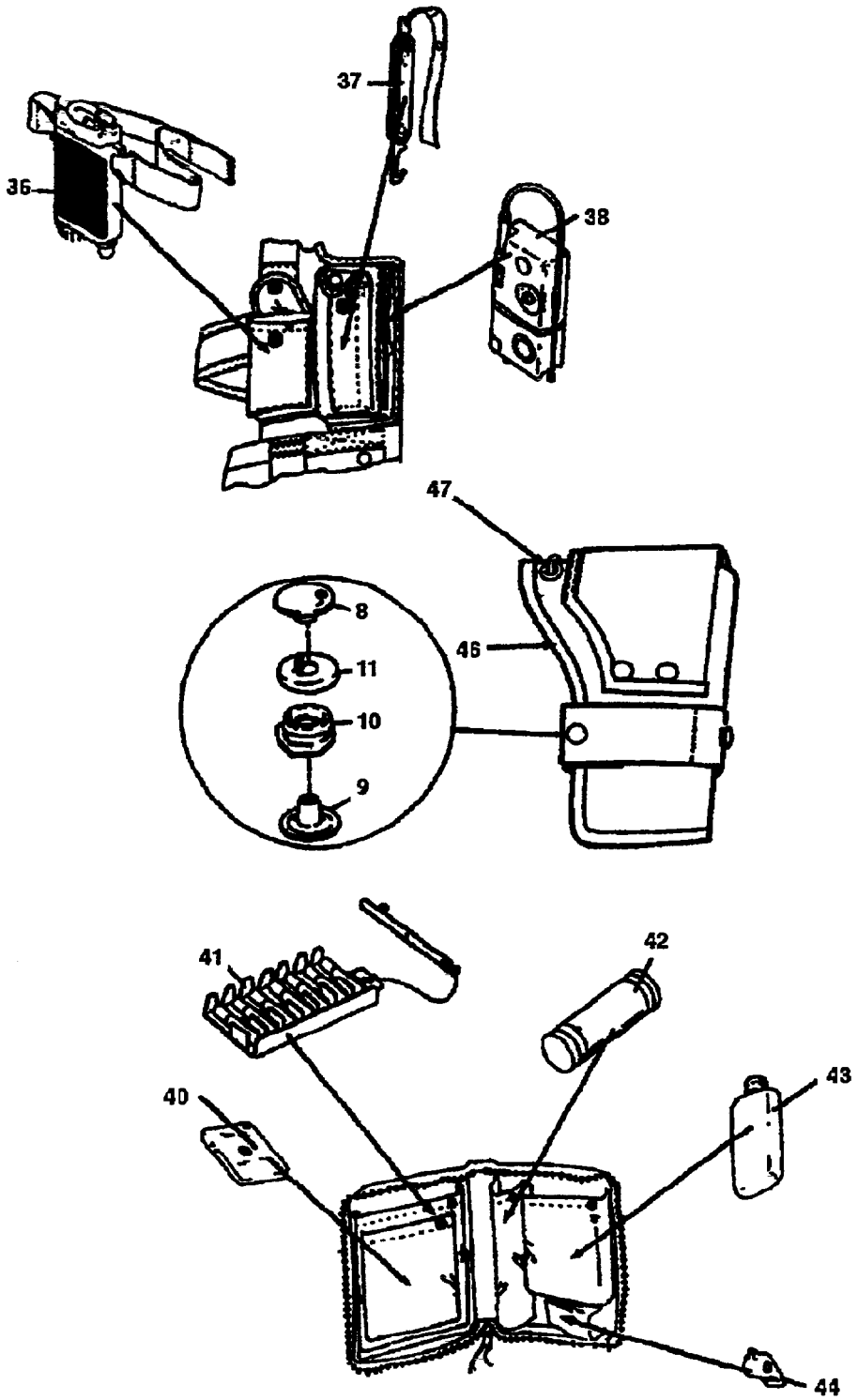


Figure 1. PCU-33/P Parachute Restraint Harness Assembly (Sheet 8 of 11)



6.2-5599B

Figure 1. PCU-33/P Parachute Restraint Harness Assembly (Sheet 9 of 11)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
39	MX-991/U	. FLASHLIGHT, GOOSENECK	1	E,F,G,H	PAOZZ
	ACR/FA-11	. CREWLIGHT /ALTERNATE/	1		PAOZZ
	ACR/FA-11 (M)	. CREWLIGHT	1		PAOZZ
40	784311-21	. MIRROR, EMERGENCY SIGNALING, TYPE 1	1	E,F,G,H	PAOZZ
	MIL-M-18371	. MIRROR, EMERGENCY SIGNALING, TYPE 1 (USE UNTIL EXHAUSTED)	1	E,F,G,H	PAOZZ
41	LD615184	. SIGNAL KIT, MK-79 MOD O	1	B,C,E,	PAOZZ
	6000D7047-1	. SIGNAL KIT, PERSONNEL DISTRESS A/P25S-5A	1		PAOZZ
42	DL3139734	. SMOKE AND ILLUMINATION, MARINE SIGNAL MK124	1	E,F,G,H	PAOZZ
	LD165580	. SMOKE AND ILLUMINATION, MARINE SIGNAL MK 13 MOD O (USE UNTIL EXHAUSTED)	1		PAOZZ
43	64-159WITHCAP	. BOTTLE, EMERGENCY DRINKING WATER	1	E,F,G,H	PAOZZ
	PLAXWITHCAP	. BOTTLE, EMERGENCY DRINKING WATER (USE UNTIL EXHAUSTED)	1		PAOZZ
44	A-A-55106	. WHISTLE, BALL	1	E,F,G,H	PAOZZ
	MIL-W-1053	. WHISTLE, BALL (USE UNTIL EXHAUSTED)	1	E,F,G,H	PAOZZ
45	1586AS101-1	. HELICOPTER EMERGENCY EGRESS DEVICE SRU-36/P	1	H	PAOZZ
46	829AS168-1	. PARACHUTE RESTRAINT HARNESS HOLSTER/SEE NOTE 4/	1	E,F,G,H	PAOZZ
47	MS 20230B10	. . GROMMET AND WASHER (SIZE 0)	1		PAOZZ

NOTES:
1. Type Radio at option of Type Commander.
2. For use with CRU-82/P Regulator utilizing OBOG System.
3. For use with Diluter Demand Regulator P/N 900-002-051-03/4 in S-3 aircraft with Lox System.
4. Optional with all Configurations.

Figure 1. PCU-33/P Parachute Restraint Harness Assembly (Sheet 10 of 11)

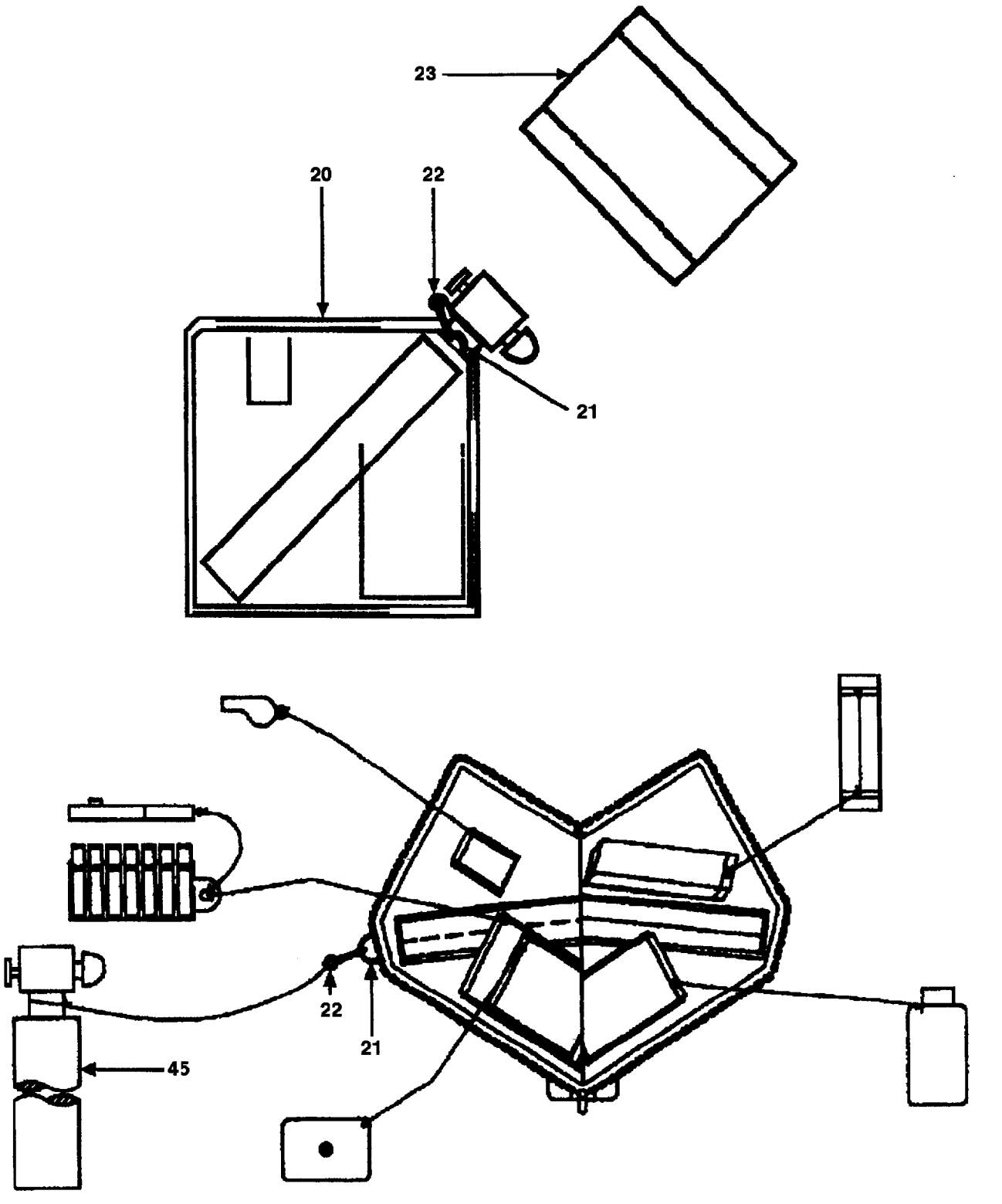


Figure 1. PCU-33/P Parachute Restraint Harness Assembly (Sheet 11 of 11)

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ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

PCU-56/P SERIES PARACHUTE RESTRAINT HARNESS ASSEMBLY

PART NO. 814AS150

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1 thru 3	11	4	10	5 thru 9	0	10 thru 14	11

Reference Material

Organizational Maintenance, Original Issue Rigging Procedures, PCU-56/P Series Parachute Restraint Harness Assembly ..... WP 009 02

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Description	2
Aircraft Applications	2
Configurations	2
Final Assessment	12
Final Harness Preparation	13
Functions	2
General	2
Seat Restraint	12
Sizing and Fitting the PCU-56/P Series Restraint Harness	2
Establishment of Parachute Restraint Harness Pool	13
Ordering and Reporting Information	13

Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 623	14 Feb 96	Riser Restraint Keeper (RAMEC P-08-95)	1 Jul 96	31 Dec 2003

1. DESCRIPTION.

2. GENERAL.

a. The PCU-56/P series Parachute Restraint Harness Assemblies provides for integration of the aircrew's parachute harness, lap belt assembly and shoulder restraint harness. Harness webbing is weaved thru torso garment to retain it in a position to help easy donning and doffing. The PCU-56/P harness provides the best mobility to aircrew while providing restraint in seat and serves as a parachute harness in case of aircraft ejection or bailout.

b. The PCU-56/P series parachute restraint harness consists of nylon webbing encased in a nylon fabric channel and is configured into a sleeveless, legless, torso garment available in four stock sizes: small, medium, large, and X-large. In addition to these stocked sizes a custom-fit harness is available to only those aircrew who are unable to be properly fitted with available stock sizes. Main sling webbing straps with canopy release adapters provide attachment of parachute riser. A lap belt adapter assembly is attached to lap belt alignment webbing. The lap belt adapter provides attachment to ejection seat, survival seat kit and parachute assembly. Two lap belt support straps are attached to the main sling on both sides of the harness near the chest strap channel and extending down forming a loop around and secured to lap belt, adjacent to the lap belt adapters. These straps provide support in carrying the weight of the seat kit transmitted thru the harness during parachute opening shock, preventing damage to the abdominal area. Saddle anti-rotation straps are installed on the front leg straps to ensure proper harness alignment while suspended and to improve overall fit of the harness. The PCU-56/P harness allows for a harness adapter assembly to be used in order to adjust the harness to a vast range of sizes. The PCU-56/P harness also incorporates two channels in the main sling for the routing of the chest strap, thus giving it even more adjustability. Webbing bands are incorporated at the waist area for attaching a life preserver in event survival vest is not used and allowing for various configurations as authorized. The garment is closed by a slide fastener at the front. Hook and eyelets may be installed under slide fastener to reduce strain on slide fastener when closing. An adjustable chest strap provides final point of adjustment for the harness. The chest strap is secured by a reversible adapter(s) and, hook and pile tape. A D-Ring with gate is attached to right shoulder adjustable strap interweaved with canopy release adapter. The D-Ring with gate is for attaching a helicopter hoist hook during rescue.

NOTE

Functions, inspections, and maintenance instructions apply equally to all approved configurations except as noted.

3. AIRCRAFT APPLICATIONS.

a. The assemblies listed in Figure 1 are applicable to the aircraft shown.

4. CONFIGURATIONS.

a. The only authorized configurations are shown in Figures 2 thru 8.

5. FUNCTIONS.

NOTE

The harness must fit aircrew properly to provide the most restraint and protection. For use with bulkier winter flight clothing, it may be necessary to use a larger size harness.

a. The harnesses are worn by aircrew aboard an aircraft fitted with a parachute designed for the integrated system.

b. These harnesses are attached to the parachute as follows:

(1) When aboard the aircraft and seated, the aircrew attaches the canopy release to the harness release adapters.

(2) The lap belt is attached to Seat Kit Unit (SKU) or Standard Soft Pack (SSP) by attaching the respective lap belt adapters.

6. SIZING AND FITTING THE PCU-56/P SERIES RESTRAINT HARNESS.

a. The PCU-56/P series parachute restraint harness must fit aircrew properly to provide protection and comfort. The proper size must be identified and fit of the selected size must be observed. Also, the fit must be observed with the aircrew in the ejection seat to ensure that the best restraint is provided. Lastly, the aircrew must be suspended in the harness and distribution of weight and body shift observed. To fit the PCU-56/P restraint harness to the aircrew, perform the following:

(1) Select an initial harness size from the four stock sizes by observing the body build and height of the aircrew. The size initially selected may not prove to be the best fit for the aircrew after adjusting to the full range of adjustment. The next appropriate size may need to be selected. A large or smaller size harness is tried until best fit is achieved. To find the best fitting harness see the following when the aircrew is donning and adjusting the harness:

AIRCRAFT HARNESS APPLICATION CHART

AV-8B, TAV-8B	TA-4	EA-6	E-2	F-4	F-14	F/A-18	T-45	S-3	T-2C	HARNESS PART NUMBER	HARNESS TYPE DESIGNATOR	HARNESS CONFIGURATION DESCRIPTION
						X				814AS150-30	PCU-74/P	POCKETS, EQUIP, LPA, CRU-103 OXYGEN REGULATOR POCKET, QUICK MOUNTING BRACKET
X						X				814AS150-28	PCU-73/P	POCKETS, EQUIP, LPA, CRU-103 OXYGEN REGULATOR POCKET
						X				814AS150-26	PCU-59A/P	POCKETS, EQUIP. LPA OBOGS, QUICK MOUNTING BRACKET
						X				814AS150-25	PCU-58A/P	BASIC, SV-2 STRAPS, BASIC, QUICK MOUNTING BRACKET
						X				814AS150-24	PCU-56A/P	BASIC, QUICK MOUNTING BRACKET
			X							814AS150-22	PCU-72/P	DROGUE/LAPBELT ATTACHMENT ASSY
			X							814AS150-5	PCU-60/P	HEED POCKET, SURVIVAL ITEM
X						X				814AS150-14	PCU-59/P	POCKETS. EQUIP. LPA OBOGS
X	X	X	X	X	X	X	X	X	X	814AS150-3	PCU-58/P	BASIC. SV-2 STRAPS
	X	X		X	X	X	X	X	X	814AS150-13	PCU-57/P	POCKETS. EQUIP. LPA
X	X	X	X	X	X	X	X	X	X	814AS150-1	PCU-56/P	BASIC HARNESS

AIRCRAFT

Figure 1. Aircraft Harness Application Chart

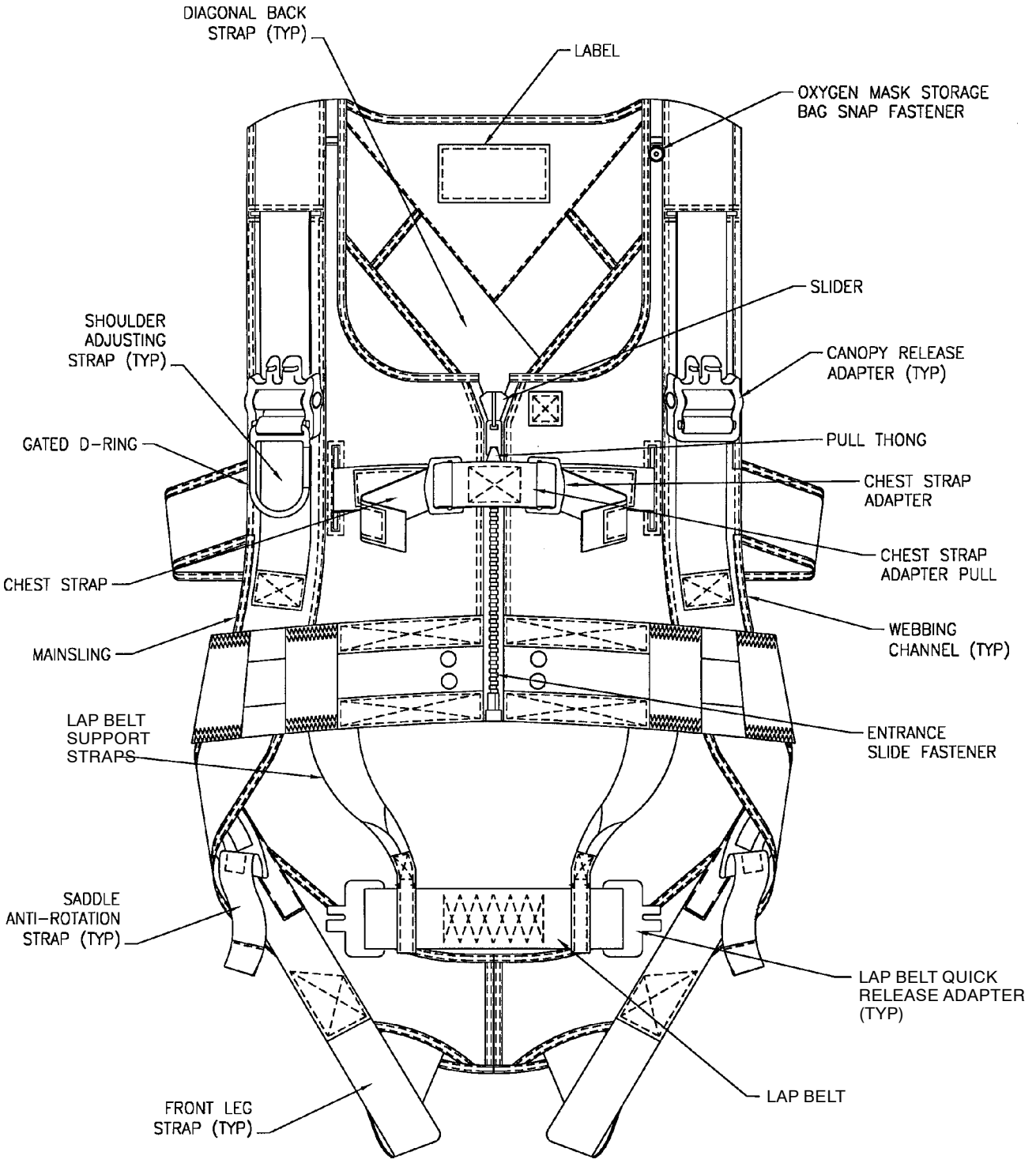

Figure 2. PCU-56/P, 814AS150-1 Parachute Restraint Harness Assembly

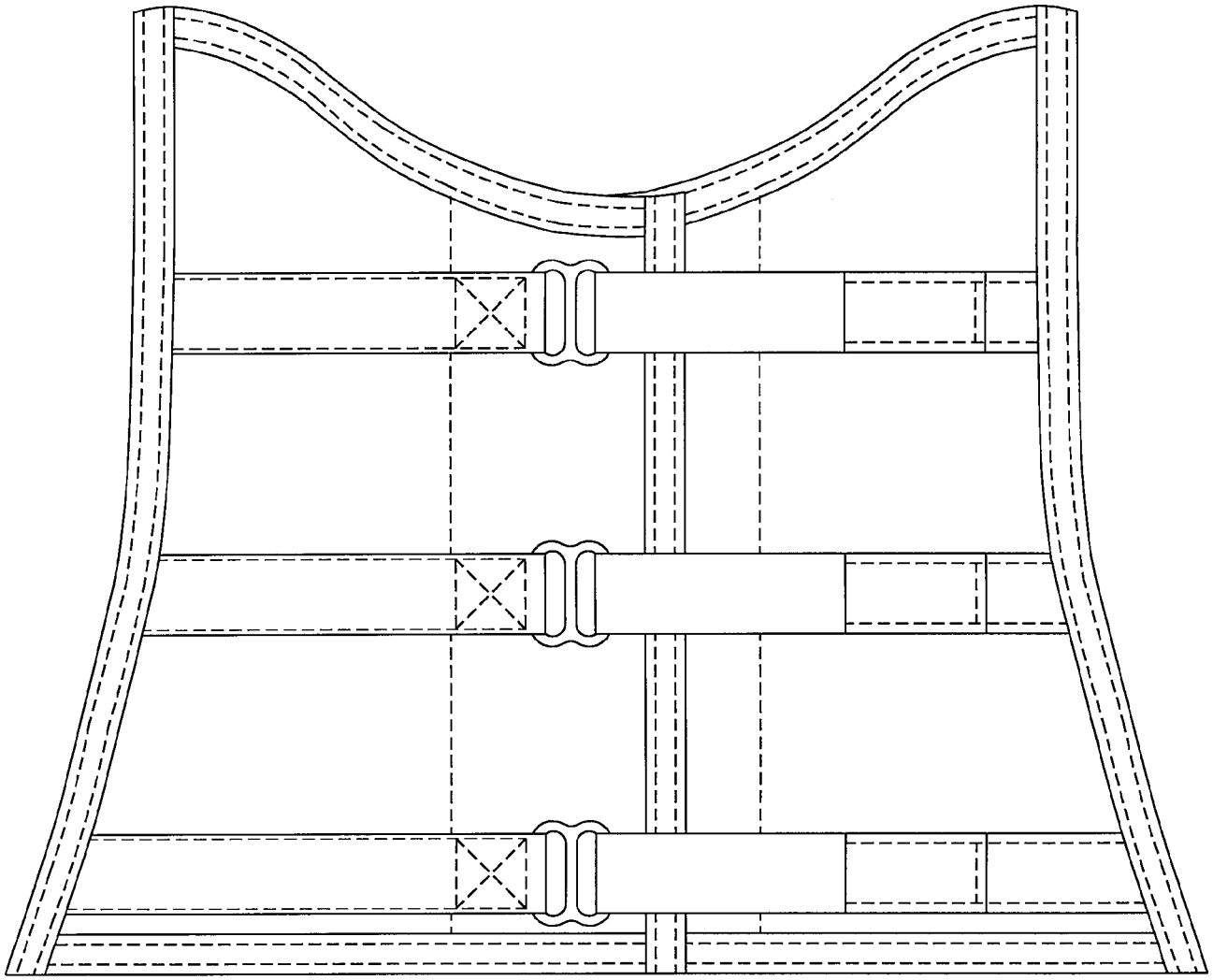

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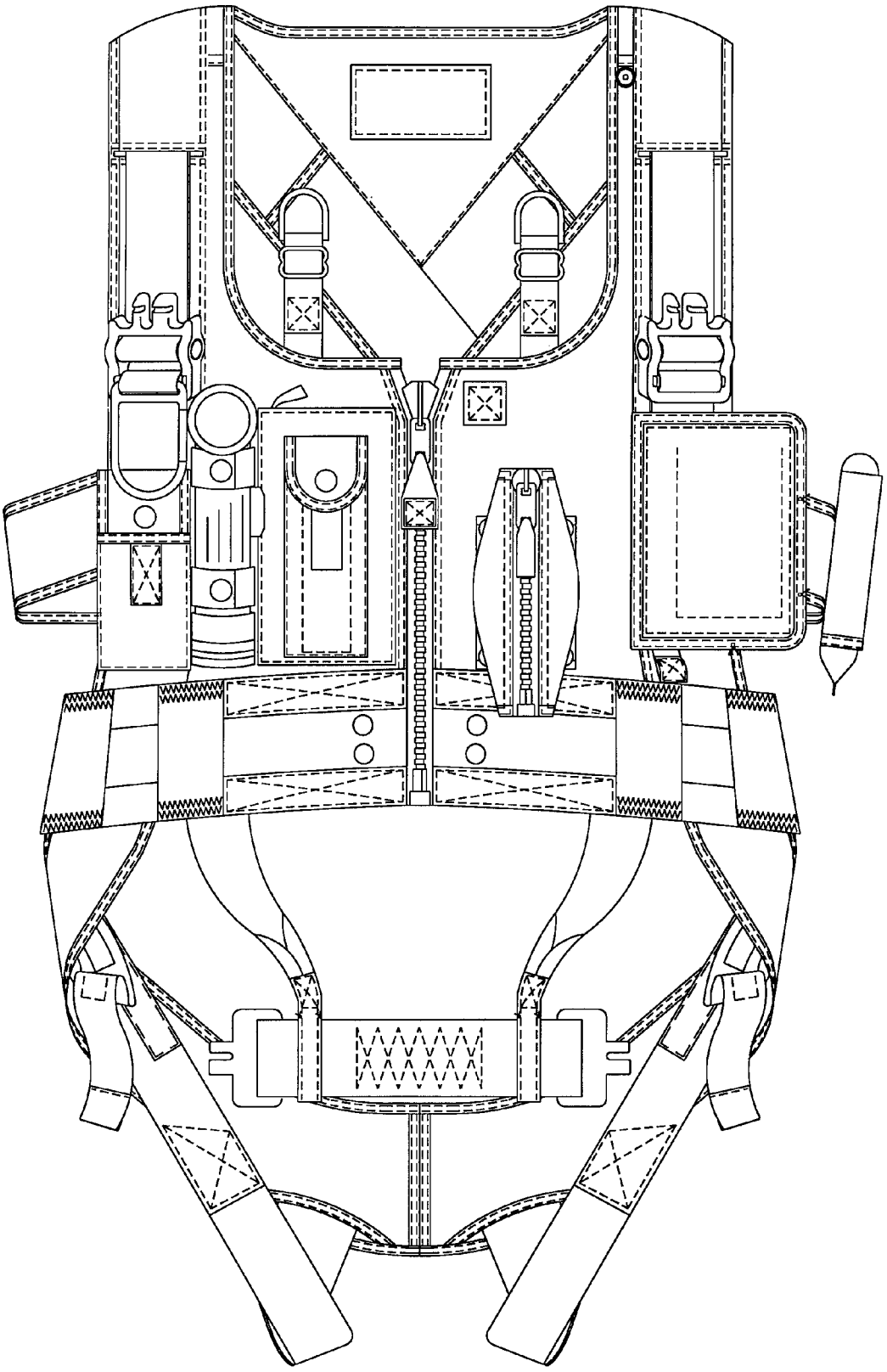
Figure 3. Inner Garmet Vest Assembly (AIRCREW OPTION)



6.2-5003A

Figure 4. PCU-57/P, 814AS150-13 Parachute Restraint Harness Assembly

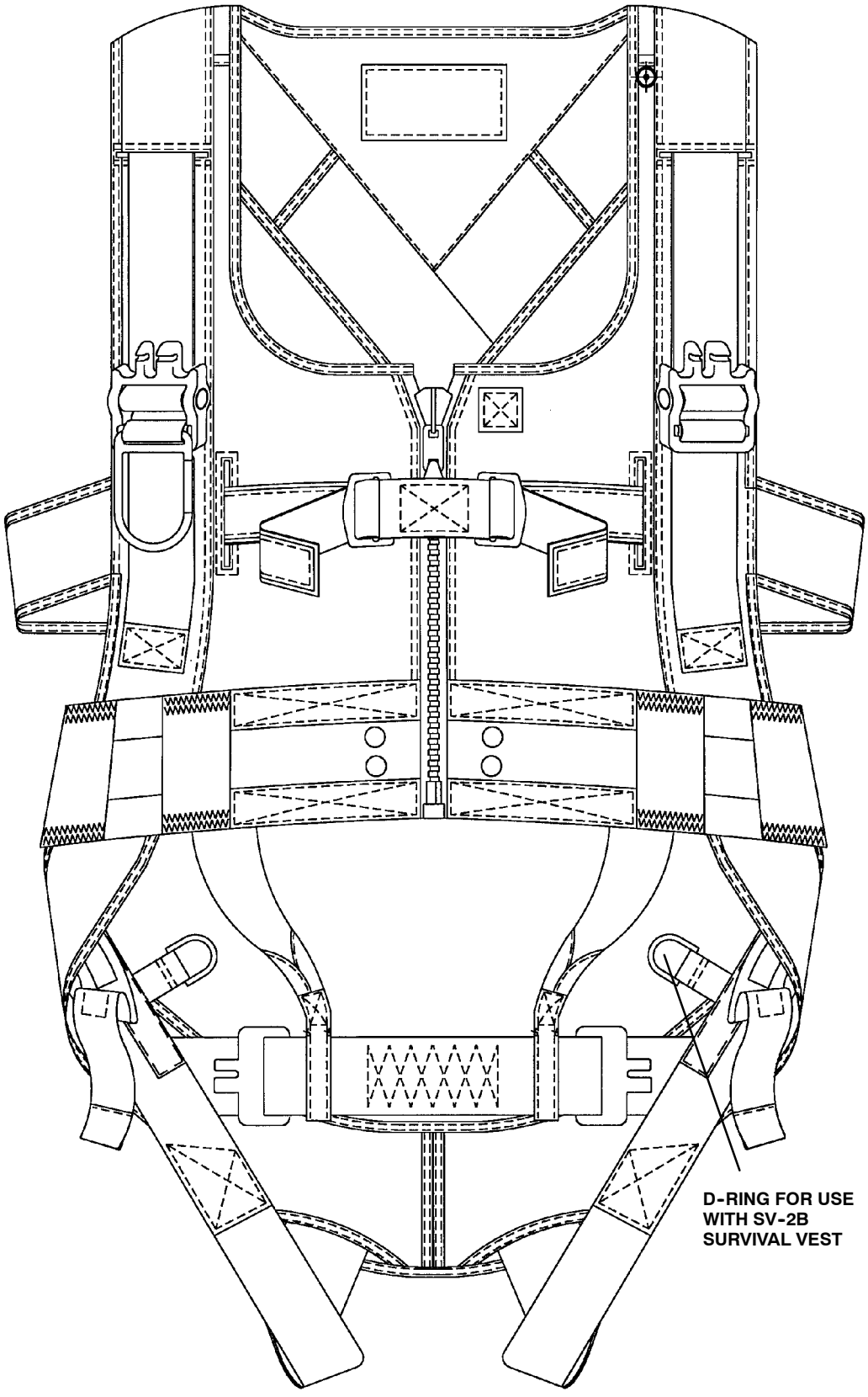


Figure 5. PCU-58/P, 814AS150-3 Parachute Restraint Harness Assembly (With D-Rings Attached)

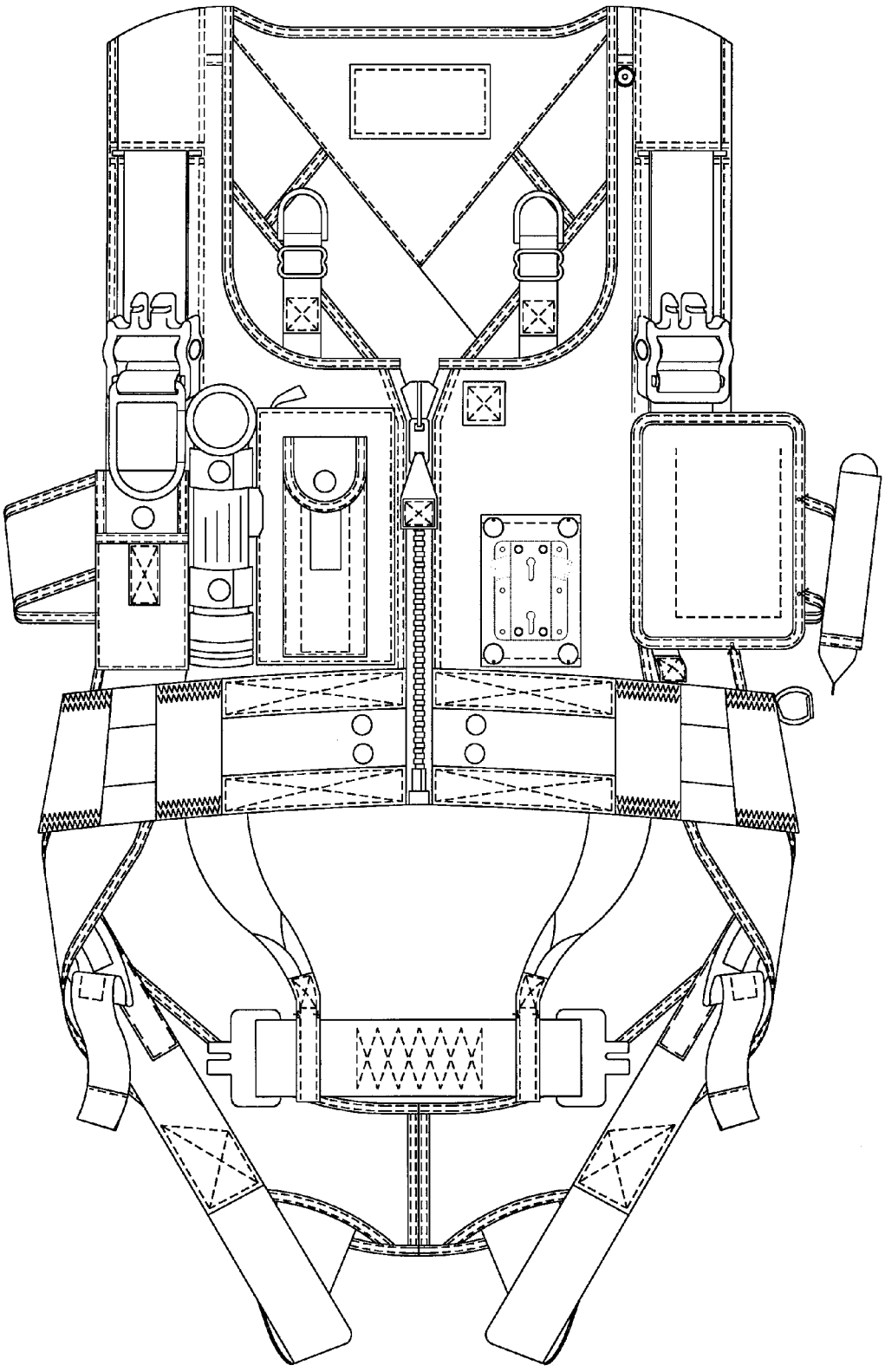


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Figure 6. PCU-59/P, 814AS150-14 Parachute Restraint Harness Assembly (With Stowage Pockets, Equipment, LPU, OBOGS)

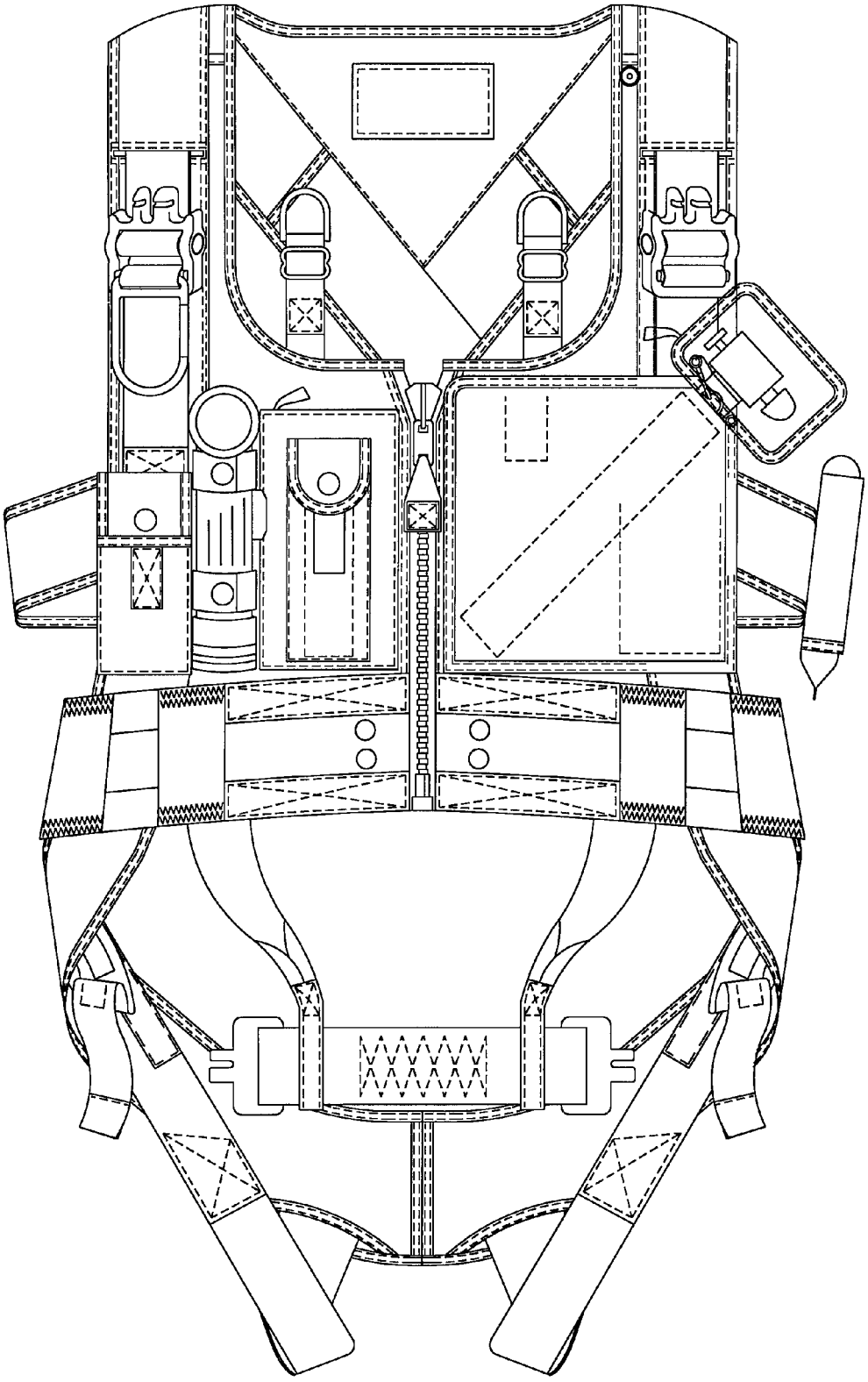

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Figure 7. PCU-60/P, 814AS150-5 Parachute Restraint Harness Assembly (With Helicopter Emergency Egress Device (HEED) Pocket)

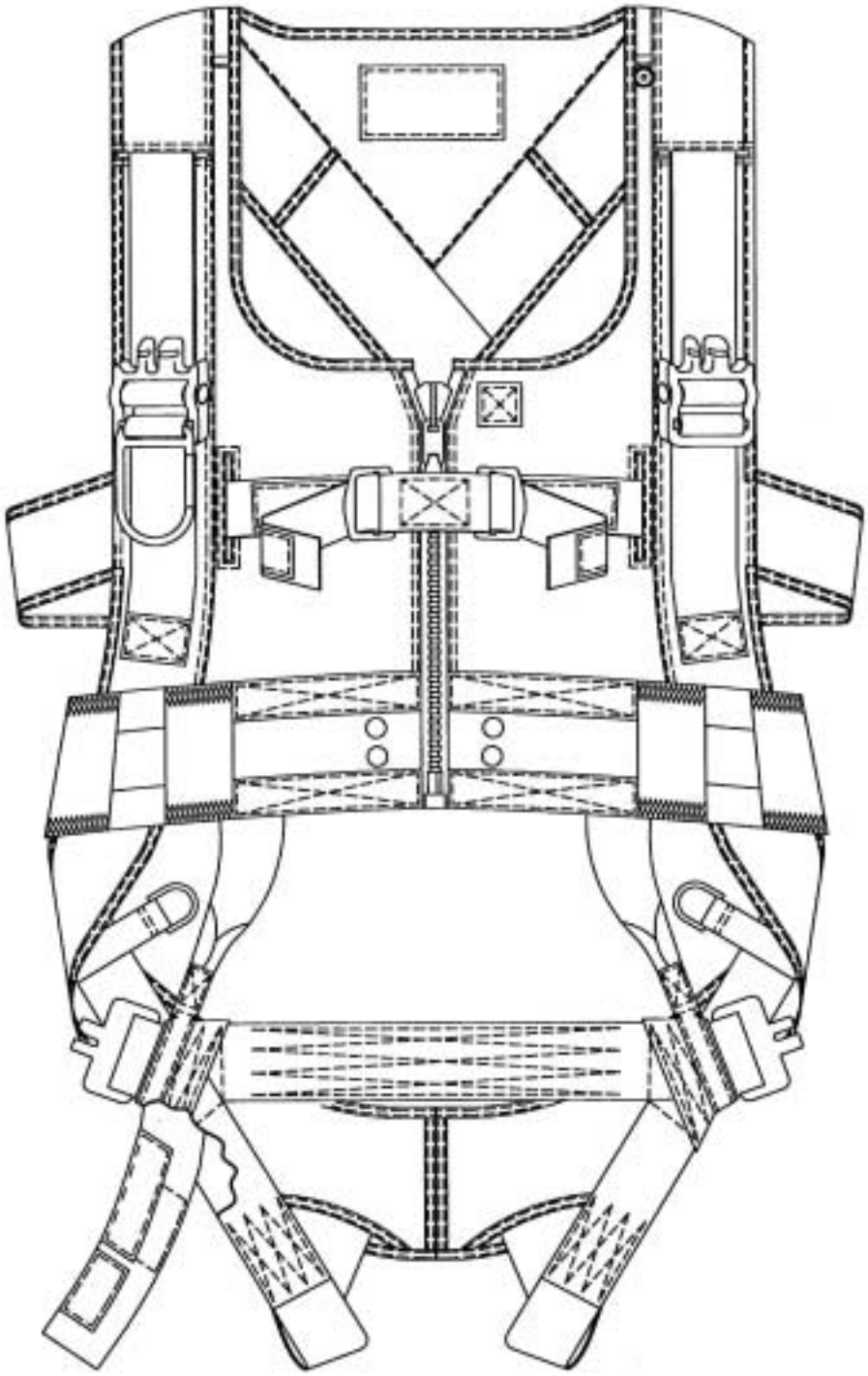

Figure 8. PCU-72/P, 814AS150-22 Parachute Restraint Harness Assembly (With Drogue/Lap Belt Attachment Strap and D-Rings)

b. Install canopy and lap belt release adapters. A good starting point for the initial positioning of the canopy release adapter is to install the hardware in such a way that the top stitch of the "triangle stitch" is centered over the canopy release adapter grooved pin.

(1) Canopy Release Adapter. The ideal location of the adapter is below the cavity/hollow below the collarbone when the harness is properly fitted/adjusted and the aircrew standing. The adapter may be adjusted lower to accomplish proper seat restraint. However, ideal location of each individual may vary from beneath the collar bone to the full down position, depending on individual body build.

c. Loosen all webbing from their associated hardware (main sling friction adapters, anti-rotation strap reversible adapters, canopy release adapters).

d. For the chest strap, start with the lower channel, this seems to work for most body types. But a general rule of thumb is for a long torso, start with the lower channel and a short torso should start with the upper channel.

e. Have Aircrew don harness, fasten garment (this may be the first indication on the correct or incorrect harness size selection). If the garment is too tight, you may need to go one size up. But, too loose a garment does not necessarily indicate a too large a harness.

f. Unfasten garment and adjust the main sling webbing as follows:

(1) Slide main sling webbing thru slide bar of canopy release to loosen the webbing.

(2) Slide slack webbing thru the harness adapter assembly friction/slide bar to loosen remaining layers of webbing.

(3) Extend or retract webbing around the roll bar as needed to extend or shorten the vertical length.

(4) Remove excess slack from canopy release and harness adapter.

(5) Ensure smooth flow of webbing thru canopy release and harness adapter.

(6) Ensure left and right main slings are symmetrical (even).

(a) The main sling webbing is adjusted to provide the best fit of the harness. The webbing is slid through the harness adapter assembly to provide the best fit of the aircrew.

g. Have aircrew bend forward at the waist approximately 45 degrees. Using both hands, have aircrew grasp each side of the chest strap. Aircrew shall alternately pull on each side of the chest strap, removing slack in the harness and cinching harness around the body. During this process, observe the harness and look for areas that don't seem to be flowing through the harness hardware or channels. A particular area to look at is the leg strap webbing and anti-rotation strap area. If the slack is not completely removed from this area, the harness will not fit properly. To ensure that the webbing flows freely in this area, have the aircrew stand slightly, this will released tension on the webbing and hardware allowing the slack to be removed.

h. During the above adjustment period ensure that the main sling saddle remains positioned under the buttocks.

(1) The main sling saddle is that portion of the main sling, located below the leg strap channels, which goes under the buttocks. The main sling saddle supports the weight of the body and absorbs the opening shock loads.

i. Return the aircrew to the 45 degree position and remove any slack that may have been induced by the standing. While maintaining the 45 degree position, install the dual pull chest strap adapter. Have aircrew cinch down the chest the strap. The chest strap should be snug, not overly tight and should allow a hand to be inserted between the chest strap and chest with little resistance. A properly fitted harness should not restrict standing, but there should be some slight pressure on the aircrews shoulders. After the harness has been adjusted to the aircrews liking, ensure that the dual pull adapter is properly center grasp both ends of the chest strap and hold them both out in front and compare the ends of the straps together. They should be of equal lengths (providing the chest strap has not been previously cut). If not, make the necessary adjustments to center the hardware.

(1) Chest Strap. The chest strap should cross the torso at breast level when the aircrew is standing and should not be below the "center of mass" of the breast of the female aircrew. However, "best restraint" should be the deciding factor, such that (positive tension is achieved from the inertial reel) when retracted. This may be accommodated by dual chest strap channels in

the main sling. The harness is provided with a dual pull chest strap and may be modified to allow the standard single pull chest strap. The dual pull chest strap should be centered on the breast bone of the aircrew. Hook and pile tape must also be added to the chest straps after final fit has been accomplished.

j. Next step is to adjust the anti-rotation straps. Have the aircrew grasp the left anti-rotation strap with his/her right hand. Give the anti-rotation strap two quick snaps in the direction of adjustment.

WARNING

DO NOT OVER-TIGHTEN. By over tightening, the anti-rotation straps will take the parachute opening loads vice the intended leg straps.

k. Using the left hand, repeat the procedure with the right anti-rotation strap.

(1) The saddle anti-rotation straps are adjustable straps, one on each leg strap, just below the attachment point of the lap belt strap. Two sleeve subassemblies with reversible adapters are located above the point where each leg strap passes thru the lower channel of the main sling. The adjustable straps are routed through their respective reversible adapters to provide a tightening adjustment, with the free end of each strap being retained by hook and pile fasteners. The hook and pile fasteners are attached to the saddle anti-rotation straps per WP 009 02. The saddle anti-rotation straps reduce harness misalignment and improve the harnesses overall fit on the aircrew. During parachute deployment, the main sling of the harness will remain vertical to the upper torso of the aircrew, allowing the main sling saddle to remain under the buttocks. Parachute canopy opening shock loads will then be transmitted throughout the saddle and main sling with little or no upper torso rotation or shift. Also the canopy release fittings will remain lower, reducing the likelihood of striking the head. After the aircrew has donned and adjusted the harness in a standing position, the straps are pulled snug, not tight. The hook and pile fasteners are mated together while in this position. Do not retighten when seated.

7. SEAT RESTRAINT.

a. Lap Belt. With aircrew seated in an ejection seat, lap belt fittings shall be connected and lap belt adjusted until snug. There shall be no slack in lap belt.

b. Shoulder Harness. The canopy release shall be connected. With aircrew seated, shoulders back in the ejection seat, and shoulder harness retracted and locked, there should be no slack in the shoulder harness restraint. If slack exists, the harness main sling will need to be adjusted slightly smaller to accommodate proper retention. If proper retention cannot be achieved, evaluation of the aircrew's anthropometric compatibility with assigned aircraft maybe necessary.

NOTE

Personnel whose harnesses do not meet the above fit criteria should be further evaluated in PCU-56/P parachute restraint harnesses of other sizes until a best fit is achieved. Aircrew unable to be fitted with a stock harness may be considered candidates for a custom-fit harness.

8. FINAL ASSESSMENT.

a. The final assessment of a properly fitted harness is made with the aircrew suspended so the harness bears the full weight of the aircrew. Two riser assemblies with 16-in. cross-connector straps and canopy release assemblies are required to suspend the aircrew. The aircrew should wear his/her own flight helmet, don and properly adjust the harness including snugging the saddle anti-rotation straps in the same manner as when preparing for a flight.

b. Attach the harness to the riser assemblies. Prior to suspending the aircrew, observe the location of the canopy release assemblies.

c. Suspend the aircrew above the deck and simulate mild opening shock by having the aircrew pull him/herself up by the risers to about 12 to 15-in. dropping back into the harness to induce settling while observing the change (rise) in location of the canopy release assemblies. If the harness is properly sized, fitted and adjusted, with full body weight of the aircrew supported by the main sling saddle, the change (rise) of the canopy release assemblies will be minimal and equal on both sides. The main sling webbing should be as close to the torso, under suspension, with no bulging or surplus webbing evident. Final position of the canopy release should not be higher than the lower edge roll of the aircrew's helmet nor indicate a loose fit of the harness. A major change (rise) may indicate that the body weight is not supported by the main sling saddle, the harness is not the proper size, or the harness has been improperly adjusted.

d. Inspect the chest strap, main sling webbing, shoulder strap adjustment links and main sling saddle for proper position. Closely observe the aircrew's weight distribution in the harness. When properly positioned

the main sling saddle supports the body weight much like sitting in a swing. Weight stress is carried from the main sling saddle up thru the main sling webbing to the canopy releases and riser assemblies. When the harness fit is best, there will be minimal tension on the lap belt support straps or saddle anti-rotation straps. Observe that the aircrew's body has not shifted out of the main sling saddle, allowing the body weight to be supported by the leg, shoulder, chest, saddle anti-rotation, or support straps.

9. FINAL HARNESS PREPARATION.

a. Lap Belt Support Straps. One end of each strap is attached to the main sling webbing inside the harness near the chest strap channels. The other end is delivered from supply long and un-sewn. The aircrew must be suspended to mark and finish the lap belt support strap. The purpose of the support straps is to carry the opening shock loads of the survival kit. Proceed as follows:

(1) Wrap the lap belt support strap around the lap belt. Make sure the lap belt is flat against the aircrew's body, remove slack from the support strap and mark the bottom of the lap belt support strap. Do not mark the other side. To ensure that the lap belts are of equal length, the lap belt support strap will be measured and marked the same as the other. This will be done after the harness has been removed and is being placed in service.

10. CUSTOM-FIT (CF) PROCUREMENT PROCEDURES FOR AIRCREW.

a. The local Aviation Physiologist or Aviation Medical Safety Officer (AMSO), with aid of a locally assigned Aircrew Survival Equipmentman, will verify need for each custom-fit harness candidate. If these personnel are not on board, direct liaison with Naval Air Warfare Center Weapons Division (NAVAIRWARCENWPNDIV) is authorized.

b. Complete the Custom-Fit PCU-56/P Harness Data Sheet (Figure 9). Ensure that the data sheet is exactly completed and that all entries are legible. Any unacceptable fit per Paragraph 6, shall be elaborated in the comments section. Send a copy of the data sheet to:

Commander
Code 461000D
NAVAIRWARCENWPNDIV
1900 N Knox Road Stop 6206
China Lake, CA 93555-6106

NOTE

The Custom-Fit PCU-56/P Harness Data Sheet (Figure 9) may be locally reproduced.

c. Send a naval message to NAVAIRWARCENWPNDIV China Lake, CA //461000D// Info: COMNAVAIRSYSCOM Patuxent River, MD //PMA202//. Give the candidates Name, Rank/Rate, Social Security Number and Branch of Service. State the candidate has been verified as a custom-fit harness candidate by Aviation Survival Training Center (ASTC) or AMSO. Provide a point of contact to arrange the custom fit scheduling.

d. Send Custom-Fit PCU-56/P Harness Data Sheet and photographs depicting unacceptable abnormalities to NAVAIRWARCENWPNDIV. This should be done well in advance of candidates arrival.

e. Following receipt of the data sheet, date record (NAVMED 6410/9) and data verification message, the individual or the point of contact will be notified by NAVAIRWARCENWPNDIV and scheduled for PCU-56/P custom-fitting.

f. The individual's command will be responsible for providing travel orders to NAVAIRWARCENWPNDIV for custom-fitting.

11. AIRCREW SYSTEMS RECORD.

a. Refer to OPNAVINST 4790.2 (series) for filling out of the Aircrew Personal Equipment Record (OPNAV 4790/159).

12. ORDERING AND REPORTING INFORMATION.

a. When ordering a new integrated parachute harness, order part number 814AS200-1 (small), 814AS400-1 (medium), 814AS600-1 (large), and 814AS700-1 (X-large), reported as 814AS150-1 thru -14. The harness is then configured for the specific aircraft/mission and reported into the 3M system as 814AS150-1 in the removed and installed blocks of the VIDS/MAF. The top assembly configuration part number (814AS150-X) shall be reported when inspection/maintenance is performed throughout the service life of the harness.

13. ESTABLISHMENT OF PARACHUTE RESTRAINT HARNESS POOL.

a. A pool of parachute restraint harnesses can be established by organizational level maintainence for visiting aircrew. The spares are owned by squadron aviation life support. They shall be inventoried, maintained, inspected in accordance with the current inspection cycle, and properly stored.

CUSTOM-FIT PCU-56/P PARACHUTE RESTRAINT HARNESS DATA SHEET

NAME _____ SSN _____ DATE _____

GRADE/RATE _____ COMMAND _____ SEX _____

AVIATION STATUS _____ (Aviator,NFO,Enlisted Aircrew, Civilian, Parachutist, Flight Surgeon, Aviation Physiologist/Psychologist)

1. HEIGHT _____ INCHES

2. WEIGHT _____ POUNDS

3. PCU-56/P HARNESS EVALUATION

		Comments
MAIN SLING WEBBING	(acceptable/unacceptable)	
MAIN SLING SADDLE	(acceptable/unacceptable)	
LAP RESTRAINT	(acceptable/unacceptable)	
SHOULDER RESTRAINT	(acceptable/unacceptable)	
CHEST STRAP	(acceptable/unacceptable)	

SIGNATURES _____ (ASTC/AMSO) _____ (PR)

Information contact

Address to: Commander
Code 461000D
NAVAIRWARCENWPNDIV
1900 N Knox Road Stop 6206
China Lake, CA 93555-6106

Print or type names _____ (ASTC/AMSO) _____ (PR)

DSN number _____ (ASTC/AMSO) _____ (PR)

and EXTENSION _____ (ASTC/AMSO) _____ (PR)

COMMENTS: _____

Figure 9. Custom-Fit PCU-56/P Harness Data Sheet

ORGANIZATIONAL MAINTENANCE

INSPECTION AND REPAIR PROCEDURES

PCU-56/P SERIES PARACHUTE RESTRAINT HARNESS ASSEMBLY

PART NO. 814AS150

List of Effective Work Package Pages

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Aviation-Crew Systems, Rescue and Survival Equipment . . . . . NAVAIR 13-1-6.5
Aircrew Personal Protective Equipment (Protective Assembly, Aircrew Survival-Armor A/P22P-18(V)) . . . . . NAVAIR 13-1-6.7-4
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdowns, Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00
Organizational and Intermediate Maintenance Description and Principles of Operation PCU-56/P Series Parachute Restraint Harness Assembly . . . . . WP 009 00
Organizational and Intermediate Maintenance Illustrated Parts Breakdown PCU-56/P Series Parachute Restraint Harness Assembly . . . . . WP 009 04
Organizational Maintenance Original Issue Rigging Procedures PCU-56/P Series Parachute Restraint Harness Assembly . . . . . WP 009 02

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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 597, Rev A	8 Apr 03	Modification of the PCU-59/P and PCU-59A/P Integrated Parachute Restraint Harness Assemblies with a CRU-103 Oxygen Regulator Pocket (WUC 96A3C00). For NALCOMIS Optimize Users, WUC (96A31) (ECP-16452)	1 Dec 03	31 Dec 2005
ACC 623	14 Feb 96	Riser Restraint Keeper (RAMEC P-08-95)	1 Jul 96	31 Dec 2003

1. INTRODUCTION.

a. This Work Package (WP) contains instructions for organizational level repair to ensure that parachute restraint harness assembly remains in Ready-For-Issue (RFI) status.

b. When performing repairs detailed in this WP, follow these guidelines:

(1) Review all applicable instructions prior to starting repair.

(2) Ensure that all necessary material and equipment are available prior to starting repair.

(3) When required, remove enough material from it's source for immediate use only. Assure material identification ticket remains with the source material at all times.

(4) A Quality Assurance (QA) inspector shall examine the finished work.

2. REPLACEMENT OF HOOK AND PILE FASTENER TAPE ON CHEST STRAP ADAPTER SINGLE PULL (MANDATORY).

NOTE

Modification of the chest strap to a dual pull is the aircrew's option.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, 1 1/2-in. Wide, Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 1 1/2-in. Wide, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Placement of the hook and pile fastener tape may be reversed (aircrew option).

a. Properly fit harness to aircrew.

b. Mark chest strap webbing 1-in. from friction bar on both the free end and portion attached to harness (Figure 1).

c. Attach a 2-in. strip of hook fastener tape on outer surface of chest strap and a 2-in. strip of pile fastener tape on inner surface of free end. Machine stitch around edges of hook and pile fastener tape. Backstitch a minimum of 1/2-in. Leave a minimum of 10-in. of webbing from the chest strap friction bar after fitting to aircrew. Trim and sear. Avoid forming sharp edges while hot knifing and searing (Figure 1). (QA)

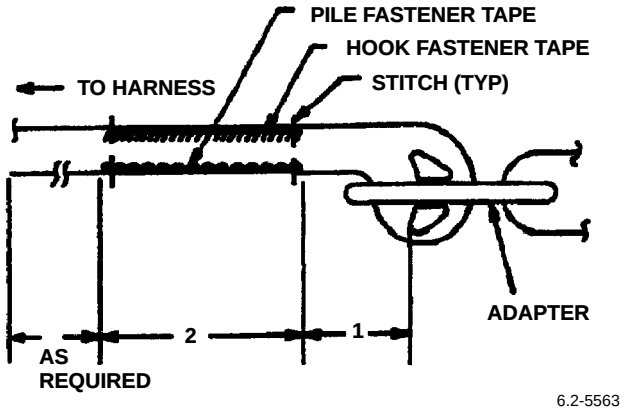


Figure 1. Addition of Hook and Pile Fastener Tape to Chest Strap

d. When donning, aircrew shall align hook and pile fastener tape patches and press together firmly.

3. REPLACEMENT OF HOOK AND PILE FASTENER TAPE ON CHEST STRAP ADAPTER DUAL PULL (AIRCREW OPTION).

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, 1 1/2-in. Wide, Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 1 1/2-in. Wide, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Placement of the hook and pile fastener tape may be reversed (aircrew option).

a. Properly fit harness to aircrew.

b. Mark chest strap webbing 1-in. from friction bar on both the free end and portion attached to harness (Figure 2).

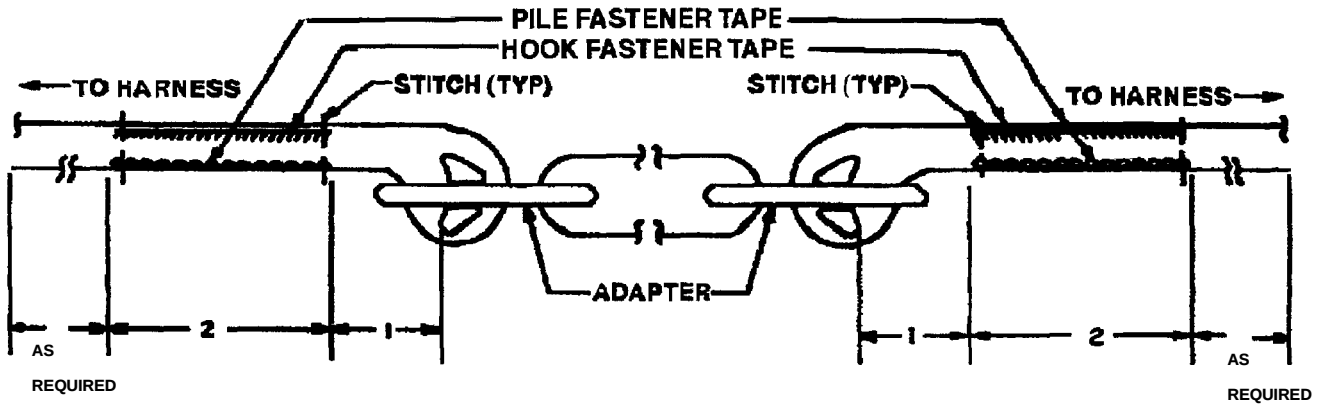


Figure 2. Addition of Hook and Pile Tape to Chest Strap Dual Pull (Aircrew Option)

c. Attach a 2-in. strip of hook fastener tape on outer surface of chest strap and a 2-in. strip of pile fastener tape on inner surface of free ends. Machine stitch around edges of hook and pile fastener tape. Backstitch a minimum of 1/2-in. Leave a minimum of 10-in. of webbing from the chest strap friction bar after fitting to aircrew. Trim and sear. Avoid forming sharp edges while hot knifing and searing (Figure 2). (QA)

d. When donning, aircrew shall align hook and pile fastener tape patches and press together firmly.

4. REPLACEMENT OF CANOPY RELEASE ADAPTER.

Materials Required

Specification or Part Number	Nomenclature
990065-1 -or- 015-710001-1	Adapter Assembly, Canopy Release
F-900 Torque Seal (Color Optional)	Sealing Compound
122-10935-3	Setscrew

NOTE

Setscrew is a one time use only part.

a. Remove setscrew and retention pin. Discard setscrew.

b. Remove adapter from harness main sling webbing.

c. Turn friction slide bar at an angle within the frame to allow removal from adapter. Crowding of adjustment strap webbing to one side is necessary to allow enough clearance for friction slide bar to be removed.

d. Remove adapter from adjustment strap. Gated D-Ring will weave thru adapter without difficulty. Removal of stitched end boxstitch is not necessary unless gated D-Ring is also being replaced.

WARNING

Harness webbing must be properly routed thru canopy release adapter.

e. With retention pin and friction slide bar removed, place new canopy release adapter on harness with notch facing outward.

WARNING

Insure friction slide bar is correctly reinstalled; word stamped FRONT will face outboard (same direction as notches).

f. Form loop in main sling harness webbing, using two forward layers (Figure 3).

g. Install retention pin and new setscrew. (QA)

h. Apply torque seal to screwhead.

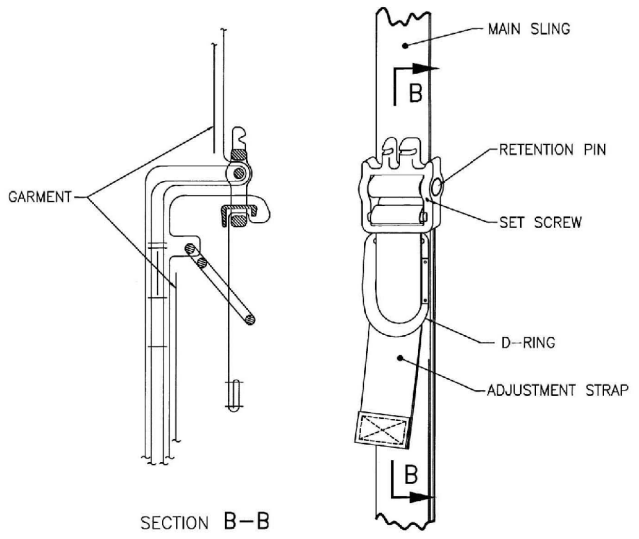


Figure 3. Replacement of Canopy Release Adapter and D-Ring

5. REPLACEMENT OF LAP BELT ADAPTER.

Materials Required

Part Number	Nomenclature
990070-1 -or- 1979AS838-1 -or- 015-11366-1	Adapter Assembly, Lap Belt
MIL-S-22473	Sealing Compound, Grade H

CAUTION

Do not pinch webbing with tools when removing or installing lap belt adapters.

a. Remove two securing screws.

b. Remove adapter from lap belt.

c. Slide pin from lap belt webbing loop.

d. Install replacement slide pin in webbing loop of lap belt.

e. Align replacement adapter, with notched side of prongs inboard toward wearer, on slide pin.

f. Apply sealing compound to threads of two shoulder screws. Install screws thru holes in release adapter.

g. Thread securing screws into slide pin.

h. Tighten securing screws.

6. REPLACEMENT OF SNAP FASTENER ON FLOTATION ATTACHMENT PANEL.

Materials Required

Specification or Part Number	Nomenclature
PIA-T-5038	Tape, Textile Reinforcing Nylon, Type IV, 1-in., Class 1 or 1A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MS27983-1	Snap, Fastener, Button
MS27983-2N	Socket, Snap Fastener
MS27983-3	Stud, Snap Fastener
MS27983-4	Snap, Fastener, Eyelet

a. Remove snap fastener using care not to damage webbing.

b. If any attachment point is damaged, sew a piece of reinforcement tape over damaged area using a box-X stitch pattern. Backstitch 1/2-in.

c. Punch new hole, if required; mate button and socket or stud and eyelet together, as required. Orient button dots closest to the securing belt free ends.

d. Install new fastener. Ensure that fastener is securely mated and that release direction is toward slide fastener.

7. REPLACEMENT OF INBOARD OXYGEN MASK STORAGE BAG ATTACHMENT SNAP FASTENER (AIRCREW OPTION).

Materials Required

Specification or Part Number	Nomenclature
MS27980-7B	Stud, Snap Fastener
MS27980-8B	Fastener, Eyelet
PIA-T-5038	Tape, Textile Reinforcing Nylon, Type IV, 1-in., Class 1 or 1A

a. Remove old fastener using care not to damage garment.

b. If attachment point is damaged, sew a piece of reinforcement tape to underside of damaged area, using a box-X stitch pattern. Backstitch 1/2-in.

c. Punch new hole, if required. Mate eyelet, tape, and stud.

d. Install new fastener. Ensure that fastener is securely mated.

8. PLACEMENT OF OUTBOARD OXYGEN MASK STORAGE BAG ATTACHMENT SNAP FASTENER (AIRCREW OPTION).

Materials Required

Specification or Part Number	Nomenclature
MS27980-7B	Stud, Snap Fastener
MS27980-8B	Fastener, Eyelet
PIA-T-5038	Tape, Textile Reinforcing Nylon, Type IV, 1-in., Class 1 or 1A

a. Punch a 3/32-in. hole, 1/2-in. ± 1/8-in., from outboard edge of garment material, above top stitching of webbing channel and 5/8-in. ± 1/8-in. from edge of harness binding tape.

b. Install snap fastener. Ensure snap fastener is securely mated.

c. Carefully remove inboard located snap fastener in accordance with Paragraph 7.

9. REPLACEMENT OF EYELET AND HOOK (AIRCREW OPTION).

Support Equipment Required

Part Number	Nomenclature
GGG-S-00278	Shears, Straight
—	Needle, Sewing

Materials Required

Specification or Part Number	Nomenclature
60A113C28-1	Eye
60A113C28-2	Hook
V-T-295	Thread, Nylon, Size 3, Type I or II, Class A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

Hook and eye maybe reversed for left hand installation. Removal of hook and eye is at aircrew's discretion.

Optional to machine stitch with size E thread, using nine single stitches per grouping in lieu of two turns doubled.

a. Carefully remove damaged eyelet and hook.

b. Attach new eyelet or hook as required in same location as removed eyelet or hook. Sew in place with thread, waxed and doubled; tie off (Figure 4).

c. Ensure that eyelet or hook is properly aligned.

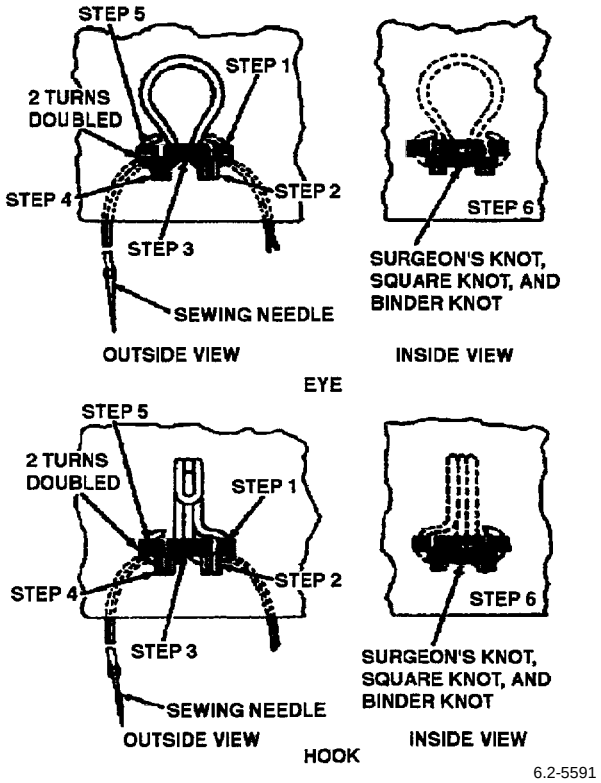


Figure 4. Replacement of Eyelet and Hook

10. REPLACEMENT OF SLIDE FASTENER.

Materials Required

Specification or Part Number	Nomenclature
V-F-106	Slide Fastener, Type IV, Style #8, Size MH, Brass with Black Chemical Finish, Sage Green Tape Available from: Lenzip Manufacturing 1900 W. Kinzie St. Chicago, IL 60622-6243 Style #1031
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove entrance slide fastener.

b. Remove two hooks and eyelets at entrance.

c. Remove damaged slide fastener and protective flap to at least 1-in. below retention system. Retain protective flap for reuse.

d. Attach replacement slide fastener as shown using size E thread. Slide fastener shall not run over edges of fabric panels (Figure 5).

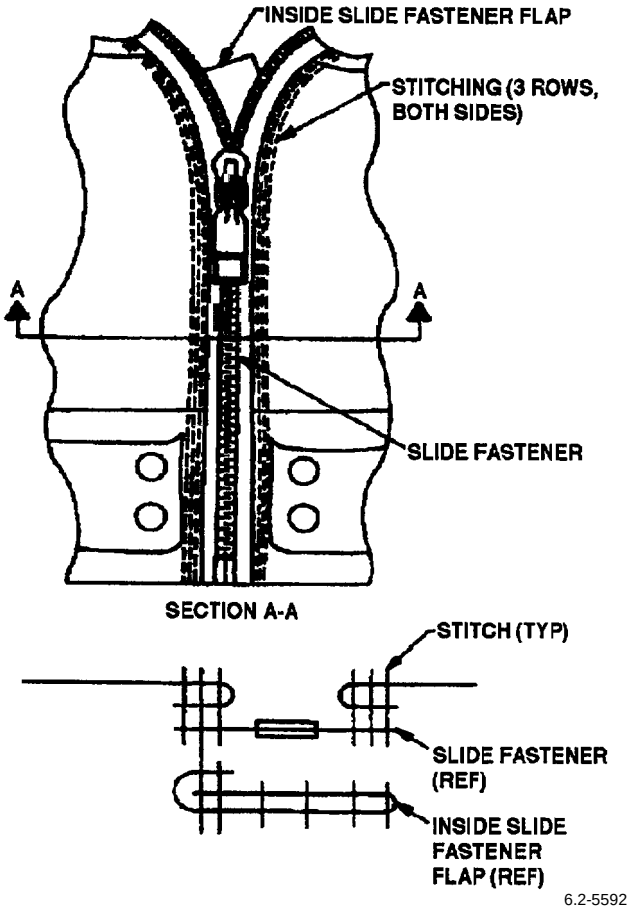


Figure 5. Replacement of Slide Fastener

11. REPLACEMENT OF SLIDER PULL THONG.

Materials Required

Specification or Part Number	Nomenclature
PIA-T-5038	Tape, Nylon, Type III, Class 1 or 1A, 3/4-in. Wide
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove and discard worn pull thong.

b. Cut a 4 3/4-in. length of nylon tape. Sear both ends.

c. Weave new pull thong thru eye in slider pull tab. Place sides together with ends even and stitch together at end using a 3/4-in. long box stitch pattern. (QA)

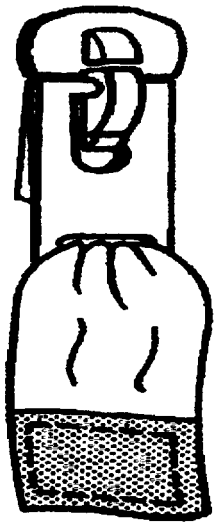
d. Add fastener tape per Paragraph 12.

12. REPLACEMENT OF PILE FASTENER TAPE ON HARNESS PULL THONG.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Pile, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Sew a 3/4-in. length of pile tape to nylon tape using a 3/4-in. long box stitch (Figure 6).



6.2-5593

Figure 6. Replacement of Slider Pull Thong

13. REPLACEMENT OF SLIDER PULL THONG ON SURVIVAL EQUIPMENT POCKETS.

Materials Required

Specification or Part Number	Nomenclature
PIA-T-5038	Tape, Nylon, Type III, Class 1 or 1A, 3/4-in. Wide
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Cut a 4-in. length of nylon tape. Sear ends to be cut on a 45 degrees bias to tape selvage edge. Remove and discard worn pull thong.

b. Insert new pull thong thru eye in slider pull tab. Place sides together with ends even and secure in place with 2 to 3 rows of 1/2-in. stitch pattern using size E thread.

14. REPLACEMENT OF HOOK FASTENER TAPE ON LEFT SIDE OF HARNESS FOR SECURING PULL THONG.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, 1-in. Wide, Type II, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove old hook tape carefully.

b. Cut a 1x1-in. piece of hook fastener tape. Sew hook fastener tape on left side of harness 1 1/2-in. from edge of harness zipper and bottom portion of hook fastener tape from top edge of harness material.

c. Sew hook tape with size E thread in a box-X stitch pattern (Figure 7).

WARNING

Do not stitch thru harness webbing.

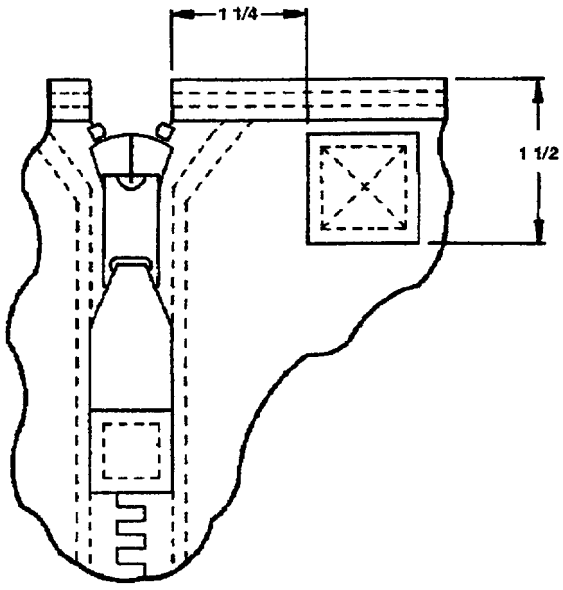


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Figure 7. Hook Tape Replacement on Harness

15. REPAIR OF HARNESS CLOTH.

Materials Required

Specification or Part Number	Nomenclature
MIL-C-508	Cloth, Oxford, Nylon, Sage Green
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Cut a patch sufficiently large to cover damage and overlap 1-in. on all sides.

b. Sear edges of patch and damaged area.

c. Fold patch under 1/4-in. on all sides and stitch in place, using size E thread, 1/8-in. from fold in patch. Backstitch 1/2-in. minimum.

d. Turn suit inside out and stitch 1/8-in. from edge of damage. Backstitch 1/2-in. minimum.

16. REPLACEMENT OF LAP BELT SUPPORT STRAPS TACKING.

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
A-A-52080-B-2	Tape, Lacing and Tying, Finish B, Size 2, Type I, Black

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove damaged tacking from lap belt support strap.

b. Hand tack support strap loop together with one turn size 6 thread or lacing tape, doubled and waxed. Tack webbing as snug as possible to prevent movement, do not tack thru lap belt. Tie off. Trim end to 1/2-in. (Figure 8).

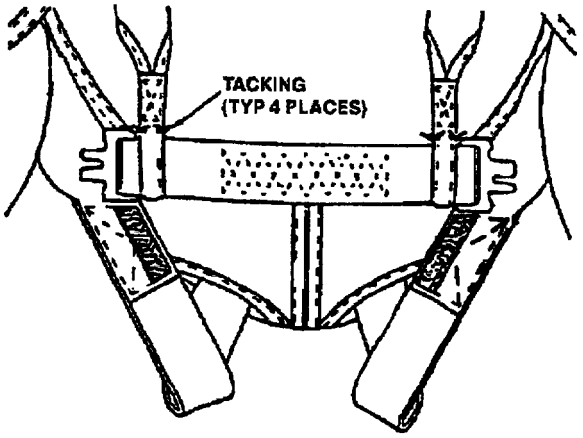


Figure 8. Lap Belt Support Strap Tacking 6.2-5594

17. REPLACEMENT OF SADDLE ANTI-ROTATION STRAP HOOK AND PILE FASTENER TAPE.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, 1-in. Wide, Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 1-in. Wide, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Placement of hook and pile fastener tape may be reversed (aircrew option).

a. Mark existing placement of tape, before removing old tape from upper adjustment strap. Carefully remove old fastener tape from existing strap.

b. Cut a 4-in. length of hook and pile fastener tape.

c. Lay hook fastener tape lengthwise over inside portion of 4-in. trapezoidal box-X stitch pattern.

d. Sew hook fastener tape over inside portion of trapezodial box-X stitch pattern. Cut top narrow end of hook fastener tape to match angled end of each trapezoidal box-X stitch.

e. Sew pile fastener tape within stitch pattern marks.

18. ATTACHMENT OF SURVIVAL ITEMS TO STOWAGE POCKETS.

Material Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type I or IA
A-A-131	Rubber Band
MIL-C-23070	Cloth, Laminated
1791A10	Tape, Duct
A-A-1799	Bag, Plastic (2)
--	Aluminum, 0.090-in. thick ±0.010-in., Any Grade

a. Attach survival items to stowage pockets (Figure 9).

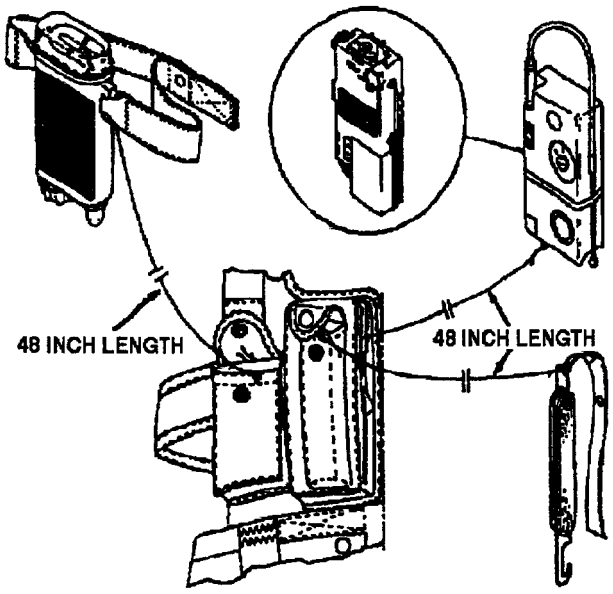
NOTE

Fake securing lines along individual survival items (excluding bandolier cord) and secure with light weight rubber band.

b. To attach Smoke and Illumination Marine Signal, cut 80-in. length of nylon cord sear ends. Tie an overhand knot in one end. Wrap end of cord two turns around one end of signal flare and tie with surgeon's knot. Turns of cord shall overlap with all knots positioned snugly against each other. Route cord to opposite end signal flare and tie in same manner as above. Cord between ties shall be drawn tight. Secure free end cord to grommet in personnel distress signal kit pocket, with a bowline knot and an overhand knot on free end.

c. To attach MK-79 signal kit, cut a 12-in. length of nylon cord and sear ends. Tie an overhand knot in one end and then a bowline knot to hole provided in one end of bandolier and then tie other free end of nylon cord to grommet in personnel distress signal kit pocket with a bowline knot followed by an overhand knot. Cut a 48-in. length of nylon cord and sear ends. Tie an overhand knot in one end, then pass thru hole in bandolier and tie off with a bowline knot. Pass other end of nylon cord thru end of personnel distress signal kit's pen gun, tie an overhand knot in end, then tie a bowline knot.

d. Secure remaining survival items, by cutting a 48-in. length of nylon cord. Tie an overhand knot in one end, then a bowline knot to survival items and then secure to grommet in pockets with a bowline followed by an overhand knot. (QA)



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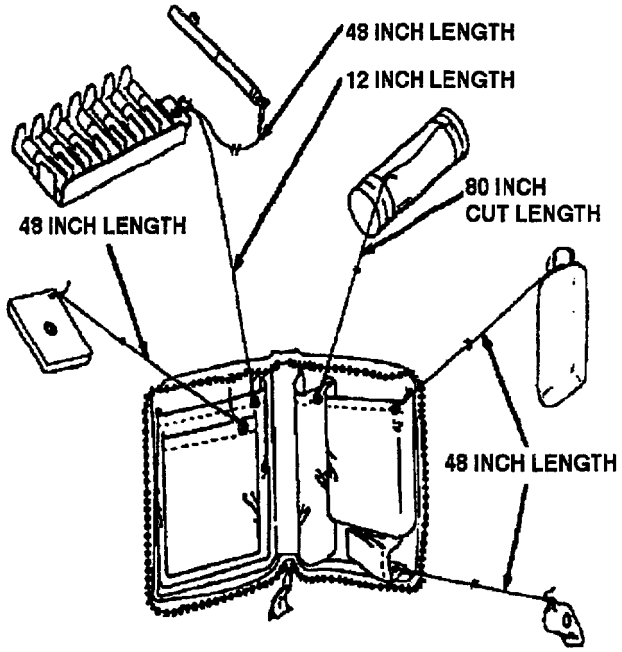

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Figure 9. Attachment of Survival Items to Stowage Pockets

e. Attach items in the HEED survival items pocket as in previous paragraphs except for the HEED bottle. Secure one end of bottle with a 24-in. length of Type I nylon cord using a surgeon's knot followed by a square knot and a bowline knot. Secure the other end to a snap hook using surgeon's knot followed by a square knot and a bowline knot. Then secure snap hook to the D-Ring on the outside of the HEED survival items pocket.

f. Cut a 48-in. length of Type I, nylon cord with strands removed or Type IA (Coreless), nylon cord and sear ends of cord.

g. Secure one end of the nylon cord to the radio/knife pocket grommet forming a 2-in. loop through the grommet and tie off using an overhand knot in one end, then tie a bowline knot.

h. Secure the other end of the nylon cord to the AN/PRC-112 series radio webbing of "V" ring using a 2-in. loop around webbing or "V" ring and tie off using an overhand knot in one end, then tie a bowline knot.

i. Place AN/PRC-112 series Radio in a 12-in. x 12-in. ziplock plastic bag.

NOTE

For AN/PRC-112B, see Paragraph 19.

j. Remove as much trapped air as possible from the ziplock bag and tape over the closed ziplock closure using a 2-in. length of duct tape.

NOTE

The Type I or IA nylon cord can exit the bag at any location on the seal line. Location of the exit point is not critical.

A bagged radio with excessive trapped air will be difficult to stow into radio/knife pocket. If difficulty is encountered during stowage continue to press radio into pocket until sufficient air escapes to permit radio/knife pocket zipper closing.

k. Place the bagged radio into a second ziplock bag and seal closure using duct tape as in step j.

l. Cut a 7 x 14-in. piece of laminated cloth and wrap around the bagged AN/PRC-112 series radio and secure with a rubber band.

m. Stow radio in radio/knife pocket. (QA)

n. Close zipper in radio/knife pocket. (QA)

NOTE

AN/PRC-112 series radios and batteries are currently undergoing rework/redesign to eliminate water leakage.

Bagging of the radio will not make it waterproof only water resistant.

Aircrew should not remove the radio from the ziplock bag until after they are in the raft.

19. BACKING PLATE FOR AN/PRC-112B.

a. Cut a 1-in. x 2 3/8-in. +1/8-in. –0-in. plate from a sheet of any grade aluminum 0.090-in. thick ± 0.010 in.

b. Radius the corners and deburr all edges.

c. Cut 2 lengths, both 2 3/8-in. x 3/4-in. of duct tape, and center lengthwise along the outboard edge of the 2 3/8-in. side of the plate, 1 on each side of the 2 3/8-in. sides and fold.

d. Cut 1 length of duct tape 6 1/2-in. long x 1-in. wide and fold one end back on itself, 1-in., to create pull tab.

e. Place the length of tape made in step d on a table with the adhesive side facing up and folded end to your right. Measure in from the right 2 inches and place the plate made in steps a through d on the adhesive to the left at the 2 inch measurement (you will have adhesive areas of tape on both sides of the plate).

NOTE

Do not cover the antenna with the tape.

f. With the AN/PRC-112B radio buttons facing up and the word "talk" closest to you and to the right, place plate made in steps a through e over the buttons with the folded edge of the tape on the right side of the radio just below the push to talk button. Fold and press the tape on to the right side of the radio body.

g. Fold and press the left side of the plate tape on to the left side of the radio body.

h. Cut a 48-in. length of Type I, nylon cord with strands removed or Type IA (Coreless), nylon cord and sear ends of cord.

i. Secure one end of the nylon cord to the radio/knife pocket grommet forming a 2-in. loop through the grommet and tie off using an overhand knot in one end, then tie a bowline knot.

j. Secure the other end of the nylon cord to the AN/PRC-112B radio webbing of "V" ring using a 2-in. loop around webbing or "V" ring and tie off using an overhand knot in one end, then tie a bowline knot.

k. Place AN/PRC-112B radio in a 12-in. x 12-in. ziplock plastic bag.

l. Remove as much trapped air as possible from the ziplock bag and tape over the closed ziplock closure using a 2-in. length of duct tape.

NOTE

The Type I or IA nylon cord can exit the bag at any location on the seal line. Location of the exit point is not critical.

A bagged radio with excessive trapped air will be difficult to stow into radio/knife pocket. If difficulty is encountered during stowage continue to press radio into pocket until sufficient air escapes to permit radio/knife pocket zipper closing.

m. Place the bagged radio into a second ziplock bag and seal closure using duct tape as in step l above.

n. Cut a 7 x 14-in. piece of laminated cloth and wrap around the bagged AN/PRC-112B radio and secure with a rubber band.

o. Stow radio in radio/knife pocket. (QA)

p. Close zipper in radio/knife pocket. (QA)

NOTE

AN/PRC-112B radios and batteries are currently undergoing rework/redesign to eliminate water leakage.

Bagging of the radio will not make it waterproof only water resistant.

Aircrew should not remove the radio from the ziplock bag until after they are in the raft.

20. FABRICATION OF CRU-103 OXYGEN REGULATOR POCKET.

Materials Required

Specification or Part Number	Nomenclature
MIL-C-7219	Cloth, Nylon, Duck, Sage Green, Type III, Class 3
PIA-W-4088	Webbing, Nylon, Type VIII, OD, Class 1, 1A, or 2
PIA-T-5038	Tape, Nylon, Type III, Green, Class 1 or 1A
PIA-T-5038	Tape, Nylon, Type IV, 1-in. Class 1 or 1A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MIL-F-21840	Fastener Tape, Pile, 1-in., Type II, Class 1
MIL-F-21840	Fastener Tape, Hook, 1-in., Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 2-in., Type II, Class 1
MIL-F-21840	Fastener Tape, Hook, 2-in., Type II, Class 1
MS27983-1	Cap, Snap, Fastener
MS27983-2	Socket, Snap, Fastener
MS27983-3	Stud, Snap, Fastener
MS27983-4	Eyelet, Snap, Fastener

NOTE

Refer to NAVAIR 13-1-6.7-4, Aircrew Personal Protective Equipment (Protective Assembly, Aircrew Survival - Armor (A/P22P-18(V)), Figure 13-14A for pattern pieces “a” and “b” only, and Paragraph 3-41A for regulator pocket folding procedures.

a. Mark and sear cut patterns “a” and “b” using sage green nylon duck cloth.

b. Place “a” on top of “b” and sew around 1 3/8-in. circle on “a”.

c. Cut out inside of hole, ensuring to stay 1/8-in. from stitch line, and push remainder of “b” through “a”.

d. Pull “b” tight and sew top stitch, 1/8-in. from folded edge, around hole. Upon completion, sew “b” to “a”.

e. Sew 3-in. piece of 2-in. pile fastener tape on top inside flap in accordance with pattern "a".

f. Sew 3-in. piece of 2-in. hook fastener tape, 3/4-in. below top of bottom outside flap in accordance with pattern "a".

g. Sew 9 1/2-in. piece of Type VIII nylon webbing, centered in pocket and 1/2-in. down from bottom of 1 1/8-in. hole, to bottom of pocket.

h. Cut out, sear and sew double row of stitching around outside diameter of 1-in. hole.

i. Invert pocket, and in accordance with folding and sewing marks on pattern "a", fold lower left outside edge of pocket flap over upper left edge of pocket. Sew pocket flap to edge of pocket using 2 rows of side-by-side stitching, 3/8-in. from edge. Stitching will be from top to bottom of flap and then across bottom of flap to form left side of pocket.

j. Turn pocket right side out and sew 1-in. Type III textile tape around outer edge of pocket, using 2 rows of stitching, 1/8-in. and 3/8-in. from edge, to prevent fraying.

k. Sew 3-in. piece of 2-in. pile tape to outside of upper right flap in accordance with pattern "a".

l. Sew 3-in. piece of 2-in. hook tape to inside of lower right flap in accordance with pattern "a".

m. Install 2 pull-the-dot caps and sockets in accordance with markings on pattern "a". Ensure that caps are installed on the outside of top flap and the sockets are installed over the 2-in. pile velcro tape on the inside of the flap, with locking lugs on sockets facing towards the 1 1/8-in. hole on top flap.

n. Install 2 pull-the-dot studs and eyelets on the inside of the lower pocket in accordance with markings on pattern "a". Ensure the eyelets are installed on the inside of the pocket and the studs are installed on the outside of the pocket over the 2-in. hook tape.

o. Fold the pocket and insert the oxygen mask hoses and CRU-103 regulator into the pocket, snap the cover flap over the regulator, and set aside for fitting.

21. FABRICATION OF GARMENT EXTENDER PANEL.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, Type II, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
PIA-T-5038	Tape, Binding 3/4-in. Wide, Type III, Class 1 or 1A
V-F-106	Slide Fastener, Type IV, Style #8, Size MH, Brass with Black Chemical Finish, Sage Green Tape Available from: Lenzip Manufacturing 1900 W. Kinzie St. Chicago, IL 60622-6243 Style #1031
PIA-W-4088	Webbing, Nylon, Type VIII, 1 23/32-in., Class 1 or 1A
	-or-
PIA-T-5038	Tape, Nylon, Type VIIIa, 3-in., Class 1 or 1A

NOTE

Permisible to use 1 23/32-in. webbing in place of 3-in. webbing. To make the garment extender panel, 2 or 3 pieces of 1 23/32-in. webbing may be sewn together using size E thread, two rows, back stitch 1/2-in.

a. Measure webbing and match the length of existing slide fastener (1 23/32-in. webbing or 3-in. webbing), and add 3/4-in. for 3/8-in. turn under at each end (Figure 10).

b. Existing slider may be placed as necessary (on right or left hand side) to match existing slide fastener.

c. Sear exposed ends of nylon webbing. Avoid forming sharp edges while hot knifing or searing.

d. Center zipper, full length of panel and stitch to panel (Figure 10, 11, and 12).

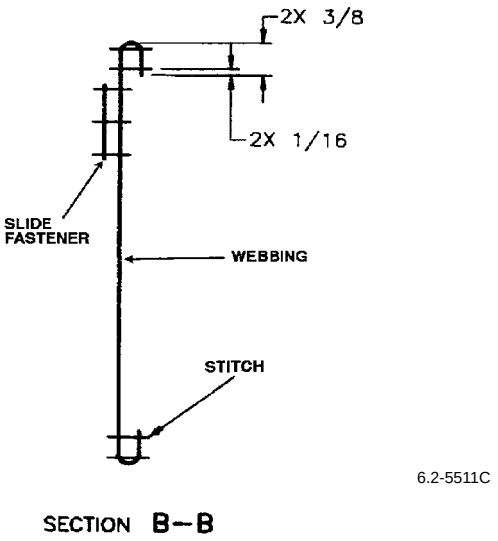

Figure 10. Alignment of Zipper

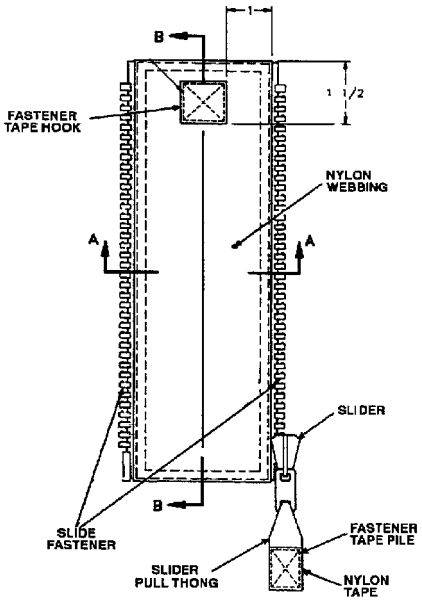

Figure 11. Center Zipper

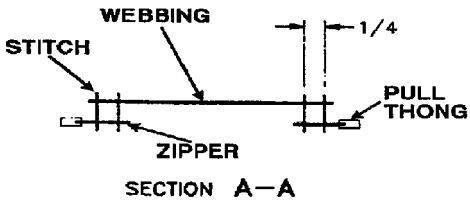

Figure 12. Stitch to Panel

e. Cut a 7/8 x 7/8-in. piece of hook fastener tape. Sew hook tape on panel 1-in. from edge of harness zipper and bottom edge of hook tape 1 1/2-in. from top of panel (Figure 11).

f. Sew hook fastener tape with size E thread in a box-X stitch pattern (Figure 11).

g. Cut a 3/4 x 4 3/4-in. length nylon tape. Sear both ends. Avoid forming sharp edges while hot knifing or searing.

h. Weave new pull thong thru eye in slider pull tab. Place sides together with ends even and stitch together at end using 3/4-in. long box-X stitch pattern including a 3/4-in. length of pile tape (Figure 12).

i. Install garment extender panel (Figure 13).

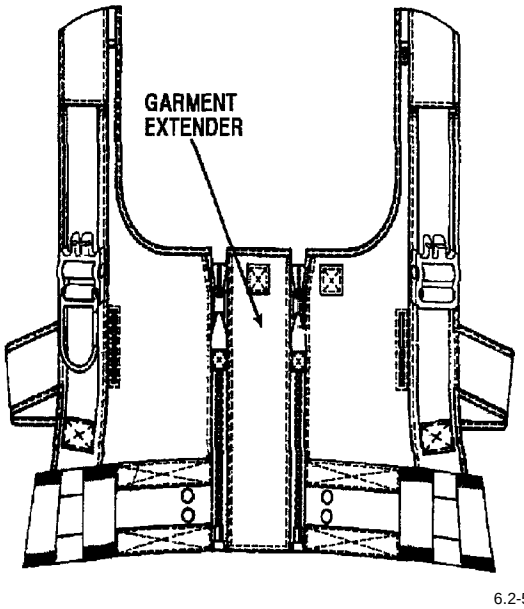

Figure 13. Garment Extender

22. ATTACHMENT OF HOOK AND PILE FASTENER TAPE TO INNER GARMENT VEST.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, 1 x 7 1/2-in. Long, Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 1 x 14-in. Long, Type II, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Placement of hook and pile fastener tape is per aircrew's preference.

a. Cut three lengths of hook fastener tape 1 x 7 1/2-in. long. Stitch pile fastener tape 1/8-in. from edge of tape and backstitch 1/2-in. (Figure 14).

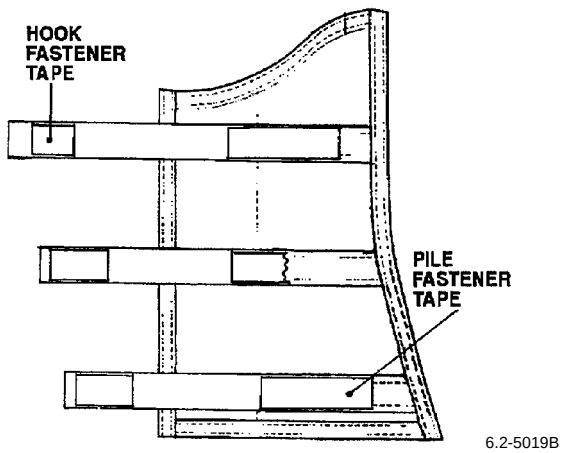

Figure 14. Attachment of Fastener Tape

b. Cut three lengths of pile fastener tape 1 x 14-in. long. Stitch pile fastener tape 1/8-in. from edge of tape and backstitch 1/2-in. (Figure 14).

23. HARNESS INSPECTION.

24. GENERAL.

a. The harnesses shall be inspected upon initial issue and at each scheduled parachute harness inspection.

25. PCU-56/P PARACHUTE RESTRAINT HARNESS ASSEMBLY 90-DAY INSPECTION.

a. The 90-day inspection shall include a service life check and a parachute harness inspection.

b. Make proper entries on Aircrew Personal Equipment Record (OPNAV 4790/159). (QA)

c. All maintenance actions performed on an aircrew's equipment shall be documented on a VIDS/MAF.

d. Copy 3 of VIDS/MAF will be placed in the Aircrew's Flight Equipment file below the Aircrew Personal Equipment Record (OPNAV 4790/159) until copy 1 is received from the data services facility.

e. Retain copy 1 for a minimum of 6 months or one complete inspection cycle, which ever is greater.

26. AIRCREW RESTRAINT HARNESS 360-DAY INSPECTION.

a. The 360-day inspection shall include a service life check, a parachute harness inspection, and a suspended aircrew fit check in the restraint harness assembly.

b. Make proper entries on Aircrew Personal Equipment Record (OPNAV 4790/159). (QA)

c. All maintenance actions performed on an aircrew's equipment shall be documented on a VIDS/MAF.

d. Copy 3 of VIDS/MAF will be placed in the Aircrew's Flight Equipment file below the Aircrew Personal Equipment Record (OPNAV 4790/159) until copy 1 is received from the data services facility.

e. Retain copy 1 for a minimum of 6 months or one complete inspection cycle, which ever is greater.

27. PARACHUTE RESTRAINT HARNESS SUSPENDED FIT CHECK.

a. Suspend the aircrew above the deck and simulate mild opening shock by having the aircrew pull him/herself up by the risers to about 12 to 15-in. dropping back into the harness to induce settling while observing the change (rise) in location of the canopy release assemblies. If the harness is properly sized, fitted and adjusted, with full body weight of the aircrew supported by the main sling saddle, the change (rise) of the canopy release assemblies will be minimal and equal on both sides. Final position of the canopy release should not be higher than the aircrew's jaw bone nor indicate a loose fit of the harness. A major change (rise) may indicate that the body weight is not supported by the main sling saddle, the harness is not the proper size, or the harness has been improperly adjusted.

28. SERVICE LIFE CHECK.

NOTE

Service life shall begin when harness is first placed in service. When assembly reaches its service life limit, it shall be removed from service and forwarded to supply for disposition. When an in service harness lacks start of service date, service life shall expire 12 years from date manufacture. When harness assembly lacks legible date of manufacture or date placed in service and a service/total life check cannot be verified by the Aircrew Personal Equipment Record (OPNAV 4790/159), the harness assembly shall be considered non-RFI and remove from service.

a. The service/total life of PCU-56/P parachute restraint harness is 12 years from date it was placed in service or 15 years from date of manufacture, whichever occurs first.

NOTE

When harness is removed from service, all parachute and lap belt adapter hardware shall be removed and screened.

b. Check markings for completeness, legibility and agreement with assembly records.

c. Compare configuration of parachute restraint harness assembly to that presented in WP 009 04 Illustrated Parts Breakdown and Record of Technical Directives.

29. PARACHUTE RESTRAINT HARNESS INSPECTION.

a. Shoulder canopy release adapter for corrosion, distortion, presence of slide bar, sharp edges, routing of webbing and security of pin and setscrew and presence of torque seal.

b. Riser restraint keeper for proper installation, security and attachment.

c. Gated D-Ring at right shoulder for corrosion, distortion, cracks, sharp edges and proper installation (gate inboard).

d. Box-X stitching on end of right shoulder strap (must be doubled rolled and machine stitched. Hand tacking is not acceptable).

e. Chest strap friction adapter(s) for corrosion, distortion, cracks, presence of slide bar, sharp edges and security of attachment.

f. Chest strap for proper installation, security and attachment of hook and pile fastener tape.

g. Pull thong for proper installation, security and attachment of hook and pile fastener tape.

h. Harness links at rear inside of suit for corrosion, distortion, cracks, sharp edges, proper routing and condition of harness webbing.

i. Harness adapter assembly links at the bottom of the main sling for corrosion, distortion, cracks, sharp edges and proper routing of harness webbing.

j. Slide fastener for corrosion, missing teeth, presence of slider, security of attachment, pull thongs and ease of operation.

k. Oxygen Regulator Mounting Bracket and Plate for corrosion, security, attachment of rivets, distortion, cracks, sharp edges and proper installation.

l. Survival Items Stowage Pockets for corrosion on slide fasteners, security of attachment, tackings, pull thongs for ease of operation.

m. Survival Items inspect per NAVAIR 13-1-6.5.

n. Life preserver retention system for cuts, rips, frayed or weakened webbing, security of stitching and presence and condition of snap fasteners.

o. Lap belt support strap loop tackings for security. Tackings (4 places) shall be 1/8-in. above lap belt.

p. (If installed) Lap belt quick-release adapter for corrosion, distortion, sharp edges and security of attachment.

q. Hooks and eyelets for damage and security of attachment (If installed).

r. Saddle anti-rotation straps for proper installation, security and proper placement of hook and pile fastener tape and tackings.

s. Anti-rotation link assemblies adapter tabs for cuts, tears, fraying, deterioration, contamination and security of stitching and tackings.

t. Pockets, attachment of survival items.

u. Mask storage bag for cuts, tears, contamination and condition of snap fastener (If installed).

v. (If required) Check for proper installation, condition and security of LPU D-Ring attachment tabs.

w. Fabric panels for cuts, tears, fraying, deterioration, contamination and security of stitching.

x. Webbing for cuts, tears, fraying, contamination, deterioration and security of stitching.

30. 90-DAY INSPECTION OF HELICOPTER EMERGENCY EGRESS DEVICE (HEED) SRU-36/P.

a. Inspect per NAVAIR 13-1-6.7-4.

31. INSTALLATION OF RISER RESTRAINT KEEPER (AIRCREW OPTION).

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon, 2 ft., Type VIII
MIL-F-21840	Fastener Tape, Hook, 2-in., Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 2-in., Type II, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Sear two pieces of webbing, 11-in. long. Avoid forming sharp edges while searing the ends of the webbing.

b. Cut two pieces of hook fastener tape and two pieces of pile fastener tape 1-in. long.

c. Position one piece of hook and pile fastener tape (faced up) on opposite ends of each 11-in. webbing.

NOTE

The 1-in. cut length of hook and pile fastener tape shall be positioned on the webbing width.

d. Machine stitch around edge of hook and pile fastener tapes with a box stitch.

e. Fold the keepers in half to match the hook and pile fastener tapes together.

f. Custom fit restraint riser keepers to the aircrew's harness assembly as follows:

(1) Insure that the keepers are installed in two places, sewn to the harness garment vertical binding tape and positioned above the canopy release adapter (Figure 15).

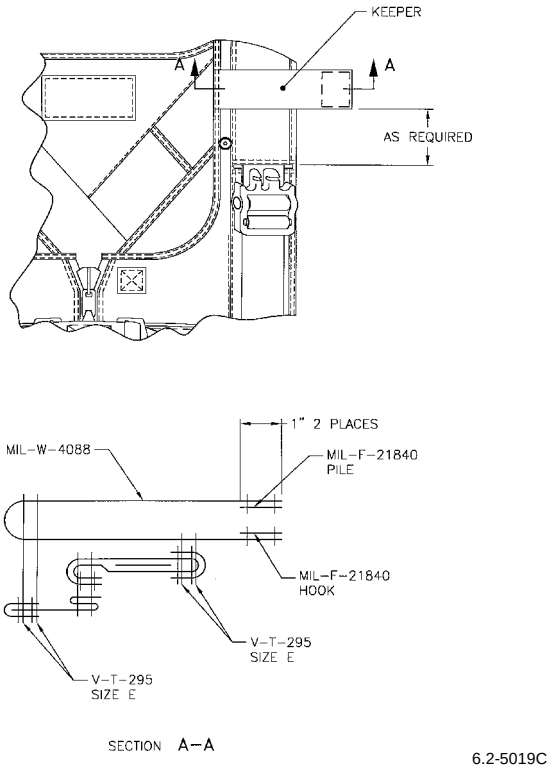

Figure 15. Riser Restraint Keeper

CAUTION

Avoid stitching across the harness webbing or garment channel.

(2) The opening ends of the left and right riser restraint keepers shall be outboard.

g. After aircrew connects the SEAWARS, then place the left and right risers between the applicable keeper and fasten the hook and pile fastener tapes.

h. Make proper entries on Aircrew Sytems Record (OPNAV 4790/138). (QA)

32. MODIFICATION OF CHANNEL WEBBING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Physically inspect harness to verify that the longer length of the Type IV webbing garment keeper, located at or above the main sling lower adjustment buckle, does indeed run parallel to the main sling of harness and the adjustment buckle cannot fit through the channel with ease. If this occurs, proceed with the following procedures:

a. Mark two lower corners of webbing for placement and reattachment.

b. Remove the four outside bartacks attaching flotation panel to garment on each side (8 total).

c. Remove outside rows of stitching attaching Type IV webbing to garment.

CAUTION

Take special care not to cut garment.

d. Remove Type IV webbing with scissors cutting as close as possible to binding tape, without cutting garment.

CAUTION

Do not sear edge of Type IV webbing located under binding tape.

e. After removal, sear edges of Type IV webbing. Avoid forming sharp edges while hot knifing or searing.

f. Rotate Type IV webbing 90 degrees, ensuring that the longest length of webbing lies across the channel. Reattach using size E thread, two rows of stitching and backstitch 1/2-in. Ensure that the lower corners of the Type IV webbing are placed at the previously marked locations (see step a).

CAUTION

Upon reattachment of Type IV webbing ensure that:

(1) The stitching does not go through the flotation panel.

(2) The harness main sling is placed into the channel with no twists prior to attachment of second side of channel.

g. Attachment of one side of Type IV webbing shall be located on the binding tape, attachment of second side of Type IV webbing shall be located on inside seam of garment.

h. Restitch bartacks from where removed (see step b) using three rows of size E thread and backstitch 1/2-in.

i. Make proper entries on Aircrew Systems Record (OPNAV 4790/138). (QA)

33. MODIFICATION OF MAIN SLING CHANNEL WEBBING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Physically inspect harness to verify that the longer length of the Type VIII webbing main sling channel keeper, located above the main sling lower adjustment buckle, is not excessively loose. If excessively loose, proceed with the following procedures:

a. Remove three rows of stitching on the Type VIII webbing making up the main sling channel keeper.

CAUTION

Take special care not to damage webbing.

b. Trim length of channel webbing to 5 3/8-in. Excess shall be cut from longest side of webbing. Sear ends, avoid forming sharp edges.

c. Reattach channel webbing, left hand and right hand, with three rows of size E thread, around main sling webbing (three layers). Edge distance for stitching shall be 1/4-in. from edge of channel webbing. Unweave webbing forming main sling prior to modification, if necessary.

d. Make proper entries on Aircrew Systems Record (OPNAV 4790/138). (QA)

34. PARACHUTE RESTRAINT HARNESS POOL.

Materials Required

Specification or Part Number	Nomenclature
MIL-W-5664	Webbing, Elastic, Cotton, Type I, Class 2, 3/4-in. long
MS51940-3S	Buckle
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Size and fit parachute restraint harness per WP 009 00.

b. Adjust main sling webbing per WP 009 02.

NOTE

Do not cut excess webbing from harness.

c. The chest strap webbing shall be left at full length without velcro installed. After the aircrew has been fitted, excess chest strap webbing will be secured with a 3/4-in. wide elastic webbing keeper.

d. Fold the lap belt support straps 3/4-in. wide, starting 1 1/2-in. from the point of connection to the main webbing. Sew the full length at the required 3/4-in. width.

e. Pass the end of the lap belt support webbing through the buckle, then around the lap belt, and back through the buckle. Do the same for the opposite side. Adjust to the aircrew for proper fit.

f. After fitting, tack buckle with one turn double size E thread. Tie off.

g. Hand tack support strap loop together with one turn size 6 thread, doubled and waxed. Tack webbing as snug as possible to prevent movement, do not tack thru lap belt. Tie off. Trim end to 1/2-in. (Figure 8).

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ORGANIZATIONAL MAINTENANCE

ORIGINAL ISSUE RIGGING PROCEDURES

PCU-56/P SERIES PARACHUTE RESTRAINT HARNESS ASSEMBLY

PART NO. 814AS150

List of Effective Work Package Pages

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Reference Material

Introduction, Organizational, Intermediate and Depot Maintenance With Illustrated Parts Breakdowns, Emergency Personnel and Drogue Parachute Systems ..... WP 002 00
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration ..... WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment ..... WP 005 00

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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 623	14 Feb 96	Riser Restraint Keeper (RAMEC P-08-95)	1 Jul 96	31 Dec 2003
ACC 633 Rev A	13 Sep 00	Replacement of LPU-23/P Floatation Device and LPU-33/P LPFC with LPU-36/P on PCU-33/P (Series) and PCU-56/P (Series) Integrated Parachute Restraint Harnesses (96A30) (ECP-16387)	1 Jan 01	30 Jun 2008
ACC 633 Rev A, Amendment 1	29 Oct 01	Replacement of LPU-23/P Floatation Device and LPU-33/P LPFC with LPU-36/P on PCU-33/P (Series) and PCU-56/P (Series) Integrated Parachute Restraint Harnesses (96A30) (ECP-16387) and to include the PCU-58/P (Series) Integrated Parachute Restraint Harness to the basic equipment	1 Jun 02	30 Jun 2008
ACC 674	22 Jan 03	Modification of the Integrated Parachute Restraint Harness, PCU-56P/(WUC 96A3800), PCU-57P/(WUC 96A3A00) and PCU-58P/(WUC 96A3B00) for Joint Helmet Mounted Cueing System (JHMCS)	1 Mar 03	31 Dec 2004

1. GENERAL.

2. This work package (WP) provides rigging procedures for the original issue of the parachute restraint harness assembly.

3. Quality Assurance (QA) points have been included in the rigging procedures. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Witnessing of QA steps may be delayed by QA if their satisfactory completion is verified in later steps.

4. All stitching shall use size E thread.

5. PRELIMINARY PROCEDURES.

6. To prepare the parachute restraint harness assembly for original issue rigging, do as follows:

Support Equipment Required

Part Number	Nomenclature
—	Needle, Sewing
—	Rubber Stamp Kit -or- Adjustable Metal Stencil -or- Printing Set
Style No. 8	
	-or-
GG-P-655	Printing Set
—	Stamp Pad

Materials Required

Specification or Part Number	Nomenclature
1979AS838-1 -or- 015-11366-1	Adapter Assembly, Lapbelt
990065-1 -or- 015-710001-1	Adjuster Assembly, Canopy Release
MIL-C-12369	Cloth, Ballistic, Class I
MIL-C-7219	Cloth, Nylon Duck, Type III, Class 3
MIL-C-5040	Cord, Nylon, Type I or IA
MS51925-4	Dee-Ring
MIL-F-21840	Fastener Tape, Hook, 1-in. Wide Type II, Class 1
MIL-F-21840	Fastener Tape, Hook, 1 1/2-in. Wide Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 1-in. Wide, Class 1
MIL-F-21840	Fastener Tape, Pile, 1 1/2-in. Wide, Class 1
TT-I-1795	Ink, Marking, Black
MIL-I-6903	Ink, Marking, Parachute, Light Blue
A-A-131	Rubber Band
F-900 Torque Seal (Color Optional)	Sealing Compound
MIL-S-22473	Sealing Compound, Grade A
122-10935-3	Setscrew
MS27983-1	Snap, Fastener, Button
MS27983-4	Snap, Fastener, Eyelet
M43770/12	Snap Hook
MS27983-2N	Socket, Snap Fastener
MS27983-3	Stud, Snap Fastener
A-A-52080-B-2	Tape, Lacing & Tying Finish B, Size 2 Type I, Black
PIA-T-5038	Tape, Nylon, Type III, Class 1 or 1A
PIA-W-4088	Tape, Nylon Type II, Class 1, 1A or 2
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
PIA-W-4088	Webbing, Nylon, Type IV, 3-in. Wide Class 1, 1A or 2
MIL-W-5664	Webbing, Textile, Elastic, Type I, Class 1 or 1A

7. APPLICATION OF MARKINGS.

8. When a harness assembly is placed in service, the month/year of opening manufacturer's individual shipping container shall be stenciled on harness as follows:

a. When using a stamp pad, moisten pad with ink. Pad must be evenly coated and free of clots.

b. Make a test impression to determine correctness of marking and inking.

c. Mark date placed in service (month/year) on center of lapbelt strap outer surface using 1/2-in letters and on the label in 1/4-in letters.

d. Verify correctness of all markings. (QA)

e. Allow markings to dry for 20 to 30 min.

f. Record in remarks section on Aircrew Systems Record (OPNAV 4790/138), date of manufacture, date placed in service, the top assembly part number of the configured assembly and size by part number.

9. RIGGING.

10. ATTACHMENT OF CANOPY RELEASE ADAPTER.

WARNING

Harness webbing must be properly routed thru release adapter.

a. Place canopy release adapter on harness with notch facing outward.

b. Form a loop in adjustment strap and place loop thru adapter from back to front.

WARNING

Insure friction slide bar is correctly installed, the word stamped FRONT will face outboard (same direction as notches).

c. Place friction slide bar thru loop of adjustment strap (word FRONT forward) and turn to an angle to allow insertion into adapter.

d. Form loop in main sling harness webbing, using two forward layers. Place loops thru adapter above adjustment strap loop (Figure 1).

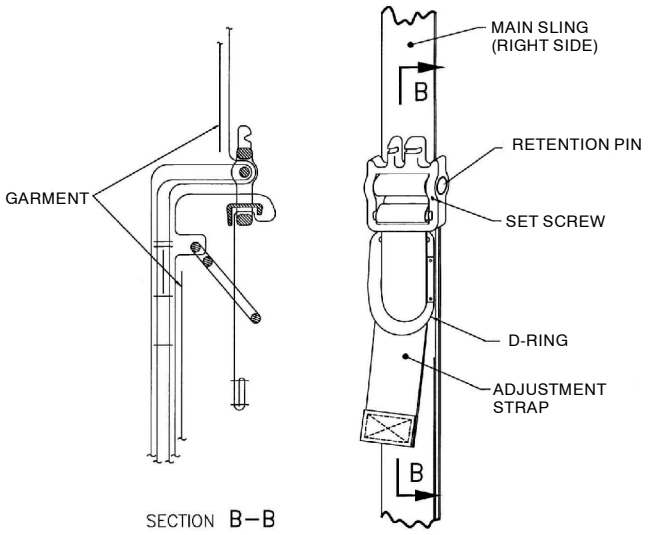


Figure 1. Replacement of Canopy Release Adapter and D-Ring

NOTE

Setscrew is a one time use item (if a new setscrew is not available reuse of a setscrew shall require application of sealing compound MIL-S-22473 Grade A to threads).

e. Install retention pin and setscrew.

f. Apply torque seal to screwhead. (QA)

11. ATTACHMENT OF LAPBELT ADAPTER ASSEMBLY.

CAUTION

Do not pinch webbing with tools when removing or installing lapbelt adapters.

a. Install slide pin in webbing loop of lapbelt.

b. Align replacement lapbelt adapter with notched side of prongs inboard toward wearer, on slide pin.

c. Apply sealing compound to threads of the two shoulder screws. Install screws thru holes in lapbelt adapter.

d. Thread securing screws into slide pin.

e. Tighten securing screws (QA).

12. INSTALLATION OF GATED D-RING.

Materials Required

Specification or Part Number	Nomenclature
Deleted	
1979AS975-1	Ring Assembly, Snaplink, Rescue (Gated D-Ring)
V-T-295	Thread, Nylon Size E, Type I or II, Class A

a. Install gated D-Ring (gate inboard) per Figure 1.

b. Leave 8-in. of webbing from bottom of canopy release adapter to end of webbing, cut and sear end. Fold free end of webbing and box-X stitch with size E thread, backstitch 1/2-in. Folded stitched webbing must face outward (Figure 1). (QA)

13. ATTACHMENT OF SURVIVAL VEST TAB AND DEE-RING.

Materials Required

Specification or Part Number	Nomenclature
MS51925-4	Dee-Ring (2)
PIA-T-5038	Tape, Nylon, Type IV, Class 1 or 1A, 1-in. Wide, 6 1/4-in. Long
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Cut a length of nylon tape 6 1/4-in. and sear ends of webbing. Avoid forming sharp edges while hot knifing and searing.

b. Reeve nylon webbing thru Dee-Ring and fold in half. Sew tape together with double row of stitching 3/8-in. from Dee-Ring. Backstitch 1/4-in. (Figure 2).

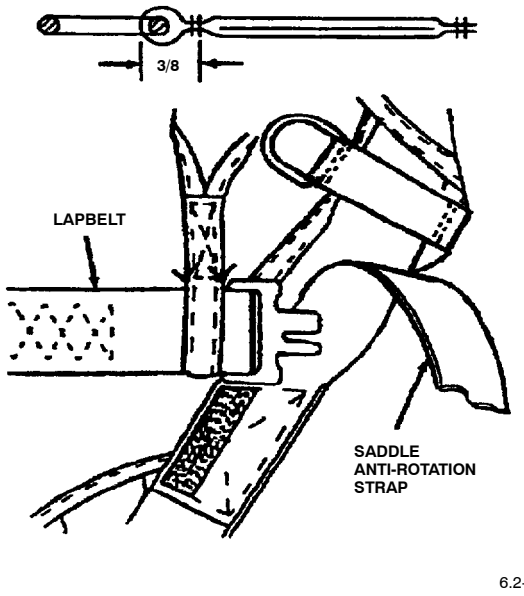


Figure 2. Attachment of Tab with Dee-Ring to Harness

NOTE

The Dee-Ring and tab should be located above the lapbelt.

c. Place Dee-Ring and tab around harness groin strap webbing and sew ends together 1/8-in. from end with a double row of stitching. Backstitch 1/4-in. Ensure that stitching does not pass thru harness webbing (Figure 2). (QA)

14. ATTACHMENT OF SURVIVAL STOWAGE POCKETS.

Materials Required

Specification or Part Number	Nomenclature
MIL-C-7219	Cloth, Nylon Duck, Type III, Class 3
	-or-
MIL-C-12369	Cloth, Ballistic, Class I

MIL-F-21840	Fastener Tape, Hook, 1-in. Wide, Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 1-in. Wide, Class 1
814AS805-1	Pocket, HEED Survival Item Stowage
829AS145-1	Pocket, Strobe Light
829AS147-20	Pocket, Survival Item Stowage
829AS146-1	Pockets, Radio and Knife
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
PIA-W-4088	Webbing, Nylon, Type III, Class 1, 1A, or 2, 3-in. Wide

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

Survival item pockets are authorized on all size harnesses. A local determination of acceptability must be made on the smaller size (including custom made) harnesses. Additionally, small stature aircrew who have difficulty with the placement of the chest strap should use a survival vest vice pockets.

a. On left panel, center webbing, full length of panel and stitch to panel before stitching to the harness (Figure 3).

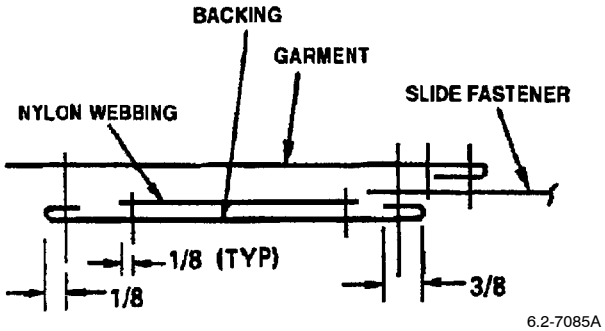


Figure 3. Cross Section of Backing Panel

b. Add backing material to inside surface of harness left and right front panels. Fold the backing material 3/8-in. on edges of left and right panels and stitch to garment 1/8-in. from edge (Figure 4).

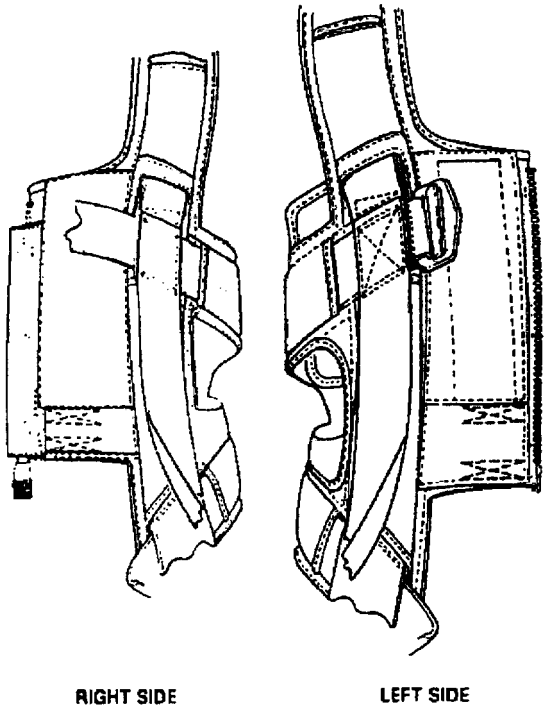


Figure 4. Addition of Backing Material

c. Install radio/knife pocket on right side of harness, align bottom of pocket with harness securing webbing assembly for LPU and along slide fastener fold line (Figure 5). (QA)

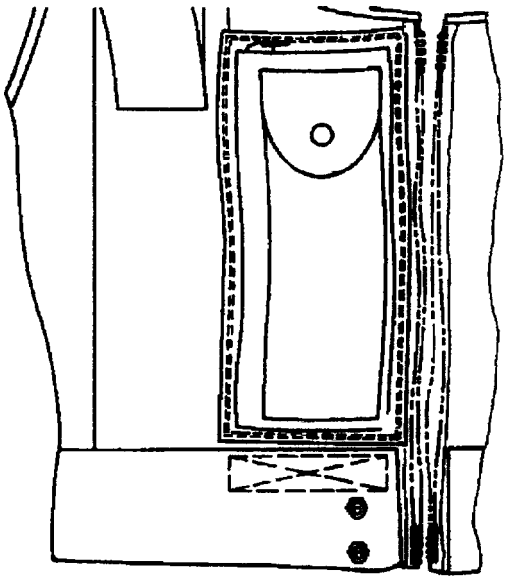


Figure 5. Attachment of Radio/Knife Pocket

WARNING

Do not stitch thru harness shoulder straps or thru fabric channels that encase the straps. Do not stitch thru the chest strap.

d. Sew a double row of stitching around pocket 1/8-in. from edge. Do not stitch into channel area.

NOTE

Bound edges of strobe light pocket and radio/knife pocket may overlap on small size harnesses.

e. Install strobe light pocket, align pocket binding tape with channel fold line, align bottom of strobe light pocket 1-in. above edge of webbing. Overlap pocket binding tape on top of radio/knife pocket binding tape and double stitch 1/8-in. from edge (Figure 6). (QA)

NOTE

Do not stitch over webbing channel.

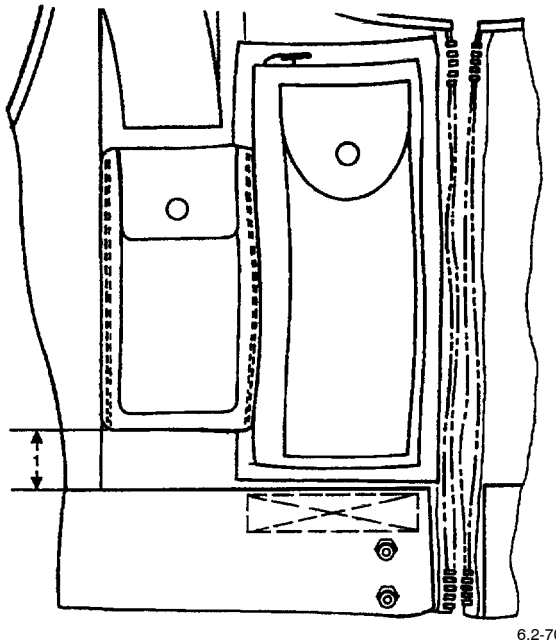


Figure 6. Attachment of Strobe Light Pocket

g. Position oxygen hose securing tab to bottom right edge survival items stowage pocket and bar tack. Position second oxygen hose securing tab to life preserver securing belt 1/4-in. from top and centered between second and third loops on left side.

h. (OBOGS) Position of oxygen securing tab(s) to life preserver securing belt 1/4-in. from top and located in a position for each aircrew's preference. To keep the oxygen hose from blocking access to the left aircraft console.

NOTE

Additional tabs may be added as required and placement of existing tabs may vary to obtain a comfortable routing of oxygen hose.

i. Attach survival items stowage pocket to harness, align pocket edge 4 1/4-in. from edge front panel material (medium size harness and smaller align on seam). Sew a double row of stitching 1/8-in. from edge of pocket, sew pocket on webbing channel fold line (Figure 7). (QA)

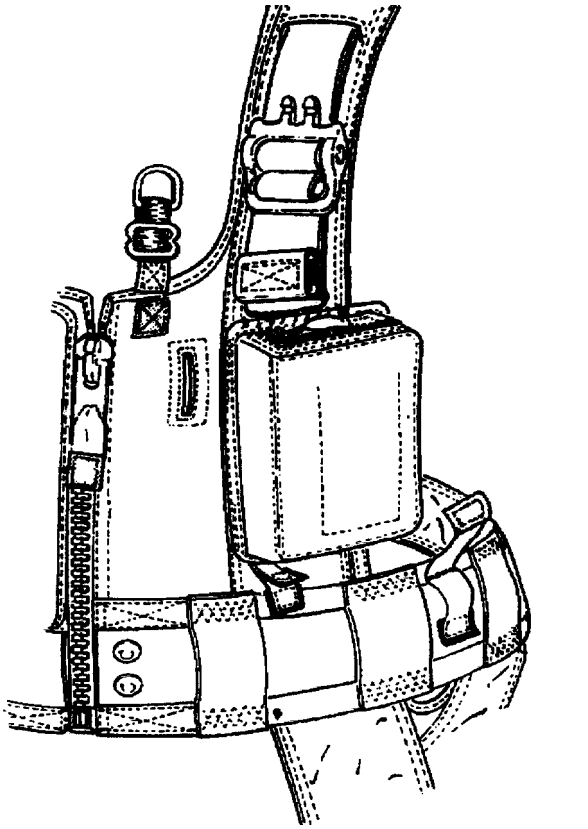
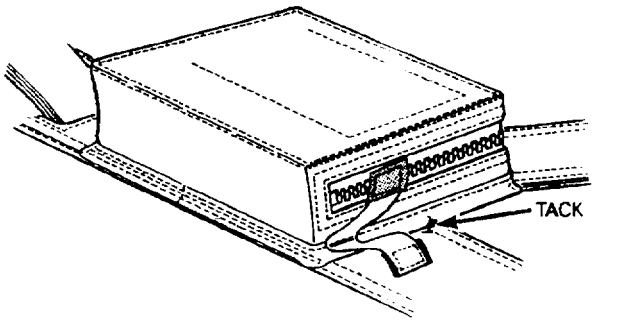


Figure 7. Attachment of Survival Items Stowage Pocket

WARNING

Do not stitch thru harness webbing, or over webbing channel.

j. Tack survival pocket to main sling, to right of oxygen securing tab with two turns of size 6 thread, single and waxed; tie off (Figure 8). (QA)



6.2-7090

Figure 8. Tacking of Survival Items Stowage Pocket to Main Sling

k. Hand tack pocket to left side of harness with two turns of size 6 thread, single and waxed; tie off. (QA)

l. Hand stitch pocket over webbing channel with one turn of size 6 thread, doubled and waxed. Start stitch with two overhand knots followed by a whip stitch and secure with two overhand knots (Figure 9). (QA)

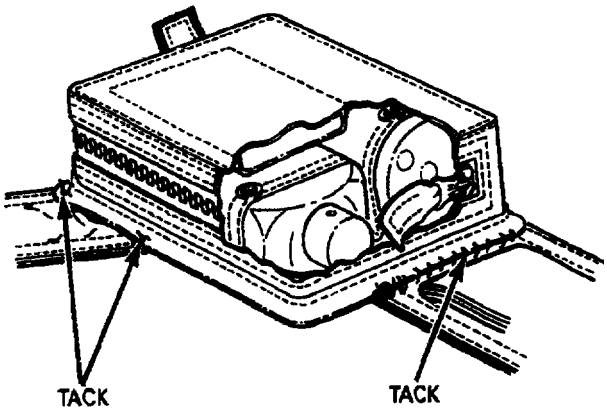


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Figure 9. Hand Stitch Pocket Over Webbing

15. ATTACHMENT OF LPU STRAPS.

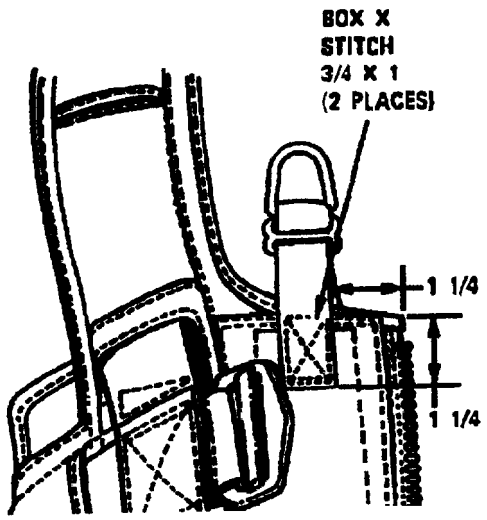
Materials Required

Specification or Part Number	Nomenclature
MS51925-4	Dee-Ring (2)
MS51940-3S	Loop, Slide (2)
PIA-T-5038	Tape, Nylon, Type IV, Class 1 or 1A, 1-in. Wide, 18-in. Long

a. Cut two lengths of nylon webbing 1-in wide and 9-in. long, and sear end of webbing. Avoid forming sharp edges while hot knifing and searing.

b. Sew one length of webbing on the left panel back side, above the zipper stop 1 1/4-in. from top of panel and 1 1/4-in. from edge of zipper, with a box-X stitch 3/4 x 3/4-in (Figure 10).

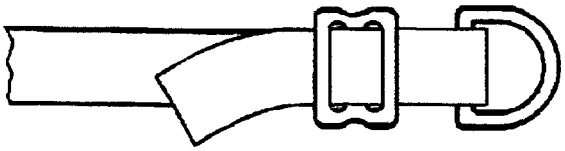
c. Sew the other length of webbing on right panel back side, above zipper stop 1 1/4-in. from top of panel and 1 1/4-in. from edge of zipper, with a box-X stitch 3/4 x 3/4-in (Figure 10).



6.2-5590C

Figure 10. Attachment of LPU Straps

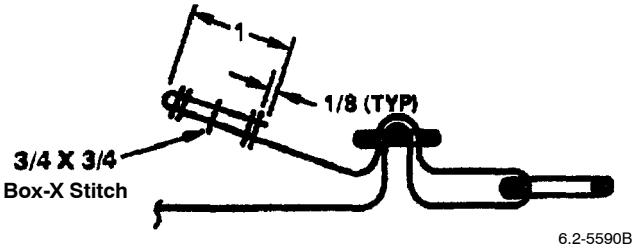
d. To attach the slide loop and Dee-Ring. Pass the end of webbing thru the slide loop, around the Dee-Ring and back thru the slide loop (Figure 11).



6.2-5590A

Figure 11. Attachment of Slide Loop and Dee-Ring

e. Adjust to the aircrew for proper fit. Cut excess webbing; fold over 1-in. and box-X stitch 3/4 x 3/4-in. (Figure 12).

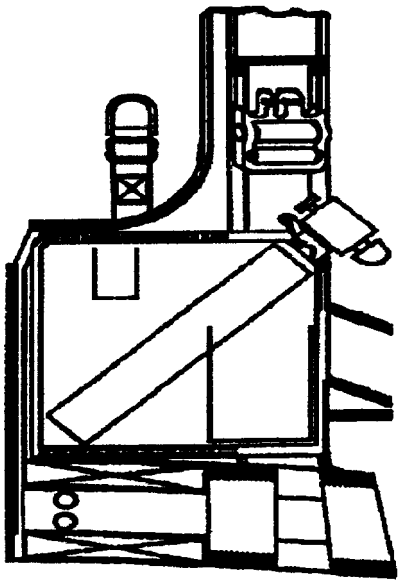


6.2-5590B

Figure 12. Adjust to Aircrew

16. ATTACHMENT OF HEED POCKET.

a. Align the pocket with the outer edge of channel and 2 7/8-in. from bottom of floatation belt. Attach pocket with a double row of stitching along channel (do not stitch thru channel) from the bottom of the pocket up to the slot where the main sling webbing exits the garment (Figure 13).



6.2-7089A

Figure 13. Attachment of HEED Pocket

b. On the inside (towards slider), attach the pocket to the garment with a double row of stitching and around the top and bottom of the pocket up to the main sling webbing (Figure 13).

c. Make proper entries on Aircrew Personal Equipment Record (OPNAV 4790/159). (QA)

17. ATTACHMENT OF RETENTION LOOPS FOR GOOSENECK FLASHLIGHT.

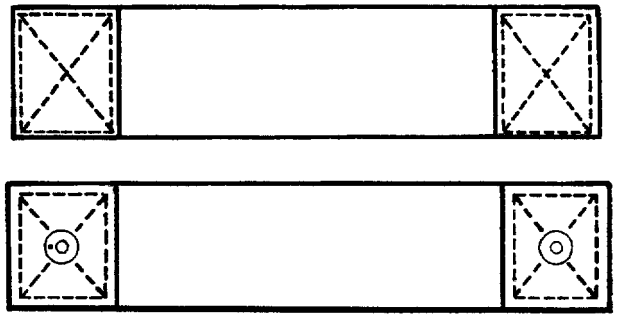
Materials Required

Specification or Part Number	Nomenclature
MS27983-1	Snap, Fastener, Button
MS27983-4	Snap, Fastener, Eyelet
MS27983-2N	Socket, Snap Fastener
MS27983-3	Stud, Snap Fastener
PIA-T-5038	Tape, Nylon, Type III, Class 1 or 1A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
PIA-W-4088	Webbing, Nylon, Type I, Class 1, 1A or 2
MIL-W-5664	Webbing, Textile, Elastic, Type I, Class 2

a. Cut two pieces of elastic webbing 9 1/2-in.

b. On each piece of webbing, fold back 1 1/4-in. on each end and stitch this doubled over end using a 1-in. box-X stitch. Stitches should be within 1/8-in. of webbing (Figure 14).

c. At intersection of diagonal stitch on box-X stitch of each piece webbing, install cap/socket on fold and stud/post on opposite fold. Ensure these are installed so they snap around the gooseneck flashlight (Figure 14). (QA)



6.2-7091

Figure 14. Retention Strap Installation

d. Mount flashlight on right side of harness between strobe light and radio/knife pocket. Mounting will be accomplished to ensure base of flashlight is flush with bottom of radio/knife pocket. Mount so stud/eyelet is on same side as SDU-5/E light pocket.

e. Find center of first piece of elastic webbing. Place top of one piece of elastic webbing 2 1/4-in. below top of radio/knife pocket upper edge binding. Ensure stud/post is facing strobe light.

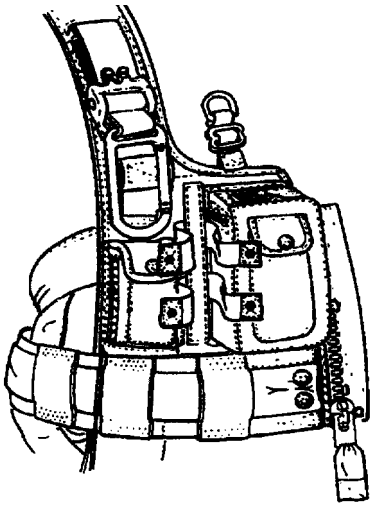
f. Stitch center of elastic webbing with four continuous rows of vertical stitches about 1/16-in. apart, directly over radio/knife pocket edge. Stitch no closer than 1/8-in. from edge of webbing.

WARNING

Do not stitch thru harness webbing straps.

g. Find center of second piece of webbing. Place top of second piece of webbing 1 3/4-in. below the bottom of the first piece.

h. Cut a piece of tape 10 1/2-in. long and turn under 1-in. and align tape with top binding tape of radio/knife pocket, sew around edge of tape. Bottom end of tape turned under 1/2-in. in aligning of flashlight retention straps, sew 1/8-in. around edge of tape, backstitch 1/2-in. (Figure 15). (QA)



6.2-7092

Figure 15. Installation of Flashlight Holder

i. Top elastic webbing should surround flashlight between gooseneck and top of light switch. Bottom elastic webbing should surround flashlight above upper lip of battery access cover. (QA)

18. ATTACHMENT OF HOOK AND PILE FASTENER TAPE TO CHEST STRAP ADAPTER SINGLE PULL (MANDATORY).

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, 1 1/2-in. Wide, Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 1 1/2-in. Wide, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Properly fit harness to aircrew.

b. Mark chest strap webbing 1-in. from friction bar on both free end and portion attached to harness. (QA)

NOTE

Placement of hook and pile fastener tape may be reversed (aircrew option).

c. Attach a 2-in. strip of hook fastener tape on outer surface of chest strap and a 2-in. strip of pile fastener tape on inner surface of free end. Machine stitch around edges of hook and pile fastener tape. Backstitch a minimum of 1/2-in. Leave a minimum of 10-in. of webbing from chest strap friction bar after fitting to aircrew. Trim and sear. Avoid forming sharp edges while hot knifing and searing (Figure 16). (QA)

d. When donning, aircrew shall align hook and pile fastener tape patches and press together firmly.

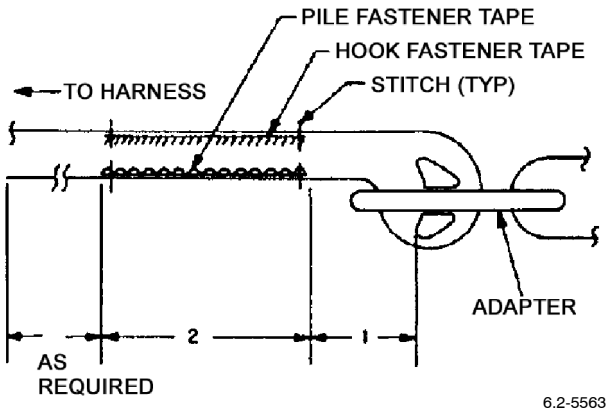


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Figure 16. Attachment of Hook and Pile Fastener Tape to Chest Strap

19. ATTACHMENT OF HOOK AND PILE FASTENER TAPE ON CHEST STRAP ADAPTER DUAL PULL (AIRCREW OPTION).

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, 1 1/2-in. Wide, Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 1 1/2-in. Wide, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Properly fit harness to aircrew.

b. Mark chest strap webbing 1-in. from friction bar on both the free end and portion attached to harness (Figure 17).

c. Attach a 2-in. strip of hook fastener tape on outer surface of chest strap and a 2-in. strip of pile fastener tape on inner surface of free end. Machine stitch around edges of hook and pile fastener tape. Backstitch a minimum of 1/2-in. Leave a minimum of 10-in. of webbing from chest strap friction bar after fitting to aircrew. Trim and sear. Avoid forming sharp edges while hot knifing and searing (Figure 17). (QA)

20. ATTACHMENT OF HOOK AND PILE FASTENER TAPE TO SADDLE ANTI-ROTATION STRAP.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, 1-in. Wide, Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 1-in. Wide, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Production harness will be supplied with 1-in. or 5/8-in. wide hook and pile fastener tape.

Placement of the hook and pile fastener tape may be reversed (aircrew option).

a. Properly size and fit parachute restraint harness to aircrew.

b. Lay each hook fastener tape lengthwise over inside portion of each 4-in. Trapezoidal box-X stitch pattern that attaches saddle anti-rotation straps to left and right leg straps. Cut top narrow end of each hook fastener tape to match angled end of each trapezoidal box-X stitch pattern. Sew each hook fastener tape over inside portion of each trapezoidal box-X stitch pattern (Figure 18).

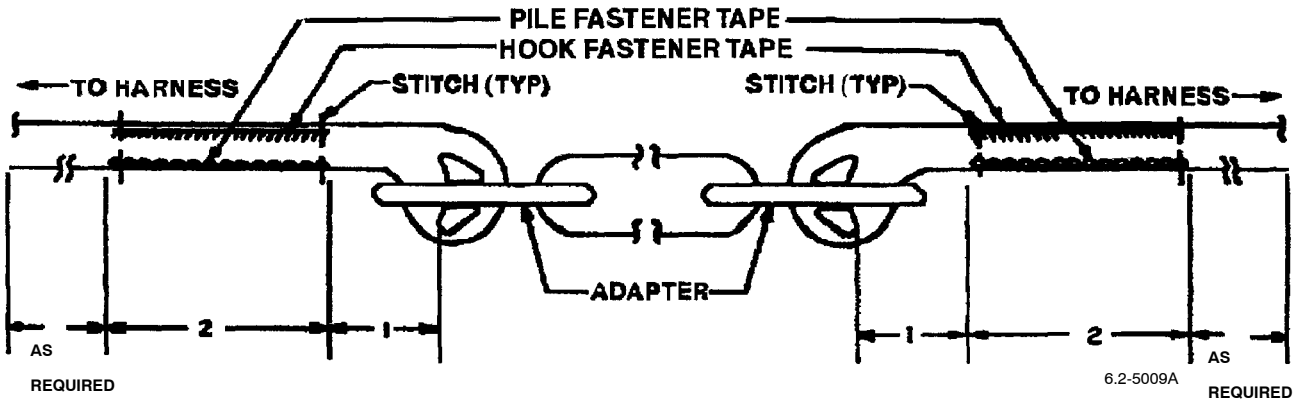

Figure 17. Attachment of Hook and Pile Tape to Chest Strap Dual Pull

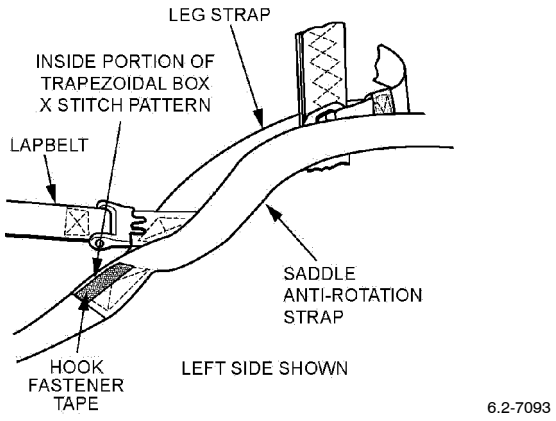

Figure 18. Lay Hook Fastener Tape Lengthwise

c. Route free ends of saddle anti-rotation straps thru their respective reversible adapter.

d. Aircrew shall don harness, adjust chest strap and saddle anti-rotation straps to a snug but not tight position. Lay free ends of upper portions of saddle anti-rotation straps flat over lower parts of saddle anti-rotation straps. On bottom side of each upper saddle anti-rotation strap mark location of hook fastener tape.

e. Sew pile fastener tape within stitch pattern marks made on upper saddle anti-rotation straps (Figure 19).

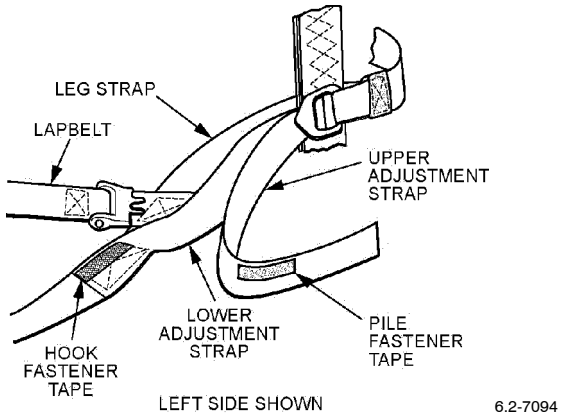

Figure 19. Sew Pile Fastener Tape to Saddle Anti-Rotation Strap

f. Measure 5-in. from ends of pile fastener tapes toward free ends of saddle anti-rotation straps and mark. Use a hot knife to sear away excess strap at 5-in. marks. Avoid forming sharp edges while hot knifing and searing (Figure 20).

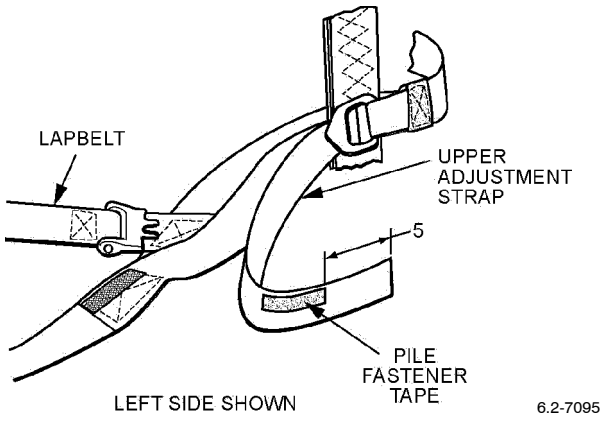

Figure 20. Measure 5-in. From Ends of Pile Fastener Tape

g. Triple roll 3/4-in. of free end of each saddle anti-rotation strap to side opposite that of pile tapes and sew together with single row of stitchings 5/8-in. from rolled end (Figure 21).

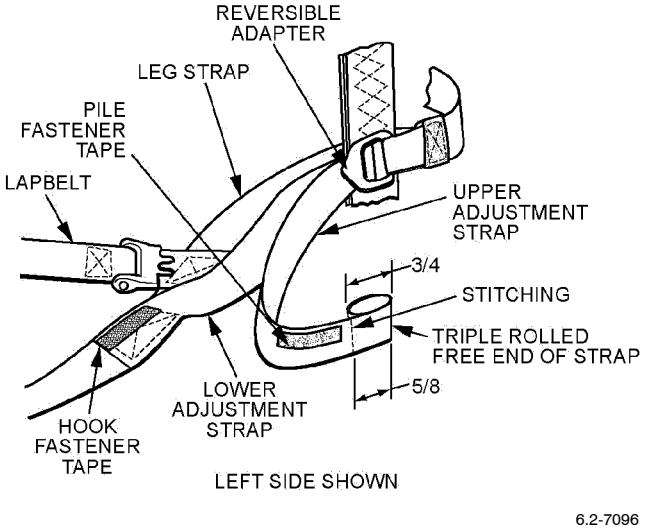

Figure 21. Triple Roll 3/4-in. of Free End

h. Tack reversible adapter on sleeve side thru webbing and as close as possible to hardware. Tack with one turn of size FF thread double and waxed; tie off (Figure 22).

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

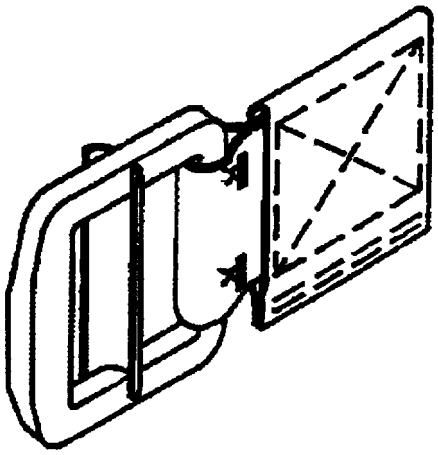

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Figure 22. Tack Reversible Adapter

i. When donning harness, aircrew shall tighten anti-rotation straps to a snug position and shall then align hook and pile fastener tapes, pressing firmly together.

21. ATTACHMENT OF SURVIVAL ITEMS TO STOWAGE POCKETS.

Materials Required

Specification or Part Number	Nomenclature
---	Aluminum, 0.090-in. thick ± 0.010-in., Any Grade
A-A-1799	Bag, Plastic (2)
MIL-C-23070	Cloth, Laminated
PIA-C-5040	Cord, Nylon, Type I or IA Coreless
1791A10	Tape, Duct

NOTE

Fake securing lines along individual survival items (excluding bandolier cord) and secure with light weight rubber band.

a. Attach a Smoke and Illumination Marine Signal (flare), cut 80-in. length nylon cord sear ends. Tie an overhand knot in one end. Wrap end of cord two turns around one end of signal flare and tie a surgeon's knot. Turns of cord shall overlap all knots positioned snugly against each other. Route cord to opposite end of signal flare and tie in same manner as above. Cord between ties shall be tight. Secure free end of cord to grommet in distress flare pocket, with bowline knot and an overhand knot on free end (Figure 23).

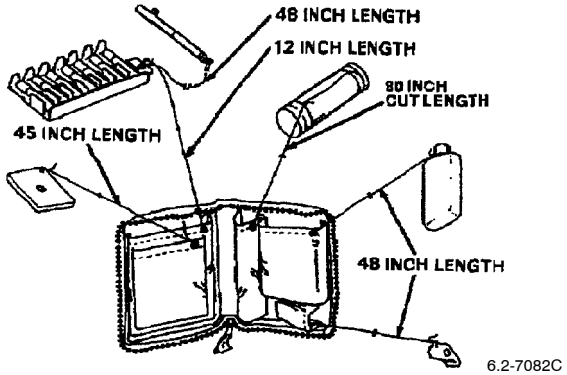

Figure 23. Smoke and Illumination Signal

b. To attach MK-79 bandolier signal kit, cut a 12-in. length of nylon cord and sear ends. Tie overhand knot in one end and then pass end thru hole provided in bandolier and tie a bowline knot. Tie an overhand knot in other end and pass nylon cord thru grommet in signal kit pocket, then tie off with a bowline knot (Figure 23).

c. Cut a 48-in. length of nylon cord and sear ends. Tie an overhand knot in both ends, pass one end thru hole in bandolier and secure with a bowline knot. Pass other end of nylon cord thru end of personnel distress signal kit's pen gun and secure with a bowline knot (Figures 23 and 24).

d. Secure remaining survival items with a 48-in. length of nylon cord, sear ends and tie and overhand knot in ends followed by a bowline knot. (QA)

NOTE

If any AN/PRC-112 (V) or AN/PRC-112B survival radios are used install and stow as follows:

e. Cut a 1-in. x 2 3/8-in. +1/8-in. -0-in. plate from a sheet of any grade aluminum 0.090-in. thick ±0.010-in.

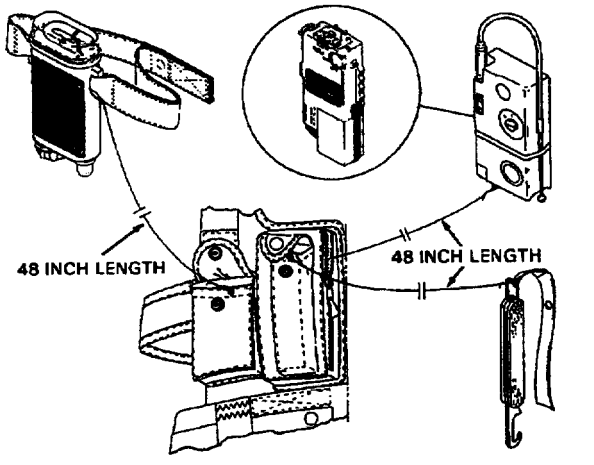

Figure 24. Secure Remaining Survival Items

f. Radius the corners and deburr all edges.

g. Cut 2 lengths, both 2 3/8-in. x 3/4-in., of duct tape, and center lengthwise along the outboard edge of the 2 3/8-in. side of the plate, 1 on each side of the 2 3/8-in. sides and fold to the tape.

h. Cut 1 length of duct tape 6 1/2-in. long by 1-in. wide and fold one end back on itself, 1-in., to create a pull tab.

i. Place the length of tape made in Paragraph 21h on a table with the adhesive side facing up and folded end to your right. Measure in from the right 2 inches and place the plate made in steps e through h on the adhesive to the left at the 2-in. measurement (you will have adhesive areas of tape on both sides of the plate).

NOTE

Do not cover the antenna with the tape.

j. With the AN/PRC-112 series radio buttons facing up and the word talk closest to you and to the right, place plate made in steps e through i over the buttons with the folded edge of the tape on the right side of the radio just below the push to talk button. Fold and press the tape on to the right side of the radio body.

k. Fold and press the left side of the plate tape on to the left side of the radio body.

l. Cut a 48-in. length of PIA-C-5040, Type I, nylon cord with strands removed or PIA-C-5040, Type IA (coreless), nylon cord and sear ends of cord.

m. Secure one end of the nylon cord to the radio/knife pocket grommet forming a 2-in. loop through the grommet and tie off using an overhand knot in one end, then tie a bowline knot.

n. Secure the other end of the nylon cord to the AN/PRC-112 radio webbing of "V" ring using a 2-in. loop around webbing or "V" ring and tie off using an overhand knot in the end, then tie a bowline knot.

o. Place AN/PRC-112 radio in a 12-in. x 12-in. ziplock plastic bag.

p. Remove as much trapped air as possible from the ziplock bag and tape over the closed ziplock closure using a 2-in. length of duct tape.

NOTE

The Type I or IA nylon cord can exit the bag at any location on the seal line. Location of the exit point is not critical.

A bagged radio with excessive trapped air will be difficult to stow into radio/knife pocket. If difficulty is encountered during stowage continue to press radio into pocket until sufficient air escapes to permit radio/knife pocket zipper closing.

q. Place the bagged radio into a second ziplock bag and seal closure using duct tape as a in step o above.

r. Cut a 7 x 14-in. piece of laminated cloth and wrap around the bagged AN/PRC-112 radio and secure with a rubber band.

s. Stow radio in radio/knife pocket. (QA)

t. Close zipper in radio/knife pocket. (QA)

NOTE

AN/PRC-112 radios and batteries are currently undergoing rework/redesign to eliminate water leakage.

Bagging of the radio will not make it waterproof only water resistant.

Aircrew should not remove the radio from the ziplock bag until they are in the raft.

22. ATTACHMENT OF SURVIVAL ITEMS IN HEED POCKET.

a. Cut a 24-in. length of nylon cord and sear ends. Attach one end of line at neck of HEED bottle, and secure with a bowline knot. Attach the other end to the snap hook, with a bowline knot and attach snap hook to Dee-Ring installed on HEED pocket (Figure 25).

b. Install protective cover over HEED bottle, after it is placed into survival item pocket, by placing cover over mouth piece and valve closing hook and pile fastener around neck of HEED pocket.

NOTE

The protective cover for the HEED is to be removed before flight. The cover is intended to protect the HEED when not in use. The beads are on the inside of the pocket to serve as a "Hand-Hold" to enable a ditched aircrew with wet hands who has forgotten to remove the pocket to easily grasp the top of the pocket for quick removal. Stow cover in flightbag.

Do not tether to vest.

Care should be taken not to pull bottle out of pocket. Zippers are to be fully closed around neck of HEED but not enough to restrict HEED from being removed by pulling on the regulator head.

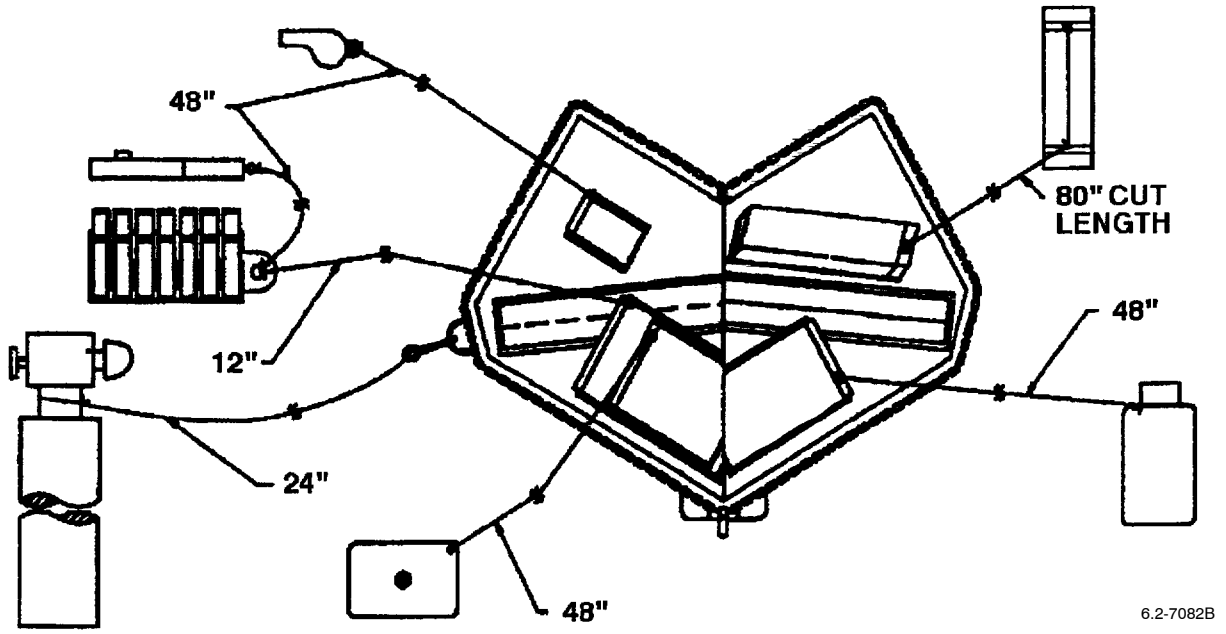

Figure 25. Attachment of Survival Items in HEED Pocket

23. RIGGING OF LAPBELT SUPPORT STRAPS.

Materials Required

Specification or Part Number	Nomenclature
A-A-52080-B-2	Tape, Lacing & Tying Finish B, Size 2 Type I, Black
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Marking for the lapbelt support straps shall be accomplished during fitting of harness with the aircrew under suspension.

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

Slack present while standing or suspended is allowed.

a. Total length of strap must be measured on aircrew prior to cutting and sewing permanently. The straps shall not be load bearing without survival kit attached. Stitching shall be with size E thread (Figure 26).

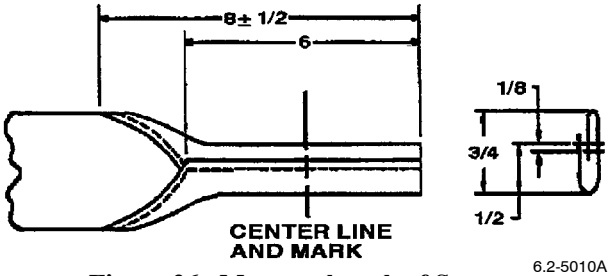

Figure 26. Measure length of Strap

b. Stitch box-X with size E thread per (Figure 27).

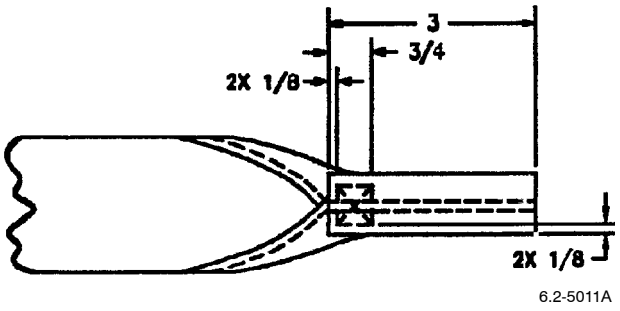

Figure 27. Box-X Stitch Lapbelt Support Strap

c. Hand tack lapbelt support strap 1/8-in. above lapbelt with one turn of size 6 thread or lacing tape, doubled and waxed; tie off (Figure 28).

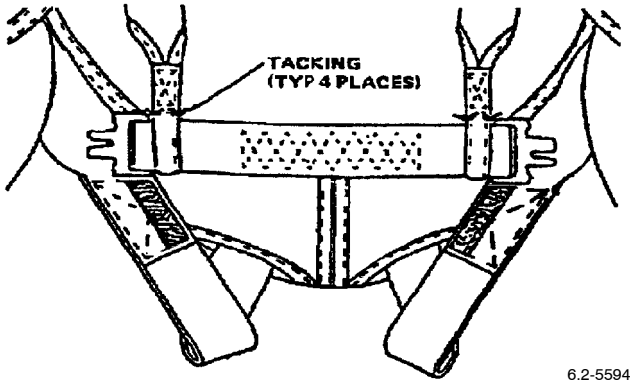

Figure 28. Lapbelt Support Strap Tacking

d. Record in remarks section on Aircrew Systems Record (OPNAV 4790/138) the date of suspended hanging.

24. ATTACHMENT OF PARACHUTE RESTRAINT HARNESS HOLSTER (OPTIONAL).

a. Attach per Figures 29 and 30.

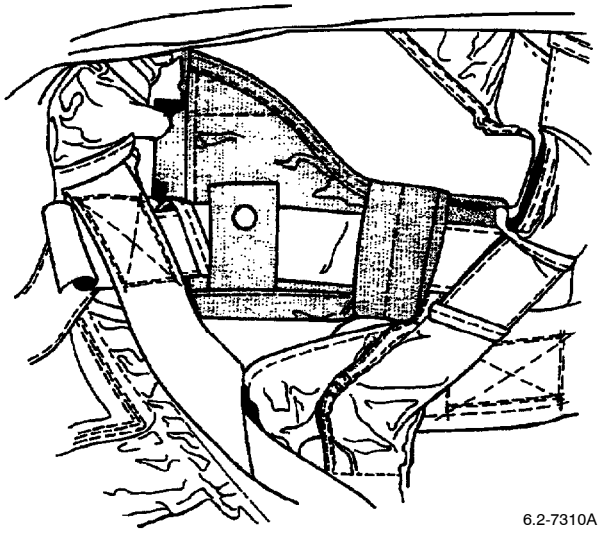

Figure 29. Attachment of Parachute Restraint Harness Holster

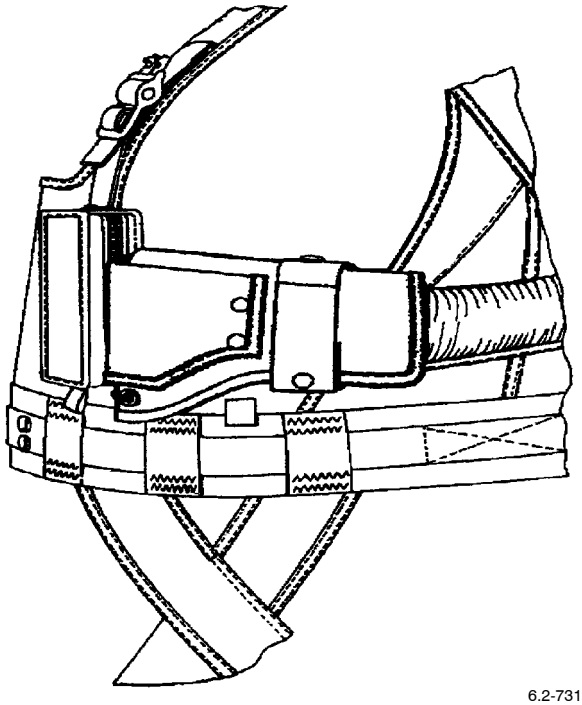

Figure 30. Attachment of Parachute Restraint Harness Holster

25. ATTACHMENT OF SADDLE ANTI-ROTATION STRAP ADAPTER TAB.

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Tape, Nylon, Type II, Class 1, 1A or 2, Sage Green or Yellow
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

a. Cut a length of tape 5-in. long and sear ends.

b. Pass one end of the tape around the friction adapter, turn ends under 1/4-in. and sew with a 1-in. box-X stitch, backstitch 1/2-in. (Figure 31).

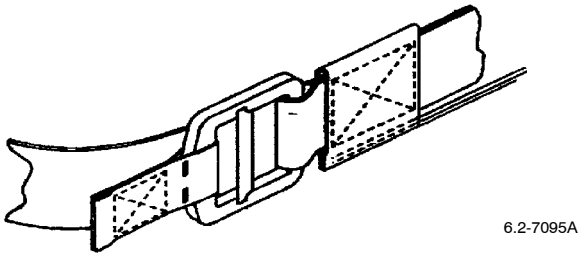

Figure 31. Attachment of Saddle Anti-Rotation Strap Adapter Tab

c. Tack webbing to center and as close as possible to friction adapter to prevent movement. Hand tack with size FF thread waxed and doubled one turn. Tie off.

26. ATTACHMENT OF INNER GARMENT VEST ASSEMBLY (AIRCREW OPTION).

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Align panels of inner garment vest assembly with bottom of harness garment. Align outboard edges with outboard edge of main sling channel (Figure 32).

WARNING

Do not stitch thru harness webbing.

b. Stitch outboard edge of vest to outboard edge of channel with two rows of stitching (Figure 32).

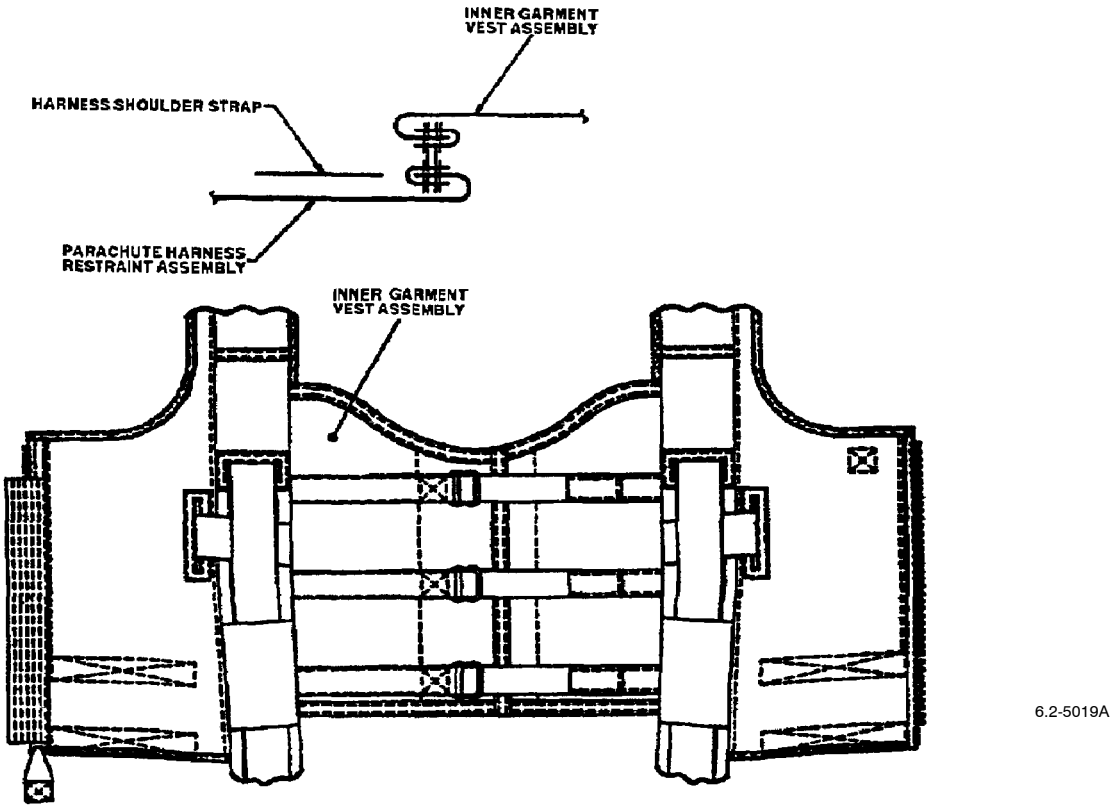

Figure 32. Attachment of Inner Vest Garment (Optional)

27. ADJUSTMENT OF MAIN SLING WEBBING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Slide main sling webbing thru side bar of canopy release to loosen the webbing (Figure 33).

b. Slide slack webbing thru the harness adapter assembly friction/slide bar to loosen remaining layers of webbing (Figure 33).

c. Extend or retract webbing around the roll bar as needed to extend or shorten the vertical length (Figure 33).

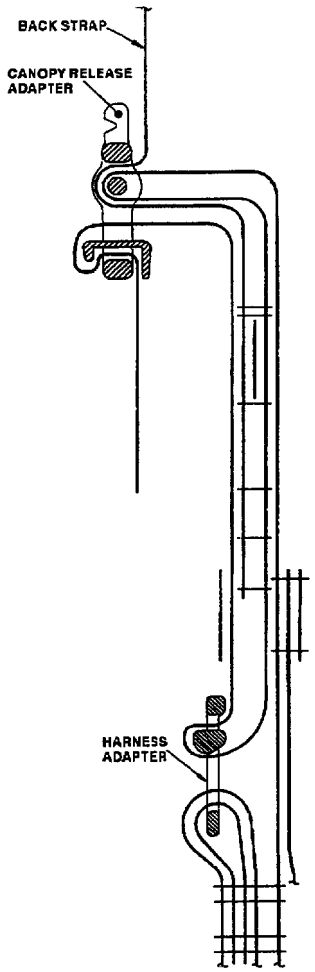

Figure 33. Adjustment of Main Sling Webbing

d. Remove excess slack from canopy release and harness adapter (Figure 33).

e. Ensure smooth flow of webbing thru canopy release and harness adapter (Figure 33).

f. Ensure left and right main slings are symmetrical (even) use harness alignment markings.

g. Suspend aircrew to verify fit.

h. Record in remarks section on Aircrew Systems Record (OPNAV 4790/138) the date of suspended hanging.

i. Leave 8-in. of webbing from bottom of canopy release adapter to end of webbing, cut and sear end. Avoid forming sharp edges while hot knifing and searing. Fold free end of webbing and box-X stitch, with size E thread, backstitch 1/2-in. Folded stitched webbing must face outward (Figure 34). (QA)

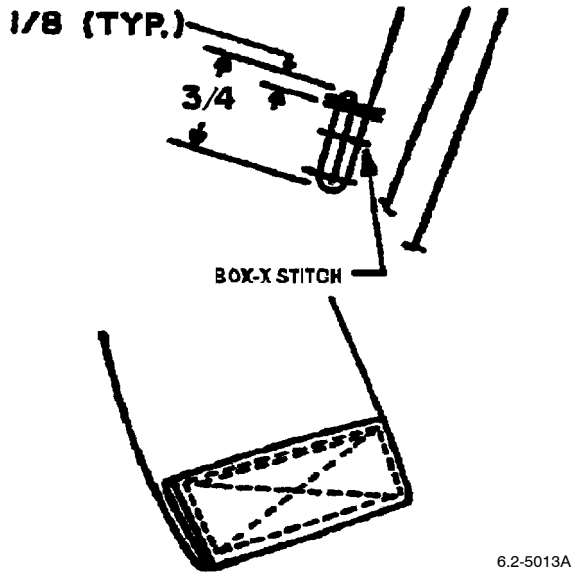

Figure 34. Box-X Free End

28. ATTACHMENT OF THE LPU-36/37 FLOTATION COLLAR HARDWARE.

Material Required

Specification or Part Number	Nomenclature
MS51925-4	Dee-Ring (8)
PIA-T-5038	Tape, Nylon 1-in. wide, Type III, Color Optional, 50 inches

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E
V-T-295	Thread, Nylon, Size 3
MIL-W-5664	Webbing, Elastic 1-in. wide, Color Optional, 17 inches
PIA-W-4088	Webbing, Nylon 1-in. wide, Type II, Color Optional, 5 inches

NOTE

Tie off all tackings with a surgeons knot topped with a square knot, topped with a binder knot per WP 002 00. Trim excess leaving 1/2-in.

a. Carefully remove LPU tabs and Dee-Rings (Figure 35).

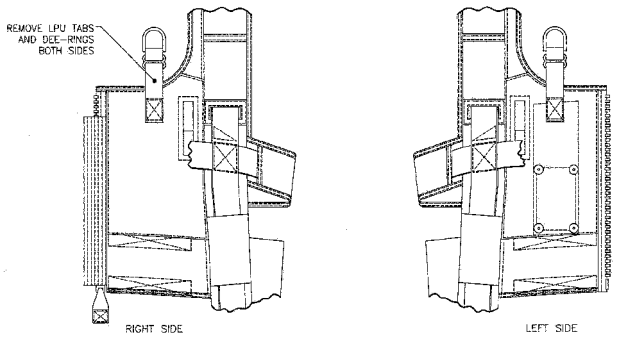

Figure 35. LPU Tab and Dee-Ring Removal

WARNING

Do not stitch thru harness webbing.

b. Cut four pieces of 1-in. wide PIA-T-5038, Type III, Nylon Tape, approximately 6 1/2-in. long. Fold each piece of webbing in half and insert two Dee-Rings. Sew with three rows of size E thread, 1/8-in. from Dee-Ring. Place each piece around harness garment and webbing. Stitch to harness garment (4 places) with size E thread (Figures 36).

c. Cut one length of 1-in. wide, PIA-W-4088, Type II, Nylon Webbing, approximately 4 1/2-in. Sew piece of webbing on backside of harness using size E thread (Figure 37).

d. Cut two pieces of 1-in. wide PIA-T-5038, Type III, Nylon Tape, 3 1/2-in. long. Measure and mark 1 1/2-in. above webbing channel. Sew webbing (horizontal straps) in place at the 1 1/2-in mark, folding under 1/4-in. with three rows of size E thread (Figure 38).

NOTE

Use of Riser keepers in accordance with WP 008 01 is permissible in lieu of horizontal straps.

e. Cut four pieces of 1-in. wide, MIL-W-5664, Elastic Webbing, 3 1/2-in. long. Fold in half and sew 1/4-in. from the edge (Figure 39).

f. On the right side it may be required to relocate the radio pocket and the Standard Right Angle Two Cell Flashlight (Gooseneck) to a lower position to allow the LPU-36/37 attachment straps to be threaded through the slots. If necessary, elongate slots in backing material of harness garment (Figure 40).

NOTE

On smaller harnesses the chest strap slots on the right side may not be accessible, even after lowering the radio pocket and flashlight holder. If this happens proceed to step g.

g. Sew a 1-in. wide PIA-T-5038, Type III, Nylon Webbing, 1 1/2-in. long on the inside and outside, as near as possible to the existing slot, sew using a box X stitch. Make sure slot is located below bottom of LPU-36/37. Hot knife a 3/4-in. long slot in the center of the webbing, through both pieces of webbing, including garment. The same process shall be done to the left side to maintain even mounting of the LPU-36/37.

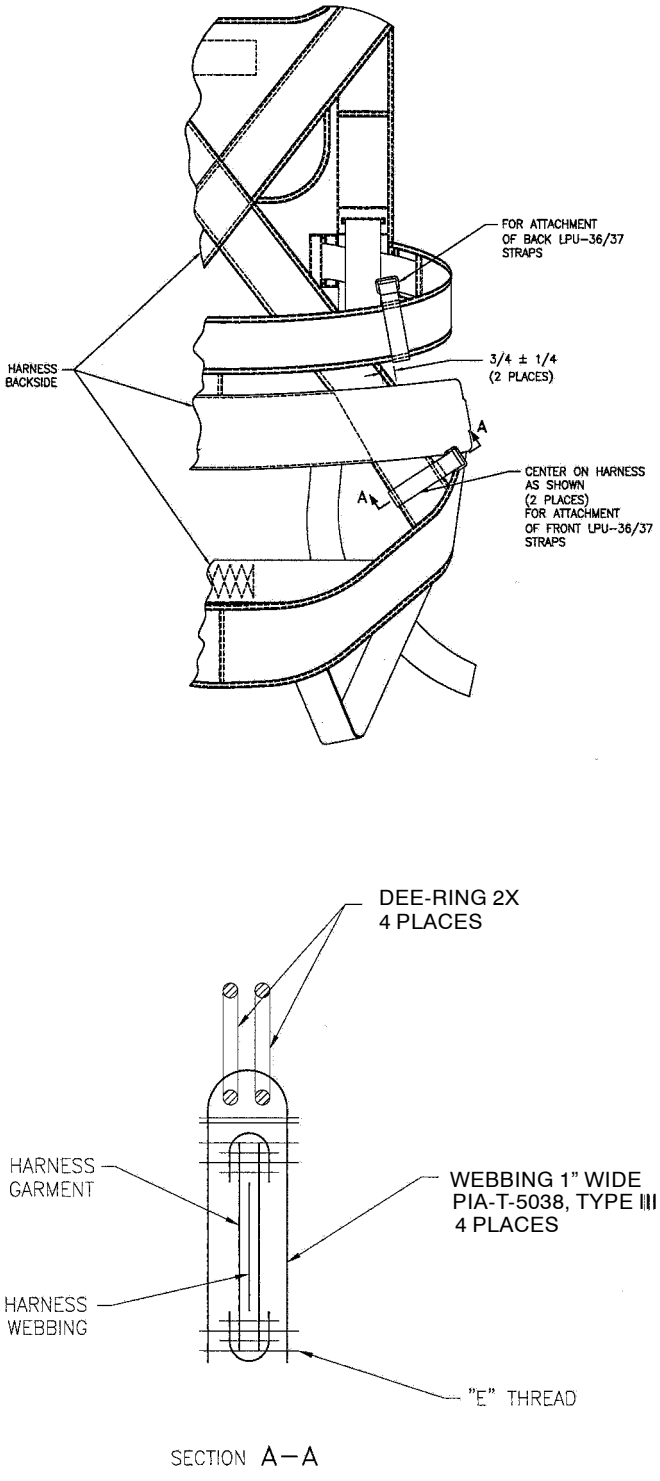

Figure 36. Front and Back Attachment Strap Location

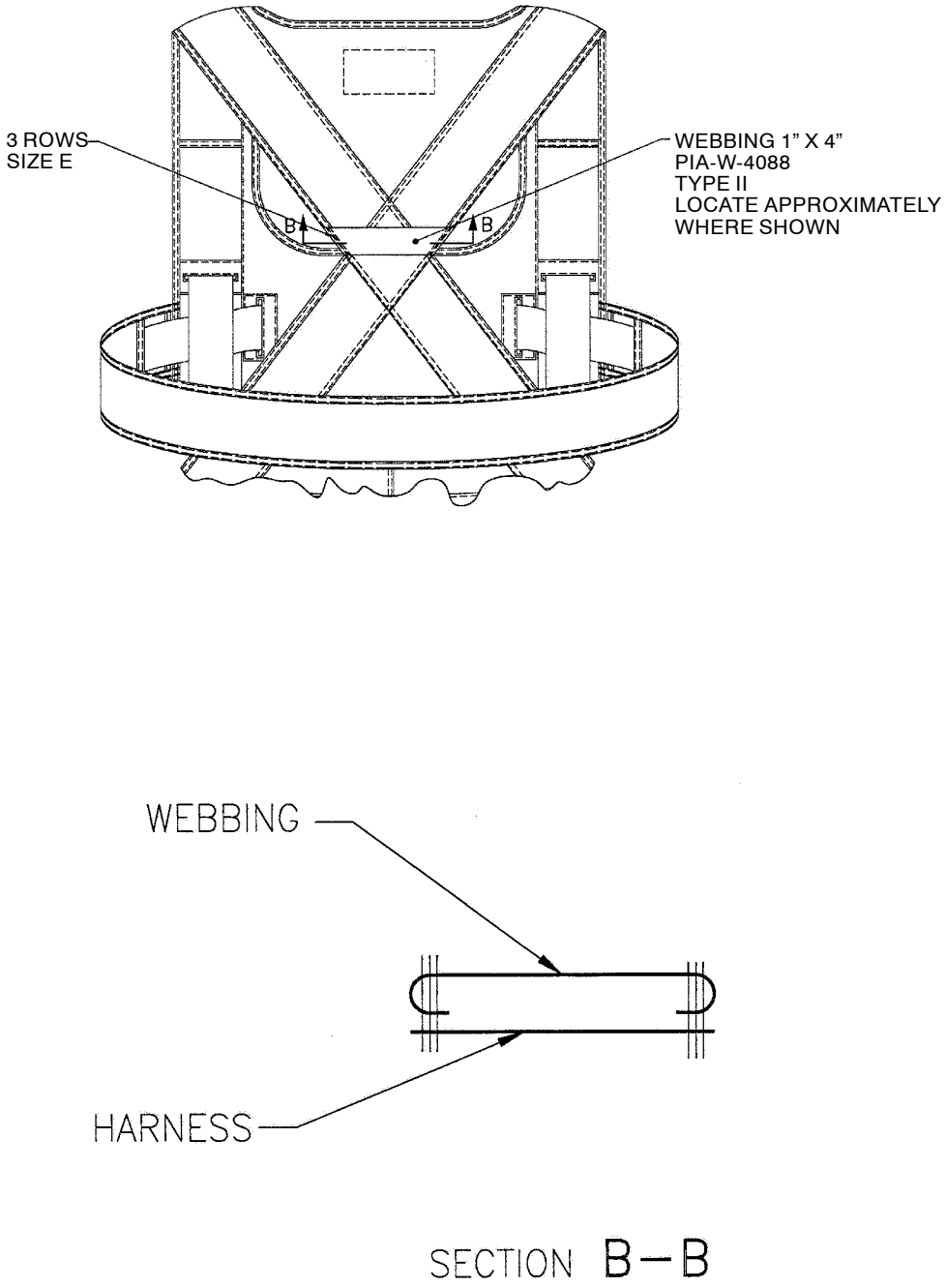

Figure 37. Back Strap Location

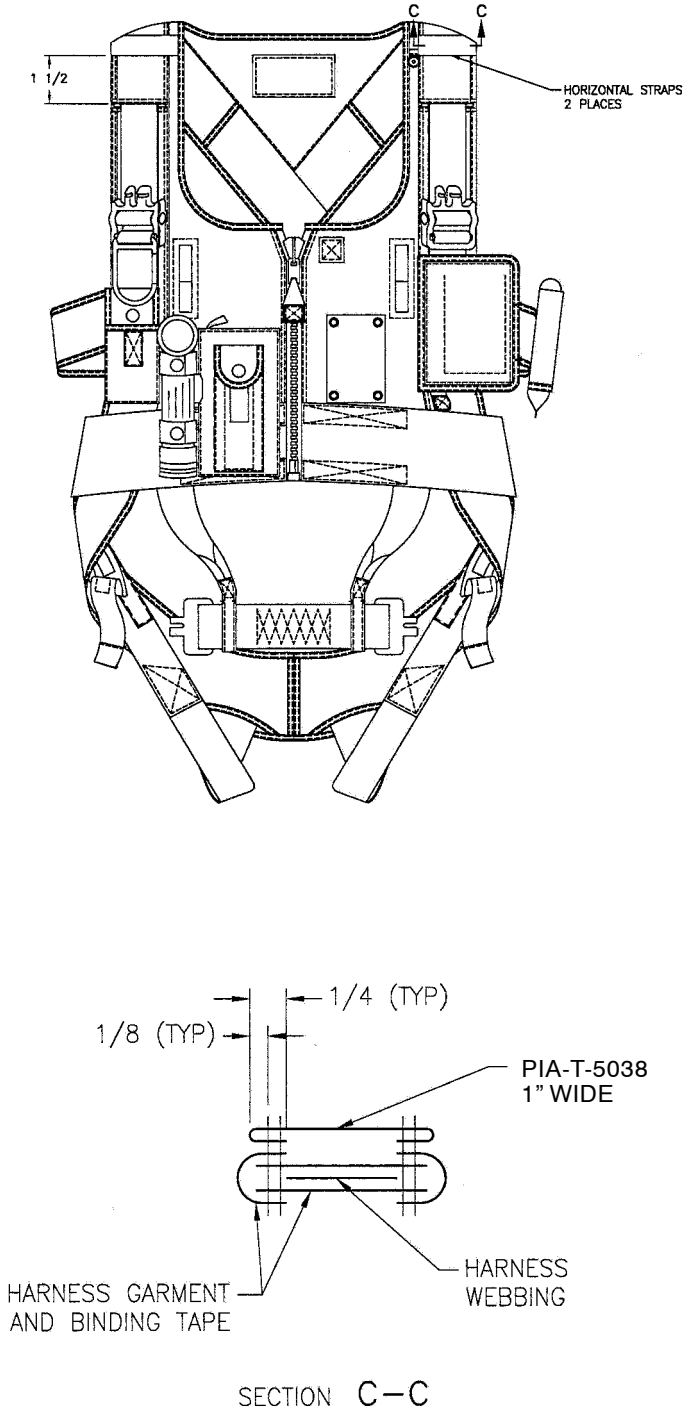

Figure 38. LPU-36/37 Horizontal Strap

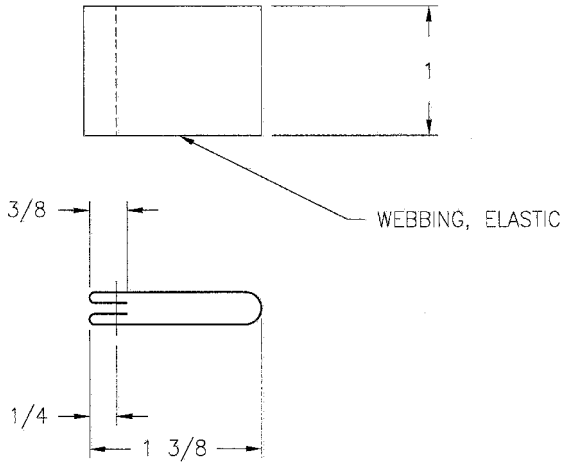

Figure 39. Keepers

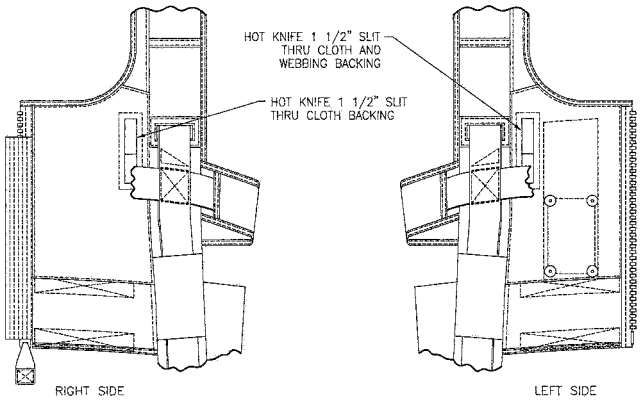

Figure 40. Front Attachment Strap Slots

29. ATTACHMENT AND FITTING OF THE LPU-36/37 FLOTATION COLLAR TO AIRCREW.

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E
V-T-295	Thread, Nylon, Size 3

NOTE

Tie off all tackings with a surgeons knot topped with a square knot, topped with a binder knot per WP 002 00. Trim excess leaving 1/2-in.

WARNING

It is important that he LPU-36/37 be properly fitted to each individual aircrew.

NOTE

To ensure complete range of motion of the head and neck, all aircrew shall be fitted while wearing their issued helmet.

a. Install elastic keepers on to the LPU-36/37 attachment straps.

b. Secure the collar vertical straps to the harness horizontal straps or riser keepers (if installed) (Figure 41).

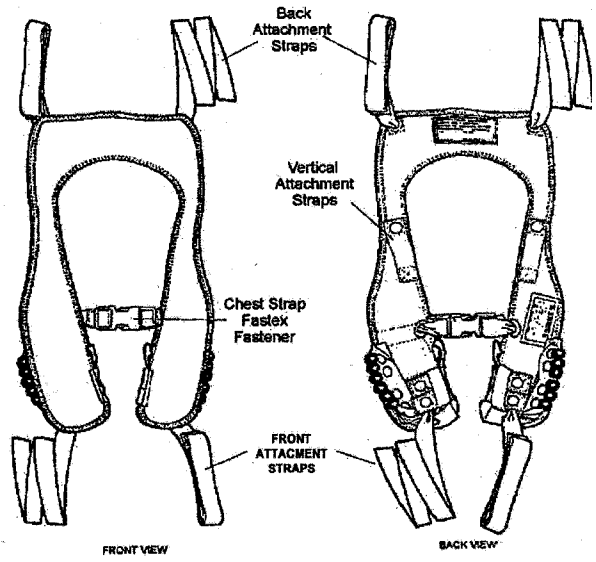

Figure 41. LPU 36/37 Low Profile Flotation Collar

c. With helmet on, place the LPU-36/37 around the aircrew's neck and close the Fastex fastener on the front of the LPU-36/37. With the aircrew holding the front collar lobes in place, fold the back collar lobe over the aircrew's shoulder. The inside of the collar lobe should be close, but not touching, the aircrew's helmet while looking up (checking 12). The aircrew should have complete range of motion at this point. If not, adjust the gap between the back collar and neck.

d. While aircrew continues to hold collar in place, route the back attachment straps through the back guide webbing, crossing the straps and thread them through the Dee-Rings (Figure 42).

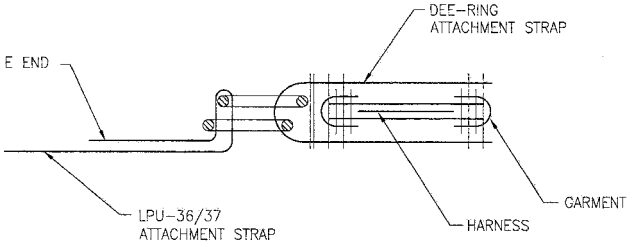

Figure 42. Proper Routing of Attachment Straps

e. Pull the free end of the back attachment straps through the Dee-Rings and remove all slack. All slack has been removed if the back portion of the collar remains conformed to the radius of the shoulder and the front portion of the collar has not moved while being held in place. Tie a half hitch in each back attachment strap to prevent slippage. Do not tack at this time.

f. Thread the LPU-36/37 front attachment straps through the harness chest strap slots/extended slots on the garment. Route the LPU-36/37 attachment straps over the harness vertical main sling webbing and insert through outside opening of harness garment. Thread front attachment straps thru Dee-Rings from the inside of harness. Remove all slack from attachment straps and tie a half hitch. If the front collar lobes are lower than the chest strap slots in the garment, it will be necessary to loosen the back attachment straps and pull the back lobe down. All slack is removed when the LPU-36/37 is not able to move or pull away from the body and complete range of motion is maintained (Figure 43).

g. Ensure that half hitches are present on all four attachment straps and remove harness from aircrew. Without disturbing adjustments, tack free end of attachment strap, above half hitch, with two-turns of waxed size 3 cord (Figure 44).

CAUTION

Do not trim excess LPU-36/37 attachment straps.

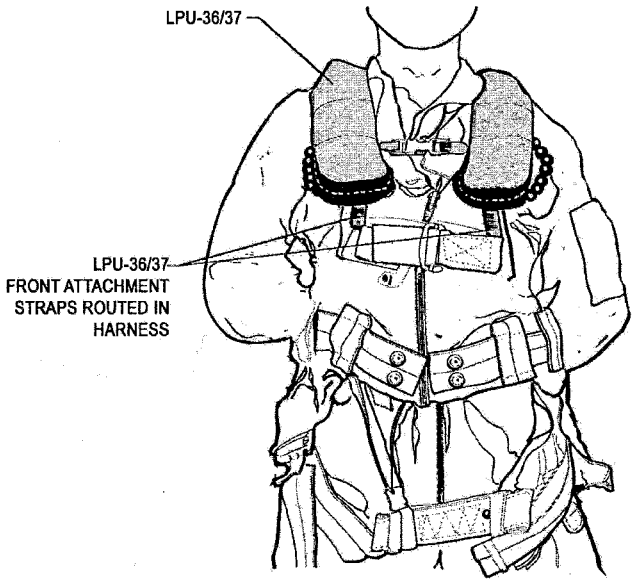

Figure 43. Front Attachment Strap Routing

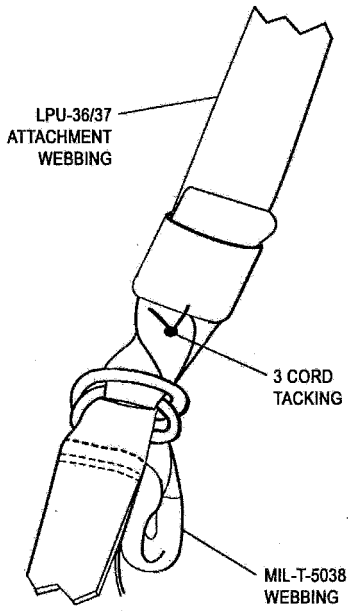

Figure 44. Tack Free End Above Larks Head

h. Secure excess front and back attachment strap webbing by folding and placing them in the elastic keepers.

i. Attachment straps should be re-inspected and adjusted (if necessary) after 5-10 sorties.

30. SDU-5/E DISTRESS LIGHT LANYARD FABRICATION.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
PIA-W-4088	Webbing, Nylon, Type II, 1-in. Yellow, Class 1, 1A or 2, 32-in. Long

a. Cut two lengths of webbing 16-in. long and sear ends. Avoid forming sharp edges while hot knifing and searing.

b. Pass one end of webbing thru slot on the distress light. Folding the webbing in half, sew all around 1/8-in. from edge and 1-in. from slot on the distress light. Do the same on the opposite side of light (Figure 45).

c. Join both pieces of webbing together and sew a crossbox stitch 3/4 x 1 1/2-in. Sear a 5/8-in. diameter hole 1/2-in. from crossbox stitch and box stitch around 5/8-in. diameter seared hole. Avoid forming sharp edges while hot knifing and searing. (Figure 45).

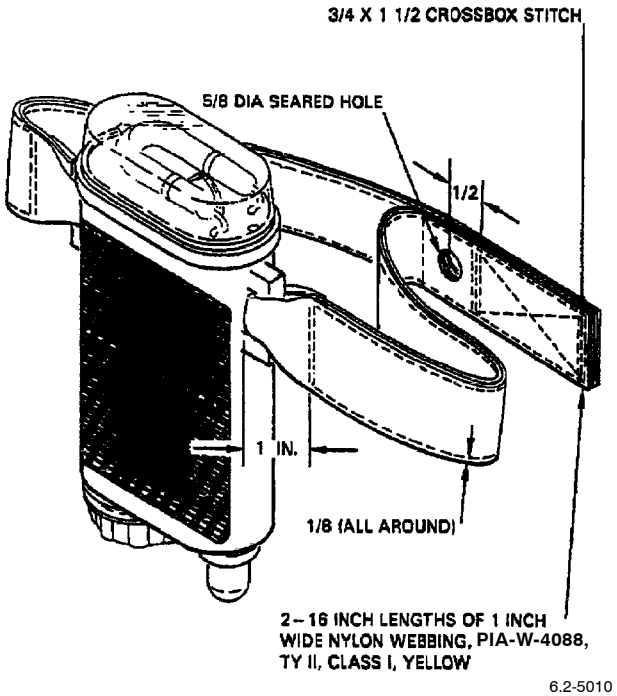

Figure 45. Distress Light Lanyard

31. FABRICATION AND INSTALLATION OF SDU-39/N DISTRESS STROBE LIGHT LANYARD. The following instructions for fabrication and installation of the SDU-39/N lanyard should be used for all applications of the SDU-39/N strobe light (Figure 46).

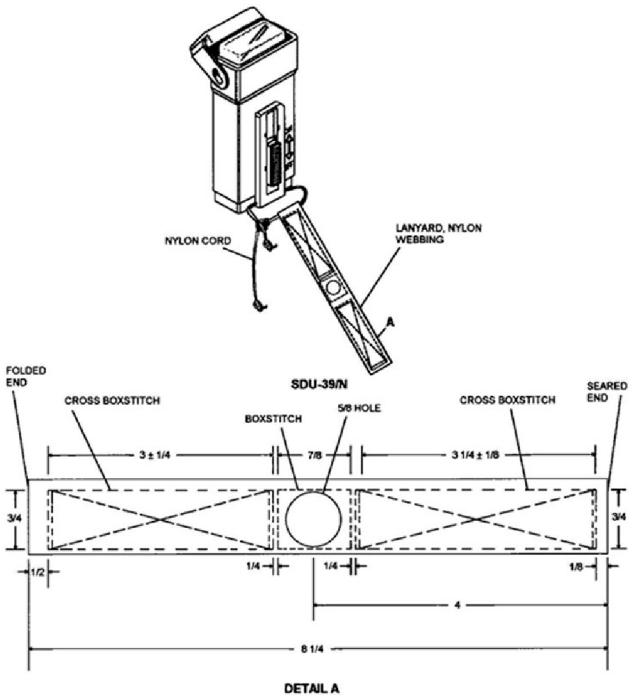

Figure 46. SDU-39/N Lanyard

Materials Required

Specification or Part Number	Nomenclature
MIL-C-5040	Cord, Nylon, Type I or IA
PIA-T-5038	Tape, Nylon, 1-in. wide, Type IV, Yellow, Class 1 or 1A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Sear cut a 16 1/2-in. length of nylon webbing.

b. Fold webbing in half aligning ends.

c. Measure and mark 3 3/8-in. from folded end of webbing.

d. Measure 1/2-in. from folded edge and sew 3/4 x 3 ± 1/4-in. cross boxstitch in webbing.

e. Sew a 3/4 x 3 1/4 ± 1/8-in. cross boxstitch 1/8-in. from seared ends of webbing.

f. Sear a 5/8-in. hole 4-in. from seared end of webbing.

g. Sew boxstitch with 5/8-in. hole made in step f centered in boxstitch.

h. Cut and sear both ends of 48-in. length of Type I or IA nylon cord.

i. Route one end of the nylon cord through the hole at the base of the distress light ON/OFF switch and through the loop at the webbing fold.

j. Tie an overhand knot at each end of the cord.

k. Tie a 1/2 to 1-in. bowline knot between the webbing loop and the base of the light.

l. Tie the other end of the cord to the grommet.

32. POCKET HOOK BLADE AND SNAP BLADE MC-1 KNIFE LANYARD FABRICATION.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
PIA-W-4088	Webbing, Nylon, Type II, 1-in. Yellow, Class 1, 1A or 2, 9-in. Long

a. Cut and sear a 9-in. length of webbing. Avoid forming sharp edges while hot knifing and searing.

b. Pass one end of webbing thru knife ring, a 2-in length and double stitch 1/8-in from edge (Figure 47).

c. Sear a 3/8-in. diameter hole in webbing 4-in. from end. Avoid forming sharp edges while hot knifing and searing (Figure 47).

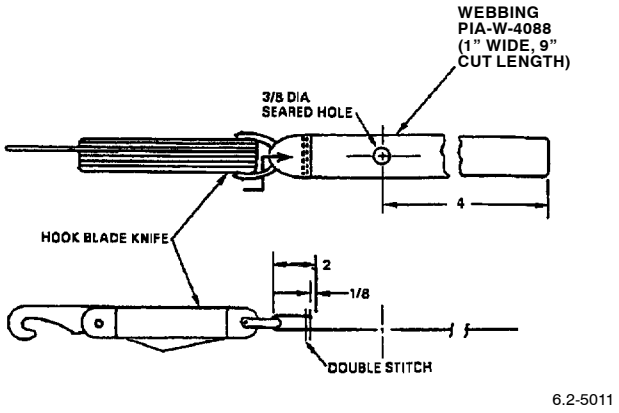

Figure 47. Attachment of Hook Blade Knife Lanyard

33. FABRICATION AND ATTACHMENT OF THE JOINT HELMET MOUNTED CUEING SYSTEM (JHMCS) QUICK MOUNTING BRACKET (QMB).

Materials Required

Specification or Part Number	Nomenclature
MS27983-1	Button, Snap Fastener
MS27980-10B	Eyelet, Snap Fastener
178-5936	Quick Mounting Bracket
MS27983-2N	Socket, Snap Fastener
MS27983-3	Stud, Snap Fastener
PIA-T-5038	Tape, Nylon, Type III, Class 1, 3/4-in. Wide, Olive Drab Green
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
	-or-
A-A-52080	Tape, Lacing & Tying, Finish B, Size 2, Type I, Class A

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon, Type IX, Class 1, 3-in. Wide, Olive Drab Green
PIA-W-4088	Webbing, Nylon, Type XII, Class 1, 1 23/32-in. Wide, Olive Drab Green

a. Using a hot knife, sear cut a length of PIA-W-4088, Type IX webbing 3 1/2-in. long. Radius each corner approximately 1/2-in. Avoid forming sharp edges while hot knifing and searing (Figure 48).

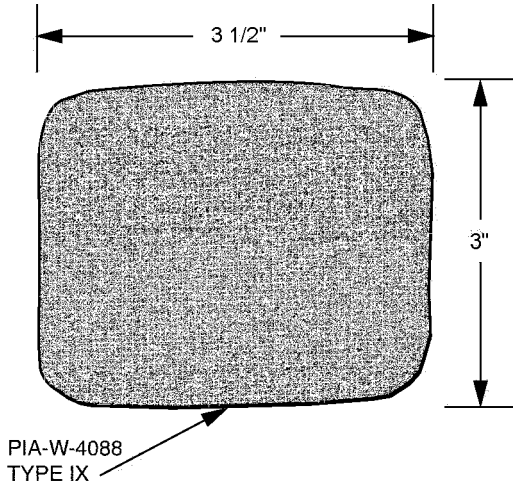

Figure 48. Webbing Layout

b. Using 3/4-in. PIA-T-5038 nylon tape (binding tape), bind the edges of the anti-chafing patch with size E thread, overlapping 1-in. at the end (Figures 48 and 49).

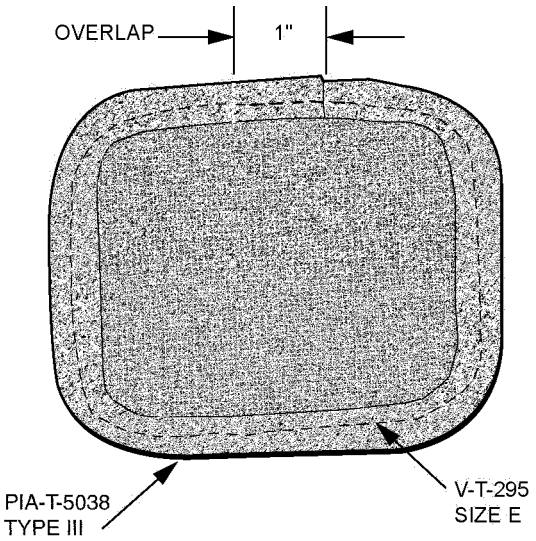

Figure 49. Tape and Overlap 1"

c. Cut a length of PIA-W-4088, Type XII webbing 17-in. long. Mark 8-in. from one end. Fold edges of 8-in. length to the center and sew the edges down with size E thread using a box stitch. Sew until the 8-in. mark is reached, creating a retangular box stitch approximately 8-in. x 1/4-in. in the center of the webbing (Figures 50 and 51).

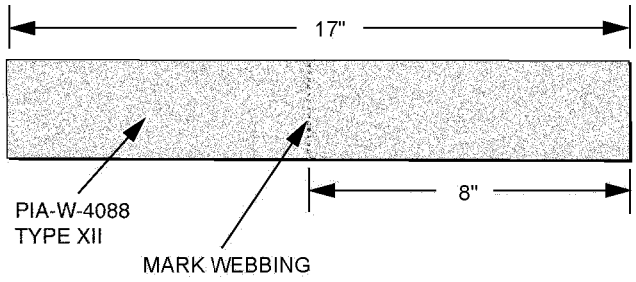

Figure 50. Attachment Strap Layout

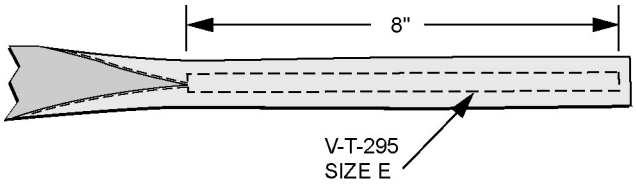

Figure 51. Fold Webbing to Center

d. Lay folded end of PIA-W-4088, Type XII webbing over the 3 x 3 1/2-in. anti-chafing patch with the seared edge of the webbing aligned with the edge of the anti-chafing patch and sew with size E thread using a 2 1/2 x 3/4-in. box-X stitch pattern. Fold PIA-W-4088, Type XII webbing over onto itself to form a 2 3/4-in. loop. Sew end of loop down with size E thread in a 3/4-in. box-X stitch (Figure 52).

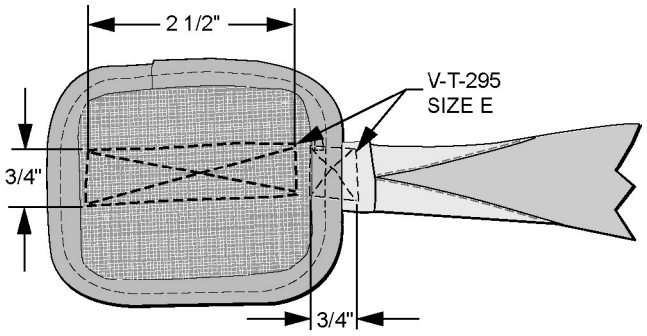

Figure 52. Attachment of Webbing to Anti-Chafing Patch

e. Slide the back plate of the quick mounting bracket inside the 2 3/4-in. loop such that the countersinks are facing the anti-chafing patch (Figure 53).

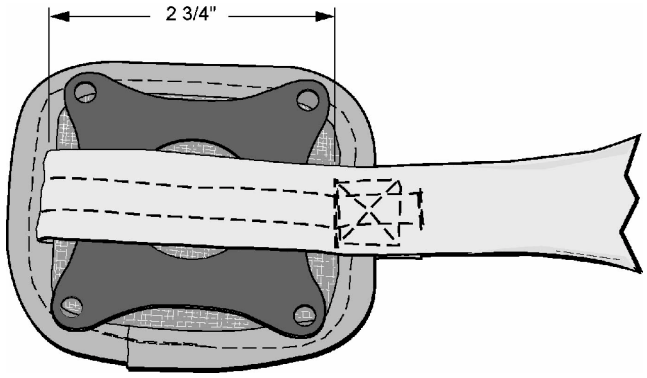

Figure 53. Back Plate Installation

f. Center the back plate on the anti-chafing patch. Cut a 3-in. piece of PIA-W-4088, Type XII webbing and place it on top of the back plate perpendicular to the 2 3/4-in. loop formed in step d. Using two turns of size 6 nylon thread, doubled and waxed, hand tack each edge of the PIA-W-4088 Type XII webbing to the anti-chafing patch by passing the thread around the edge of the binding so that the knots are on the side of the patch to secure the back plate in place (Figure 54).

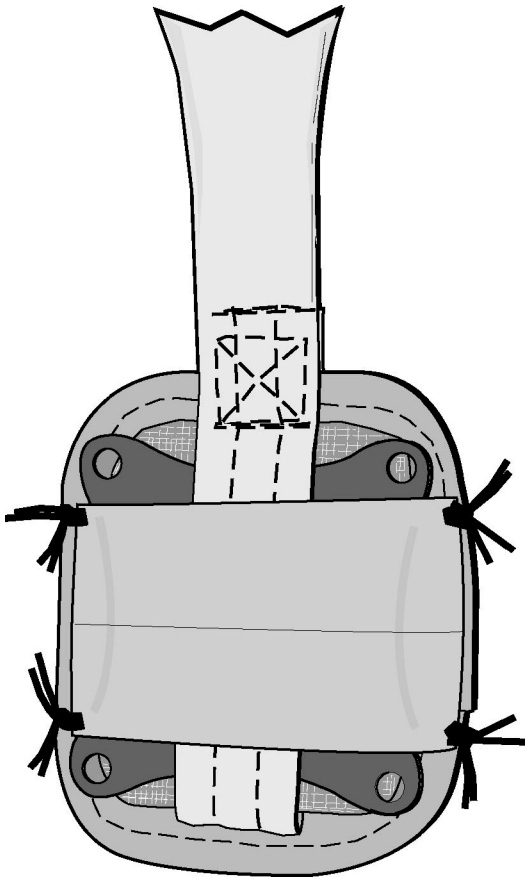

Figure 54. Back Plate Anti-Chafing Webbing

WARNING

When attaching quick mounting bracket to back plate, ensure that PIA-W-4088, Type XII webbing does not get trapped between quick mounting bracket, washers and/or back plate.

g. Place back plate and anti-chafing pad assembly under harness webbing just above left anti-rotation strap friction adapter, locating confluence wrap in center of back plate. Remove small screws from quick mouting bracket and replace with long screws found in separate packet. Using these four countersunk screws and spacers, attach quick mounting bracket to the back plate ensuring release tab is positioned upward (Figures 55 and 56).

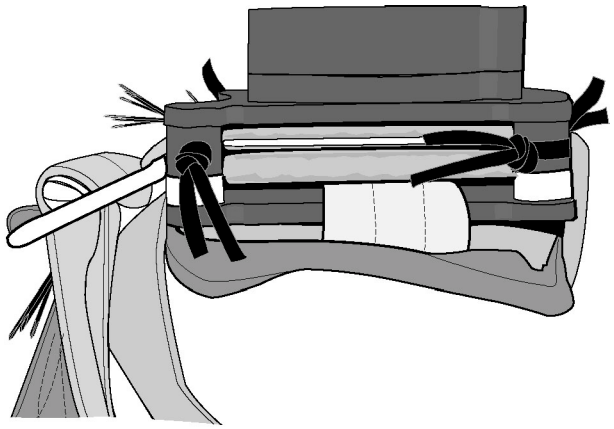

Figure 55. Quick Mounting Bracket Tackings

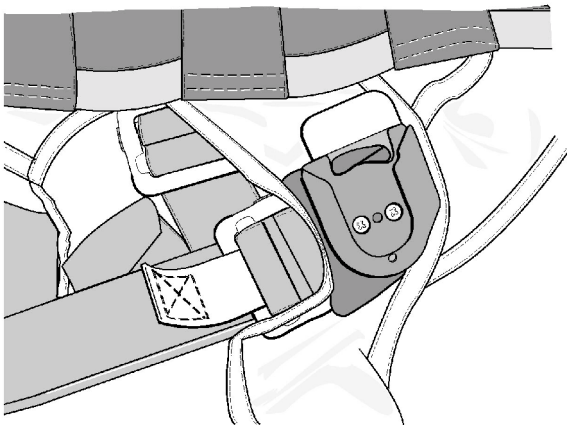

Figure 56. Quick Mounting Bracket Installation

WARNING

When hand tacking quick mounting bracket to confluence wrap, do not pierce harness webbing with needle. Type XXVII harness webbing must move freely within quick mounting bracket.

h. To retain the quick mounting bracket, hand tack bracket to confluence wrap in four places by passing two turns of size 6 nylon thread, doubled and waxed, through the confluence wrap webbing, around each screw lug and tying off (Figure 55).

WARNING

Avoid removal of too much slack in the PIA-W-4088 Type XII webbing. If the webbing is too short, it can cause improper positioning of the quick mounting bracket and potentially result in an uncommanded disconnect of the oxygen mask hose. Proper length and positioning of the PIA-W-4088, Type XII webbing will allow the quick mounting bracket to lay flat against the aircrew when seated without any excess slack remaining.

i. To determine proper length of PIA-W-4088, Type XII webbing to sew to harness, have aircrew don harness wearing winter flight clothing. Mark area on harness to be sewn (approximately 1/2-in. below the lower chest strap channel). Align end of PIA-W-4088, Type XII webbing with this mark. There should not be any tension on the PIA-W-4088, Type XII webbing. Have aircrew doff harness. Using a hot knife, cut and remove excess PIA-W-4088, Type XII webbing. Sew PIA-W-4088, Type XII webbing to harness using size E thread with a 2-in. box-X stitch (Figures 57 and 58).

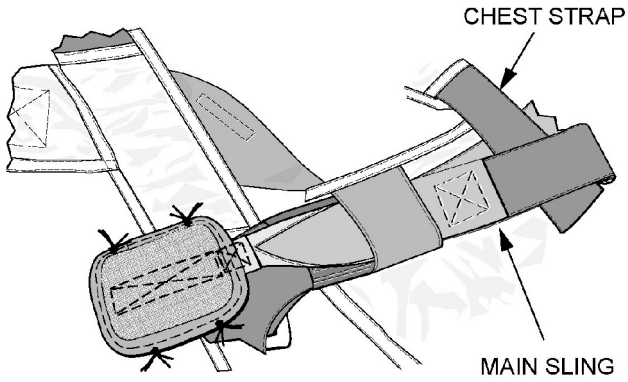

Figure 57. Attachment of Webbing to Harness

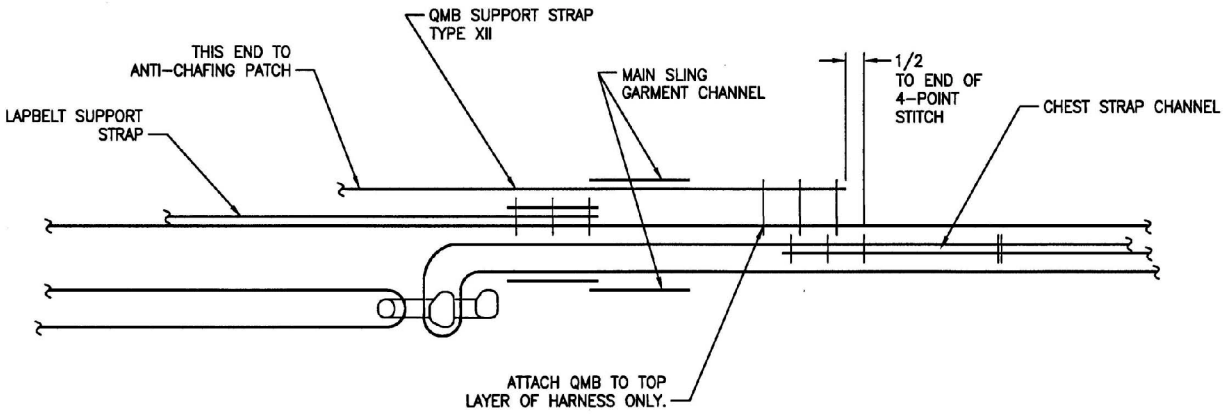

Figure 58. Main Sling Cross-Section

NOTE

If garment causes interference with quick mounting bracket, mark area to be removed. Using a hot knife, cut out the portion of the garment immediately above the quick mounting bracket. Bind the edges.

34. FABRICATION AND ATTACHMENT OF THE JOINT HELMET MOUNTED CUEING SYSTEM (JHMCS) BUNDLE FLUE.

Materials Required

Specification or Part Number	Nomenclature
PIA-T-5038	Tape, Nylon, Type III, Class 1, 3/4-in. Wide, Olive Drab Green
PIA-W-4088	Webbing, Nylon, Type XII, Class 1, 1 23/32-in. Wide, Olive Drab Green
MS27983-1	Button, Snap Fastener
MS27983-2N	Socket, Snap Fastener
MS27983-3	Stud, Snap Fastener
MS27980-10B	Eyelet, Snap Fastener

a. Cut a 7-in. length of PIA-W-4088, Type XII webbing for the bundle flue. Hot knife edges (Figure 59).

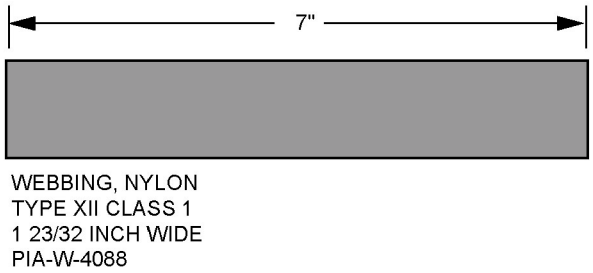

Figure 59. Bundle Flue Webbing Layout

b. Fold one end over 1 3/4-in. and sew a 3/4-in. box-X stitch pattern with size E thread (Figure 60).

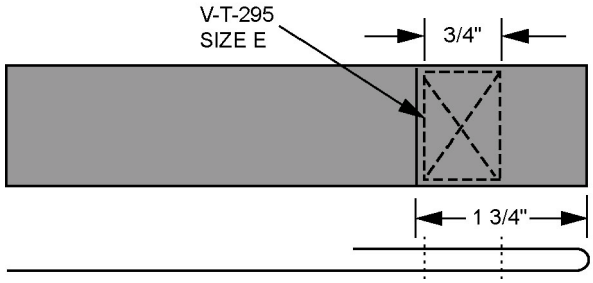

Figure 60. Fold Webbing

c. Install pull-the-dot button and socket fastener. Place the one set of snaps in the center of the box stitch 1/2-in. down from top and the other set 1/2-in. up from the bottom edge of webbing (Figure 61).

NOTE

Location of bundle flue may vary from harness to harness depending on the location of the chest strap and OBOGS bracket.

d. Fold other end of webbing over 1-in. and locate bundle flue on the wearer's left front panel of the chest garment as shown in Figure 62 in an area that does not interfere with the chest strap or oxygen bracket. Tab should be located outboard. Sew bundle flue to harness using size E thread with a 3/4-in. wide box-X stitch (Figure 62).

e. Install stud and eyelet fasteners on the flue through the harness front panel and flue webbing. Place one set of snaps in the center of the box stitch 1/2-in. down from the top and the other set 1/2-in. up from the bottom edge of webbing (Figures 63 and 64).

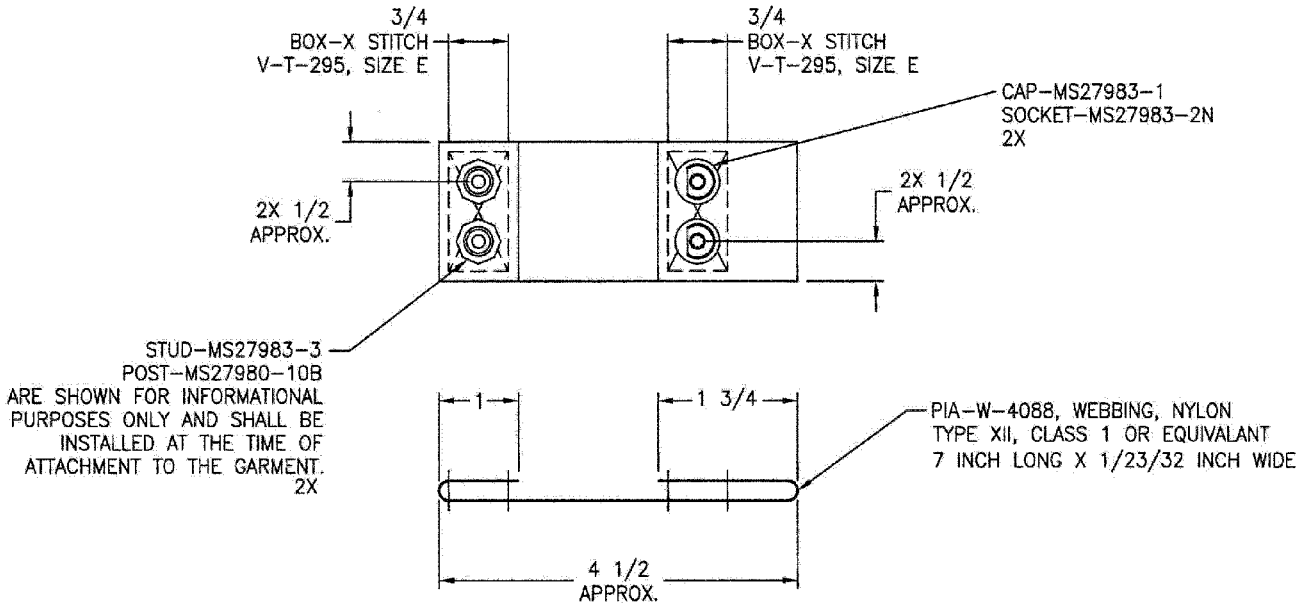

Figure 61. Bundle Flue Layout

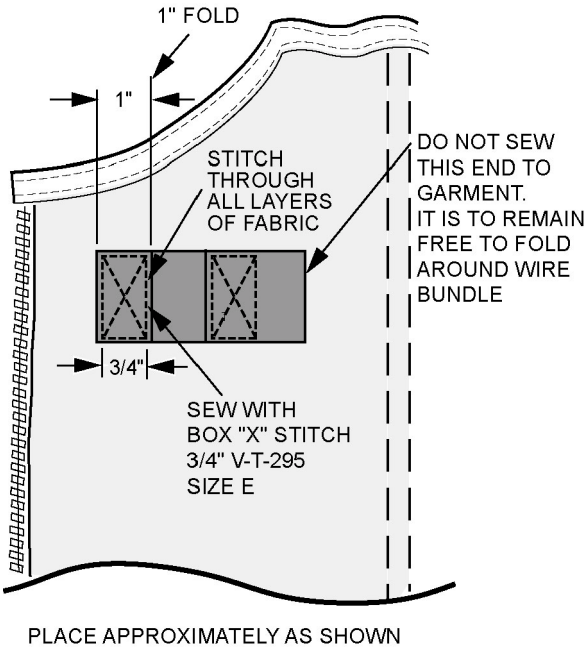

Figure 62. Bundle Flue Placement

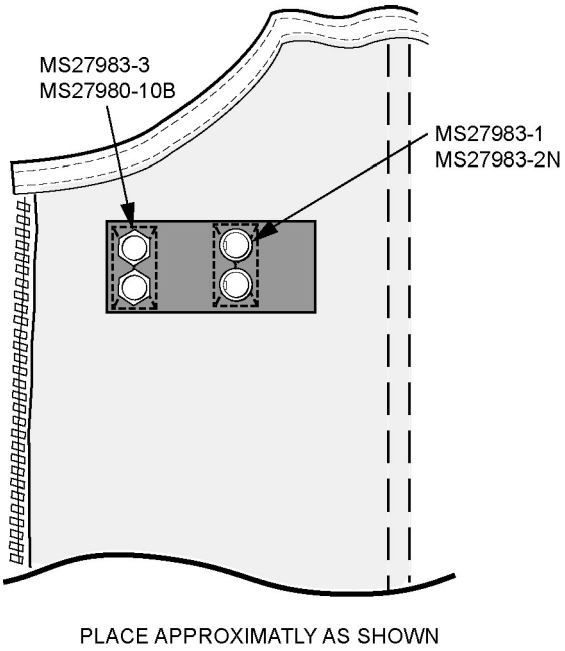

Figure 64. Snap Placement

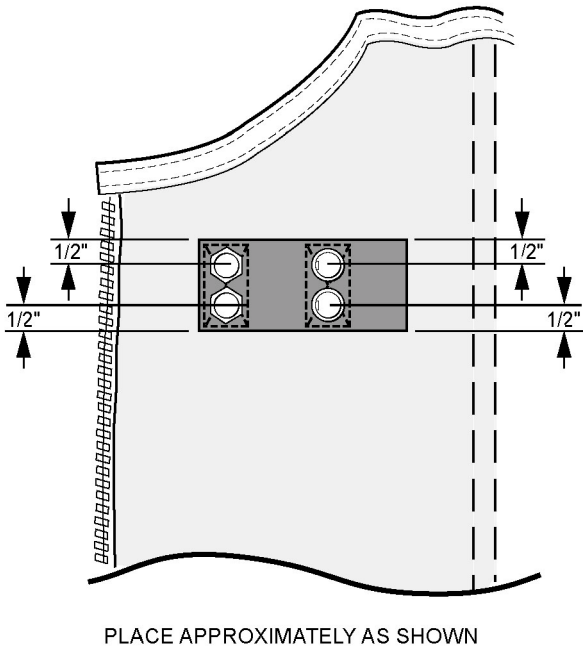

Figure 63. Snap Installation Dimensions

INTERMEDIATE MAINTENANCE

REPAIR PROCEDURES

PCU-56/P SERIES PARACHUTE RESTRAINT HARNESS ASSEMBLY

PART NO. 829AS100

List of Effective Work Package Pages

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Reference Material

Aircrew Personal Protective Equipment (Protective Assembly, Aircrew Survival-Armor A/P22P-18(V)) . . . . . NAVAIR 13-1-6.7-4
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdowns, Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00
Organizational and Intermediate Maintenance Description and Principles of Operation PCU-56/P Series Parachute Restraint Harness Assembly . . . . . WP 009 00
Organizational Maintenance Inspection and Repair Procedures PCU-56/P Series Parachute Restraint Harness Assembly . . . . . WP 009 01
Organizational Maintenance Original Issue Rigging Procedures PCU-56/P Series Parachute Restraint Harness Assembly . . . . . WP 009 02

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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Target Completion
ACC 597, Rev A	8 Apr 03	Modification of the PCU-59/P and PCU-59A/P Integrated Parachute Restraint Harness Assemblies with a CRU-103 Oxygen Regulator Pocket (WUC 96A3C00). For NALCOMIS Optimize Users, WUC (96A31) (ECP-16452)	1 Dec 03	31 Dec 2005
ACC 623	14 Feb 96	Riser Restraint Keeper (RAMEC P-08-95)	1 Jul 96	31 Dec 2003
ACC 633	14 Sep 98	Replacement of LPU-23/P Floatation Device with the LPFC	1 Jan 00	31 Dec 2006
ACC 633, Rev A	13 Sep 00	Replacement of LPU-23/P Floatation Device and LPU-33/P LPFC with LPU-36/P on PCU-33/P (Series) and PCU-56/P (Series) Integrated Parachute Restraint Harnesses (96A30) (ECP-16387)	1 Jan 01	30 Jun 2008

1. INTRODUCTION.

a. This Work Package (WP) contains instructions for intermediate level repair to ensure that the parachute restraint harness assembly remains in Ready-For-Issue (RFI) status.

b. When performing repairs detailed in this WP follow these guidelines:

(1) Review all applicable instructions prior to starting repair.

(2) Ensure that all necessary material and equipment are available prior to starting repair.

(3) To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

(4) A Quality Assurance (QA) inspector shall examine the finished work.

2. HARNESS ASSEMBLY.

3. REPLACEMENT OF HOOK AND PILE FASTENER TAPE TO CHEST STRAP FOR SINGLE AND DUAL PULL (IF REQUIRED).

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21480	Fastener Tape, Hook, 1 1/2-in. Wide, Type II, Class 1
MIL-F-21480	Fastener Tape, Pile, 1 1/2-in. Wide, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Hook and Pile Fastener Tape is mandatory for single pull and aircrew optional for dual pull.

Placement of hook and pile fastener tape may be reversed (aircrew option).

a. Properly fit harness to aircrew.

b. Mark chest strap webbing 1-in. from friction bar on both the free end and portion attached to harness (Figure 1).

c. Attach a 2-in. strip of hook fastener tape on outer surface of chest strap and a 2-in. strip of pile fastener tape on inner surface of free end. Machine stitch around edges of hook and pile fastener tape. Backstitch a minimum of 1/2-in. Leave a minimum of 10-in. of webbing from chest strap friction bar after fitting to aircrew. Trim and sear. Avoid forming sharp edges while hot knifing and searing (Figure 1 or Figure 2). (QA)

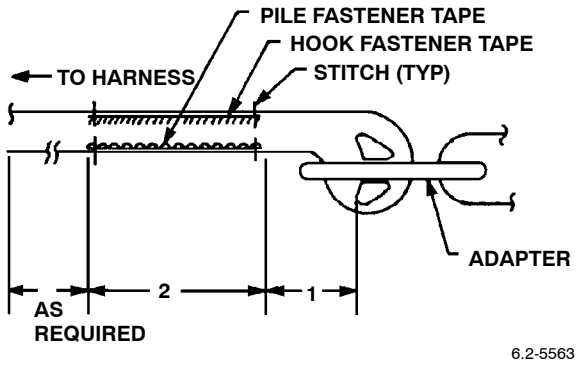


Figure 1. Addition of Hook and Pile Fastener Tape to Chest Strap

d. When donning, aircrew shall align hook and pile tape patches and press together firmly.

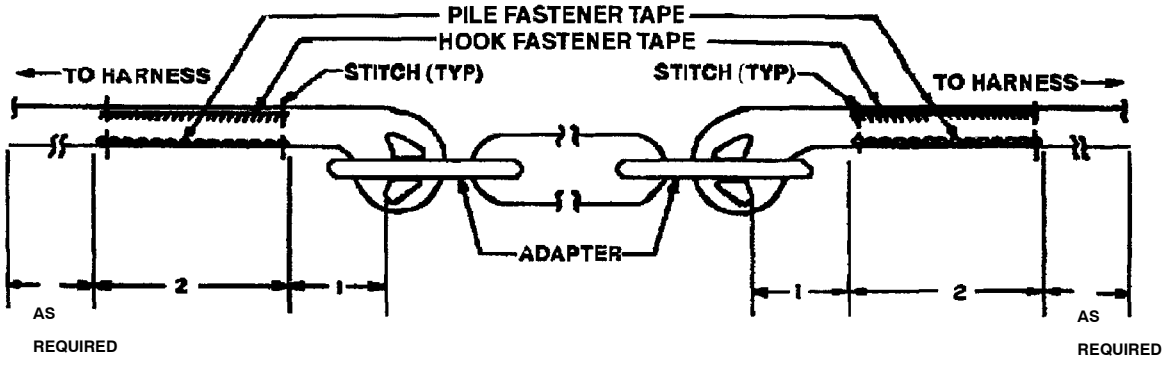


Figure 2. Attachment of Hook and Pile Tape to Chest Strap Dual Pull (Aircrew Option)

4. REPLACEMENT OF SADDLE ANTI-ROTATION STRAPS HOOK AND PILE FASTENER TAPE.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21480	Fastener Tape, Hook, 1-in. Wide Type II, Class 1
MIL-F-21480	Fastener Tape, Pile, 1-in Wide Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Placement of hook and pile fastener tape may be reversed (aircrew option).

a. Carefully remove old hook and pile fastener tape.

b. Lay each hook fastener tape lengthwise over inside portion of each 4-in. Trapezoidal box-X stitch pattern that attaches saddle anti-rotation adjustment straps to left and right leg straps. Cut top narrow end of each hook fastener tape to match angled end of each trapezoidal box-X stitch pattern. Sew hook fastener tape over inside portion of each trapezoidal box-X stitch pattern (Figure 3).

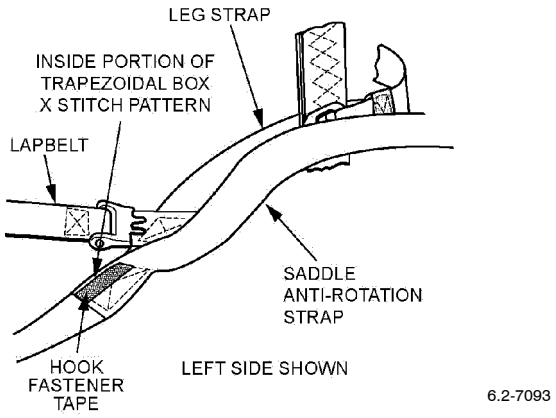


Figure 3. Lay Each Hook Fastener Tape Lengthwise

c. Route free ends of adjustment straps thru their respective reversible adapter.

d. Sew each pile tape within stitch pattern marks made on upper adjustment straps (Figure 4).

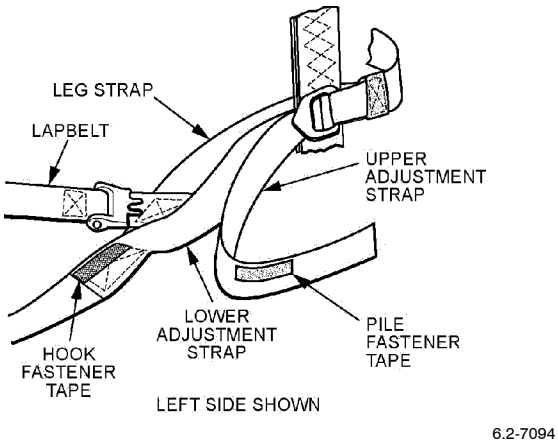


Figure 4. Sew Pile Fastener Tape to Adjustment Straps

e. Tack reversible adapter on sleeve side thru webbing and as close as possible to hardware. Tack with one turn of size FF thread doubled and waxed; tie off (Figure 5).

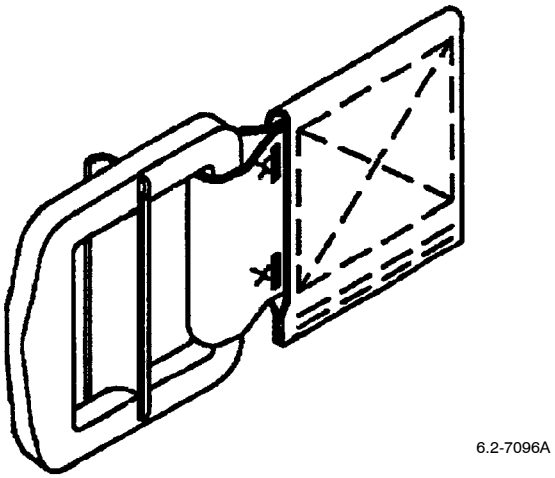


Figure 5. Tack Reversible Adapter

f. When donning harness, aircrew shall saddle tighten anti-rotation adjustment straps to a snug position and shall then align hook and pile tapes, pressing firmly together.

5. REPLACEMENT OF SADDLE ANTI-ROTATION STRAP.

Support Equipment Required

Part Number	Nomenclature
—	Hot Knife

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
PIA-W-4088	Webbing, Nylon, Type VIII, 51-in. Long

CAUTION

Avoid damaging harness material when removing the old saddle anti-rotation straps.

a. Remove the trapezoidal box-X stitching from the saddle anti-rotation strap carefully.

b. Using a hot knife cut two lengths of nylon webbing 25 1/2-in. long, if required. Avoid forming sharp edges while hot knifing and searing.

c. From the bottom outboard points where the lap belt attaches to the left and right leg straps, measure down 4-in. toward the saddle and mark (Figure 6).

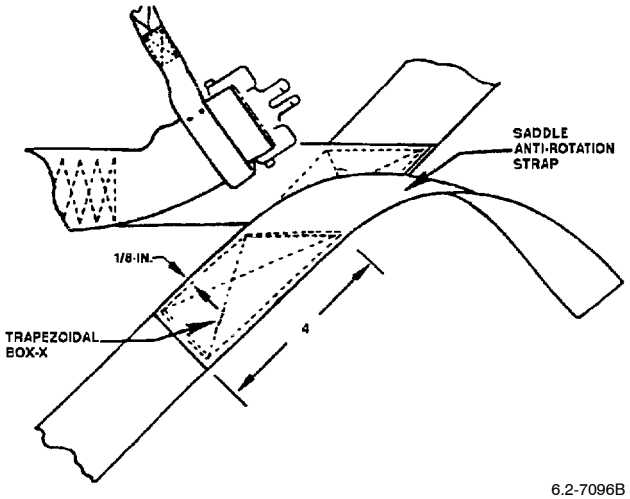


Figure 6. Attachment Point for Left and Right Leg Straps

d. Position the seared end of new leg strap on the adjustment strap 4-in. mark, with the free end of the strap toward the lap belt strap (Figure 6). Sew new strap in place with a trapezoidal box-X stitch pattern. Follow the same procedure for the other leg, if required.

e. Route free end of the anti-rotation strap thru the respective friction adapter (Figure 7).

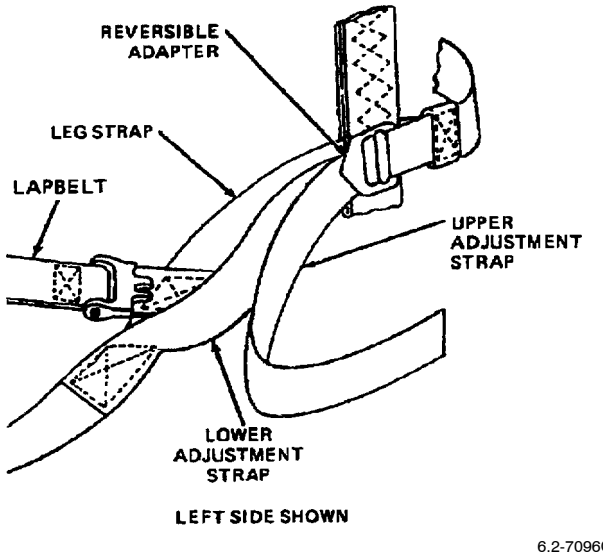


Figure 7. Routing of Anti-Rotation Strap

f. The aircrew shall don the restraint harness and adjust the chest strap and anti-rotation strap for a snug (but not tight) fit. Position the free ends of the adjustment strap flat over the lower attachment ends of the adjustment straps.

g. Mark on each upper strap the corresponding location of the hook fastener tape attached to the lower strap.

h. For attachment of the hook and pile fastener tape refer to WP 009 02.

i. Measure 5-in. from ends of the pile fastener tape towards the free ends of the adjustment straps. Use a hot knife to cut any excess adjustment strap webbing at the 5-in. mark. Avoid forming sharp edges.

j. Triple roll 3/4-in. of each free end of the adjustment straps to the inboard side, opposite that of the pile fastener tape and sew together with a single row of stitching 5/8-in. from rolled end. Backstitch both ends of the strap 1/2-in. (Figure 8).

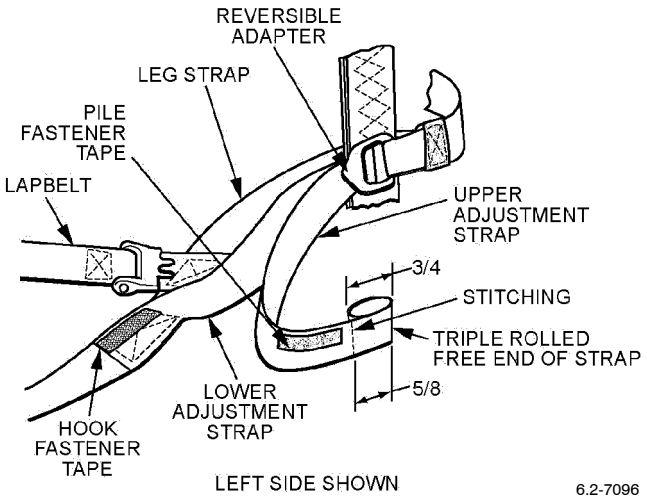


Figure 8. Triple Roll 3/4-in. of Free End

6. REPLACEMENT OF SADDLE ANTI-ROTATION STRAP ADAPTER TAB.

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon, Type II, Yellow 1 x 5 Class 1, 1A, or 2
V-T-295	Thread, Nylon, Size E, Type I or II Class A
V-T-295	Thread, Nylon, Size FF, Type I or II Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove old nylon tape from saddle anti-rotation adapter.

b. Cut a length of tape 5-in. and sear ends. Avoid forming sharp edges while hot knifing and searing.

c. Pass end of nylon webbing thru friction adapter, turn ends under 1/4-in. and sew with a 1-in. box-X stitch, 1/8-in. from edge (Figure 9).

d. Tack webbing to center and as close as possible to friction adapter to prevent movement. Tack with one turn size FF thread, doubled and waxed; tie off (Figure 9).

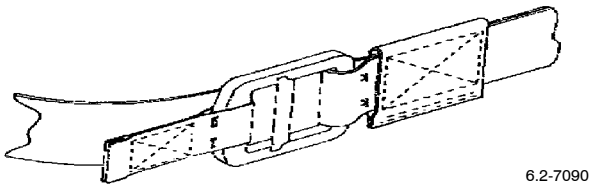


Figure 9. Tacking of Saddle Anti-Rotation Strap Tab to Adapter

7. REPLACEMENT OF GATED D-RING.

Materials Required

Specification or Part Number	Nomenclature
1979AS975-1	Ring Assembly, Snaplink, Rescue (Gated D-Ring)
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. Remove stitching at end of adjustment strap, using care not to damage webbing.

b. Remove webbing adjustment strap from lower portion of damaged gated D-Ring.

c. Install replacement gated D-Ring (gate inboard) per Figure 10.

d. Refold end of adjustment strap webbing and machine box-X stitch in place. Backstitch 1/2-in. (QA)

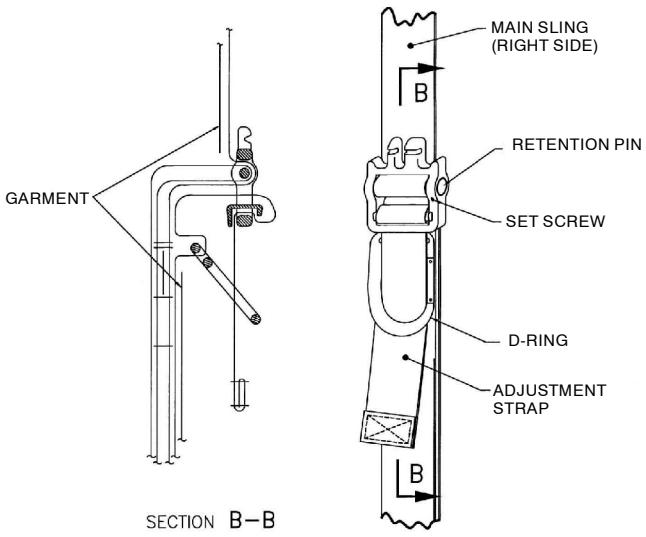


Figure 10. Replacement of Gated D-Ring

8. RELOCATION OF CHEST STRAP ADAPTER SINGLE PULL.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. Center the chest strap adapter if off centered to the right, do as follows:

(1) Properly fit harness to aircrew per WP 009 00.

(2) Mark desired new location for adapter.

(3) Carefully remove existing stitching. From new center mark, allow 3-in. and sear off excess webbing. Position adapter in place and machine stitch (Figure 11).

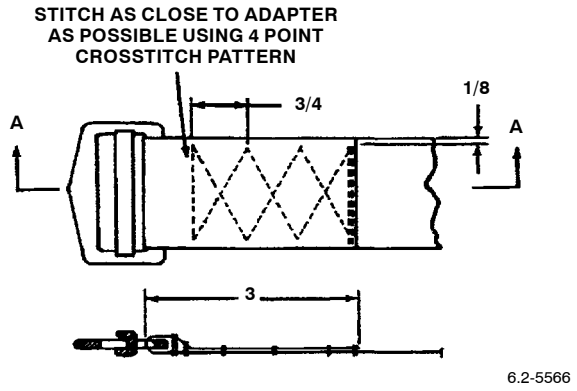


Figure 11. Relocation of Chest Strap Adapter

9. FABRICATION OF CHEST STRAP EXTENSION.

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon, Type XXVII, Class 1, 1A, or 2
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

This extension is applicable to both the left and right hand chest strap.

a. Remove free end of chest strap from garment channel located between the right front and back panels. Reroute chest strap so that it passes thru the channel in the mainsling webbing and the slit in front garment panel (Figure 12).

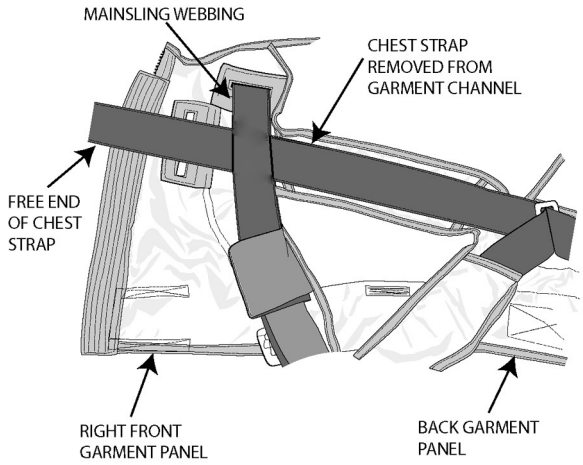


Figure 12. Remove Free End of Chest Strap

b. Adjust harness on aircrew and mark center of chest strap between the right front and back garment panels. (QA)

c. After aircrew has removed harness, lay out harness and cut chest strap 2-in. from centerline toward free end of chest strap (Figure 13). (QA)

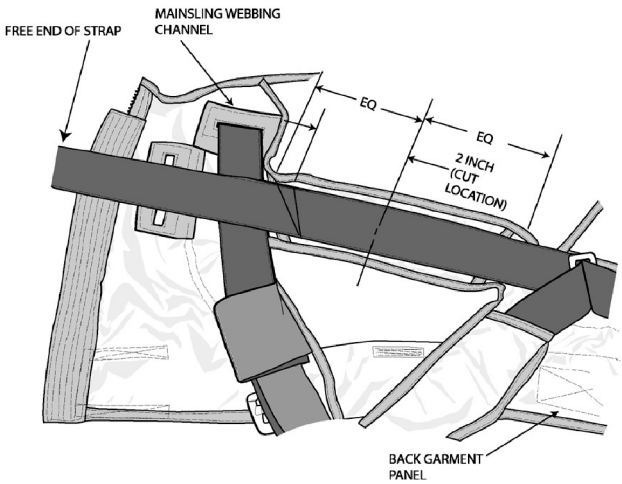


Figure 13. Layout Harness and Cut Chest Strap

d. Obtain a length of webbing 12-in. longer than the portion of the chest strap previously removed. Sew new webbing to the end of chest strap remaining on harness. Overlap webbing 4-in. stitch in a four-point W-W pattern (Figure 14). (QA)

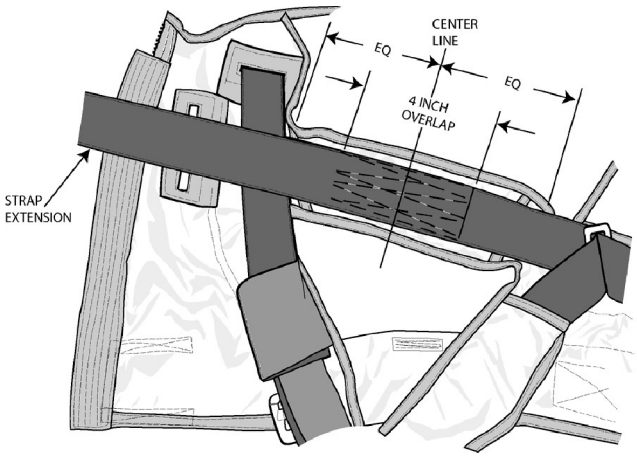


Figure 14. Obtain Length of Webbing 12-in. Longer

e. Insert modified chest strap into garment channel thru channel in mainsling and thru slit in front garment panel. Channel used may vary according to aircrew's size (Figure 15).

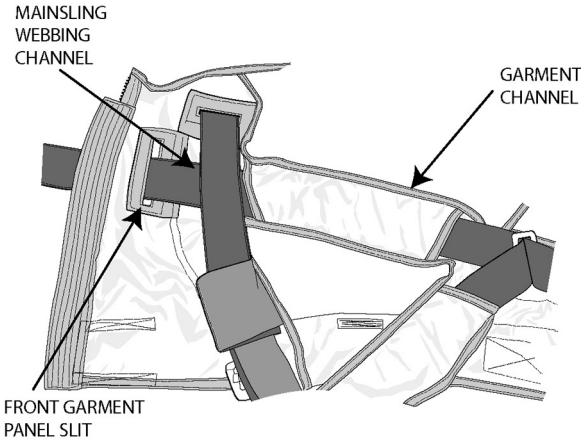


Figure 15. Insert Modified Chest Strap

10. REPLACEMENT OF DUAL CHEST STRAP ADAPTER.

Materials Required

Specification or Part Number	Nomenclature
MS70101-1	Quick Fit Adapter
PIA-W-4088	Webbing, Nylon, Type XXVII, Class 1, 1A, or 2
V-T-295	Thread, Nylon, Size 6, Type I or II Class A

a. Cut and sear a 6-in. length of nylon webbing. Avoid forming sharp edges while hot knifing and searing.

b. Fold and sew with size 6 thread, in a box-X stitch patten per Figure 16.

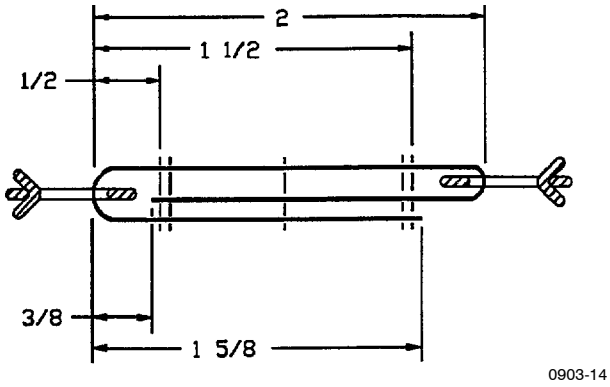


Figure 16. Fabrication of Dual Chest Adapter

11. FABRICATION OF CRU-103 OXYGEN REGULATOR POCKET.

Materials Required

Specification or Part Number	Nomenclature
MIL-C-7219	Cloth, Nylon, Duck, Sage Green, Type III, Class 3
PIA-W-4088	Webbing, Nylon, Type VIII, OD, Class 1, 1A, or 2
PIA-T-5038	Tape, Nylon, Type III, Green, Class 1 or 1A

Materials Required

Specification or Part Number	Nomenclature
PIA-T-5038	Tape, Nylon, Type IV, 1-in. Class 1 or 1A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MIL-F-21840	Fastener Tape, Pile, 1-in., Type II, Class 1
MIL-F-21840	Fastener Tape, Hook, 1-in., Type II, Class 1
MIL-F-21840	Fastener Tape, Pile, 2-in., Type II, Class 1
MIL-F-21840	Fastener Tape, Hook, 2-in., Type II, Class 1
MS27983-1	Cap, Snap, Fastener
MS27983-2	Socket, Snap, Fastener
MS27983-3	Stud, Snap, Fastener
MS27983-4	Eyelet, Snap, Fastener

NOTE

Refer to NAVAIR 13-1-6.7-4, Aircrew Personal Protective Equipment (Protective Assembly, Aircrew Survival - Armor (A/P22P-18(V)), Figure 13-14A for pattern pieces "a" and "b" only, and Paragraph 3-41A for regulator pocket folding procedures.

a. Mark and sear cut patterns "a" and "b" using sage green nylon duck cloth.

b. Place "a" on top of "b" and sew around 1 3/8-in. circle on "a".

c. Cut out inside of hole, ensuring to stay 1/8-in. from stitch line, and push remainder of "b" through "a".

d. Pull "b" tight and sew top stitch, 1/8-in. from folded edge, around hole. Upon completion, sew "b" to "a".

e. Sew 3-in. piece of 2-in. pile tape on top inside flap in accordance with pattern "a".

f. Sew 3-in. piece of 2-in. hook tape, 3/4-in. below top of bottom outside flap in accordance with pattern "a".

g. Sew 9 1/2-in. piece of Type VIII nylon webbing, centered in pocket and 1/2-in. down from bottom of 1 1/8-in. hole, to bottom of pocket.

h. Cut out, sear and sew double row of stitching around outside diameter of 1-in. hole.

i. Invert pocket, and in accordance with folding and sewing marks on pattern "a", fold lower left outside edge of pocket flap over upper left edge of pocket. Sew pocket flap to edge of pocket using 2 rows of side-by-side stitching, 3/8-in. from edge. Stitching will be from top to bottom of flap and then across bottom of flap to form left side of pocket.

j. Turn pocket right side out and sew 1-in. Type III textile tape around outer edge of pocket, using 2 rows of stitching, 1/8-in. and 3/8-in. from edge, to prevent fraying.

k. Sew 3-in. piece of 2-in. pile fastener tape to outside of upper right flap in accordance with pattern "a".

l. Sew 3-in. piece of 2-in. hook fastener tape to inside of lower right flap, in accordance with pattern "a".

m. Install 2 pull-the-dot caps and sockets in accordance with markings on pattern "a". Ensure that caps are installed on the outside of top flap and the sockets are installed over the 2-in. pile velcro tape on the inside of the flap, with locking lugs on sockets facing towards the 1 1/8-in. hole on top flap.

n. Install 2 pull-the-dot studs and eyelets on the inside of the lower pocket in accordance with markings on pattern "a". Ensure the eyelets are installed on the inside of the pocket and the studs are installed on the outside of the pocket over the 2-in. hook tape.

o. Fold the pocket and insert the oxygen mask hoses and CRU-103 regulator into the pocket, snap the cover flap over the regulator, and set aside for fitting.

12. REPLACEMENT OF SLIDE FASTENER.

Materials Required

Specification or Part Number	Nomenclature
V-F-106	Slide Fastener, Type IV, Style #8, Size MH, Brass with Black Chemical Finish, Sage Green Tape Available from: Lenzip Manufacturing 1900 W. Kinzie St. Chicago, IL 60622-6243 Style #1031
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove hooks and eyelets if required.

b. Remove damaged slide fastener and protective flap. Retain protective flap for reuse.

c. Attach replacement slide fastener using size E thread. Slide fastener shall not run over edges of fabric panels (Figure 17). (QA)

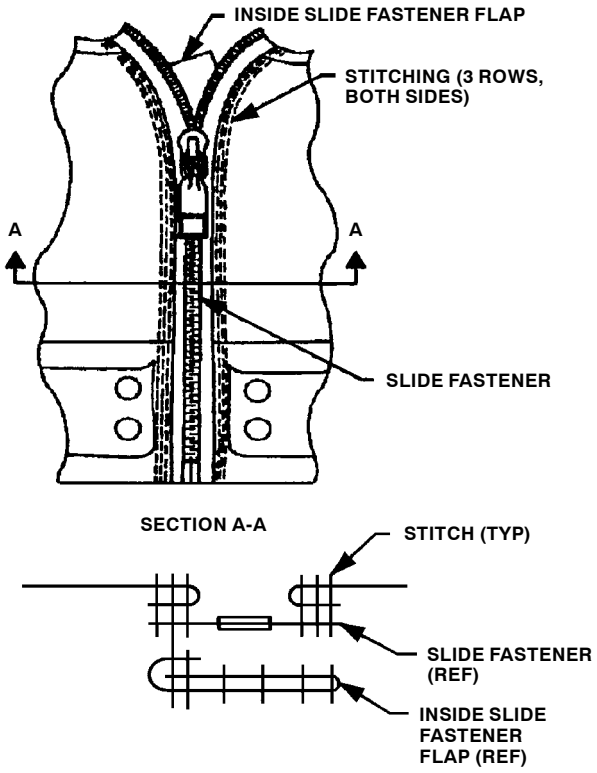


Figure 17. Replacement of Slide Fastener

d. Resew protective flap back in place.

e. Replace hooks and eyelets per WP 009 01, if required.

13. REPLACEMENT OF SLIDER PULL THONG.

Materials Required

Specification or Part Number	Nomenclature
PIA-T-5038	Tape, Nylon, Type III, Class 1 or 1A, 3/4-in. Wide
MIL-F-21840	Fastener Tape, Pile, 1-in. Wide, Class 1

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, 1-in. Wide, Type II, Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove worn pull thong.

b. Cut 4 3/4-in. length nylon tape. Sear both ends. Avoid forming sharp edges while hot knifing and searing.

c. Weave new pull thong thru eye in slider pull tab. Place sides together with ends even and stitch together at end using 3/4-in. long box stitch pattern including a 3/4-in. length of 1-in. pile tape (Figure 18).

Figure 18. Replacement of Slider Pull Thong

14. REPAIR OF HARNESS CLOTH.

Materials Required

Specification or Part Number	Nomenclature
MIL-C-508	Cloth, Oxford, Nylon
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

WARNING

Do not stitch thru harness webbing.

a. Cut a patch sufficiently large to cover damage and overlap 1-in. on all sides.

b. Sear edges of patch and damaged area.

c. Fold patch under 1/4-in. on all sides and stitch in place, using size E thread 1/8-in. from fold in patch. Backstitch 1/2-in. minimum. (QA)

d. Turn suit inside out and stitch 1/8-in. from edge of damage. Backstitch 1/2-in. minimum. (QA)

15. REPLACEMENT OF SURVIVAL VEST TAB AND DEE-RING.

Materials Required

Specification or Part Number	Nomenclature
MS51925-4	Dee-Ring
PIA-T-5038	Tape, Nylon, Type IV, Class 1 or 1A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Cut a 5 1/2-in. length of nylon tape and sear ends. Avoid forming sharp edges while hot knifing and searing.

b. Reeve nylon tape thru Dee-Ring and fold in half. Sew tape together with double row of stitching 3/8-in. from Dee-Ring. Backstitch each end 1/4-in.

NOTE

The Dee-Ring and tab should be located above lap belt.

c. Place Dee-Ring and tab around harness groin strap webbing and sew ends together with double row of stitching. Ensure that stitching does not pass thru harness webbing. Backstitch each end 1/4-in. (Figure 19). (QA)

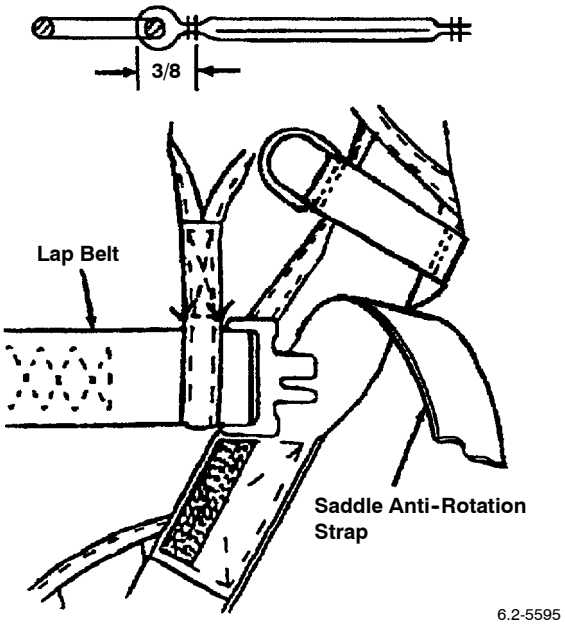


Figure 19. Attachment of Survival Vest Dee-Ring

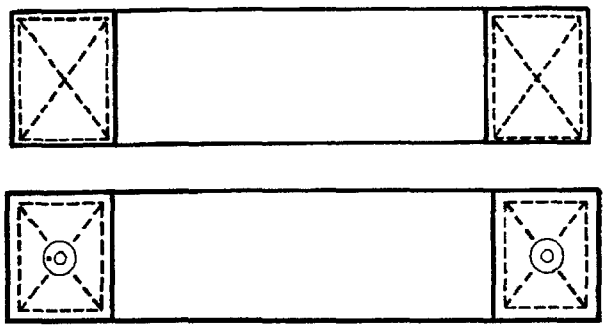
16. REPLACEMENT OF FLASHLIGHT RETENTION STRAPS.

Materials Required

Specification or Part Number	Nomenclature
MIL-W-5664	Webbing, Textile, Elastic, Type I, Class 2 19-in. Long
PIA-T-5038	Tape, Nylon, Type III, Class 1 or 1A
PIA-W-4088	Webbing, Nylon, Type I, Class 1, 1A, or 2
MS27983-1	Snap, Fastener, Button
MS27983-2N	Socket, Snap Fastener
MS27983-3	Stud, Snap Fastener
MS27983-4	Snap, Fastener, Eyelet
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Cut two pieces of elastic webbing 9 1/2-in.

b. On each piece of webbing, fold back 1 1/4-in. on each end and stitch this doubled over end using 1-in. wide box-X stitch. Stitches should come within 1/8-in. of edge of webbing (Figure 20). (QA)



6.2-7091

Figure 20. Retention Strap and Installation of Snaps

c. At intersection of diagonal stitch on box-X stitch of each piece of webbing, install a button/socket on one fold and a stud/eyelet on the opposite fold. Ensure these are installed so they will snap around the gooseneck flashlight (Figure 20).

d. Flashlight will be mounted on the rightside of restraint harness between the strobe light and the radio/knife pocket. Mounting will be accomplished to ensure base of flashlight is flush with the bottom of the radio/knife pocket. Mount so stud/eyelet is on same side as the strobe light pocket.

e. Determine center of first piece of elastic webbing. Place top of one piece of elastic webbing 2 1/4-in. below top of radio/knife pocket upper edge binding. Ensure stud/eyelet is facing the strobe light pocket.

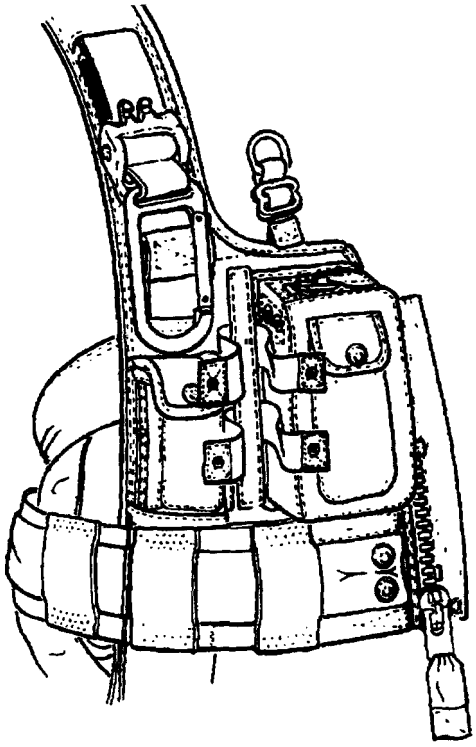
f. Stitch center of elastic webbing with four continous rows of vertical stitches about 1/16-in apart, directly over radio/knife pocket edge binding. Stitch no closer than 1/8-in. from edge of webbing.

WARNING

Do not stitch thru harness webbing straps

g. Determine center of second piece of elastic webbing. Place top of second piece of elastic webbing 1 3/4-in. below the bottom of the first piece.

h. Cut a piece of tape 10 1/2-in. long and turn under 1-in. and align tape with top binding tape of radio/knife pocket, sew around the edge of the tape. Bottom end of tape is turned under 1/2-in. in aligning of flashlight retention straps, sew 1/8-in. around edge of tape, backstitch 1/2-in. (Figure 21). (QA)



6.2-7092

Figure 21. Attachment of Flashlight Holder

i. Top elastic webbing should surround flashlight between gooseneck and top of light switch. Bottom elastic webbing should surround flashlight above upper lip of battery access cover (Figure 21). (QA)

17. REPLACEMENT OF SURVIVAL STOWAGE POCKETS.

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

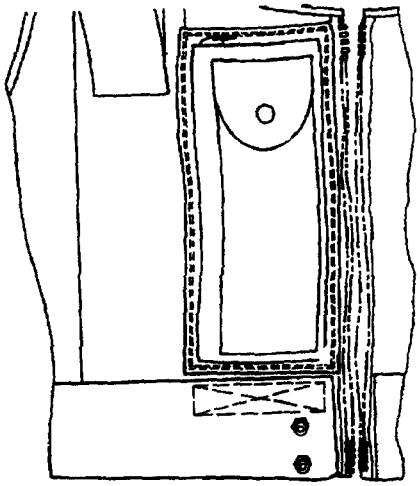
NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

Survival item pockets are authorized on all size harnesses. A local determination of acceptability must be made on extra small, small short harnesses. Custom made harnesses must use a survival vest. Additionally, small statured crewmembers who have difficulty with the placement of the chest strap, must use a survival vest vice pockets.

a. Inspect backing material for possible replacement.

b. Install radio/knife pocket on right side of harness, align the bottom of the pocket with harness securing webbing for the LPU and along slide fastener fold line (Figure 22). (QA)



6.2-7086

Figure 22. Attachment of Radio/Knife Pocket

WARNING

Do not stitch thru harness shoulder straps or thru fabric channels that encase the straps. Do not stitch thru the chest strap.

c. Double stitch around pocket 1/8-in. from edge. Do not stitch into channel area.

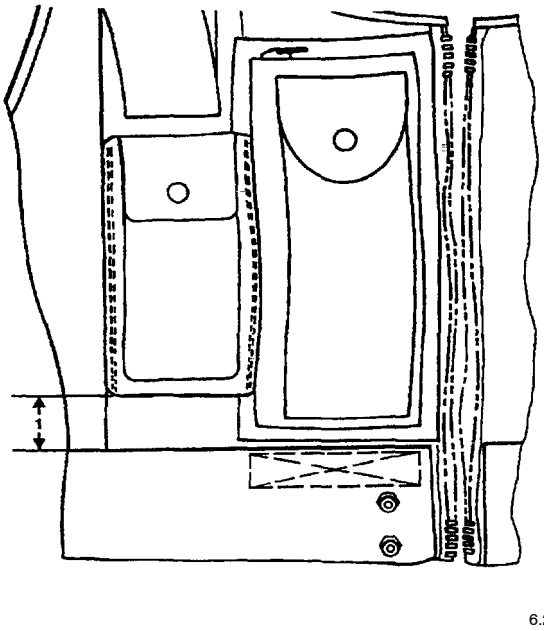
NOTE

Bound edges of the strobe light pocket and radio/knife pocket may overlap on small size harnesses.

d. Install strobe light pocket, align pocket binding tape with channel fold line, align bottom of strobe light pocket 1-in. above edge of webbing. Overlap pocket binding tape on top of radio/knife pocket binding tape and double stitch 1/8-in. from edge (Figure 23). (QA)

NOTE

Do not stitch over webbing channel.



6.2-7087

Figure 23. Attachment of Strobe Light Pocket

e. Cut two pieces tape 4 1/2-in. also two pieces hook and pile tape. Sew one piece hook tape to nylon tape in a box stitch 1/8-in. from edge, turn nylon tape over and sew pile tape on opposite end in same manner.

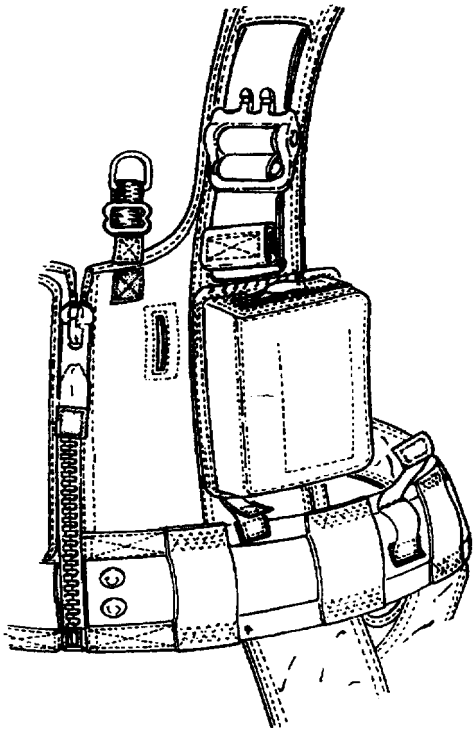
f. Position oxygen hose securing tab to bottom right edge survival items stowage pocket and bar tack. Position second oxygen hose securing tab to life preserver securing belt 1/4-in. from top and centered between second and third loops on left side.

g. (OBOGS) Position of oxygen securing tab(s) to life preserver securing belt 1/4-in. from top and located in a position for each aircrew's preference. To keep the oxygen hose from obscuring access to the left aircraft console.

NOTE

Additional tabs may be added as required to obtain a comfortable routing of oxygen hose

h. Attach survival items stowage pocket to harness, align pocket edge 4 1/4-in. from edge front panel material (medium size harness and smaller align on seam). Sew a double row of stitching 1/8-in. from edge of pocket, sew pocket down on webbing channel fold line (Figure 24). (QA)



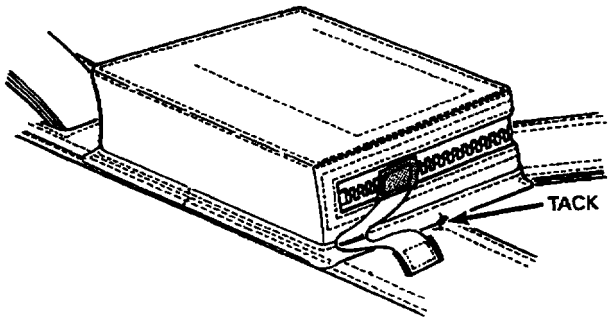
6.2-7088

Figure 24. Attachment of Survival Items Stowage Pocket

WARNING

Do not stitch thru harness webbing or over webbing channel.

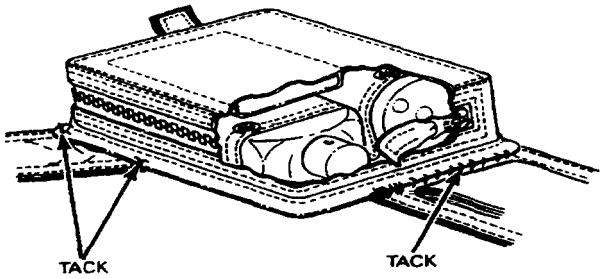
i. Tack survival pocket to main sling, to right of oxygen securing tab with two turns of size 6 thread, single and waxed; tie off (Figure 25). (QA)



0903-30

Figure 25. Tacking Survival Items Stowage Pocket to Main Sling

j. Hand tack pocket to left side of harness, with two turns size 6 thread, single and waxed; tie off (Figure 26).



6.2-7089

Figure 26. Hand Stitch Pocket Over Webbing

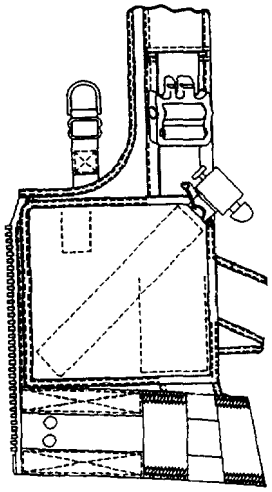
k. Hand stitch pocket over webbing channel with size 6, thread doubled and waxed. Start stitch with two overhand knots followed by a whip stitch and secure with two overhand knots. (QA)

18. REPLACEMENT OF HEED SURVIVAL STOWAGE POCKET.

a. Remove survival equipment and attachment lines from pockets.

b. Carefully remove old stitching around HEED pocket.

c. Align the pocket with the outer edge of channel and 2 7/8-in. from bottom of floatation belt. Attach pocket with a double row of stitching along channel (do not stitch thru channel) from the bottom of the pocket up to the slot where the main sling webbing exits the garment (Figure 27).



6.2-7089C

Figure 27. Attachment of HEED Pocket

d. On the inside (towards slider), attach the pocket to the garment with a double row of stitching and around the top and bottom of the pocket up to the main sling webbing (Figure 27).

19. REPLACEMENT OF INNER GARMENT VEST.

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

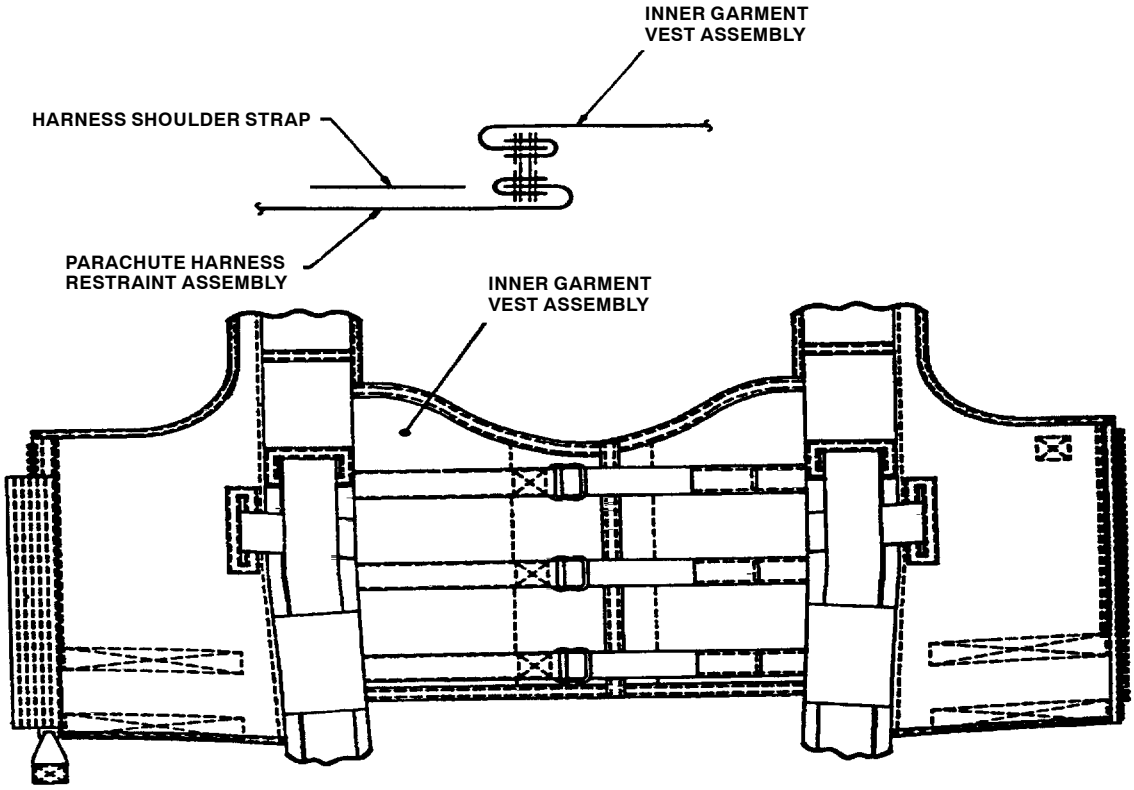
a. Carefully remove stitching from vest where it is sewn to harness.

b. Align panels of inner garment vest assembly with bottom of harness garment. Align outboard edges with outboard edge of main sling channel (Figure 28).

WARNING

Do not stitch thru harness webbing.

c. Stitch outboard edge of vest to outboard edge of channel with two rows of stitching (Figure 28).



6.2-5019A

Figure 28. Replacement of Inner Vest Garment

20. MODIFICATION AND INSTALLATION OF RADIO/KNIFE POCKET TO STORE THE GPS RECEIVER.

Material Required

Specification or Part Number	Nomenclature
829AS146-1	Pockets, Radio and Knife
PIA-W-4088	Webbing, Nylon, Type VIII, 8-in.
PIA-T-5038	Tape, Nylon, Type III, Class 1 or 1A, 16-in.
MS27980-1B	Snap, Fastener, Button (4)
MS27980-6B	Socket, Snap Fastener (4)
MS27980-7B	Stud, Snap Fastener
MS27980-8B	Snap, Fastener, Eyelet
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
A-A-1799	Bag, Plastic

a. Cut one piece of nylon webbing 8-in. long and install on inside bottom of pocket and stitch all around 1/16 to 1/8-in. edge distance (Figure 29).

b. Cut two pieces nylon tape 1-in. x 8-in. long and sew using a box-X stitch to attach to outside bottom of pocket. Place nylon as shown in (Figure 30).

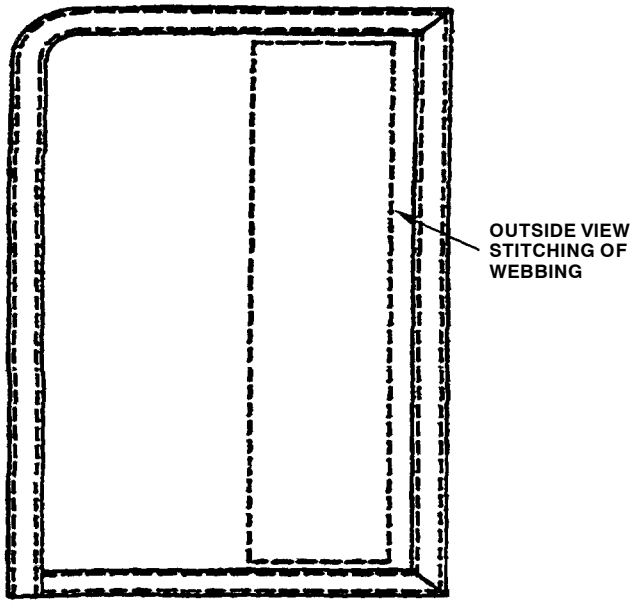


Figure 29. Installation of Webbing on Inside Bottom

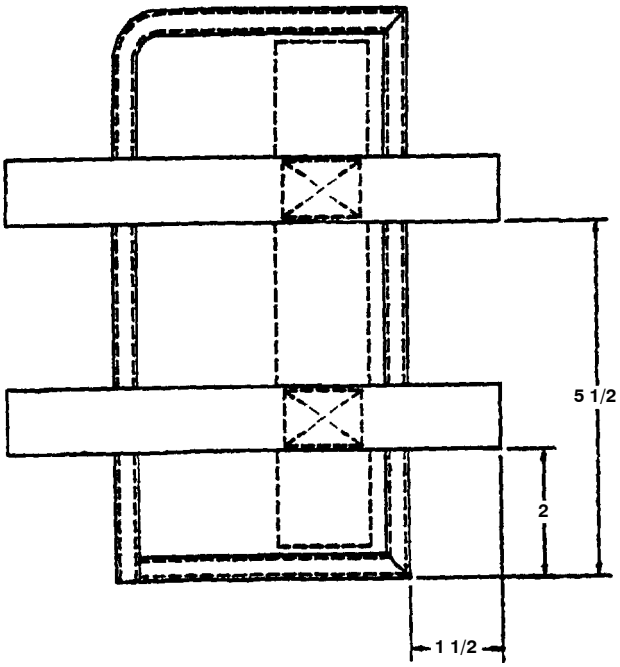


Figure 30. Installation of Tape on Outside Bottom

c. Install button, socket, stud, and eyelet fasteners as shown in (Figure 31).

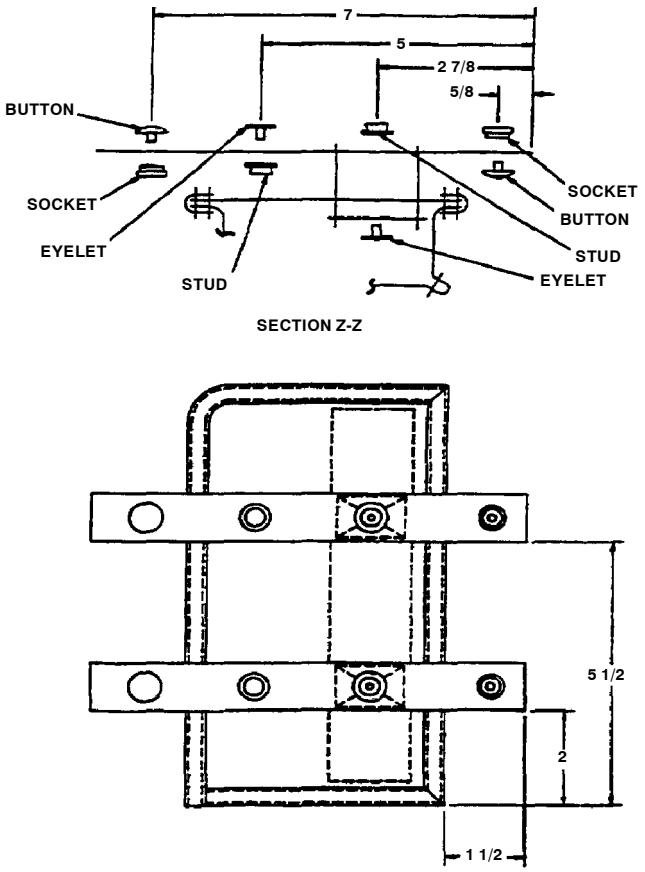


Figure 31. Installation of Snap Fasteners

d. Attach the GPS pocket to the PCU harness as follows:

(1) With the pocket slider facing down and the knife pocket facing forward, install the GPS pocket onto the right hand chest strap channel aft of the strobe light pocket.

(2) Place the long end of the GPS pocket straps around chest strap channel and snap to pocket mounted snap stud (both straps).

(3) Bring short end around and snap to pocket strap snap.

e. Install GPS device as follows:

(1) Ensure GPS is RFI per maintenance instruction.

(2) Place GPS devices in plastic bag and seal.

(3) Install bagged GPS device into pocket.

21. MODIFICATION OF PCU-56/P HARNESS ADJUSTMENT (AS REQUIRED).

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. Remove both canopy release adapters.

b. Remove the chest strap from channel in the main sling webbing. Do the same procedure for the opposite side.

c. Carefully remove the top triangular stitching from the main sling (Figure 32).

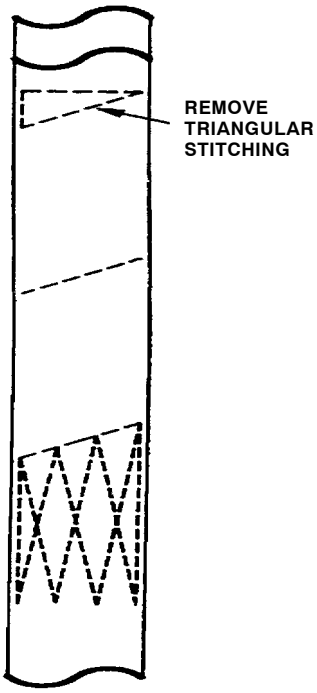


Figure 32. Removal of Triangular Stitching

d. Sew new triangular stitching with size 6 thread, back-stitch 1/2-in. (Figure 33).

e. Reinsert chest strap on right and left side of harness, thru the main sling. Between the new triangular stitching and the W-W stitching.

f. Reinstall both canopy release adapters per WP 009 01 (Figure 3). (QA)

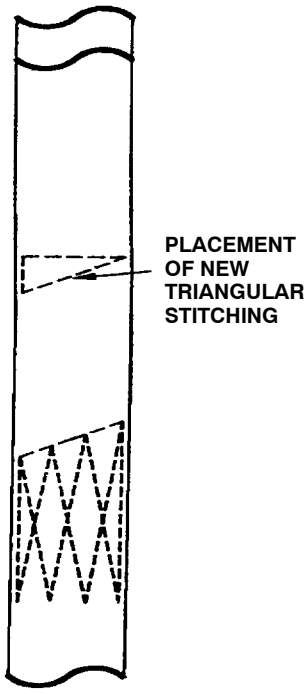


Figure 33. Placement of New Triangular Stitching

22. TACKING OF HARNESS ADJUSTER (AIRCREW OPTION).

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 3, Type I or II, ClassA
	-or-
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. After the harness has been fitted to the aircrew, it is permissible to tack the main sling adjuster to the Type IV webbing that forms the main sling channel.

b. Tacking shall be around the adjuster body and through the Type IV webbing only.

c. Tack using waxed size 3 or 6 thread, one turn single. Tie off.

23. MODIFICATION OF BACK STRAP ADJUSTMENT (AS REQUIRED).

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 3, Type I or II, Class A
	-or-
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Properly fit parachute restraint harness to aircrew. Chest strap should cross the torso at breast level when aircrew is standing.

b. Check the back strap for excess webbing. If there is excess, pull excess webbing back through the upper portion of the canopy release adapter. Measure the total length of the excess webbing (release of the chest strap may be necessary to pull back strap webbing through the canopy release adapter).

c. If the excess webbing measurement is less than 3-inches in length, do not proceed to the next step.

d. If the excess webbing measurement is within 3 1/2-in. to 8-in., proceed to the following steps in order to remove the excess. (If the excess webbing is greater than 8-inches, aircrew may need to be resized to smaller harness.)

e. Looking at the inside of the harness, locate the webbing that forms an X-pattern on the backside of the harness (Figure 34).

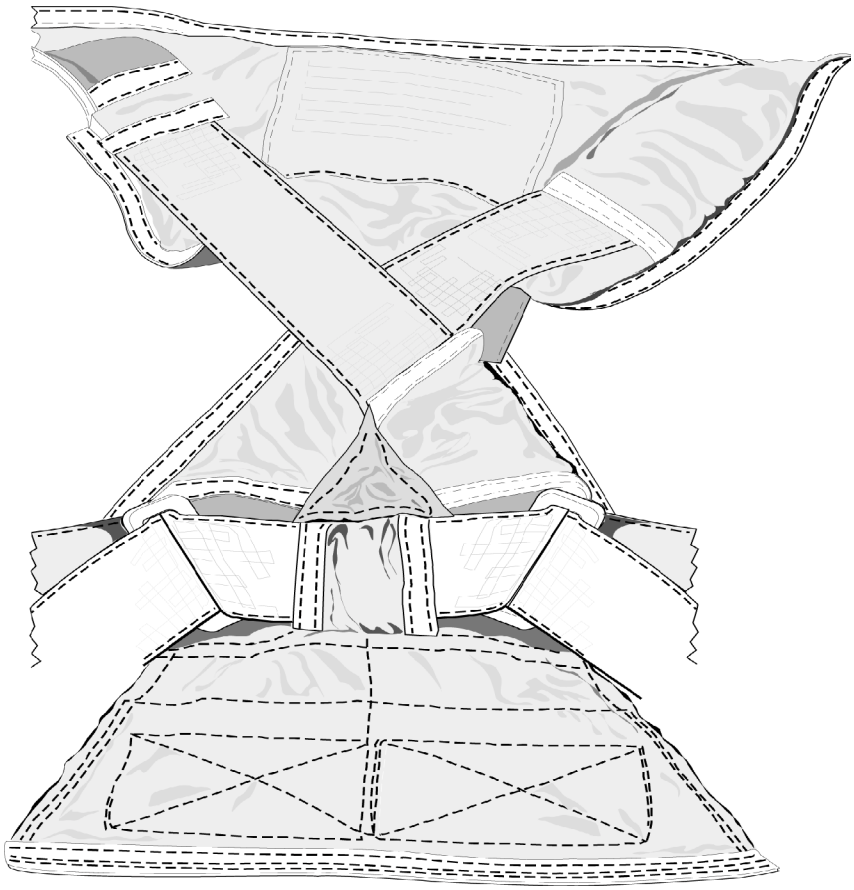


Figure 34. X-Pattern on Backside of Harness

f. Gather the back strap webbing located between the two harness links. From the measurement found in step d above, form an S-shape of the gathered harness webbing (Figure 35). The back strap modification must be taken evenly from each side of the back strap (measure and mark center of back strap, if necessary).

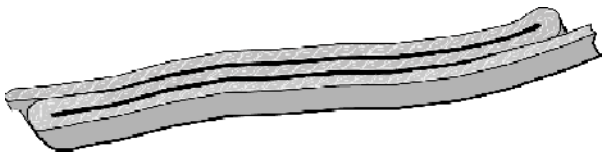


Figure 35. S-Shape Gathered Harness Webbing

g. Holding the webbing in place, do a temporary tacking with either size 3 or 6 thread, single and waxed. Perform a fit check with the aircrew. Make any necessary adjustments before the modification is sewn down permanently.

h. Holding the webbing in place and ensuring no garment material is in the way, sew with V-T-295, Size E thread, a box-X stitch 1-in. wide, at each end of the webbing 1/4-in. from edge and backstitch 1/2-in (Figure 36).

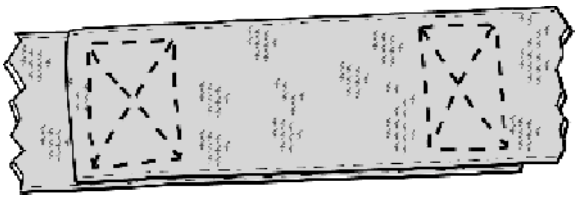


Figure 36. Modified Webbing

i. Upon completion of sewing adjust the harness webbing to its proper placement back into the garment channel (Figure 37).

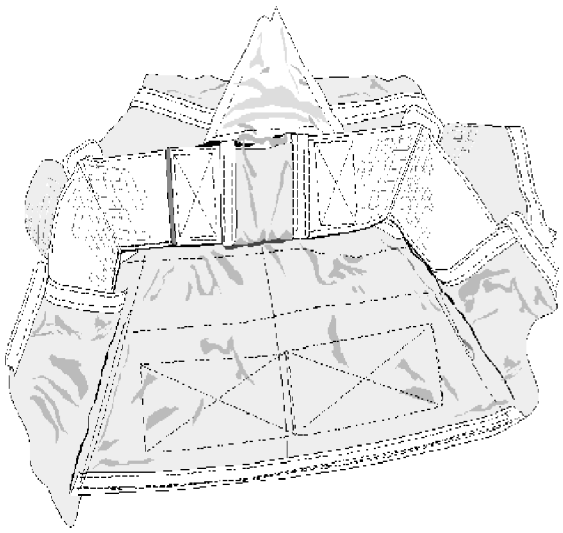


Figure 37. Finished Harness

24. LAP BELT ADJUSTMENT (AIRCREW OPTION).

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. Properly fit the parachute restraint harness to the aircrews.

b. Sit aircrew at flight station. Hook up the seat restraints (seat restraints may be attached to either the seat or the survival kit).

c. Observe the lap belt's placement and routing. The seat restraints should run straight from the seat restraint attachment points to the aircrew lap belt's release fittings. The aircrew should not be able to slide down or forward in the seat, nor under the seat restraints. There should not be any restriction or binding of the lap belt and seat restraints.

d. If the aircrew is secure in the seat and satisfied with the lap belt placement, do not proceed to the next step.

e. If the aircrew is neither secure nor satisfied with the lap belt placement, the lap belt may be moved up or down as needed.

f. Have the aircrew unhook from the flight station and remove the harness.

g. If the lap belt must be moved down, the existing lap belt may be used (if not damaged during removal from the harness). If the lap belt is damaged during removal, or the lap belt must be moved up, a new lap belt must be obtained from NAVAIRWARCENWPNDIV China Lake, CA, Code 461000D.

NOTE

If a new lap belt is required, obtain the new lap belt before proceeding with the next step.

h. To remove the lap belt from the harness, cut and remove the stitching from the box-X (2 places) that secures the lap belt attachment strap to the leg straps.

i. Have aircrew don the harness, sit at the flight station and hook up.

j. Center the lap belt between the leg straps.

k. Have the aircrew place the loose lap belt at the desired position.

l. Mark one leg strap, above and below the lap belt attachment strap.

m. Mark both sides of the lap belt attachment strap, following the angle of the leg straps.

n. Have the aircrew unhook from the flight station, and remove the harness.

o. Cut and sear excess material on the outside marks of the lap belt attachment strap, leaving 1/4 to 3/8-in. to allow for shrinkage. Avoid forming sharp edges while hot knifing and searing.

p. Measure marked leg strap from the center of the harness saddle to the positioning marks for the lap belt. Repeat for opposite side of leg strap. Ensure both leg straps are marked and located evenly.

q. Line up the outside edges of the lap belt attachment strap to the outside edges of the harness leg straps, where marked in steps l and m. Sew lap belt using a box-X stitch pattern with size 6 thread, four to six stitches per inch. The box-X stitch pattern should be formed so that the two rows of stitching are located at the outer and inner edges of the harness leg straps (DO NOT SEW OVER THE EDGES OF THE LEG STRAPS NOR LAP BELT ATTACHMENT STRAP) (Figure 38).

r. The above procedure may be performed one time per harness only. Any additional modifications will weaken the harness below minimum requirements.

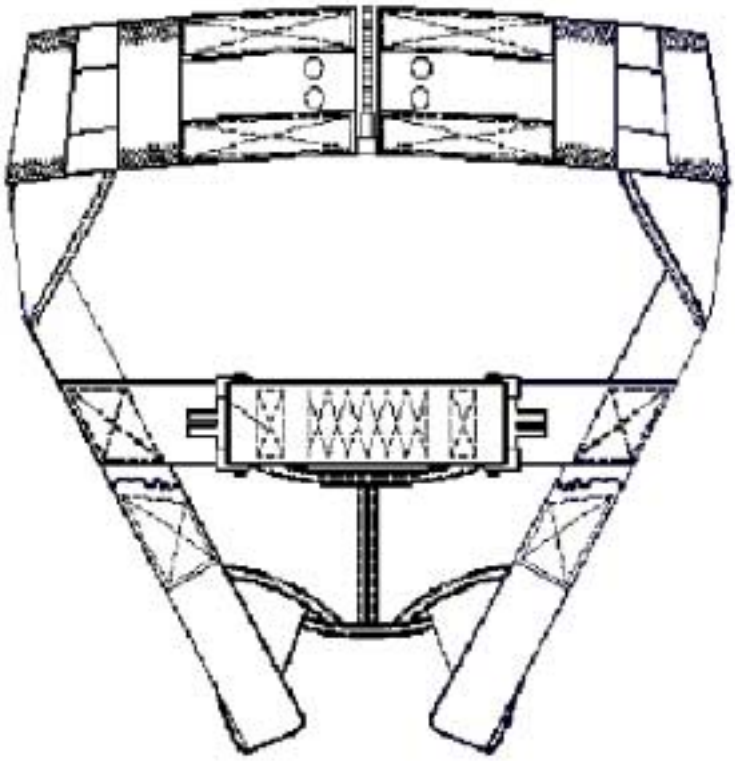


Figure 38. Aircrew Lap Belt Adjustment (Optional)

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ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

PCU-56/P SERIES PARACHUTE RESTRAINT HARNESS ASSEMBLY

PART NO. 814AS150

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 623	14 Feb 96	Riser Restraint Keeper (RAMEC P-08-95)	1 Jul 96	31 Dec 2003

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the PCU-56/P Series Parachute Restraint Harness Assembly (Figure 1).

2. USABLE ON CODES.

a. The usable on codes in this WP refer to the aircraft application for the PCU-56/P Series Parachute Restraint Harness Assembly.

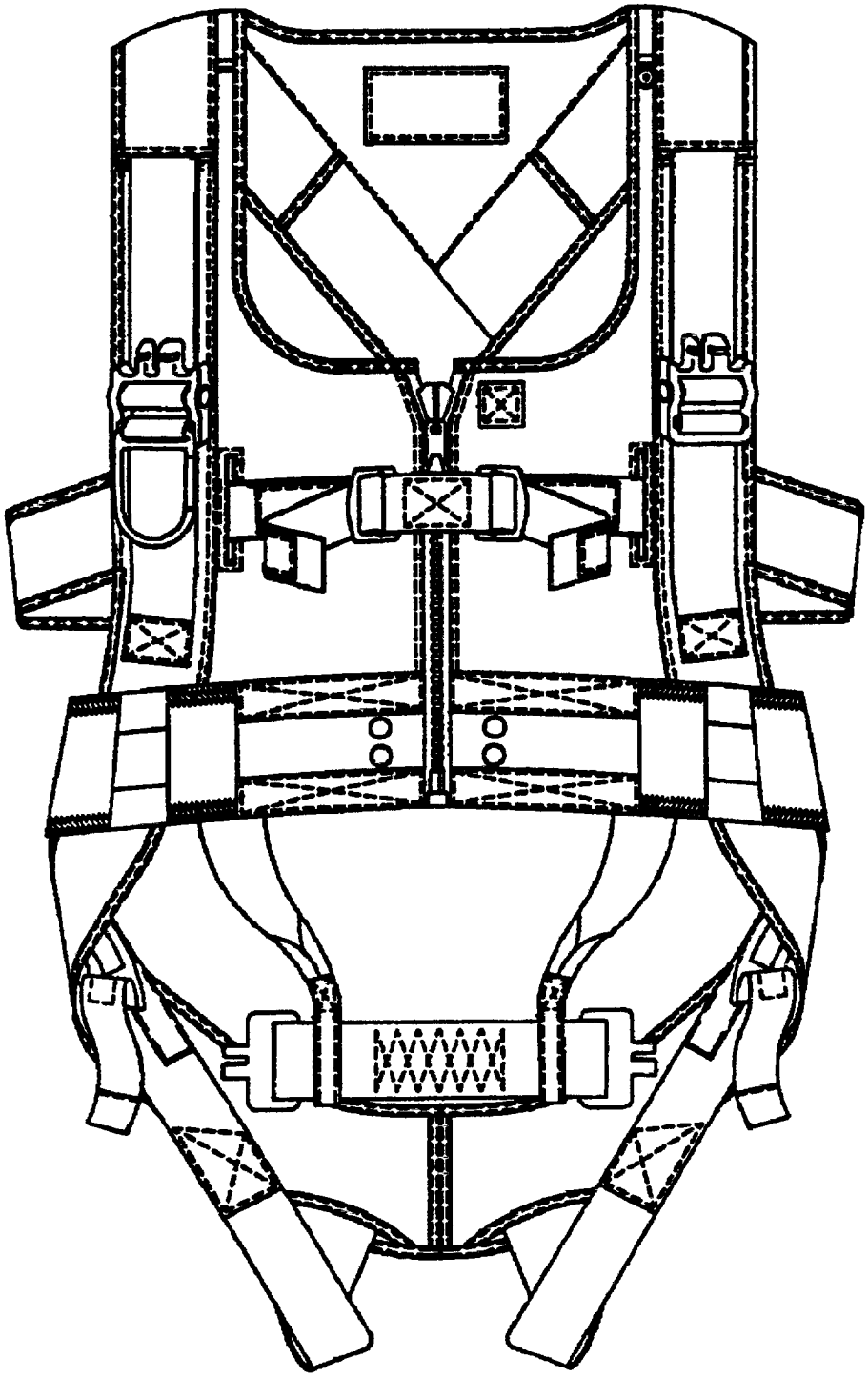
b. The following usable on codes apply to this WP.

A, C, – T-2C, S-3, F/A-18 F-14, F-4, E-2, EA-6, TA-4, TAV/AV-8B, T-45

B – T-2C, S-3, F/A-18, F-14, F-4, C-2, EA-6, TA-4

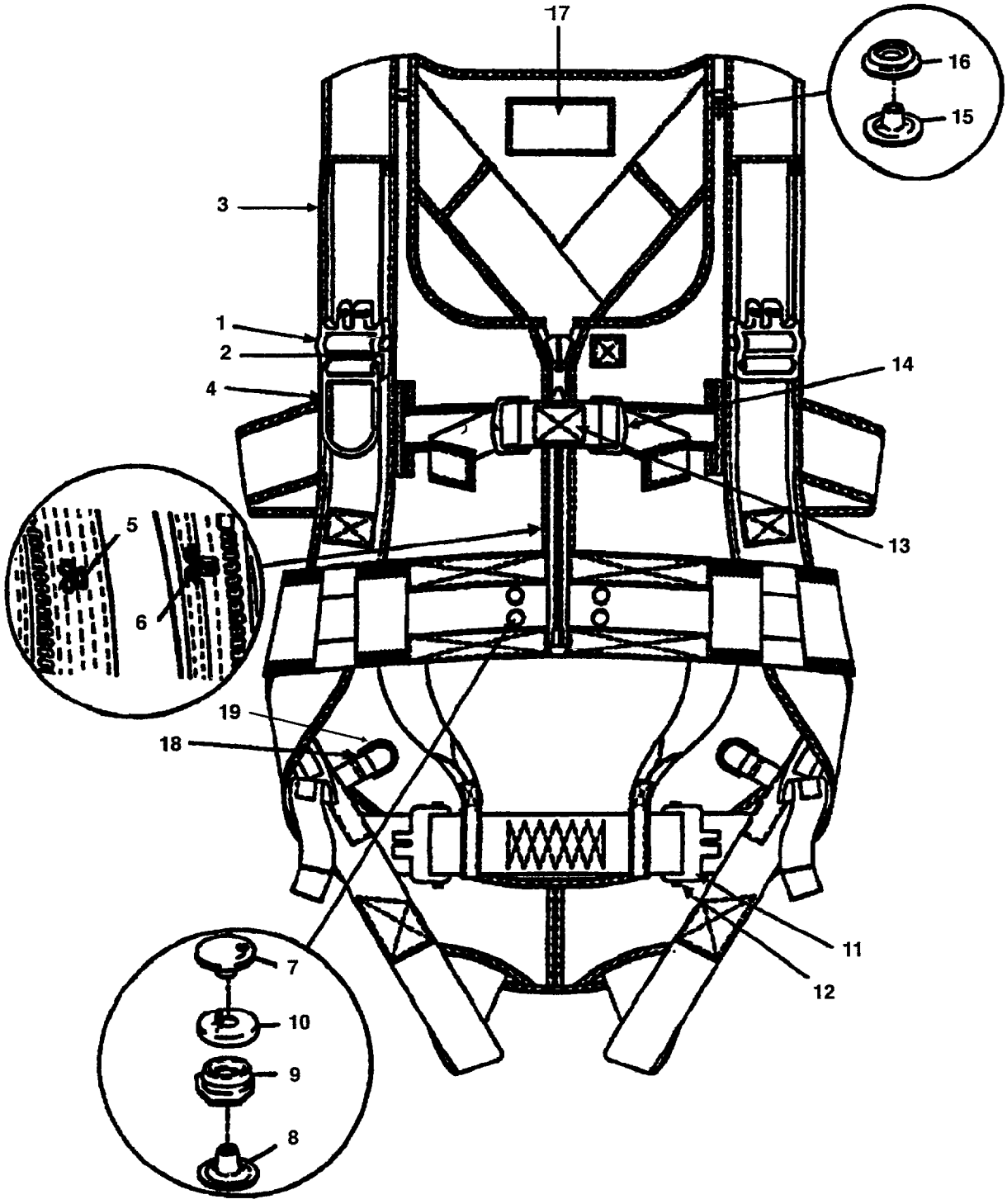
D – TAV/AV-8B, T-45, F/A-18, F-14

E – E-2



6.2-5014A

Figure 1. PCU-56/P Parachute Restraint Harness Assembly (Sheet 1 of 9)



6.2-5015A

Figure 1. PCU-56/P Parachute Restraint Harness Assembly (Sheet 2 of 9)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	814AS150-1	HARNESS ASSEMBLY, PCU-56/P PARACHUTE RESTRAINT	1	A	AGOGG
	814AS150-13	HARNESS ASSEMBLY, PCU-57/P PARACHUTE RESTRAINT	1	B	AGOGG
	814AS150-3	HARNESS ASSEMBLY, PCU-58/P PARACHUTE RESTRAINT	1	C	AGOGG
	814AS150-14	HARNESS ASSEMBLY, PCU-59/P PARACHUTE RESTRAINT	1	D	AGOGG
	814AS150-5	HARNESS ASSEMBLY, PCU-60/P PARACHUTE RESTRAINT	1	E	AGOGG
1	990065-1	. ADJUSTER ASSEMBLY, STRAP	2	*	PAOGG
	015-710001-1	. ADAPTER ASSEMBLY, CANOPY RELEASE	2	*	PAOGG
2	122-10935-3	. . SCREW /99449/	1		PAOZZ
3	814AS200-1	. ADJUSTABLE INTEGRATED PARACHUTE RESTRAINT HARNESS SIZE SMALL	1		PCOGG
	814AS400-1	. ADJUSTABLE INTEGRATED PARACHUTE RESTRAINT HARNESS SIZE MEDIUM	1		PCOGG
	814AS600-1	. ADJUSTABLE INTEGRATED PARACHUTE RESTRAINT HARNESS SIZE LARGE	1		PCOGG
	814AS700-1	. ADJUSTABLE INTEGRATED PARACHUTE RESTRAINT HARNESS SIZE EXTRA LARGE	1		PCOGG
4	1979AS975-1	. . RING ASSEMBLY, SNAPLINK, RESCUE	1		PAOZZ
	823AS100-1	. . D-RING ASSEMBLY, SNAPLINK, RESCUE (USE UNTIL EXHAUSTED)	1		PAOZZ
5	60A113C28-1	. . EYE	3		PAOZZ
6	60A113C28-2	. . HOOK	3		PAOZZ
7	MS27983-1	. . BUTTON	9		PAOZZ
8	MS27983-4	. . EYELET	11		PAOZZ
9	MS27983-3	. . STUD	10		PAOZZ
10	MS27983-2N	. . SOCKET	10		PAOZZ
11	1979AS838-1	. ADAPTER ASSEMBLY, LAP BELT	2	*	PAOGG
	015-11366-1	. ADAPTER ASSEMBLY, LAP BELT	2	*	PAOGG
	990070-1	. ADAPTER ASSEMBLY, LAP BELT	2	*	PAOGG
12	1979AS837-1	. . SCREW, SHOULDER	2		PAOZZ
	122-11614-1	. . SCREW	2		PAOZZ
13	814AS803-1	. . CHEST STRAP ADAPTER, DUAL PULL	1		MGGZZ
14	MS70101-1	. . . ADAPTER, REVERSIBLE	2		PAOZZ
15	MS27980-8B	. . EYELET	1		PAOZZ
16	MS27980-7B	. . STUD	1		PAOZZ
17	829AS105-2	. . LABEL, HARNESS, PARACHUTE	1		MDGZZ
18	829AS153-1	. SURVIVAL VEST ATTACHMENT TAB AND RING	2	C	MGGZZ
19	MS51925-4	. . D-RING	2		PAGZZ
20	829AS151-1	. LPU ATTACHMENT STRAP	2	B,D,E	PAOZZ
21	MS51940-3S	. . LOOP, SLIDE	5		PAGZZ
22	829AS157-1	. FLASHLIGHT RETENTION STRAP	2	B,D,E	MGGZZ
23	MX-991/U	. FLASHLIGHT, GOOSENECK	1	B,D,E	PAOZZ
	ACR/FA-11	CREWLIGHT /ALTERNATE/	1		PAGZZ
	ACR/FA-11 (M)	. CREWLIGHT	1		PAGZZ

Figure 1. PCU-56/P Parachute Restraint Harness Assembly (Sheet 3 of 9)

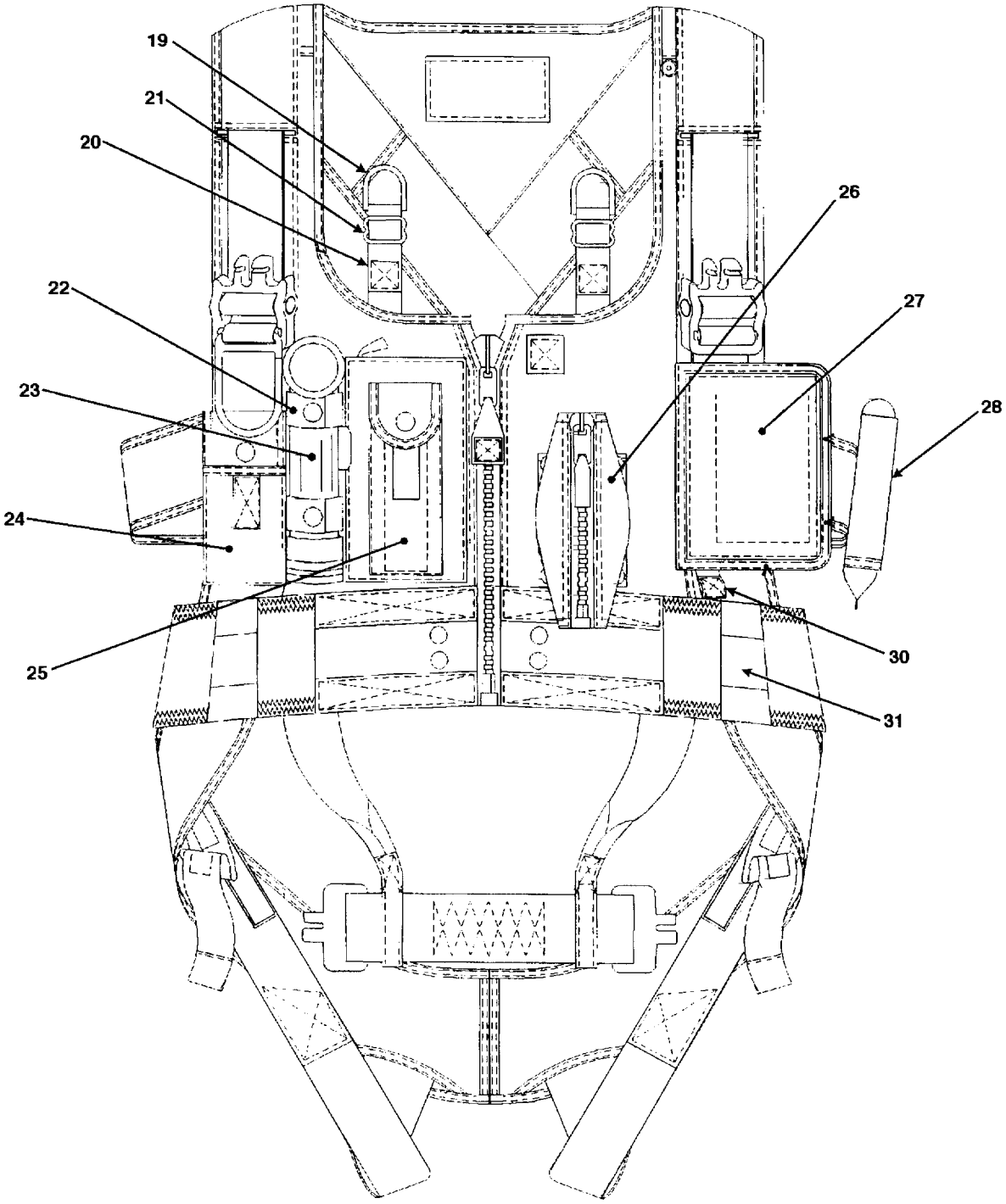


Figure 1. PCU-56/P Parachute Restraint Harness Assembly (Sheet 4 of 9)

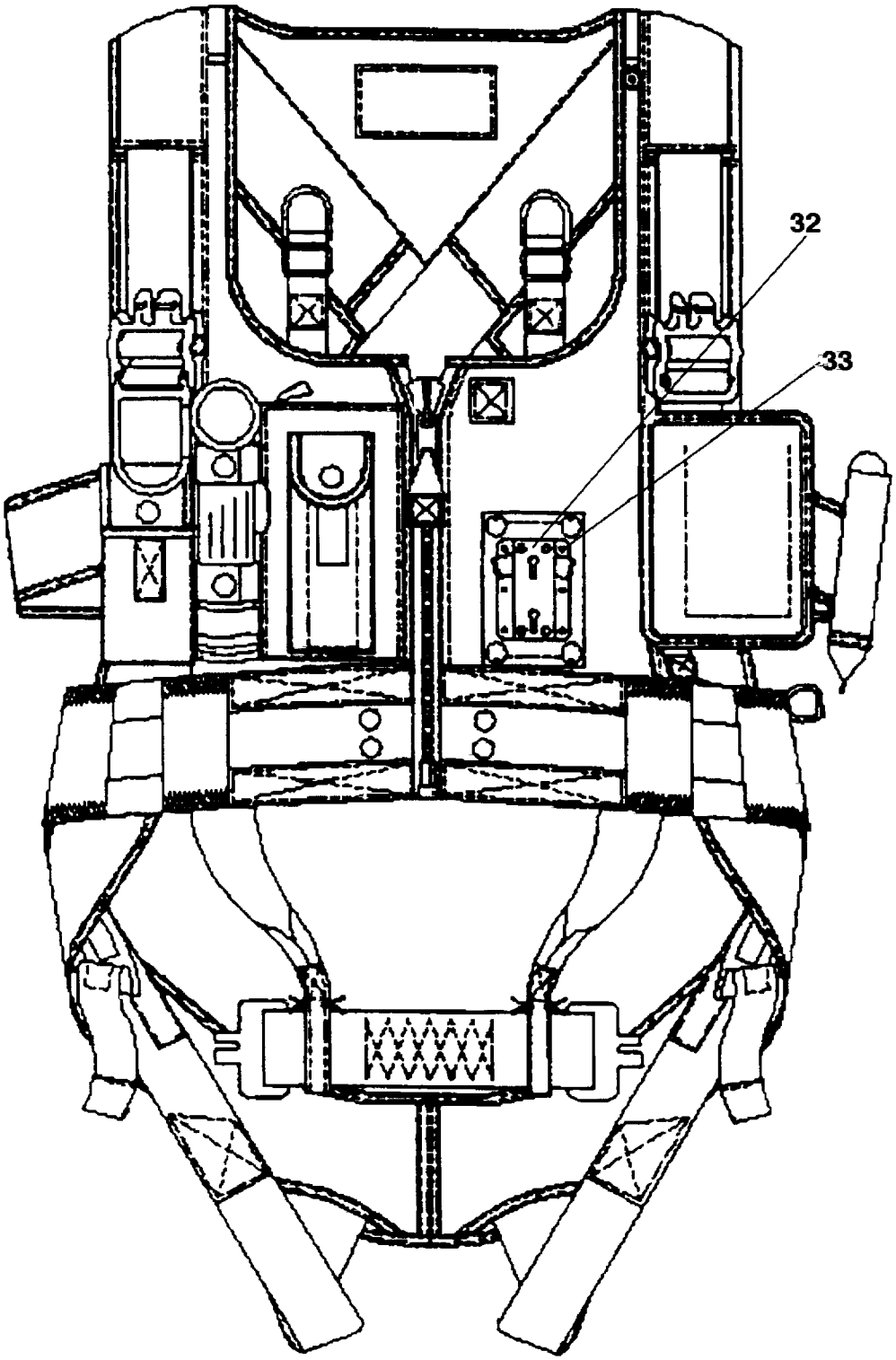
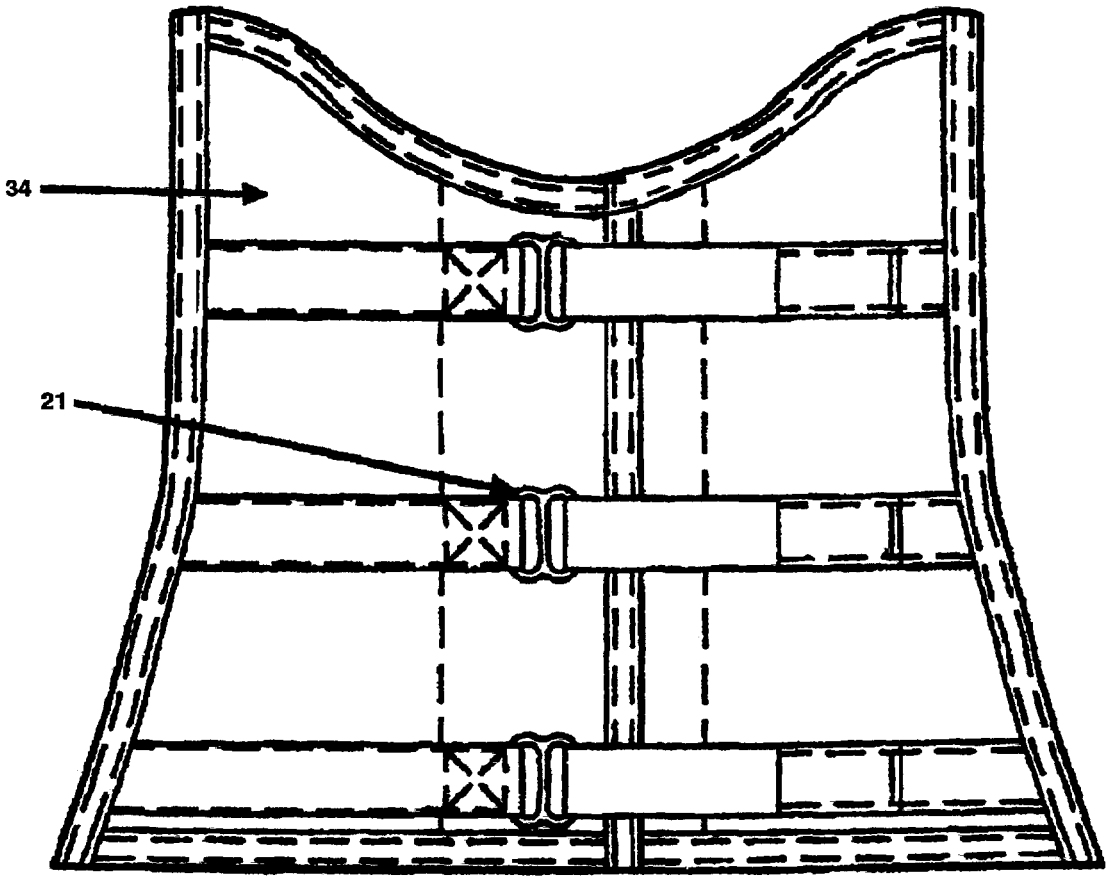


Figure 1. PCU-56/P Parachute Restraint Harness Assembly (Sheet 5 of 9)



Inner Garment Vest (Optional)

6.2-5018A

Figure 1. PCU-56/P Parachute Restraint Harness Assembly (Sheet 6 of 9)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
24	829AS14-1	. POCKET, STROBE LIGHT	1	B,D,E	PAGZZ
25	829AS146-1	. POCKETS, RADIO AND KNIFE	1	B,D,E	PAGZZ
26	829AS152-13	. POCKET, OXYGEN REGULATOR AND HOSE	1	B	PAGZZ
27	829AS147-20	. POCKET, SURVIVAL ITEM STOWAGE	1	B,D	PAGZZ
28	829AS168-1	. PARACHUTE RESTRAINT HARNESS HOLSTER/SEE NOTE 2/	1		PAOZZ
29	MS20230B10	. . GROMMET AND WASHER (SIZE 0)	1		PAOZZ
30	829AS158-2	. TAB, OXYGEN HOSE SECURING	2	B,D	MGGZZ
31	829AS106-1	. FLOTATION ATTACHMENT PANEL	2	B,D,E	MGGZZ
32	829AS165-2	. MOUNTING BRACKET KIT, OXYGEN REGULATOR	1	D	PAGZZ
33	MS20427F4-9	. . RIVETS	6		PAGZZ
34	814AS804-15	. INNER GARMET VEST (SMALL)/SEE NOTE 2/	1		PAGZZ
	814AS804-16	. INNER GARMET VEST (MEDIUM)/SEE NOTE 2/	1		PAGZZ
	814AS804-17	. INNER GARMET VEST (LARGE)/SEE NOTE 2/	1		PAGZZ
35	MIL-L-38217	. LIGHT, DISTRESS SIGNAL, SDU-5/E	1	B,D,E	PAOZZ
36	MIL-K-25594	. KNIFE, POCKET HOOK/SHARP BLADE MC-1	1	B,D,E	PAOZZ
37	AN/PRC-90	. RADIO SET,	1	B,D,E	PAOGG
	AN/PRC-90-2	. RADIO SET/SEE NOTE 1/	1		PAOGG
	AN/PRC-112	. RADIO SET	1		PAOGG
	AN/PRC-149	. RADIO SET/SEE NOTES 1 AND 3/	1		PAOGG
38	784311-21	. MIRROR, EMERGENCY SIGNALING	1	B,D,E	PAOZZ
	MIL-M-18371	. MIRROR, EMERGENCY SIGNALING (USE UNTIL EXHAUSTED)	1		PAOZZ
39	6000D7047-1	. SIGNAL KIT, PERSONNEL DISTRESS	1	B,C	PAOZZ
	6136004	. SIGNAL KIT, MK-79 MOD 2	1		PAOZZ
40	DL3139734	. SMOKE AND ILLUMINATION, MARINE SIGNAL MK124	1	B,D,E	PAOZZ
41	64-159WITHCAP	. BOTTLE, EMERGENCY DRINKING WATER	1	B,D,E	PAOZZ
42	A-A-55106	. WHISTLE, BALL	1	B,D,E	PAOZZ
	MIL-W-1053	. WHISTLE, BALL (USE UNTIL EXHAUSTED)	1	B,D,E	PAOZZ
43	814AS805-1	. POCKET, HEED SURVIVAL ITEM STOWAGE	1	E	PAGZZ
44	M43770-12-SIZE1	. . SNAP HOOK	1		PAGZZ
45	MS51925-1	. . D-RING	1		PAGZZ
46	814AS805-2	. COVER, HEED BOTTLE	1	E	PAGZZ
47	1586AS101-1	. HELICOPTER EMERGENCY EGRESS DEVICE SRU-36/P	1	E	PAOZZ

NOTES:
1. Type Radio at option of Type Commander.
2. Optional with all Configurations.
3. Replaces AN/PRC-90 Radio Set.

Figure 1. PCU-56/P Parachute Restraint Harness Assembly (Sheet 7 of 9)

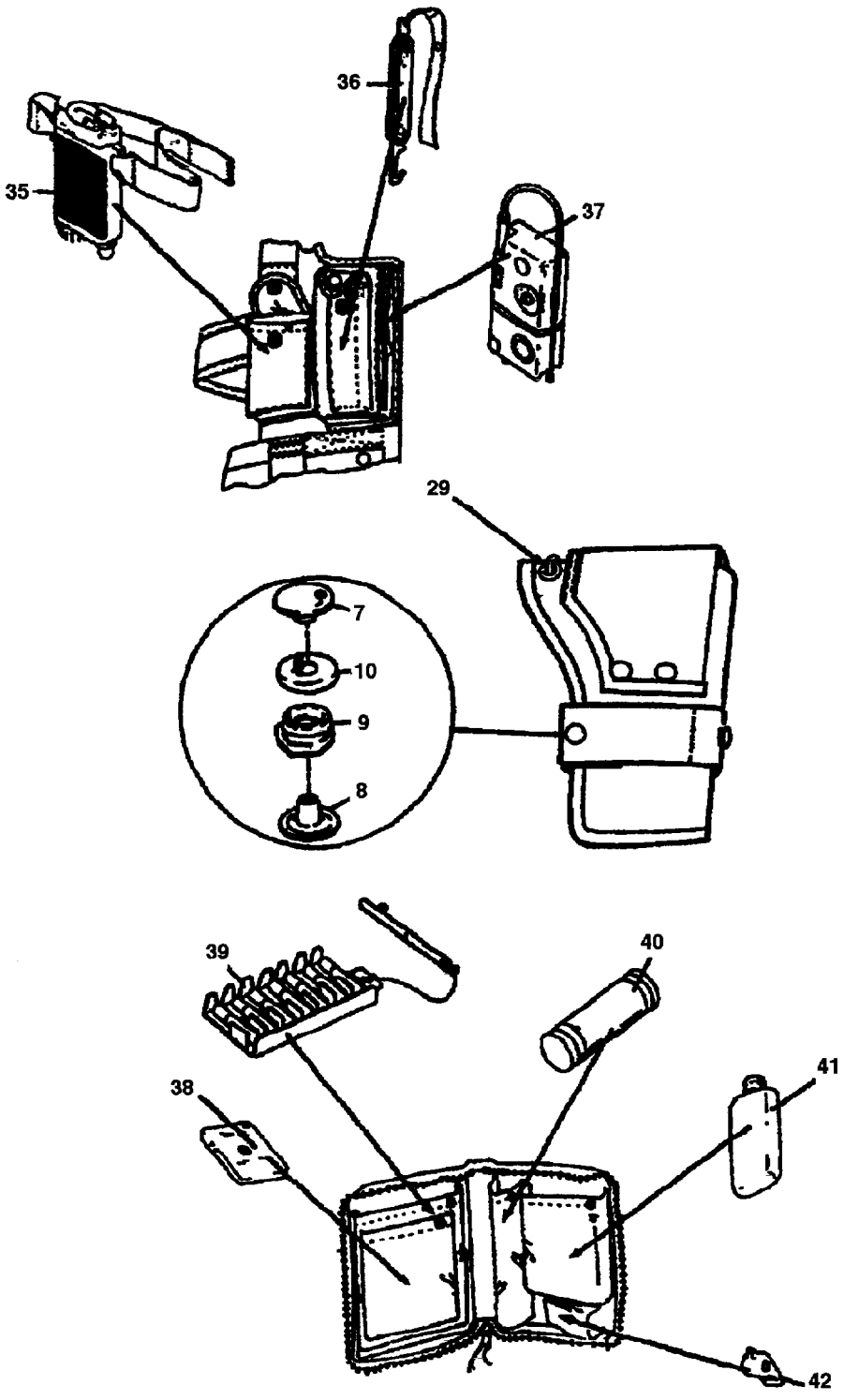


Figure 1. PCU-56/P Parachute Restraint Harness Assembly (Sheet 8 of 9)

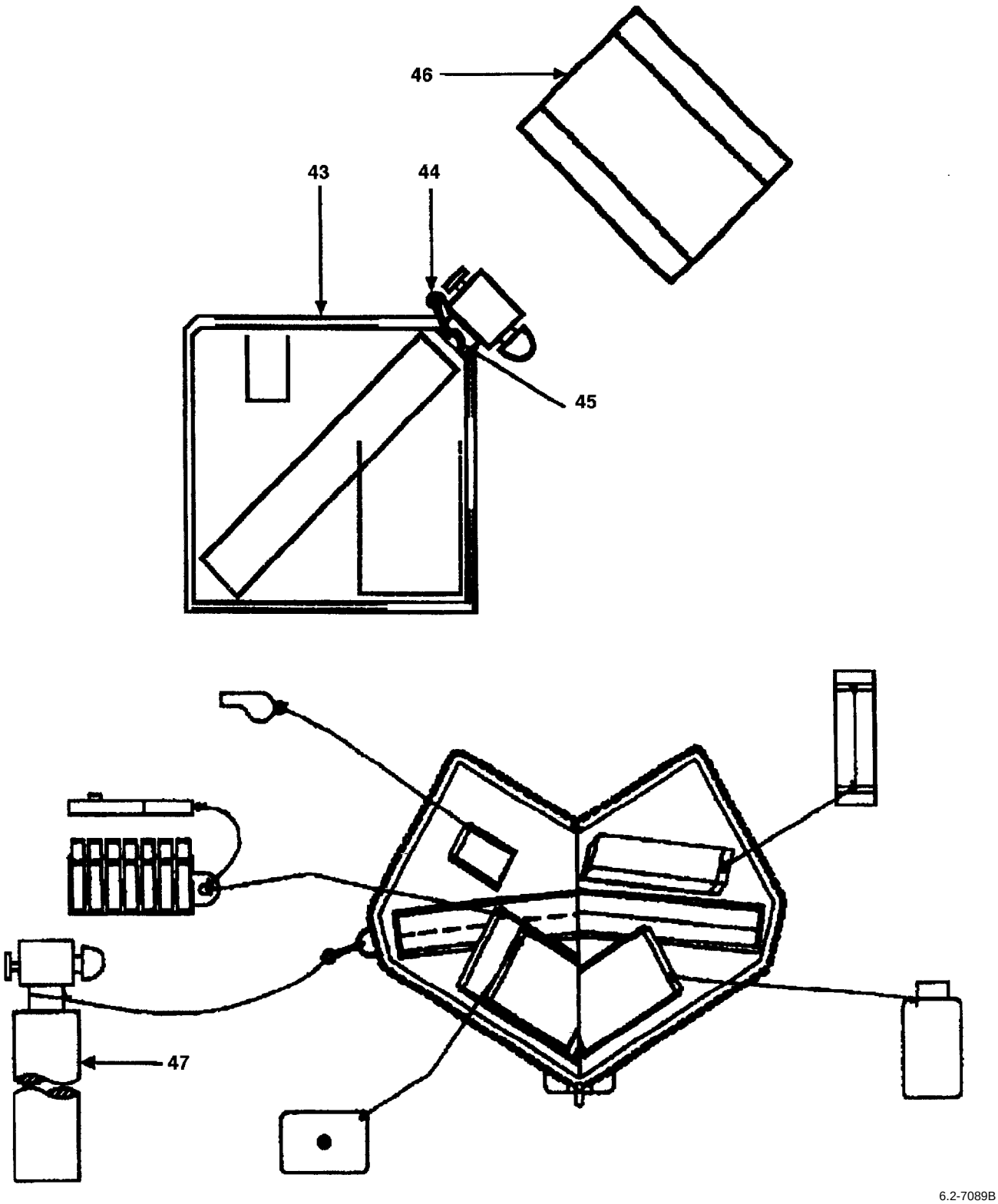


Figure 1. PCU-56/P Parachute Restraint Harness Assembly (Sheet 9 of 9)

ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

NC-3 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 580AS100-5 AND 580AS100-6

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

Illustrated Parts Breakdown, NC-3 Personnel Parachute Assembly . . . . . WP 010 04

Alphabetical Index

Title	Page
Description	2
Configurations	2
General	2
Subassembly Configurations	2
Principles of Operation	2
Repack Schedule	2

Record of Applicable Technical Directives

None

1. DESCRIPTION.

2. GENERAL. The NC-3 Personnel Parachute Assembly is a chest-type parachute used primarily in transport type aircraft.

3. The NC-3 assembly includes a multicolored (white, olive green, international orange, and sand shade), 28 ft. diameter, flat, circular, nylon canopy with 28 gores. Water deflation pockets are provided on alternate gores. The canopy is packed in a container assembly secured to the aircrew's chest by means of a harness assembly (Figure 1).

4. CONFIGURATIONS. Two different configurations of the NC-3 parachute assembly may be used in-service. The difference is the size of the harness, NC-3R (regular) or an NC-3O (oversize). Refer to the Illustrated Parts Breakdown (WP 010 04) for exact configuration requirements. The two configurations of the NC-3 assembly may also be used in-service with the Standard Soft Pack (SSP) depending on aircraft application (WP 010 04). The SSP is one of several types of packaged LR-1 life raft assemblies (NAVAIR 13-1-6.3).

5. SUBASSEMBLY CONFIGURATIONS. The subassemblies listed below and shown in (Figure 2) make up the NC-3 regular and oversize assemblies. Refer to (WP 010 04) for detailed information.

Pilot Parachute Assembly

Pilot Parachute Connector Strap

Canopy Assembly

Harness Assembly

Lift Web Assembly

Cushion Assembly

Ripcord Assembly

Container Assembly

6. PRINCIPLES OF OPERATION.

7. Deleted

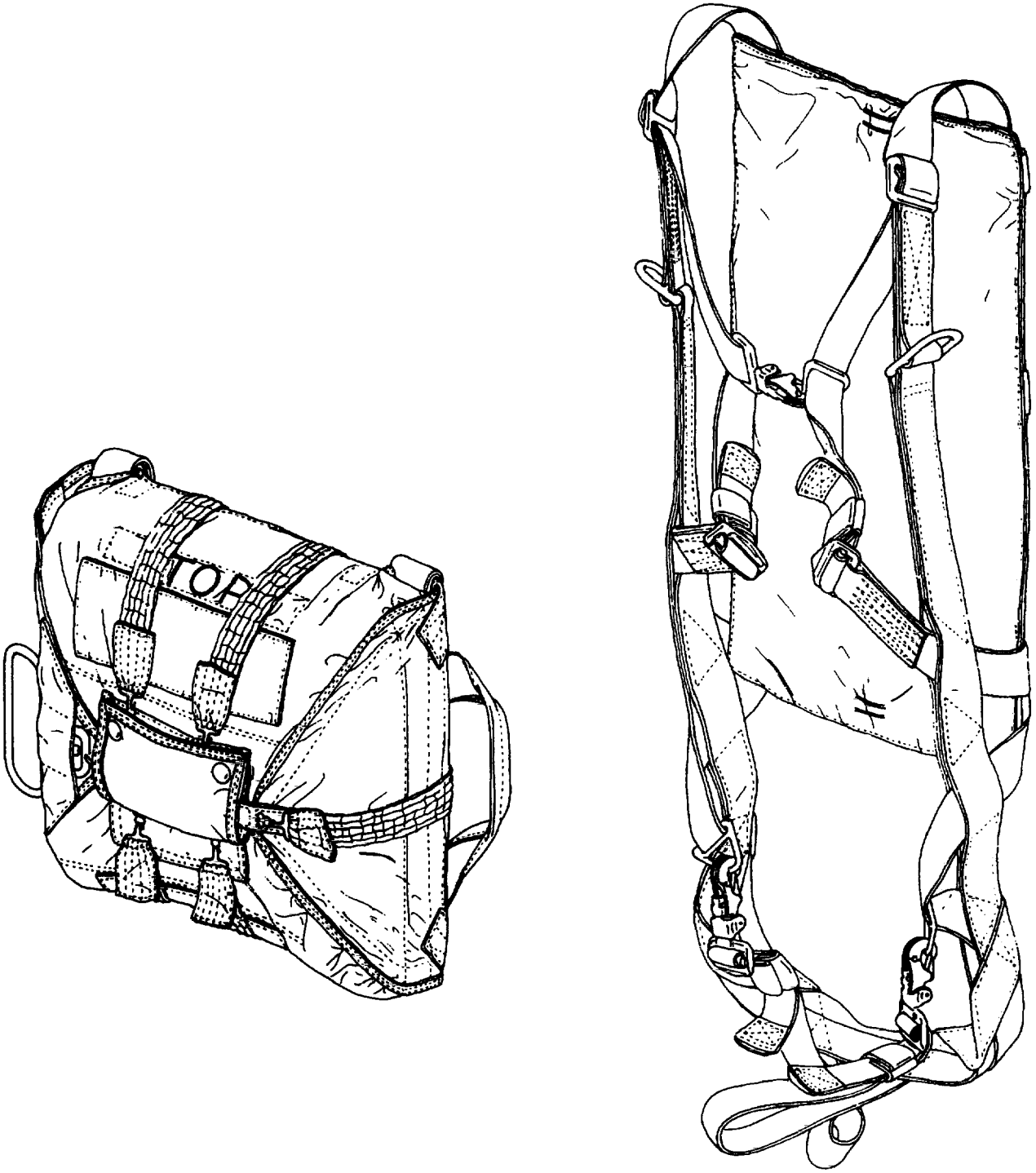
a. The ripcord is manually pulled. The ripcord pins are then removed from the locking cones, permitting the container side and end flaps to separate. The container spring opening assemblies pull the side and end flaps apart allowing the pilot parachute to spring from the container.

b. The aircrew falling away from the pilot parachute causes the canopy to be pulled from the container, followed by the suspension lines. The canopy begins to inflate during this operation.

c. The tackings on the lift web assembly break as load is applied. The lift webs are then pulled from the container, and the canopy inflates. This permits the aircrew to descend suspended in the harness. Manual actuation of the four-line release system will reduce oscillation during descent and provide a method of maneuvering the parachute to a less hazardous landing site.

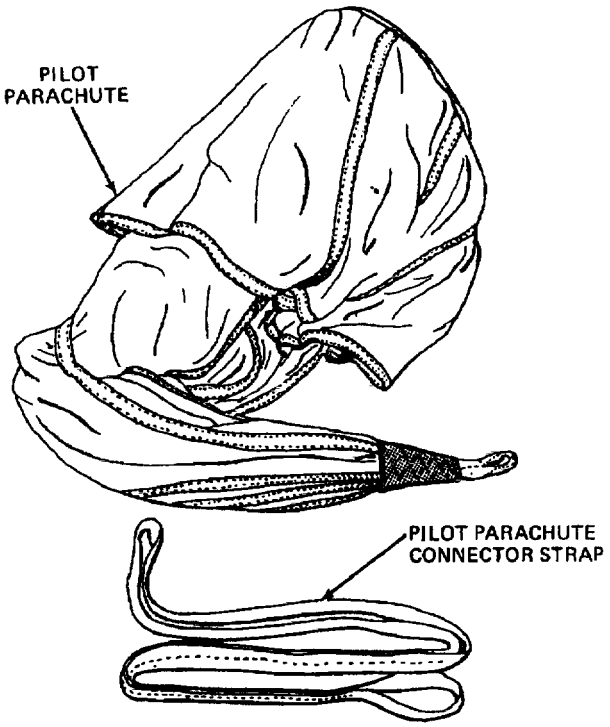
8. REPACK SCHEDULE.

a. Scheduled repack cycle is 672 days.



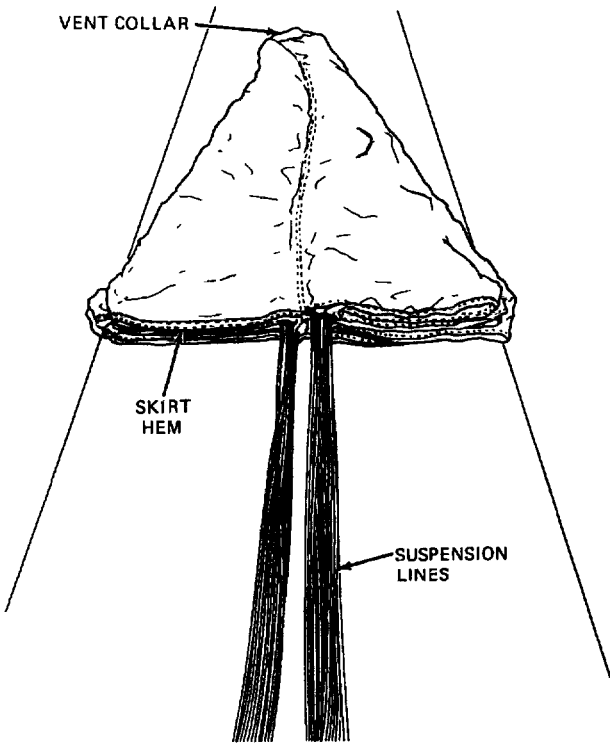
6.2-5444

Figure 1. Personnel Parachute Assembly, NC-3



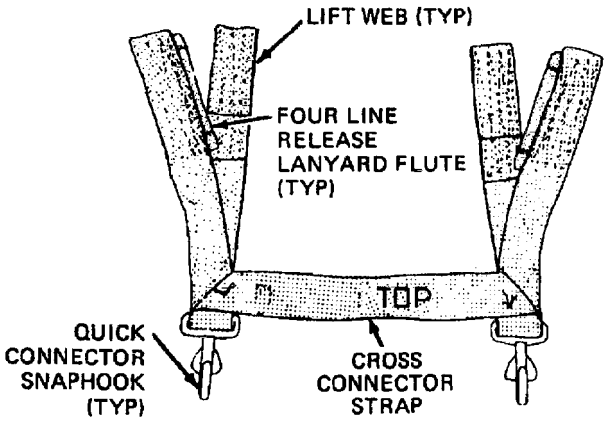
PILOT PARACHUTE AND CONNECTOR STRAP ASSEMBLIES

6.2-5002A



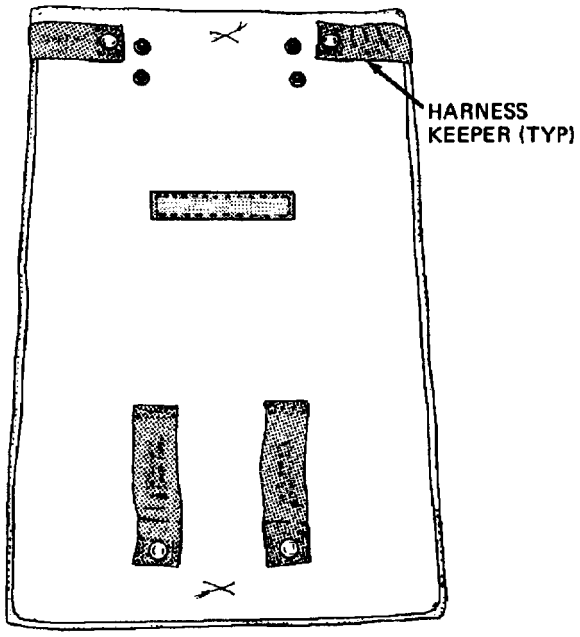
CANOPY

6.2-5002C



LIFT WEB ASSEMBLY

6.2-5002B



CUSHION

6.2-5002D

Figure 2. Subassemblies, NC-3 (Sheet 1 of 4)

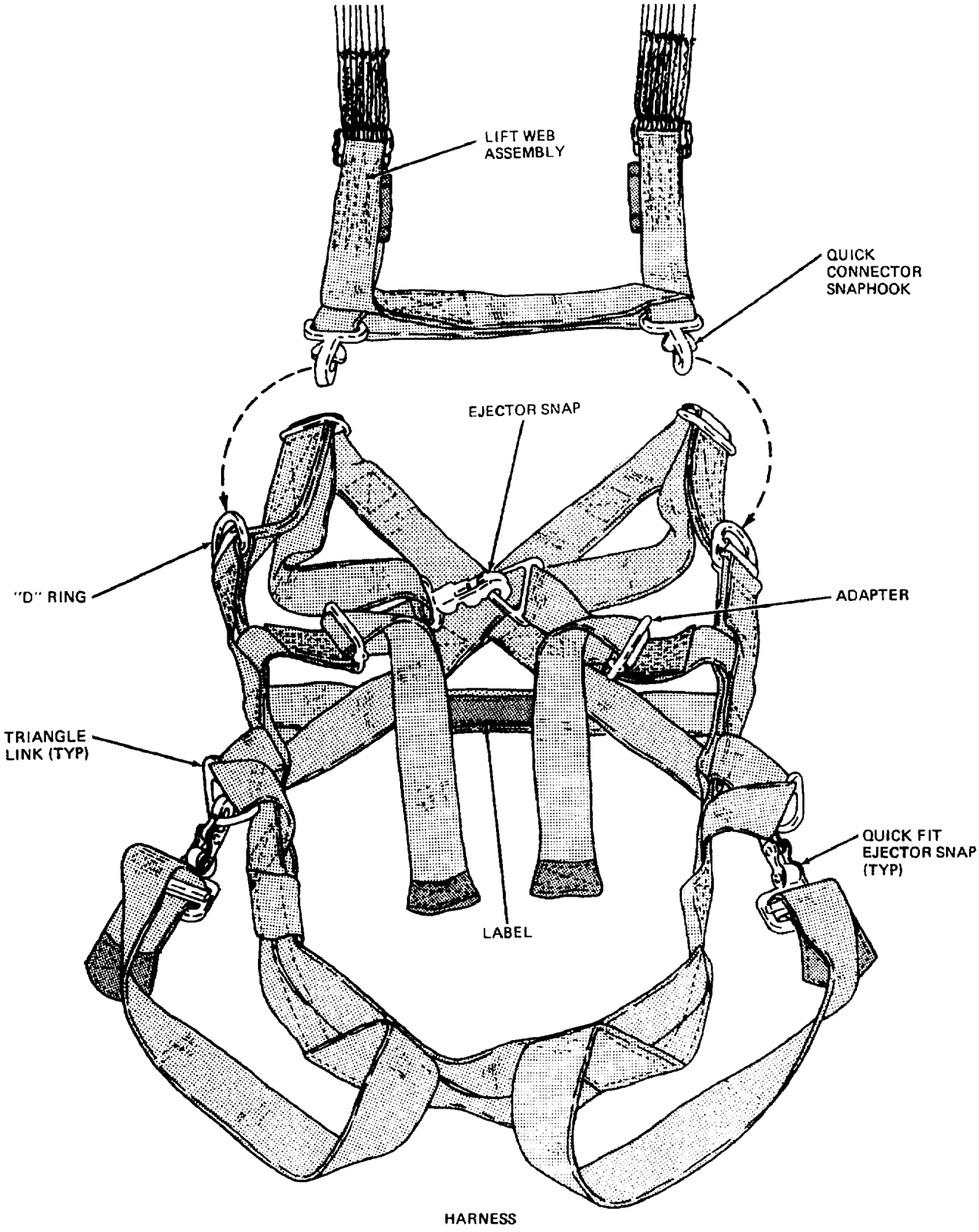
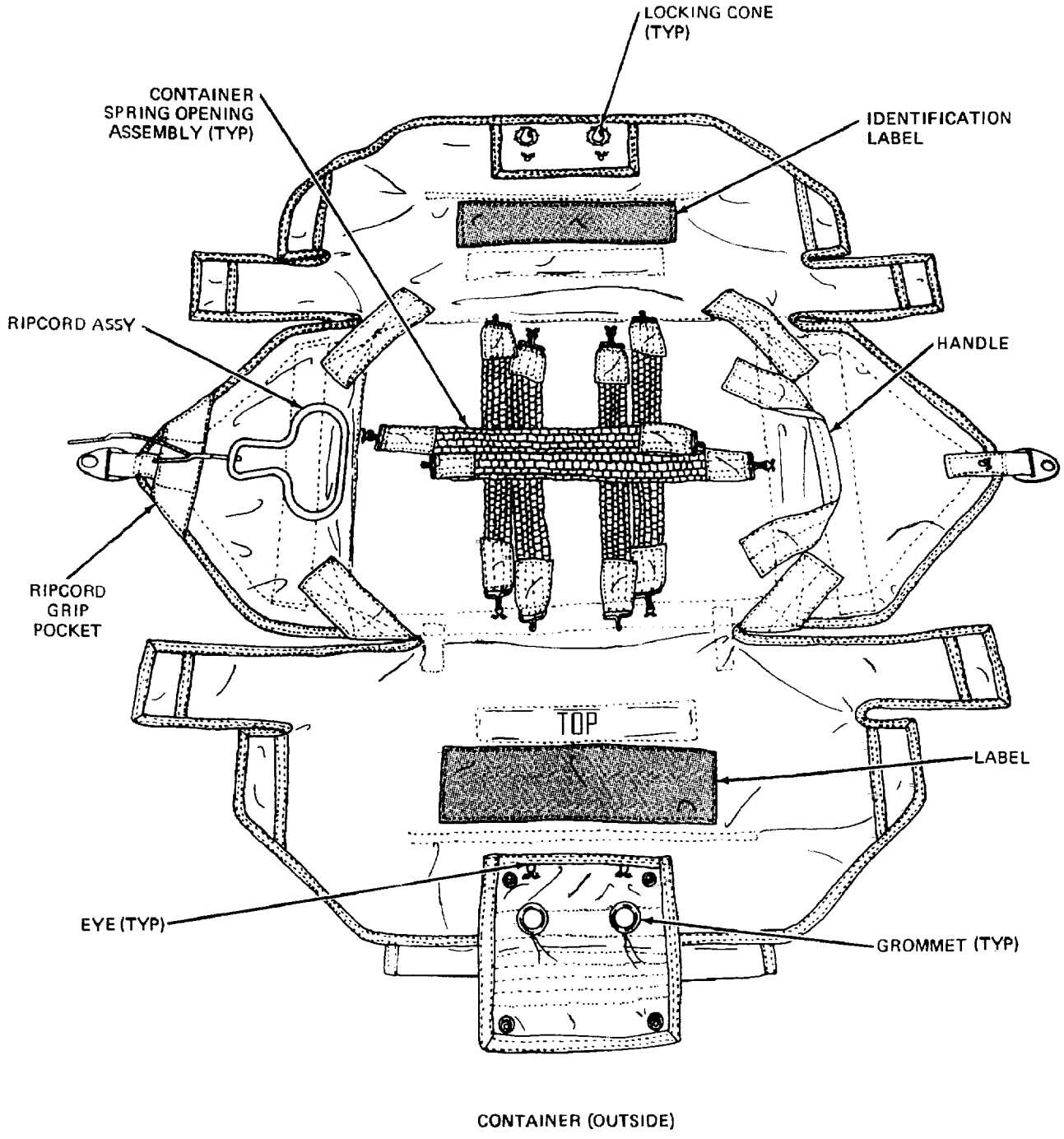


Figure 2. Subassemblies, NC-3 (Sheet 2 of 4)



6.2-5003

Figure 2. Subassemblies, NC-3 (Sheet 3 of 4)

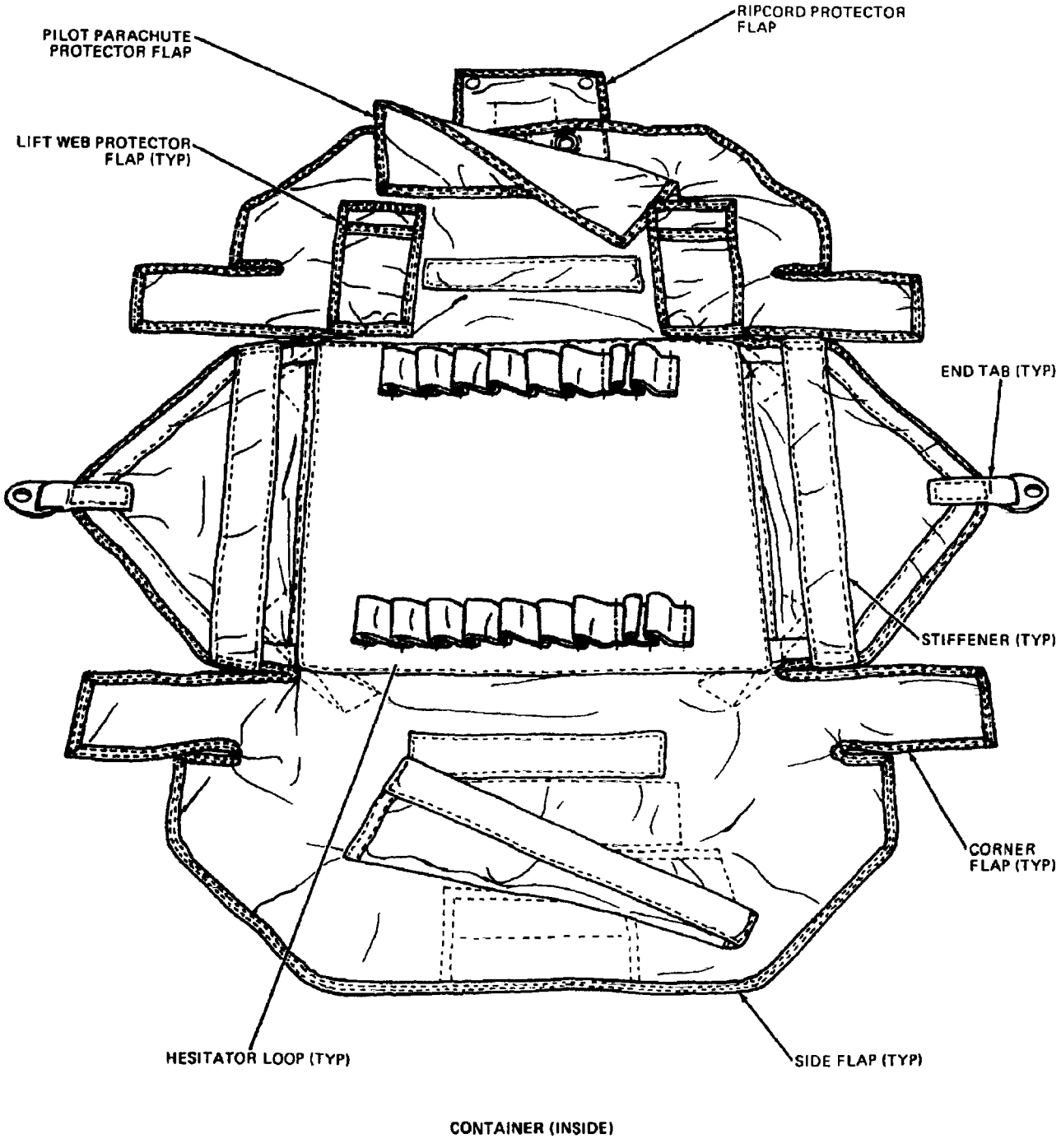


Figure 2. Subassemblies, NC-3 (Sheet 4 of 4)

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ORGANIZATIONAL MAINTENANCE

REPAIR PROCEDURES

NC-3 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 580AS100-5 AND 580AS100-6

List of Effective Work Package Pages

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Reference Material

Intermediate and Depot Maintenance, Common Repair Procedures . . . . . WP 004 00
Intermediate and Depot Maintenance, Packing Procedures, NC-3 Personnel Parachute Assembly . . . . . WP 010 02
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdowns, Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00

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Replacement of Harness Assembly	2
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Survival Kit	3
Replacement of Quick-Connector Snaphook Ties/Tackings on SSP Outer Container	3
Replacement of Standard Soft Pack (SSP) Combination Carrying Case and Equipment Container	3

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains instructions for organizational level repair to ensure that the parachute assembly remains in Ready-For-Issue (RFI) status.

b. Refer to WP 004 00 for common repairs.

c. When performing repairs detailed in this WP follow these guidelines:

(1) Review all applicable instructions prior to staring repair.

(2) Ensure that all necessary support equipment and materials required are available prior to starting repair.

(3) When required, remove enough material from it's source for immediate use only. Ensure that the material identification ticket remains with the source material at all times. Material that cannot be identified will not be used.

(4) To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

(5) A Quality Assurance (QA) inspector shall examine the finished work.

2. HARNESS ASSEMBLY.

3. REPLACEMENT OF HARNESS ASSEMBLY.

a. Inspect replacement harness per WP 010 02.

b. Mark date placed in-service on identification and service life label.

c. Lay out harness assembly on table so that a wearer would be face down on table with head toward canopy. Position back cushion underneath with cushion keepers released (Figure 1).

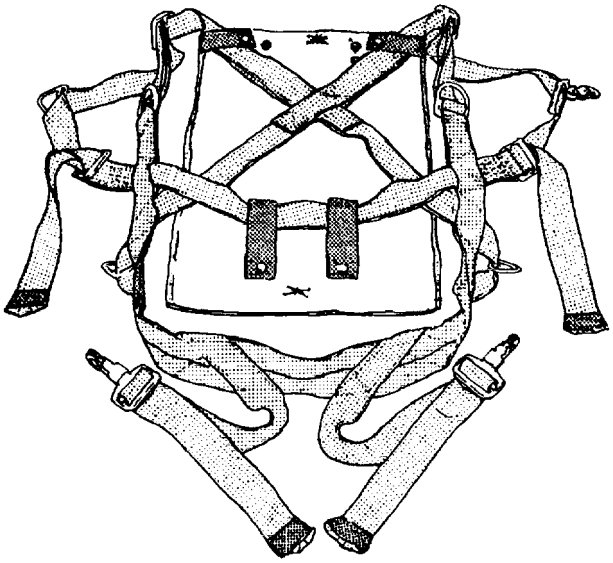
d. Secure diagonal backstraps under upper corner keepers and horizontal backstrap under two bottom center keepers.

e. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

4. REPLACEMENT OF CUSHION ASSEMBLY.

a. Inspect replacement cushion per WP 010 02.

b. Lay out harness assembly on table so that a wearer would be face down on table with head toward canopy. Position back cushion underneath with cushion keepers released (Figure 1).



6.2-5467

Figure 1. Replacement of Harness Assembly

c. Secure diagonal backstraps under upper corner keepers and horizontal backstrap under two bottom center keepers.

5. CONTAINER ASSEMBLY.

6. REPLACEMENT OF CONTAINER OPENING SPRING ASSEMBLY.

a. Measure length of replacement spring assembly. Required length is 13 7/8 ± 1/4-in. when measured from end of one hook to end of other hook with no tension applied.

b. Inspect spring assembly for broken springs, contamination, corrosion, cuts, fraying, bent or broken hooks, elasticity, and loose or broken stitching.

c. Attach hook end of spring opening assembly, without pull tab, to eyelet on container frame with hook facing down. Crimp hook to eyelet.

d. After ensuring that spring assembly is reeved between container and lift webs, attach opposite end of spring assembly to corresponding eyelet on container.

7. SURVIVAL KIT.

8. REPLACEMENT OF STANDARD SOFT PACK (SSP) COMBINATION CARRYING CASE AND EQUIPMENT CONTAINER.

a. Insert SSP combination carrying case and equipment container into SSP outer container, equipment end first and with shoulder straps facing packed parachute.

b. Pass vertical strap over handle on combination carrying case and equipment container, and fasten quick-disconnect shackle.

9. REPLACEMENT OF QUICK-CONNECTOR SNAPHOOK TIES/TACKING ON SSP OUTER-CONTAINER.

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord,Nylon, Type III
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

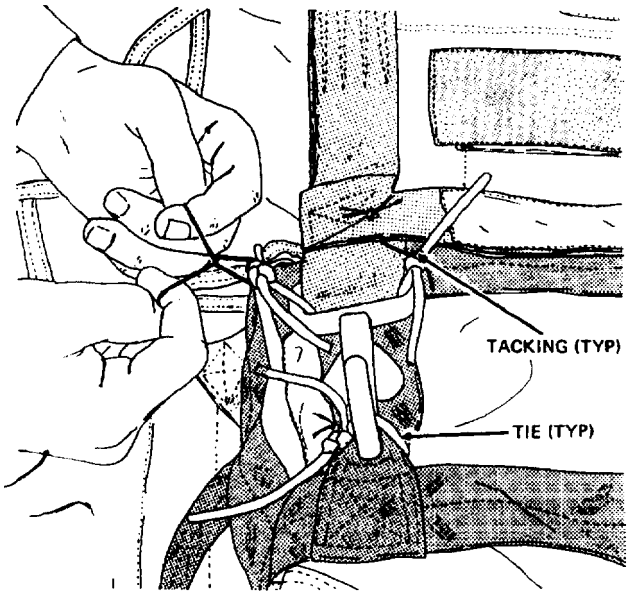
NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Cut a 10-in. length of nylon cord.

b. Pass cord under proper horizontal or vertical strap on outer container.

c. Pass cord thru side of snaphook or around hook, as applicable, tie off with a square knot (Figure 2).



6.2-5647

Figure 2. Replacement of Quick-Connector Snaphook Ties/Tackings on SSP Outer Container

d. Tack thru square knot on tie with one turn of size 6 thread, single and waxed; tie off.

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INTERMEDIATE AND DEPOT MAINTENANCE

PACKING PROCEDURES

NC-3 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 580AS100-5 and 580AS100-6

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Intermediate and Depot Maintenance, Common Repair Procedures ..... WP 004 00
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdowns, Emergency Personnel and Drogue Parachute Systems ..... WP 002 00
Organizational, Intermediate and Depot Maintenance, Illustrated Parts Breakdown, NC-3 Personnel Parachute Assembly ..... WP 010 04
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration ..... WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment ..... WP 005 00

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Stowage of Canopy	11
Stowage of Suspension Lines	9
Whipping and Folding of Canopy	5
Preliminary Procedures	2

Record of Applicable Technical Directives

None

1. GENERAL.

a. Packing instructions are provided with the assumption that they will be carried out under ideal conditions in a parachute loft (WP 003 00). When a parachute assembly must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

b. In no case shall the packing of a parachute assembly be interrupted after packing operation has been started. If the packing operation is interrupted, due to unforeseen circumstances, the parachute assembly shall be completely repacked per the instructions contained in this work package (WP).

c. Quality Assurance (QA) points have been included in the packing procedures. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Witnessing of QA steps may be delayed by QA if their satisfactory completion is verified in later steps.

d. During packing procedures, packer shall be positioned on left side of packing table, and helper on right side when viewed from harness/risers end of table.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Fid
11-1-3512	Small Line Separator
Refer to WP 005 00	Long Bar
Refer to WP 005 00	Packing Hook
Refer to WP 005 00	Ripcord Pin Lock
DPP-50	Scale, Spring
Refer to WP 005 00	Shot Bag (4)
Refer to WP 005 00	Temporary Locking Pins (2)

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type I or IA

a. Ensure that all support equipment and materials required are available prior to starting.

b. Inspect packing tools for nicks, burrs, or sharp edges which may cause damage to the parachute assembly.

c. Count and record number of packing tools.

d. Clean packing table.

3. LAYOUT OF RIGGED PARACHUTE ASSEMBLY.

a. Completely open parachute container and detach spring opening assemblies.

b. Remove canopy and suspension lines from container and stretch full length on a clean packing table.

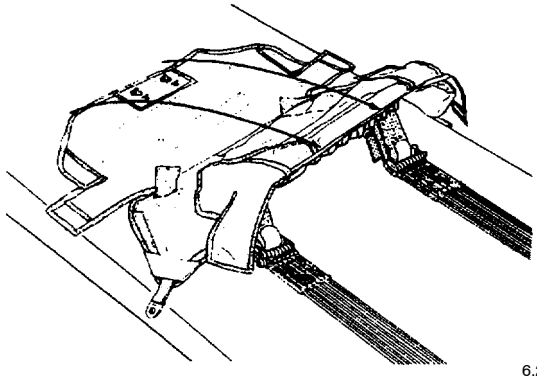
c. Locate gore 28 (nameplate gore) and place uppermost in center of packing table.

d. Attach tension strap hook to canopy vent lines.

e. At skirt hem separate suspension lines into two equal groups with lines 1 thru 14 on packer's side and 15 thru 28 on helper's side. Grasping each group of lines, walk from skirt hem to connector links removing any dips or twists between the two groups.

f. Position container on packing table with inside facing up and ripcord pin protector flap turned away from canopy. Insert tensions hooks into connector links.

g. Turn container over so that inside faces packing table and side flap with locking cones faces away from canopy. Insert tension hooks into holes in packing table (Figure 1).



6.2-6005

Figure 1. Layout of Rigged Container

h. Tension canopy using tension strap.

i. Pull canopy vent collar below vent hem. Ensure that vent hem is even.

j. Straighten vent hem if necessary.

k. Pull vent collar back to original position.

4. INSPECTION (SPECIAL).

a. Maximum scheduled repack cycle is 672 days.

5. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Parachute Harness Sensing Release Unit Cartridge) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be re-based if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Components without a service/total life shall be removed from service if the components do not pass inspection, as determined by Quality Assurance Representative (QAR) or Collateral Duty Inspector (CDI).

g. Check date placed in-service and date of manufacture on each parachute part for service/total life as follows:

Nomenclature	Service Life (Yr)	Total Life (Yr)
Canopy Assembly	None	15
Cross-Connector Strap	(See Note)	(See Note)
Harness Assembly	None	15
Lift Web Assembly	None	15
Pilot Parachute		15
Pilot Parachute Connector Strap		15

Note: Replace at Canopy Assembly replacement.

(1) Markings for completeness, legibility, and agreement with information on Parachute Record.

(2) Compare configuration of parachute assembly to WP 010 04 Record of Applicable Technical Directives, and Illustrated Parts Breakdown.

6. SUSPENSION LINE CONTINUITY CHECK.

a. Grasp line 1 on left side of gore 28 and raise line to height sufficient to ensure that line is free of dips and twists from skirt hem to connector links. Continue procedure with lines 2 thru 14. (QA)

b. Use same procedure as in task 1 on right side of gore 28 except that packer shall start with line 28 and work thru line 15 (Figure 2).

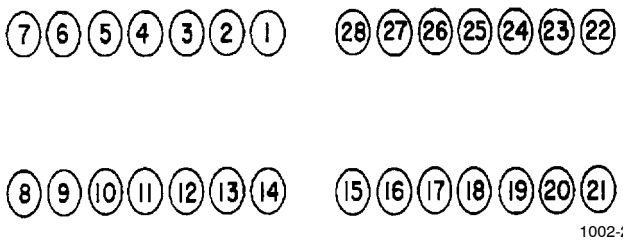


Figure 2. Arrangement and Orientation of Suspension Lines on Connector Links

7. CANOPY ASSEMBLY.

a. Canopy skirt hem, fabric surface, diagonal seams, radical seams, vent hem, water deflation pockets, for cuts, holes, ruptures, contamination, deterioration, and loose or broken stitching.

b. Suspension lines and canopy apex lines for fraying, ruptures, protruding inner core lines, burns, contamination, and presence of twists.

c. Attachment of suspension line at skirt hem for security and condition of V-tabs.

d. Attachment of four-line release anchor loops to suspension lines 3 and 26.

e. Attachment of four-line release lanyards to anchor loops on suspension lines 3 and 26.

f. Four-line release system for proper rigging and security of tacking WP 004 00. (QA)

NOTE

For Double "L" Connector Link, refer to WP 010 03 for disassembly, assembly, and inspection instructions.

g. Connector links for corrosion, distortion, nicks, burrs, sharp edges, and cracks.

h. Connector links for defective yoke and plate assemblies. Maximum of 1/32-in. play allowable in plate.

i. Torque seal unbroken with yoke and plate assemblies installed with knurled portion facing up and screwheads facing outboard (Figure 3). (QA)

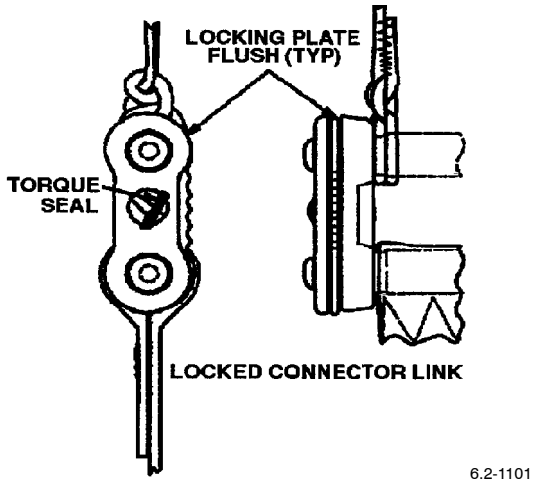


Figure 3. Torque Seal Unbroken

8. PILOT PARACHUTE AND CONNECTOR STRAP.

a. Fabric surfaces, and seams for cuts, tears, burns, fraying, and loose or broken stitching.

b. Vane material for cuts, tears, burns, fraying, and deterioration.

c. Seam area at crown for seam separation.

d. Spring assembly for distortion.

e. Loose or broken tackings (4 places) at bottom of coil spring.

f. Connector strap for cuts, fraying, burns, loose or broken stitching.

g. Connector strap for proper attachment at apex lines and pilot parachute loop.

h. Connector strap for loose or broken tacking of lark's head knot at pilot parachute loop.

9. HARNESS/BACK CUSHION.

a. Webbing for contamination, rust at points of contact with metal parts, cuts, twists, fading, wear, fraying, burns, abrasions, and loose or broken stitching.

b. Elastic keepers for condition, number (4) and proper location.

c. D-rings and triangle links for damage, corrosion, and security of attachment.

d. Ejector snaps and adapters for damage, corrosion, and security of attachment, and ease of operation.

e. Back cushion for cuts, tears, burns, dirt or oil, loose or broken stitching, and missing or defective keepers and snap fasteners.

f. Back cushion for proper attachment to harness.

10. LIFT WEB ASSEMBLY.

a. Webbing for contamination, rust at points of contact with metal parts, cuts, twists, fading, wear, fraying, burns, abrasions, and loose or broken tackings and stitching.

b. Four-line release flute for wear and proper attachment.

c. Quick-connector snaphooks for broken springs, corrosion, pitting, dents, and sharp edges.

d. Proper tacking of snaphooks to container.

e. Loose or broken four-line release tackings.

11. CONTAINER ASSEMBLY.

a. Grommets, cones, end tabs fasteners for security of attachment, cracks, corrosion, nicks, and gouges.

b. Snap fasteners for proper operation.

c. Fabric areas and hesitator loops for seam separations, loose or broken stitching, cuts, tears, contamination, and detoriation.

d. Spring opening assemblies for broken springs, contamination, corrosion, cuts, fraying, bent or broken hooks, elasticity, and loose or broken stitching.

e. Spring opening eyes (12) for security of attachment.

f. Stiffeners for distortion and breaks.

12. RIPCORD ASSEMBLY.

a. Cable for corrosion, bends, fraying, broken strands and security of attachment of swaged ball.

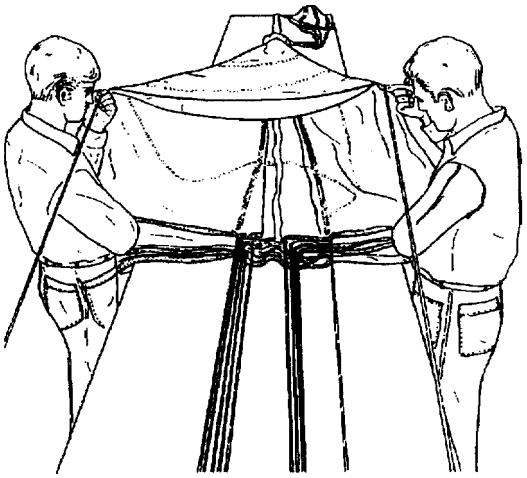
b. Locking pins for bends, dents, cracks, security of attachment to cable, and corrosion.

c. Grip for bends, dents, cracks, and corrosion.

13. PACKING.

14. WHIPPING AND FOLDING OF CANOPY.

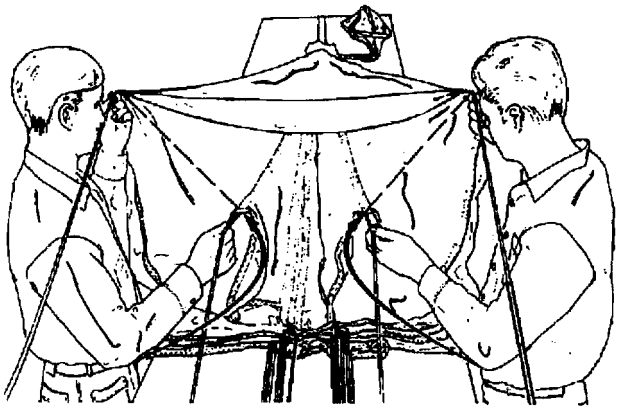
a. Packer and helper shall lift the suspension line on each side of nameplate gore up and out. The skirt hem between lines shall be taut so that canopy apex can be seen on inside. While holding suspension lines up, each man shall whip the gore hanging from line outwards to prepare canopy for folding (Figure 4).



6.2-5184

Figure 4. Lift Suspension Line on Each Side of Nameplate

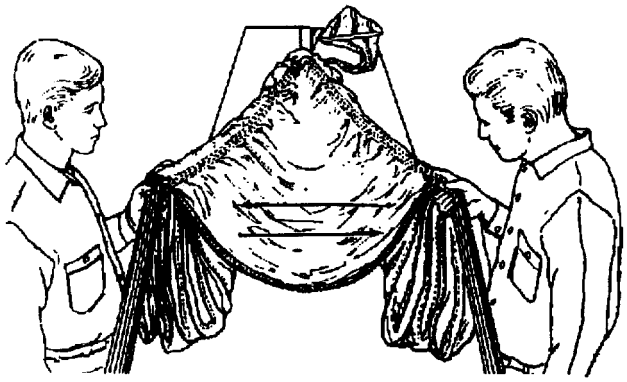
b. Draw next suspension line upwards to suspension line in hand, using a rapid circular motion (Figure 5).



6.2-5184A

Figure 5. Draw Suspension Lines Upward

c. Continue whipping operation for all gores. Ensure radial seams are not overlapped by gore material. Move whipped gores rapidly back and forth across packing table (Figure 6).

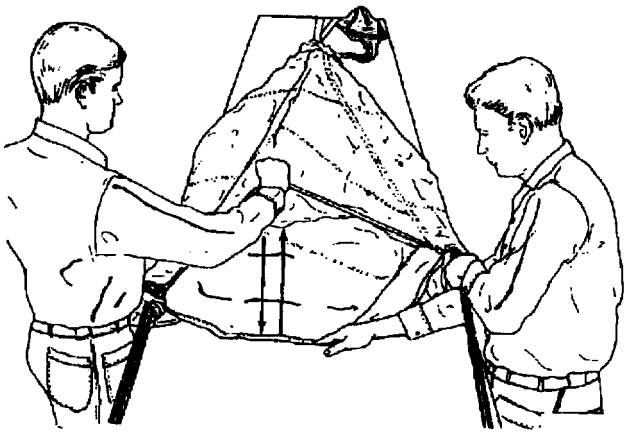


6.2-5184B

Figure 6. Continue Whipping Operation

d. Two groups of suspension lines shall be stretched to the edges of packing table with folded gores hanging over sides. Packer and helper shall grasp all folds at outer edges on skirt hem and hold suspension line groups at edges of packing table. Packer and helper shall simultaneously move folds up and down rapidly, in a whipping motion.

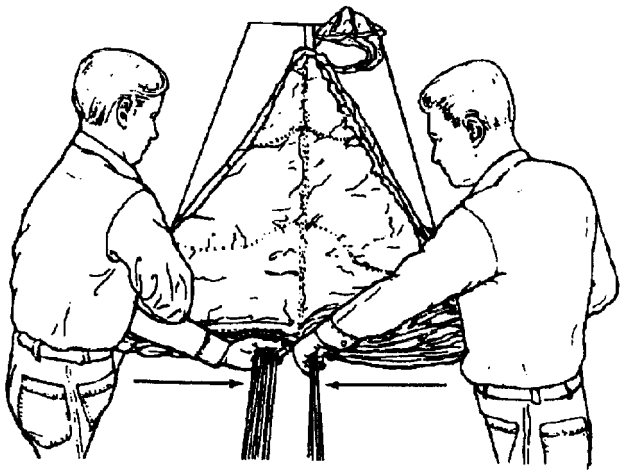
e. Packer shall flap top gore up and down at skirt hem center as helper holds bottom gore at skirt hem center (Figure 7).



6.2-5184C

Figure 7. Packer Shall Flap Top Gore Up and Down

f. On signal, packer and helper shall draw their respective gores, at skirt hem centers, towards table edge while at same time bringing suspension line groups to center of packing table (Figure 8).

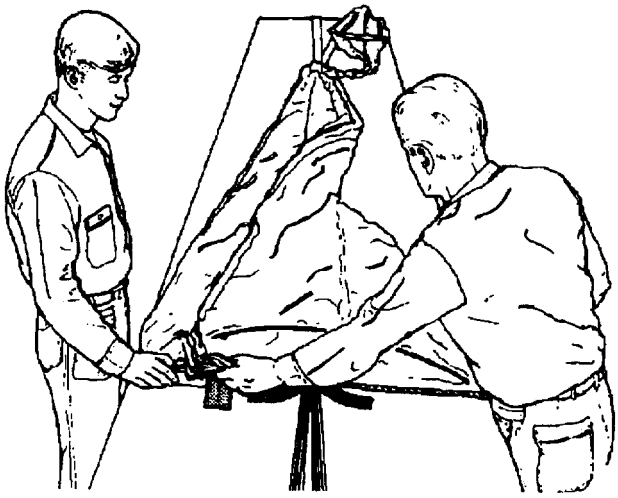


6.2-5185

Figure 8. On Signal Draw Respective Gores at Center

g. Insert suspension line groups into their respective slot in small line separator and place shot bag on lines. Packer shall place second shot bag across skirt hem on left side of suspension lines.

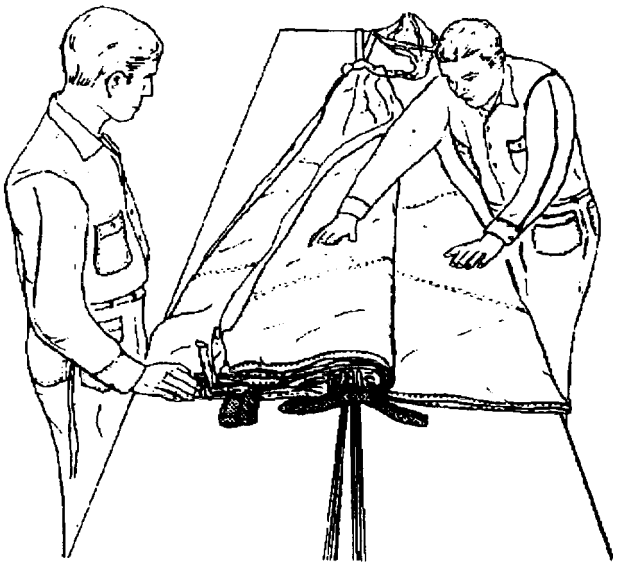
h. Helper shall rotate all gores as a group, except bottom gore, from helper's side top packer's side of packing table (Figure 9).



6.2-5185A

Figure 9. Rotate All Gores as a Group

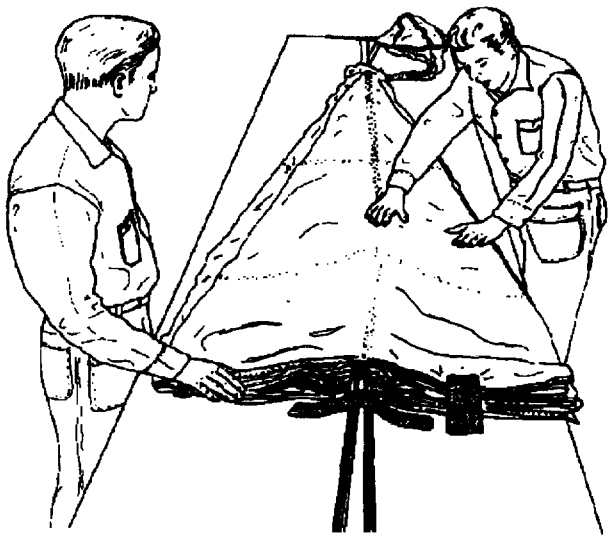
i. Helper shall straighten and smooth bottom gore on helper's side of packing table thru out its length to apex (Figure 10).



6.2-5185B

Figure 10. Straighten and Smooth Bottom Gore

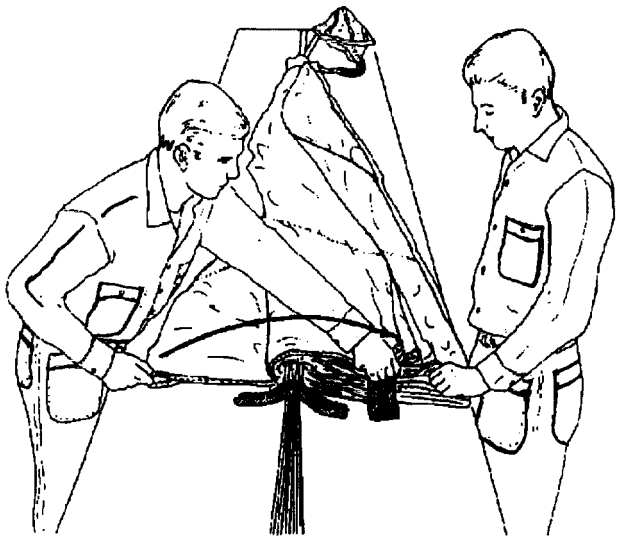
j. Return gores above shot bag on helper's side of packing table to packer's side one at a time. Helper shall straighten and smooth each gore and place the shot bag on skirt hem (Figure 11).



6.2-5185C

Figure 11. Return Gores Above Shot Bag

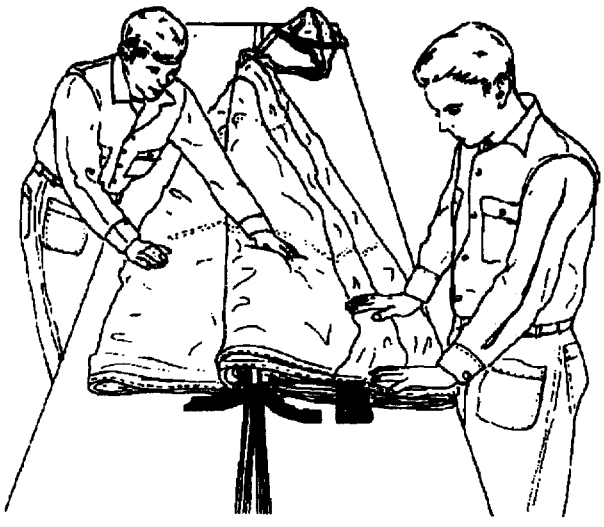
k. Packer shall rotate all gores as a group except bottom gore, from packer's side to helper's side of packing table (Figure 12).



6.2-5186

Figure 12. Rotate all Gores as a Group Except Bottom Gore

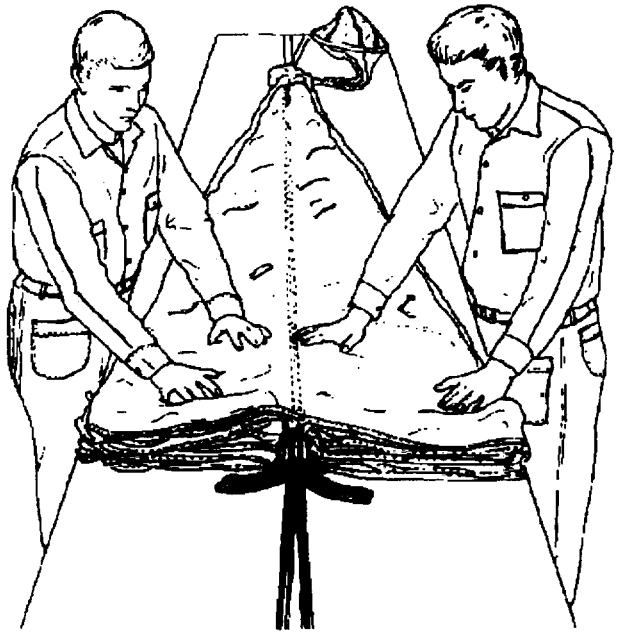
l. Packer shall straighten and smooth bottom gore on packer's side of packing table throughout its length to apex (Figure 13).



6.2-5186A

Figure 13. Packer Shall Straighten and Smooth Bottom Gore

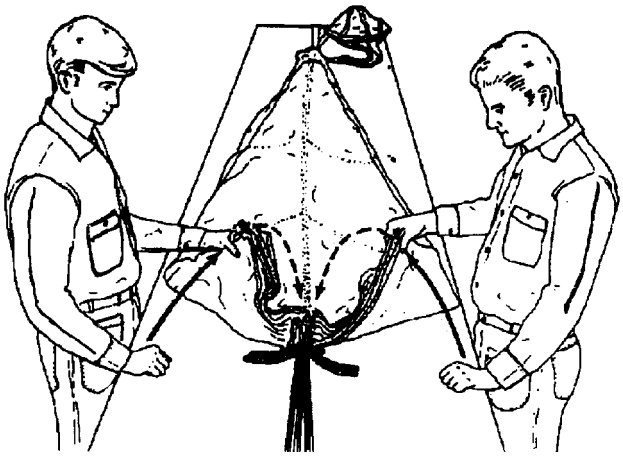
m. Helper shall return folded gores above shot bag to packer's side of packing table. Packer shall straighten and smooth each gore. Remove shot bag from canopy (Figure 14).



6.2-5186B

Figure 14. Helper Shall Return Folded Gores Above Shot Bag

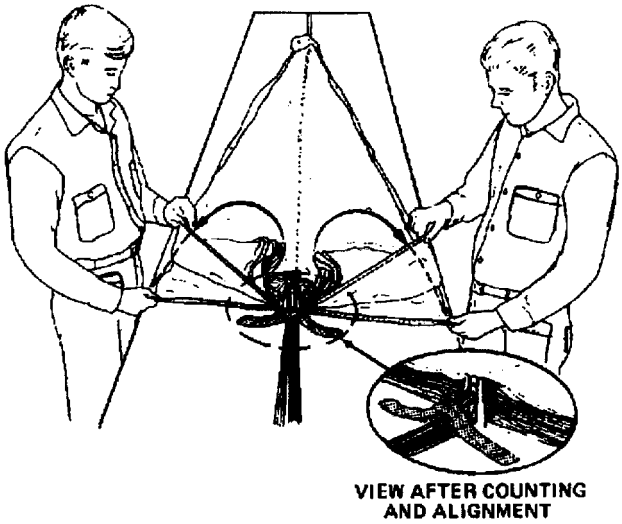
n. Packer and helper shall grasp skirt hem at midsections of gores and rotate towards suspension lines (Figure 15).



6.2-5186C

Figure 15. Packer and Helper Shall Grasp Skirt Hem at Midsections of Gores

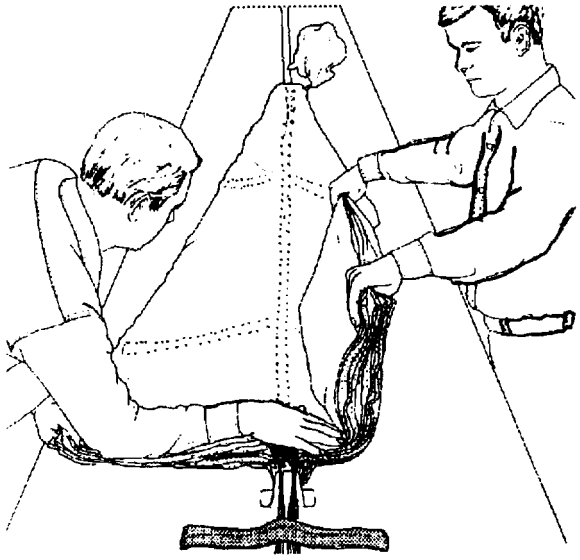
o. Packer and helper shall grasp the bottommost gore fold and extend outwards. Aligning edge of the skirt hem and suspension line V-tab reinforcements. Remaining 13 gores shall be aligned in a similar manner. Ensure that all V-tab reinforcements face same direction and that 14 gores have been counted on each side (Figure 16).



6.2-6006

Figure 16. Packer and Helper Shall Grasp Bottommost Gore

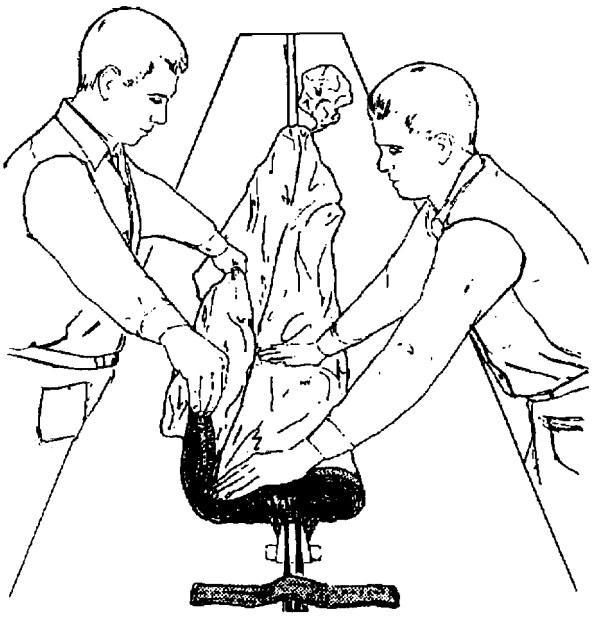
p. Canopy shall be folded in thirds by packer placing his hand on helper's side of skirt hem 6-in. from suspension lines. Helper shall rotate gores over center of canopy to left side of packing table (Figure 17).



6.2-6006A

Figure 17. Canopy Shall be Folded in Thirds

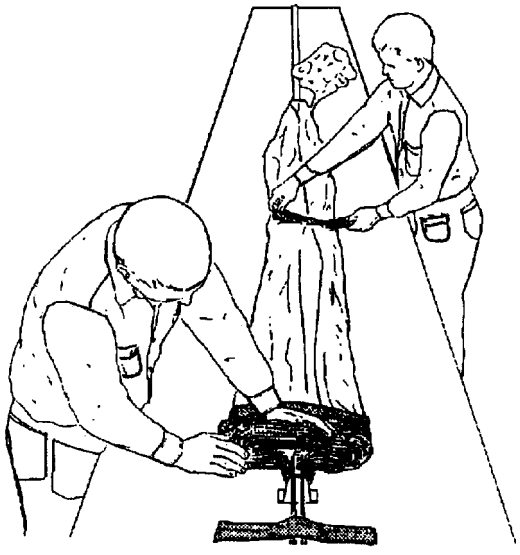
q. Helper shall place his hand on packer's side of skirt hem 6-in. from suspension lines. Packer shall rotate gores over center of canopy to right side of packing table. The two groups of folded gores shall overlap. Note that canopy cannot be folded throughout entire length but breaks two-thirds the distance to apex (Figure 18).



6.2-6006B

Figure 18. Helper shall Place His Hand on Packer's Side of Skirt Hem

r. Place a shot bag slightly behind skirt hem and another at middle of canopy. Place pilot parachute on top of canopy (Figure 19).



6.2-6006C

Figure 19. Placement of Shot Bag

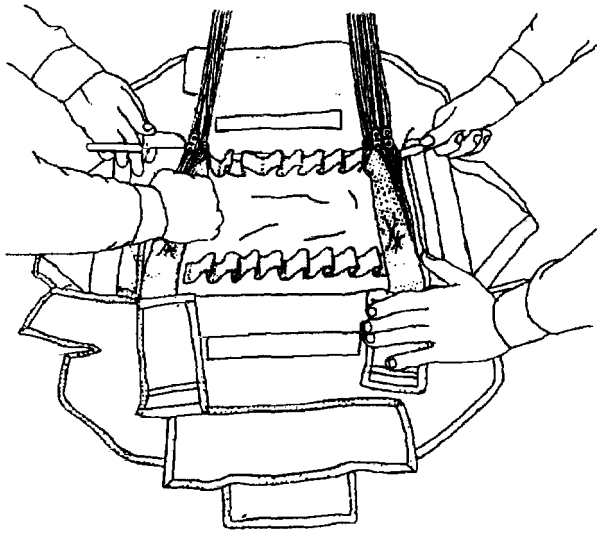
15. STOWAGE OF SUSPENSION LINES.

NOTE

During stowing operation, ensure suspension lines do not become loose, rotated, or left out of hesitator loops.

a. Remove tension strap hook from canopy vent lines.

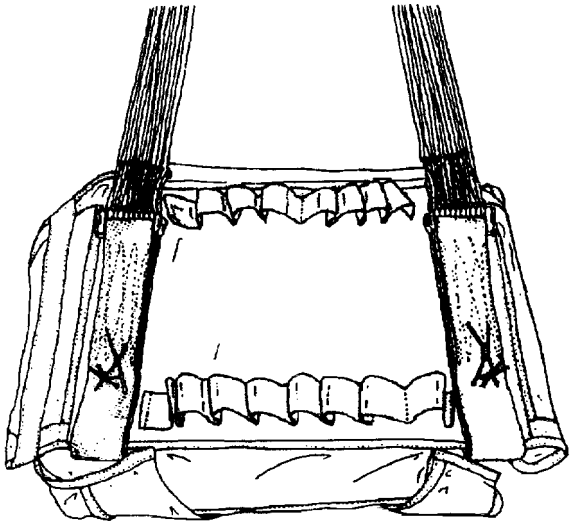
b. Turn container over so that inside faces up, ripcord pin protector flap is turned away from canopy, and lift webs are positioned on top of container. Remove tension hooks from connector links, then remove hooks from packing table (Figure 20).



6.2-6007A

Figure 20. Inside Face Up

c. Fold side and end flaps under container (Figure 21).



6.2-6007B

Figure 21. Fold Flaps Under Container

d. Packer shall grasp both groups of suspension lines 22-in. from connector links to make first bight. Ensure that there are equal amounts of suspension line in both groups, from connector links to hand. Canopy shall be drawn along packing table only in enough lengths to permit each bight to be performed (Figure 22).

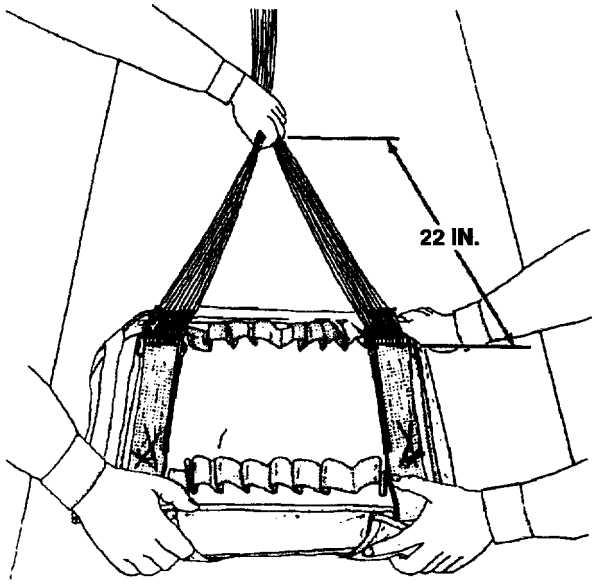


Figure 22. Grasp Both Groups of Suspension Lines

e. Packer shall form a bight in suspension lines at hesitator loop closest to canopy and helper. Packer shall draw bight thru hesitator loop but not beyond container frame (Figure 23).

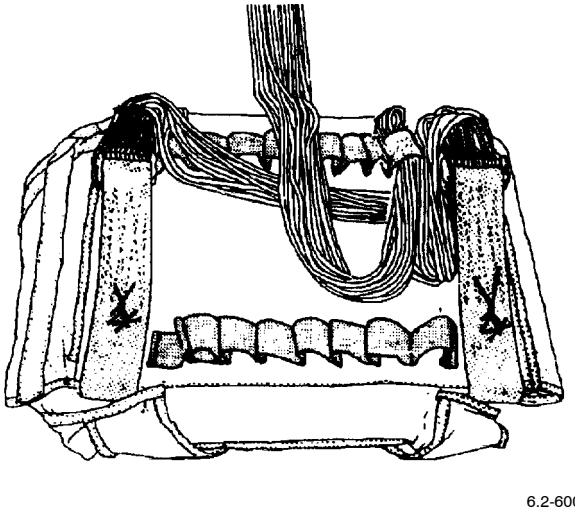


Figure 23. Form a Bight in Suspension Lines

f. Packer shall draw suspension lines and folded canopy towards container to form second bight at the hesitator loop farthest from canopy and nearest to helper. Packer shall draw bight thru hesitator loop, but not beyond container frame (Figure 24).

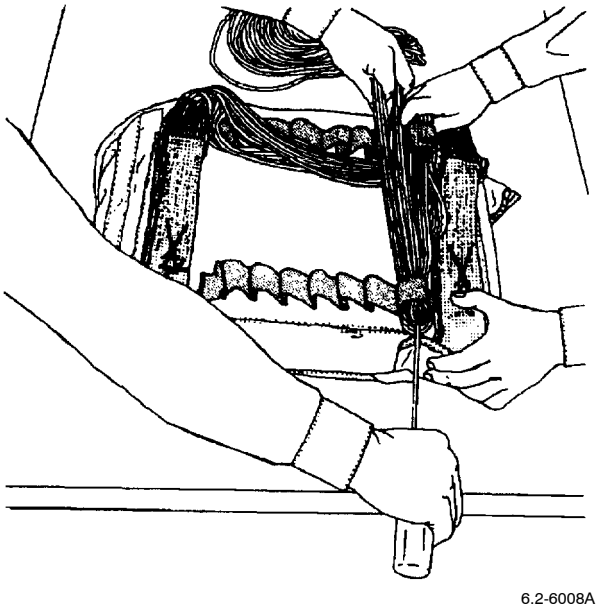


Figure 24. Draw Suspension Lines Toward Container

g. The suspension line slack between connector links and first stow shall be arranged to fill voids in container corners. Packer shall form a third bight in suspension lines at hesitator loop closest to canopy at helper's side. Packer shall draw bight thru, but not beyond container frame (Figure 25).

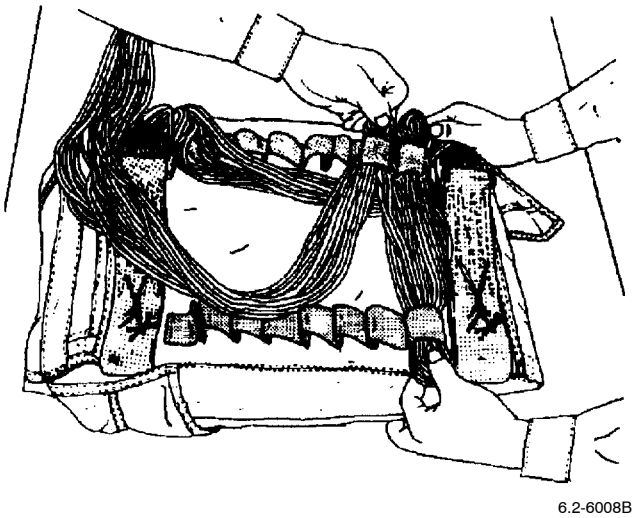
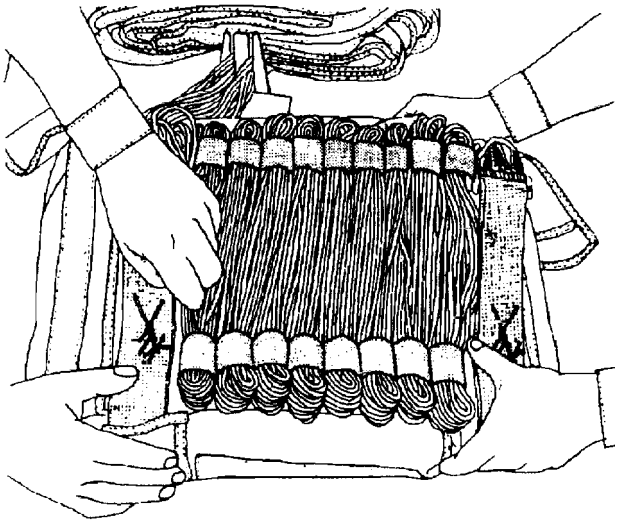


Figure 25. Slack Between Connector Links and First Stow

h. Fourth bight is formed in same manner as in previous steps. Bight pulled thru hesitator loop next to second stow.

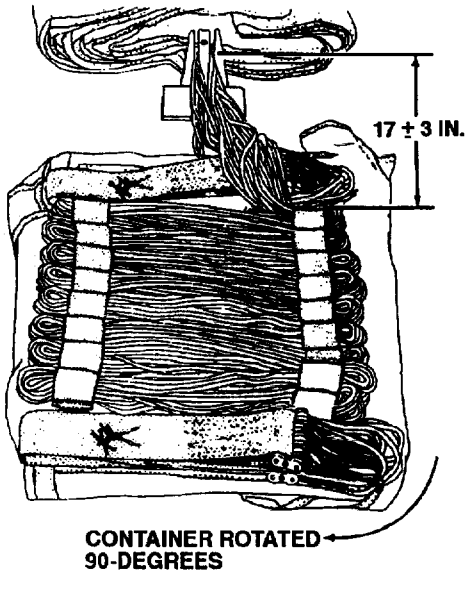
i. Continue stowing suspension lines in hesitator loops. As each stow is completed, ensure suspension lines are not rotated or loose and that there are no suspension lines left out of hesitator loops. Stowed bights shall not extend beyond container frame. Straighten all hesitator loops using temporary locking pin (Figure 26).



6.2-6008C

Figure 26. Continue Stowing Suspension Lines

j. When suspension lines are stowed in all hesitator loops, there shall be 17 ± 3-in. between last stow and canopy skirt hem (Figure 27). (QA)



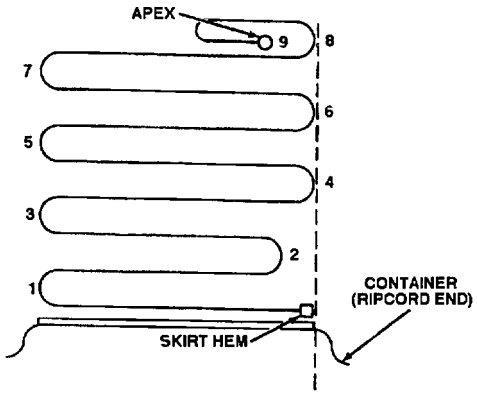
6.2-6008D

Figure 27. Checking Distance Between Last Stow and Canopy Skirt Hem

16. STOWAGE OF CANOPY.

a. Pull side and end flaps out from under parachute container. Place lift web protector flaps on top of lift webs. Remove shot bags from canopy.

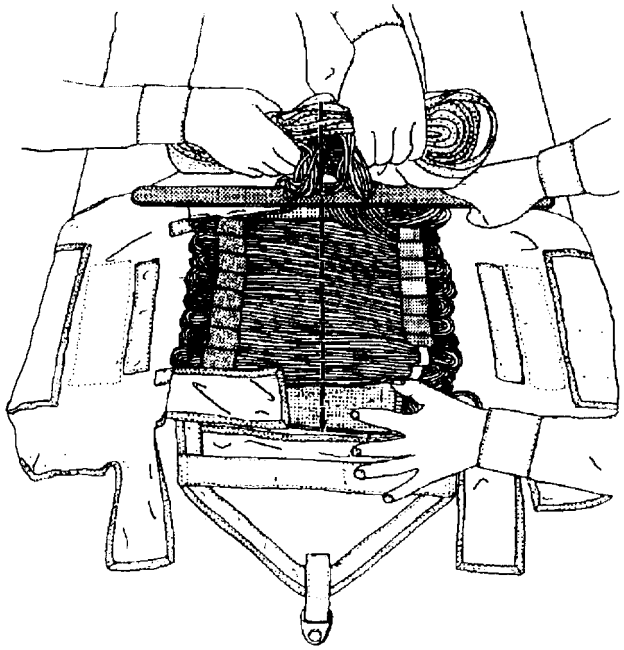
b. Nine folds shall be made when stowing canopy. Use the following illustration as a guide while stowing canopy (Figure 28).



6.2-5219

Figure 28. Alignment of Folds

c. Remove small line separator. Helper shall place long bar over suspension lines, parallel with upper container edge. Packer shall grasp canopy skirt hem on each side of suspension lines and draw canopy across container (Figure 29).



6.2-5219B

Figure 29. Removal of Small Line Separator

d. Skirt hem shall be aligned with bottom container edge. Allow folded canopy to extend 2-in. over sides of container (Figure 30).

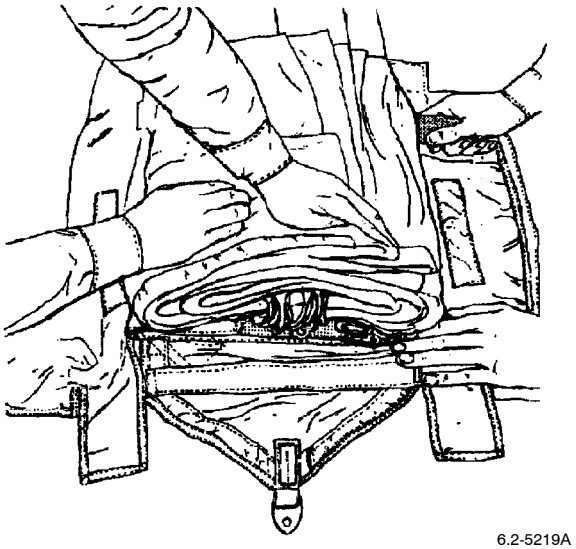


Figure 30. Align Skirt Hem with Bottom of Container

e. To make first and second folds, helper shall remove long bar from between canopy and container and place it on top of canopy, parallel with upper container edge. Packer shall grasp canopy one container length from long bar and draw it across container (Figure 31).

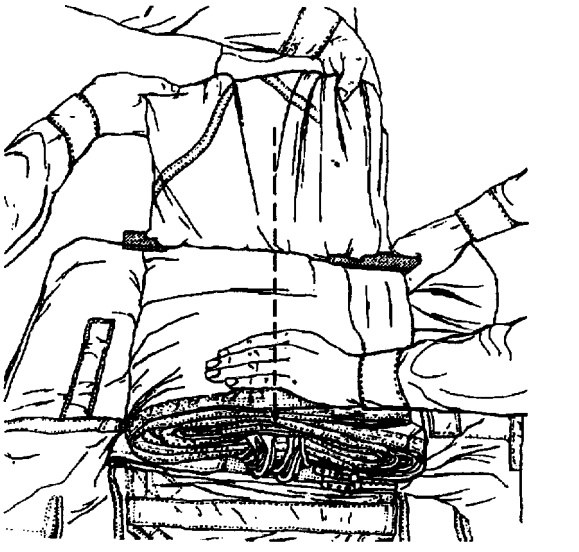


Figure 31. Make First and Second Folds

f. Second fold shall be positioned slightly behind skirt hem. Sides of canopy shall extend 2-in. over sides of container (Figure 32).

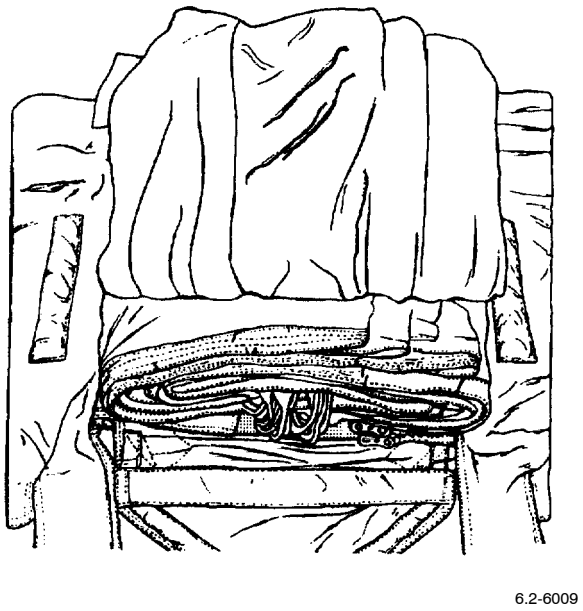


Figure 32. Position Second Fold Behind Skirt Hem

g. To make third and fourth folds, helper shall use long bar in same manner as with first and second folds. Fourth fold is extended to align with skirt hem.

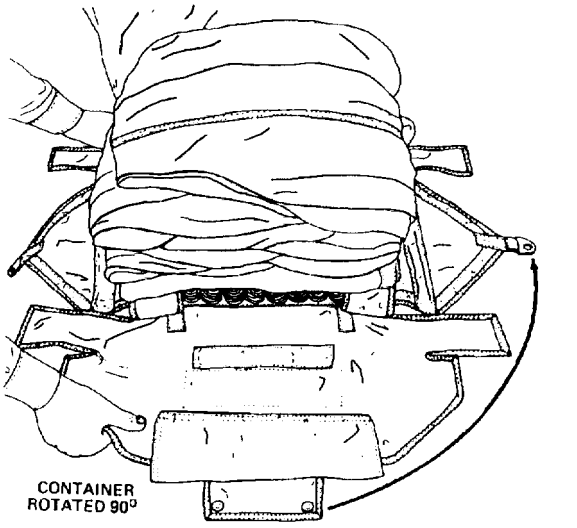
h. Continue accordion folding remainder of canopy into container, maintaining 2-in. overlap on sides of container. As apex of canopy is drawn close to container, pilot parachute shall be placed back onto packing table.

i. When insufficient canopy remains to continue folding operation, canopy shall be folded under about 9-in. from apex. Folded under portion of canopy shall be positioned on top of canopy to form uppermost fold (Figure 33).

6.2-6009A

Figure 33. Fold Canopy Under 9-in.

j. Adjust canopy, as required, to obtain neat and square folds. Rotate container 90-degrees counter-clockwise (Figure 34).



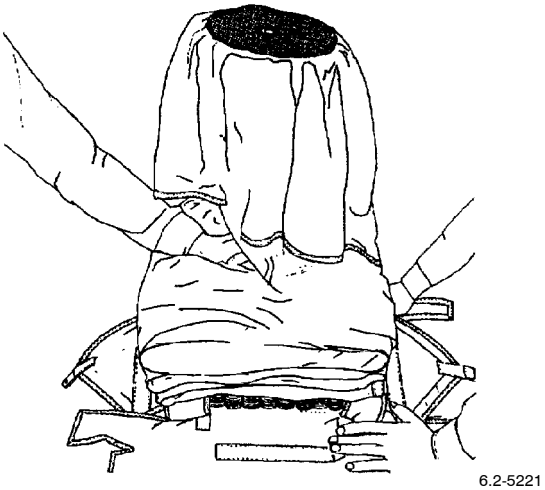
6.2-6009B

Figure 34. Adjust Canopy

17. CLOSING OF CONTAINER.

a. Ensure pilot parachute connector strap is free of entanglements

b. Position pilot parachute on top of folded canopy with bridle eye in center (Figure 35).



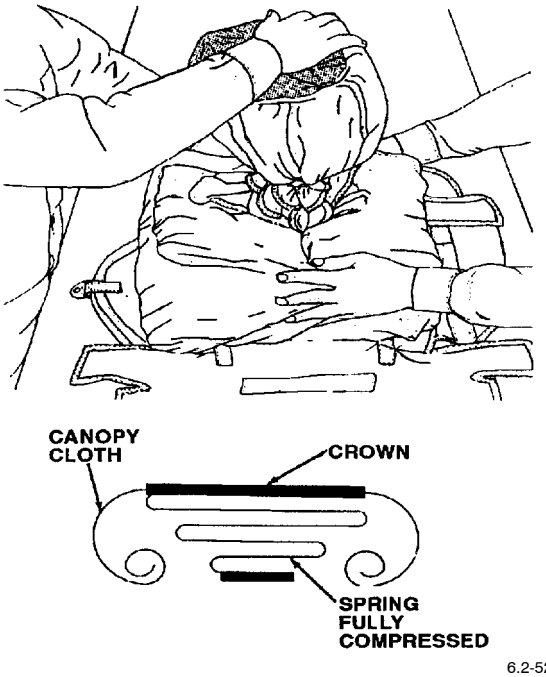
6.2-5221

Figure 35. Position Pilot Parachute

CAUTION

Ensure that pilot parachute cloth is not twisted around or entangled in compressed pilot parachute spring.

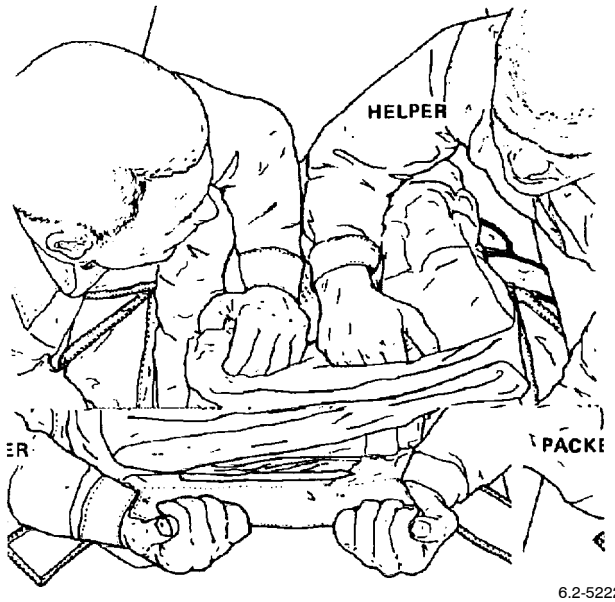
c. Gradually compress pilot parachute fully on top of canopy. Roll pilot parachute cloth under outer edge of crown. Check folding of canopy and proper position of pilot parachute (Figure 36). (QA)



6.2-5221A

Figure 36. Gradually Compress Pilot Parachute

d. Packer and helper shall pull pilot parachute protector flap on side flap with locking cones over canopy while holding pilot parachute compressed (Figure 37).

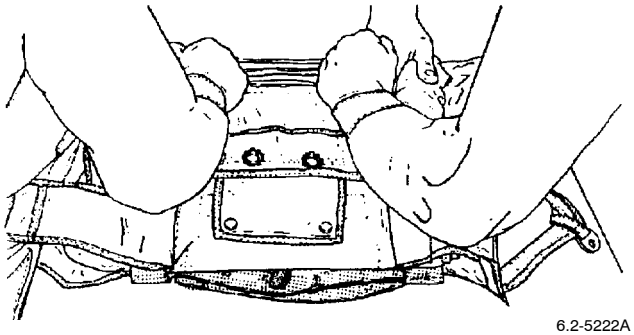


6.2-5222

Figure 37. Pull Pilot Parachute Protector Flap with Cones Over Canopy

e. The protector flap on side flap with locking cones shall be held in place.

f. Pull pilot parachute protector flap on side flap with grommets over canopy and place on top of protector flap from opposite side. Keep canopy movement to a minimum (Figure 38).

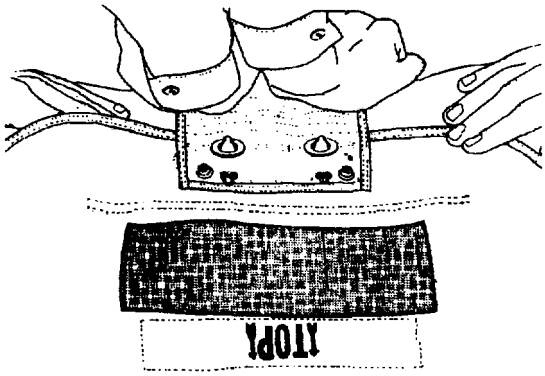


6.2-5222A

Figure 38. Pull Pilot Parachute Protector Flap with Grommets Over Canopy

g. Pull side flap with locking cones over pilot parachute protector flap and hold in place.

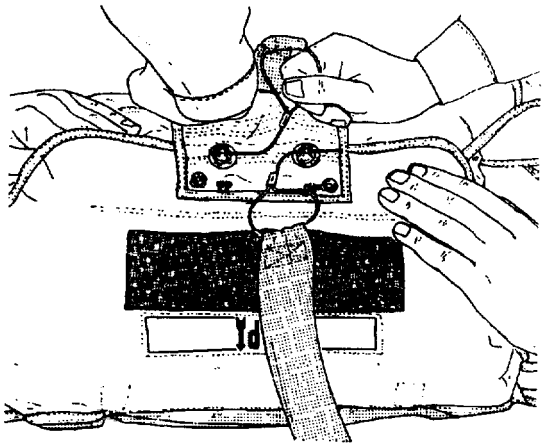
h. Pull side flaps with grommets over side flap with locking cones and place grommets over locking cones (Figure 39).



6.2-5222B

Figure 39. Pull Flap With Locking Grommets Over Locking Cones

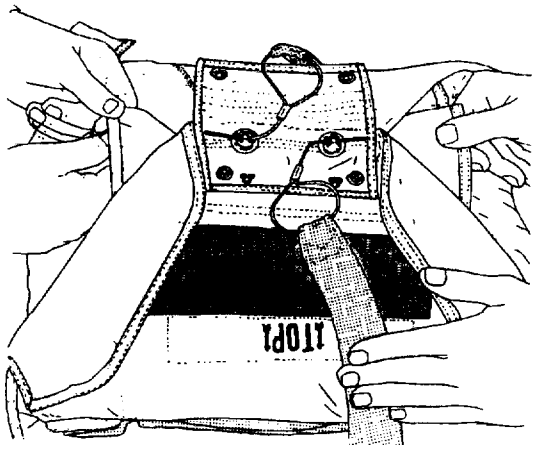
i. Insert temporary locking pins into locking cones. Note direction of locking pins (Figure 40).



6.2-5222C

Figure 40. Insert Temporary Locking Pins

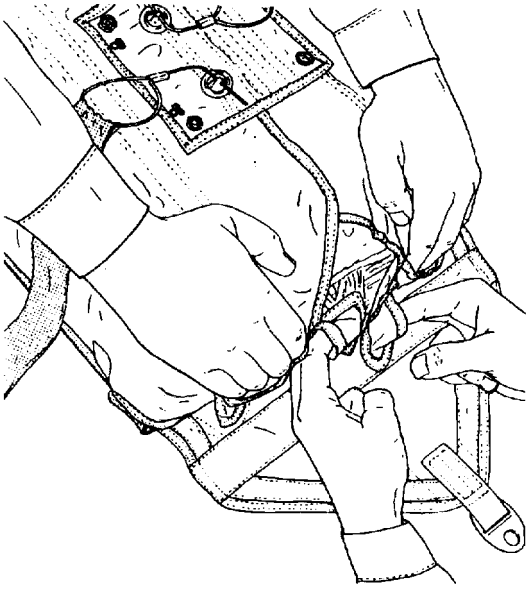
j. Straighten pilot parachute protector flaps and ensure they are properly overlapped. Arrange canopy folds at each end of container to obtain neat, square corners (Figure 41).



6.2-5223

Figure 41. Straighten Pilot Parachute Protector Flaps

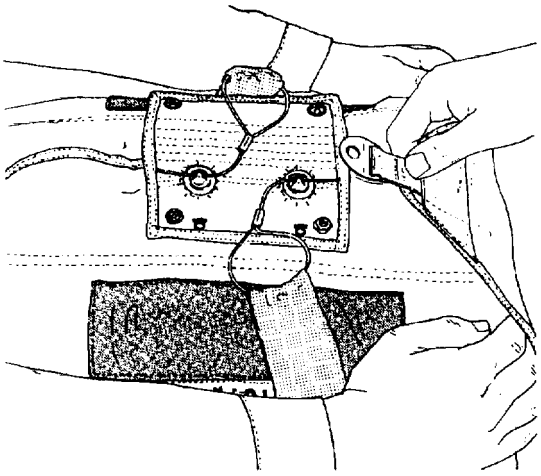
k. Helper shall pull corner flaps together on ripcord handle pocket side of container, and packer shall push down on side flaps (Figure 42).



6.2-5223A

Figure 42. Pull Flap Together

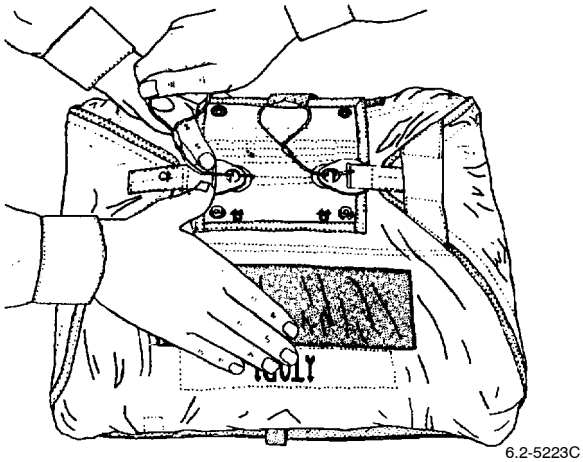
l. Packer shall hold side and corner flaps together with fingers in pockets. Helper shall pull end flap over top of container placing fastener tab over cone (Figure 43).



6.2-5223B

Figure 43. Packer Hold Side and Corner Flaps

m. Packer shall hold fastener tab over locking cone as helper removes temporary locking pin. Helper shall then reinsert temporary locking pin from inboard side of locking cone, securing metal end tab in place. Opposite end flap is closed and secured in same manner, inserting temporary locking pin from outboard side of locking cone. Ensure temporary locking pins are inserted properly (Figure 44).



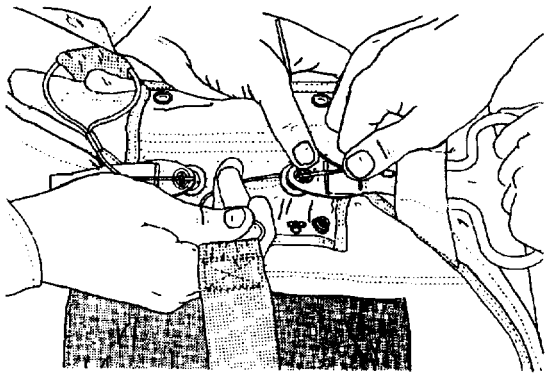
6.2-5223C

Figure 44. Hold Fastener Tab Over Locking Cones

WARNING

Use of the ripcord pin(s) as an alignment aid during installation may cause bending of pin(s) and result in excessive pull forces.

n. Partially insert ripcord handle (bend facing up) into ripcord handle pocket. Packer shall carefully remove temporary locking pin from locking cone nearest ripcord pocket. Helper, at same time, shall insert top ripcord pin into locking cone, inserting ripcord handle in elastic ripcord pocket (Figure 45).



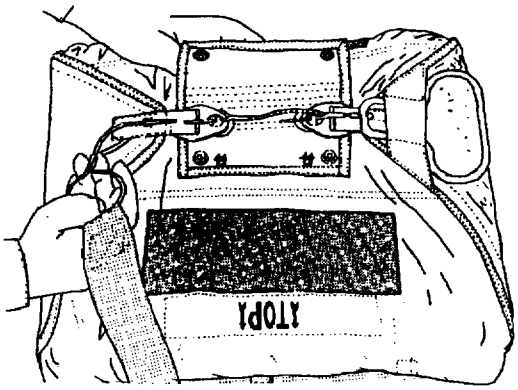
6.2-5224

Figure 45. Partially Insert Ripcord Handle

WARNING

Ripcord pins must be centered in locking cones.

o. Remove temporary locking pin from second locking cone and insert bottom ripcord pin in same manner as top ripcord pin, inserting ripcord handle in elastic ripcord pocket (Figure 46).



6.2-5224A

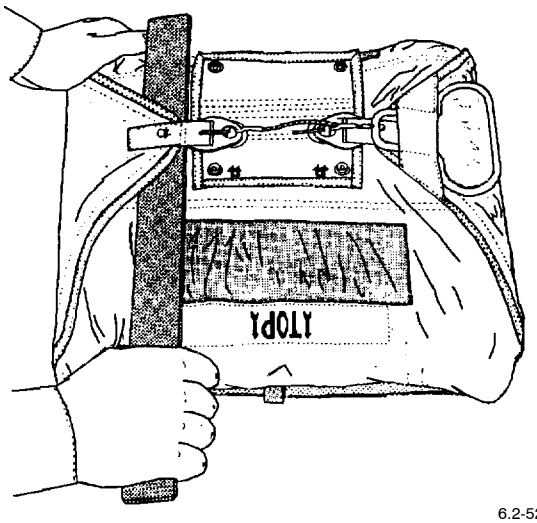
Figure 46. Remove Temporary Locking Pin

p. Ensure ripcord pins are centered in locking cones so that shoulder of ripcord pin is not jammed against hole in locking cone, but extends more than 1/2-in. beyond locking cone. (QA)

CAUTION

Improper insertion of long bar into container may cause bar to enter pack and disturb arrangement of canopy folds or flaps.

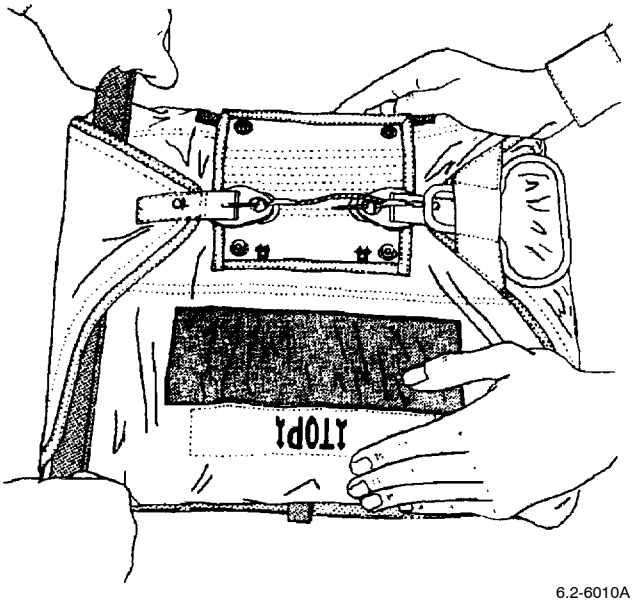
q. Insert long bar under end flap from direction of side flap containing ripcord protector flap (Figure 47).



6.2-5224B

Figure 47. Insert Long Bar

r. Push downward and work long bar in a see-saw fashion to shape pack and remove wrinkles (Figure 48).

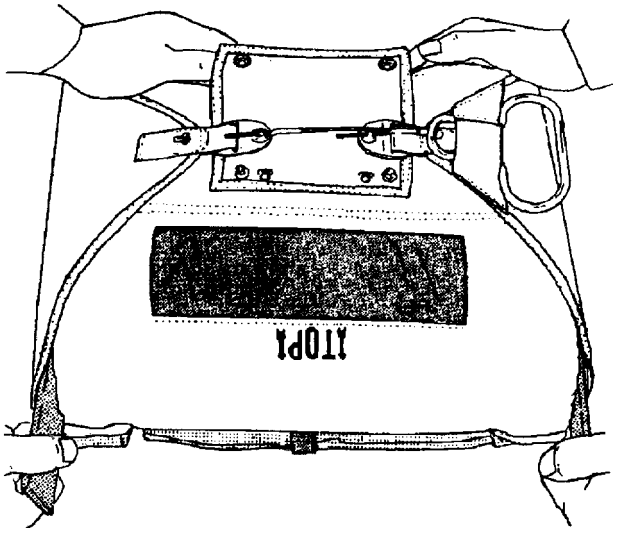


6.2-6010A

Figure 48. Push Downward and Work Long Bar

s. Shape opposite end of pack in same manner.

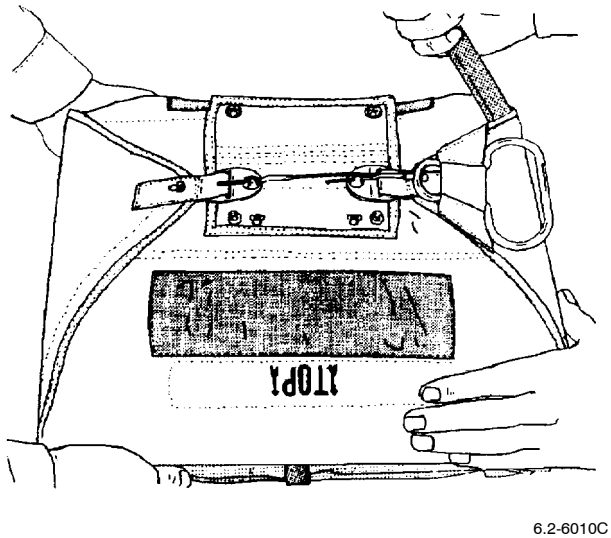
t. Push four corner flaps firmly into container using packing fid inserted into pockets. Ensure corners are firm and square with no canopy cloth exposed (Figure 49).



6.2-6010B

Figure 49. Push in Four Corners Firmly

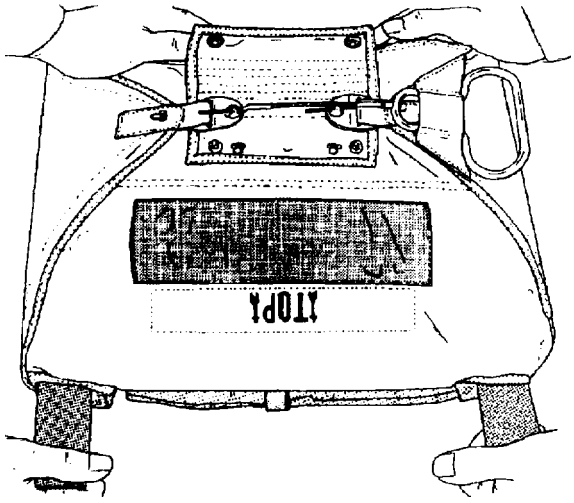
u. Insert packing fid into pockets at corners of both side flaps and push firmly into place, smoothing container cloth as required (Figure 50).



6.2-6010C

Figure 50. Insert Packing Fid Into Corner Pockets

v. Insert packing fid into pockets of lift web protector flaps and push firmly inward, straightening flaps (Figure 51).



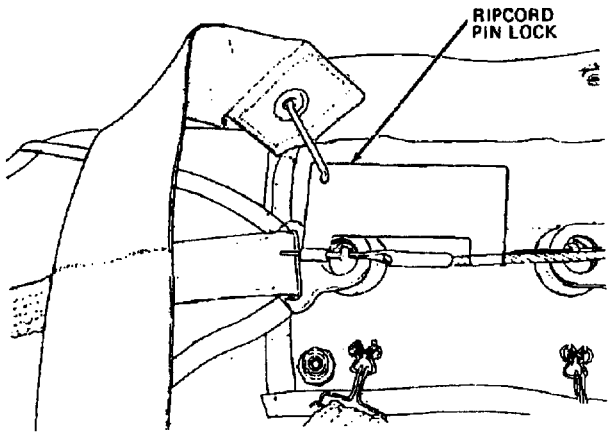
6.2-6010D

Figure 51. Insert Packing Fid Into Pockets of Lift Webs

w. Attach four container spring opening assemblies to eyes on side flaps, spring opening assembly hooks must face down. Attach two remaining container spring opening assemblies to eyes on end flaps. Ensure container spring opening assemblies are reeved between container and lift web assembly. Crimp hooks on container eyes on each opening assembly.

18. RIPCORD PIN PULL CHECK.

a. Insert ripcord pin lock on bottom ripcord pin (Figure 52).



6.2-5473

Figure 52. Ripcord Pin Pull Check

b. Attach spring scale to ripcord handle with a nylon cord. Set spring scale at zero.

c. Using the scale, apply a straight steady force to ripcord handle until initial movement of ripcord pins is observed. Most allowable force is 27 lbs. (QA)

WARNING

Ripcord pin lock must be removed.

d. Remove ripcord pin lock. (QA)

e. If necessary, reposition ripcord pins so they are centered in locking cones with each pin extending more than 1/2-in. beyond locking cone.

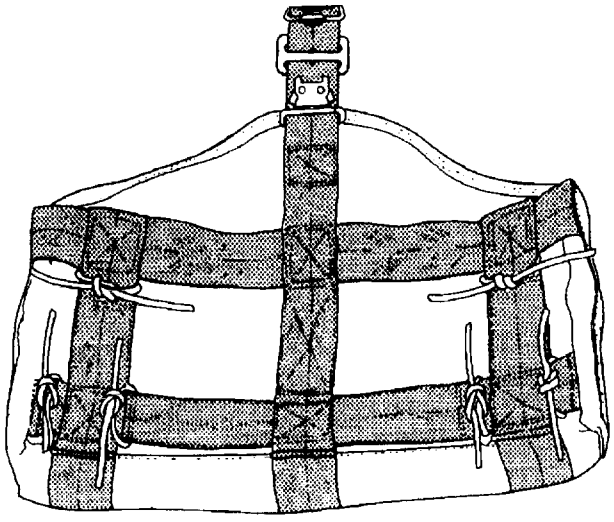
f. Snap ripcord pin protector flap closed.

19. ATTACHMENT OF STANDARD SOFT PACK (SSP) (IF APPLICABLE).

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

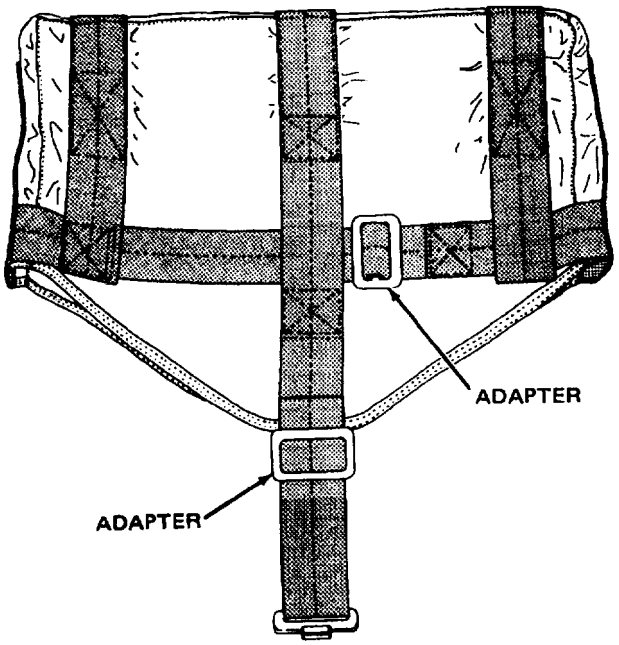
a. Ensure that six 10-in. lengths of nylon cord are tied to SSP outer container. Remove and discard inner cord and sear ends of casing (Figure 53).



6.2-6002A

Figure 53. Tie Six Lengths of Cord to Outer Container

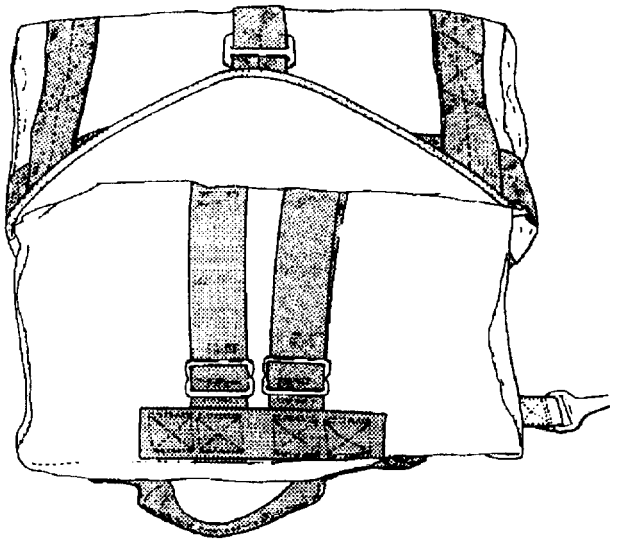
b. Position SSP outer container on packing table so that horizontal and vertical strap adapters face up (Figure 54).



6.2-6002B

Figure 54. Position SSP Outer Container

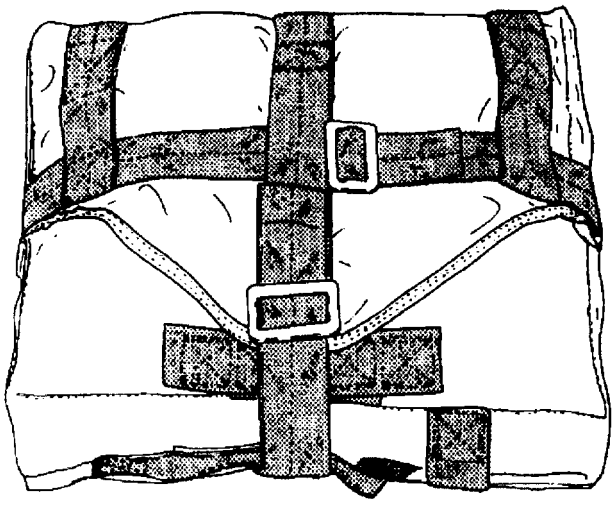
c. Insert combination carrying case and equipment container into outer container with shoulder straps facing up and strap handle positioned at open end of outer container (Figure 55).



6.2-6002C

Figure 55. Insert Combination Carrying Case

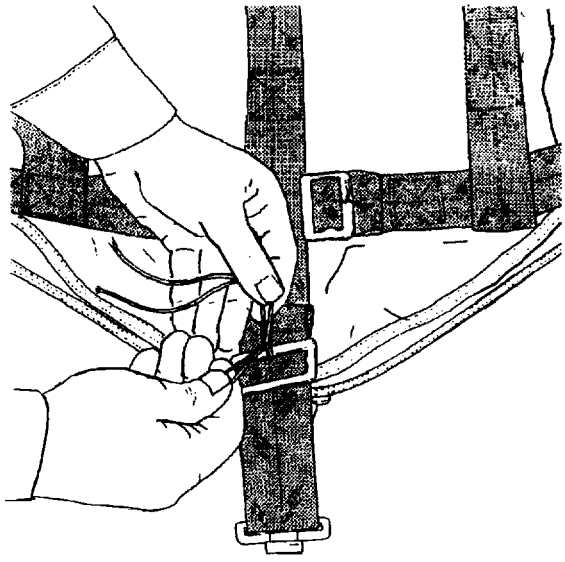
d. Pull outer container main panels over sides of combination carrying case and equipment container and fasten vertical strap quick-disconnect shackle. Reeve horizontal and vertical straps snugly together (Figure 56).



6.2-6002D

Figure 56. Pull Outer Container Main Panel Over Sides

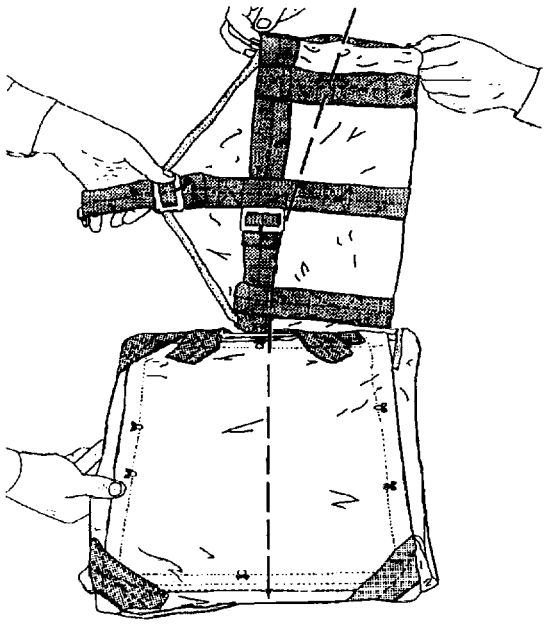
e. Mark horizontal and vertical straps midway between adapter and end of strap (Figure 57).



6.2-5173A

Figure 57. Mark Horizontal and Vertical Straps

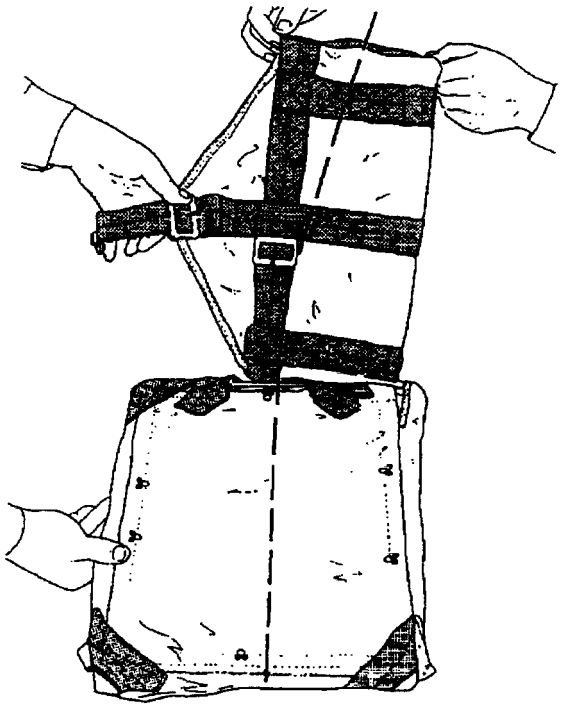
f. Remove combination carrying case and equipment container from outer container. Fold horizontal and vertical strap under at mark per step e, and tuck strap ends under adapter. Tack folded strap to strap located beneath it, passing cord around adapter and using one turn of size 6 thread, doubled and waxed; tie off (Figure 58).



6.2-5173B

Figure 58. Remove Combination Carrying Case

g. Position SSP outer container on top of parachute container, with outer container adapters facing parachute container, and open end facing locking cones (Figure 59).



6.2-5173C

Figure 59. Position SSP Outer Container

h. Tack four corners of SSP outer container to bottom of parachute container. Tack outer container main panel on each side of vertical strap to parachute container. Pass all tackings around parachute container wire frame. Tackings shall be with two turns of size 6 thread, doubled and waxed; tie off (Figure 60).

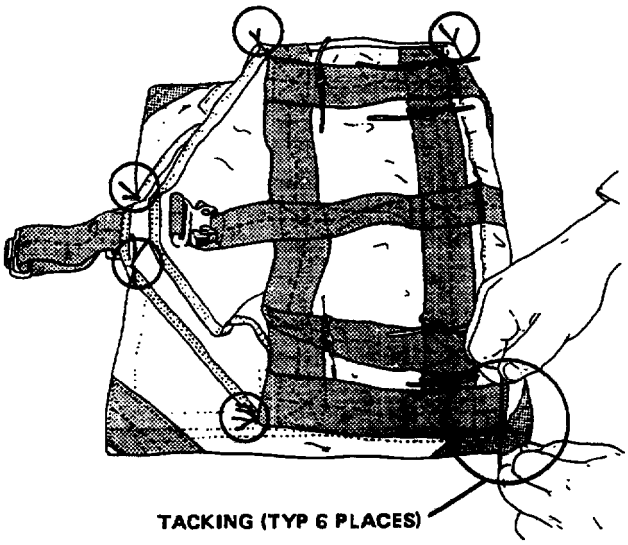


Figure 60. Tack Four Corners of SSP

i. Insert combination carrying case and equipment container into SSP outer container.

j. Insert combination carrying case and equipment container into SSP outer container. Position parachute container with shoulder straps of combination carrying case and equipment container facing parachute container under lift web assembly with inside facing packing table and ripcord pin protector flap facing canopy. Remove tension hooks from connector links and packing table (Figure 61).

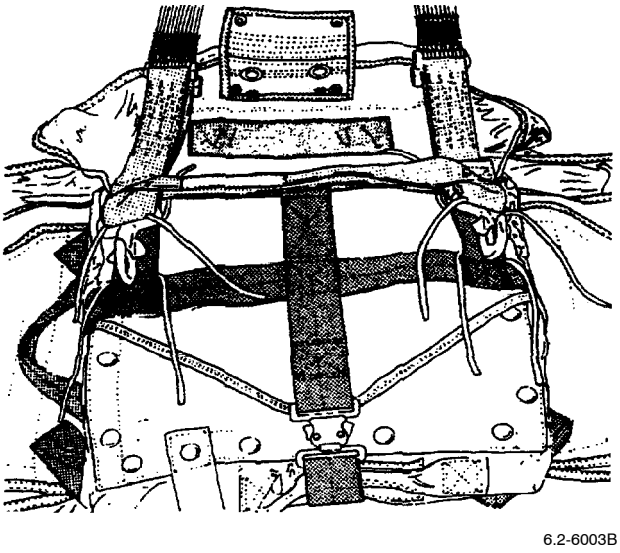
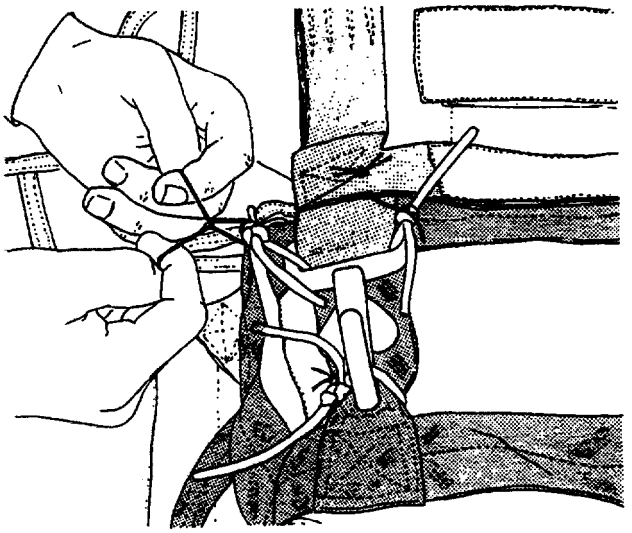


Figure 61. Insert Combination Carrying Case

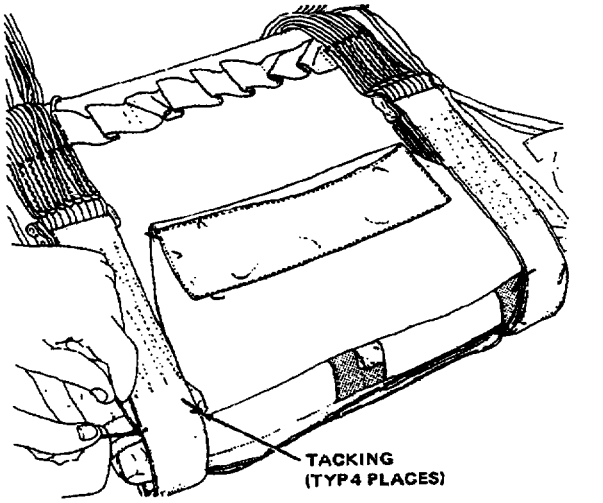
k. Tie lift web assembly quick-connector snaphooks to the SSP outer container using six 10-in. lengths of nylon cord. Pass cord thru each side of slot and around hook on both snaphooks; tie ends with a square knot. Tack thru each square knot with one turn of size 6 thread; single and waxed; tie off (Figure 62).



6.2-6003C

Figure 62. Lift Web Assembly Quick-Connector Snap Hooks

l. Rotate parachute container, from ripcord pin protector flap side over, so that SSP faces packing table. Connector links shall be positioned on top of container with lift webs thru top side of flap slots. Tack both sides of lift webs to container passing one turn of size E thread, single and waxed, thru webbing and around container frame; tie off (Figure 63).

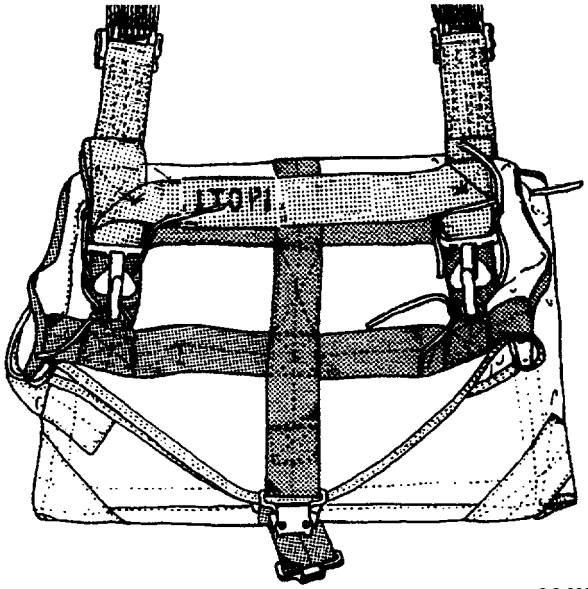


6.2-6004A

Figure 63. Rotate Parachute Container

m. Remove combination carrying case and equipment container from SSP outer container.

n. Pull parachute container out from under connector links so that inside of parachute container faces packing table and ripcord pin protector flap faces canopy. Fold side and end flaps under container (Figure 64).



6.2-6004B

Figure 64. Pull Parachute Container Out From Under Connector Links

20. FINAL CHECKOUT.

a. Account for all packing tools.

b. Examine packed parachute for general condition.

c. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA)

d. QA inspector shall examine completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

e. QA inspector shall sign Parachute Record (OPNAV 4790/101).

f. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

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INTERMEDIATE AND DEPOT MAINTENANCE

REPAIR PROCEDURES

NC-3 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 580AS100-5 and 580AS100-6

List of Effective Work Package Pages

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Intermediate and Depot Maintenance, Packing Procedures, NC-3 Personnel Parachute Assembly ..... WP 010 02
Organizational, Intermediate, and Depot Maintenance, Illustrated Parts Breakdown, NC-3 Personnel Parachute Assembly ..... WP 010 04
Parachute Loft Requirements/Administration ..... WP 003 00
Support Equipment ..... WP 005 00

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Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This work package (WP) contains instructions for the maintenance, repair, replacement, and fabrication of various parachute parts or subassemblies to ensure that proper items of equipment remain in a Ready-For-Issue (RFI) status. Selected repairs shall be documented on Parachute Record. For common repairs refer to WP 004 00.

2. PILOT PARACHUTE AND CONNECTOR STRAP REPAIRS.

a. Repair of the pilot parachute and/or connector strap is limited to the following:

(1) Cleaning of contaminated areas.

(2) Replacement of loose or broken tacking.

(3) Repair of holes or tears 0 to 1-in. in diameter in cloth by single patch.

b. Replace pilot parachute and/or connector strap for any of the following:

(1) Service/total life per WP 010 02.

(2) Seam separations and loose or broken stitching (yarn separation is acceptable) that may affect the safe operation of the parachute assembly.

(3) Holes or tears over 1-in. in diameter or length and more than five holes or tears per pilot parachute.

(4) Pilot parachute spring is broken or distorted.

(5) Pilot parachute locking cone or grommet is loose or damaged.

(6) Connector strap finished length is incorrect.

3. REPLACEMENT OF PILOT PARACHUTE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Inspect replacement pilot parachute per WP 010 02.

b. Remove tacking at lark's head knot and then remove pilot parachute.

c. Pass large loop of connector strap in pilot parachute. Form a lark's head knot by passing entire pilot parachute thru loop of connector strap and pull tight (Figure 1).

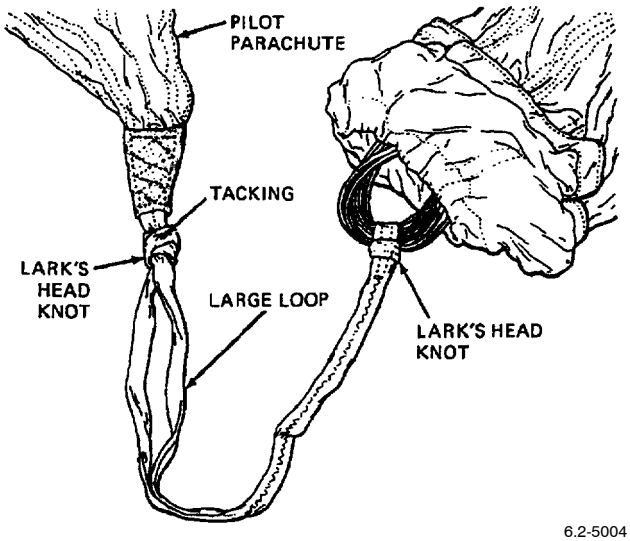

Figure 1. Pilot Parachute and Connector Strap Removal and Replacement

d. Tack lark's head knot with two turns of size 6 thread, single and waxed; tie off (Figure 1). (QA)

e. Mark date placed in service on pilot parachute per WP 004 00. (QA)

f. Make proper entries on Parachute Record (OPNAV 4790/101).

4. REPLACEMENT OF PILOT PARACHUTE CONNECTOR STRAP.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Inspect replacement connector strap for cuts, fraying, and loose or broken stitching.

b. Measure length of connector strap. Proper unattached length is 23 1/2 ± 1/2-in

c. Grasp a suspension line at canopy vent, count, and hold 14 consecutive lines.

d. Pass small loop end of connector strap thru and around all apex lines. Forming a lark's head knot, pass large loop end of connector strap thru small loop end; pull tight (Figure 1).

e. Pass large loop end of connector strap thru loop in pilot parachute. Form a lark's head knot by passing entire pilot parachute thru large loop of connector strap (Figure 1).

f. Tack lark's head knot at pilot parachute with two turns size 6 thread, single and waxed; tie off (Figure 1). (QA)

g. Mark date placed in service on connector strap per WP 004 00. (QA)

h. Make proper entries on Parachute Record (OPNAV 4790/101).

5. REPLACEMENT OF PILOT PARACHUTE CONNECTOR STRAP LOOSE OR BROKEN TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove broken and loose tacking.

b. Pull Lark's head knot tight.

c. Tack lark's head knot at pilot parachute with two turns of size 6 thread, single and waxed; tie off. (QA)

6. REPLACEMENT OF PILOT PARACHUTE LOOSE OR BROKEN TACKING (PLATE ASSEMBLY).

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove broken and loose tacking.

NOTE

The plate assembly is attached at the base of the coil spring.

b. Locate the four holes in the plate assembly within the pilot parachute fabric.

c. Tack thru holes with two turns of size 6 thread, doubled and waxed; tie off.

7. CANOPY REPAIRS.

8. REPLACEMENT OF CANOPY.

Support Equipment

Part Number	Nomenclature
Refer to WP 005 00	Temporary Locking Pin
—	Screwdriver, Torque

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

For Double "L" Connector Link, refer to Paragraph 21 for disassembly, assembly, and inspection instructions.

a. Remove pilot parachute and connector strap from vent lines. Retain for reinstallation.

b. Remove four-line release rigging from connector links and then remove lanyard from riser flutes.

c. Remove connector link yoke and plate assemblies.

d. Remove connector links from lift web loops and then reinstall yoke and plate assemblies.

e. Dispose of canopy per supply directives.

f. Lay out replacement canopy assembly full length on clean packing table.

g. Attach tension strap hook to canopy vent lines.

h. Locate gore 28 (nameplate gore) and place uppermost in center of packing table.

i. At skirt hem, separate suspension lines into two equal groups with lines 1 thru 14 on packer's side and 15 thru 28 on helper's side. Grasping each group of lines, walk from skirt hem to connector links removing any dips and twists between two groups.

j. Place connector link holding lines 1 thru 7 on top of connector link holding lines 8 thru 14. Place connector link holding lines 22 thru 28 on top of connector link holding lines 15 thru 21. Insert tension hooks into connector links and insert hooks into packing table (Figure 2).

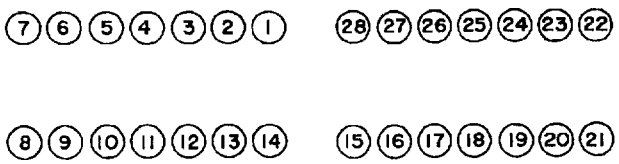

Figure 2. Arrangement and Orientation of Suspension Lines on Connector Links 1003-2

k. Pull suspension lines taut, pull vent collar toward canopy, and align exposed upper lateral band.

l. Check suspension line continuity on left side of gore 28. Packer shall grasp line 1 at skirt hem and raise to enough height to ensure line is free of dips and twists. Continue procedure with lines 2 thru 14 (Figure 2). Helper shall be positioned at connector links to check lines selected by packer.

m. Check suspension line continuity on right side of gore 28. Packer shall grasp line 28 at skirt hem and raise to enough height to ensure line is free of dips and twists. Continue procedure with lines 27 thru 15 (Figure 2). Helper shall be positioned at connector links to check lines selected by the packer.

n. Inspect four-line release anchor loops for proper attachment to lines 3 and 26. Measure 30 ± 1/2-in. above upper connector link bar. Anchor loops must be attached with 2-in. of zigzag stitching.

o. Inspect canopy assembly per WP 010 02.

p. Reattach pilot parachute and connector strap per Paragraphs 4 and 5.

q. Remove connector links from tension hooks. Remove tension hooks from packing table.

r. Remove connector link yoke and plate assemblies from bottom connector links.

s. Insert bottom connector links into bottom lift web loops and connector links into top lift web loops.

t. Reattach yoke and plate assemblies to bottom connector links ensuring knurled portions of plate faces up and screwheads face outboard.

u. Remove connector link yoke and plate assemblies from top connector links.

v. While maintaining continuity, slide suspension lines onto a temporary locking pin or rod.

w. Insert connector links into top lift web loops.

CAUTION

Ensure that clove-hitch and half-hitch at ends of suspension lines do not separate during handling.

x. Reinstall suspension lines 3 thru 7 and 26 thru 22 onto connector links.

y. Reattach yoke and plate assemblies to top connector links ensuring knurled portion of plate faces up and screwheads face outboard.

z. Insert tension hooks into connector links and then tension canopy.

aa. Perform suspension line continuity check as in steps m and n. (QA)

ab. Tighten screws on top and bottom connector links to a torque value of 20 to 25 in-lbs. (QA)

ac. Apply torque seal to each connector link screwhead.

ad. Mark date placed in service on canopy assembly per WP 004 00. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

ae. Fabricate four-line release lanyards, if required per WP 004 00.

af. Attach four-line release lanyards to suspension lines 3 and 26, per WP 004 00.

ag. Rig four-line release lanyards per WP 004 00.

9. HARNESS REPAIRS.

10. REPLACEMENT OF HARNESS LABEL.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove back cushion.

b. Carefully remove old label.

c. Mark required information on replacement label.

d. Machine stitch label to harness in center of horizontal backstrap with label positioned to face wearer.

e. Lay out harness on packing table so that wearer would be face down on packing table with head towards canopy and position back cushion underneath harness with back cushion keepers released (Figure 3).

f. Secure diagonal backstrap under upper corner keepers and horizontal backstrap under two bottom center keepers (Figure 3).

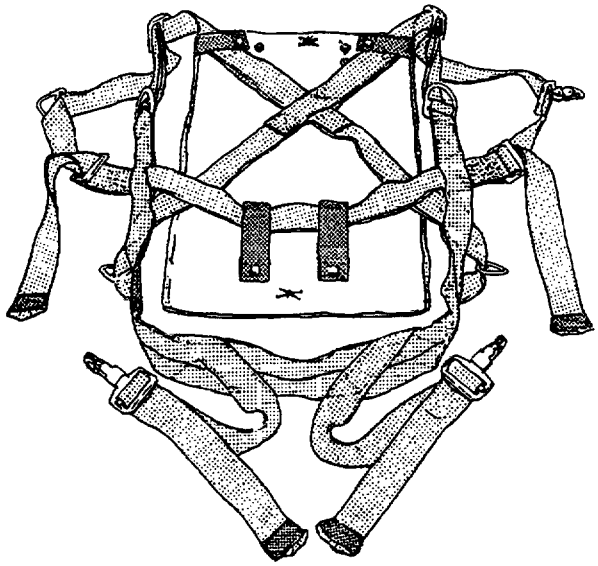

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Figure 3. Back Cushion Attachment

11. MODIFICATION OF HARNESS FOR STANDARD SOFT PACK (SSP) APPLICATION.

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon, Type XXVIII, 1 3/4-in.
	-or-
PIA-W-4088	Webbing, Nylon, Type XIII, 1 3/4-in. Class 1 or 1A
PIA-T-5038	Tape, Nylon, Type IV, 1-in. Class 1 or 1A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
MS22020-1	Link, Parachute Harness Triangle (2)

a. Cut two 6 1/4-in. and two 13-in. pieces of webbing. Sear cut edges. Avoid forming sharp edges while hot knifing and searing.

b. Mark off 6 5/8-in. from end of each 13-in. length of webbing.

c. Cut two 6 3/4-in. lengths of tape. Sear cut edges. Avoid forming sharp edges while hot knifing and searing.

d. Modify harness.

e. Insert each 6 1/4-in. piece of webbing into the slot of each triangle link. Line up both ends. Sew both nylon webbing folds at triangle link base. Stitch as close as possible to link (Figure 4).

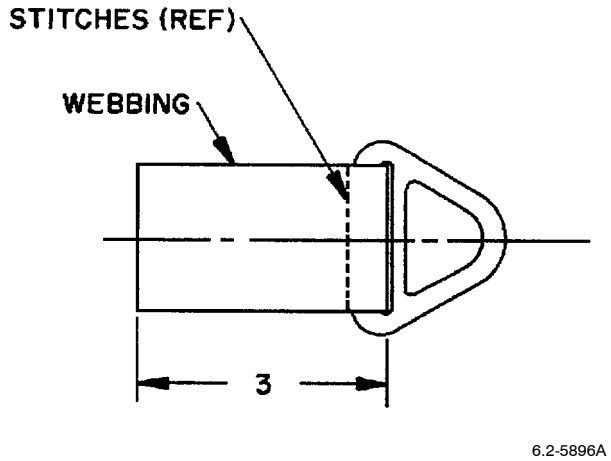

Figure 4. Insert Webbing Into Slot

f. Insert tape thru eye and reeve back thru slot of each triangle link. Line up both ends. Sew tape and webbing together (Figure 5).

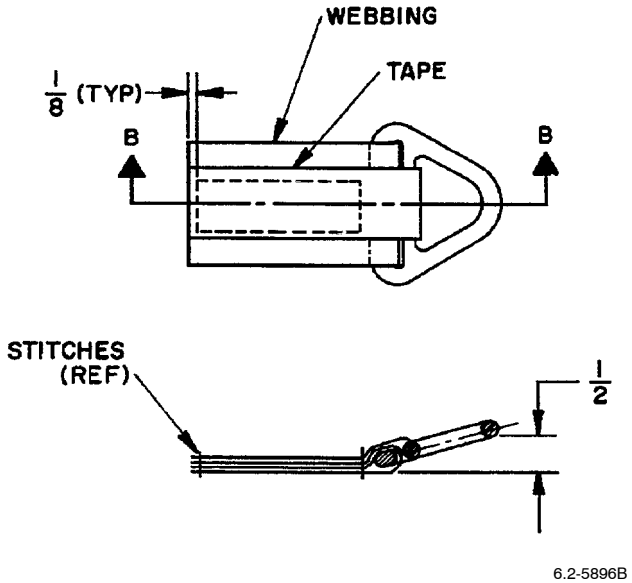

Figure 5. Insert Tape thru Eye

g. Position links with webbing and tape installed on marked-off area on webbing. Sew in place using a four-point crosstitch (Figure 6).

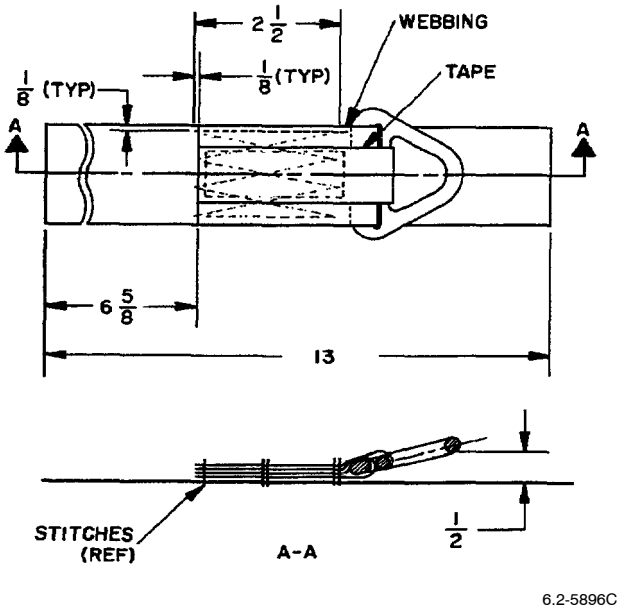

Figure 6. Position Links with Webbing

h. Position one strap on each side of main member of harness to harness so that base of V-ring is 14 1/2-in. from centerline of harness seat sling.

i. Match four-point crosstitch with harness pattern and sew strap to harness. Stitch as close as possible to fitting. Check that horizontal and diagonal back straps are free to adjust and are not sewn down (Figure 7).

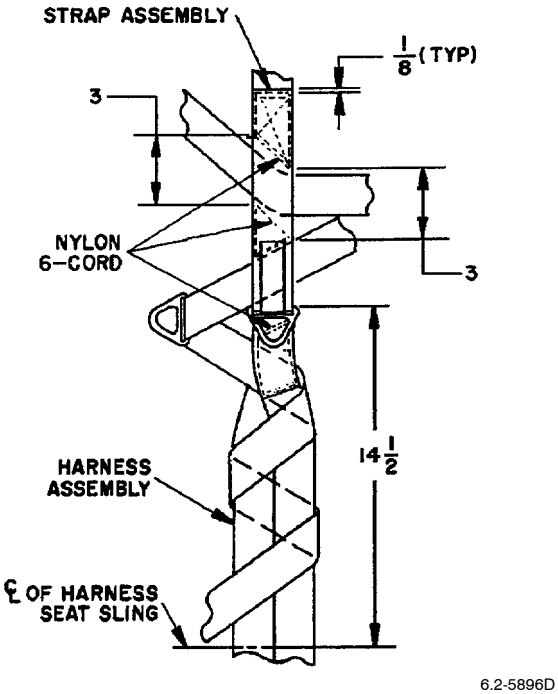

Figure 7. Match Four-Point Crosstitch

12. REPLACEMENT OF BACK CUSHION SNAP FASTENERS.

Support Equipment Required

Part Number	Nomenclature
CAGE 57771	Chuck, Stud and Die, Eyelet,
	-or-
CAGE 57771	Chuck, Socket and Die Button

Materials Required

Specification or Part Number	Nomenclature
MS27980-8B	Fastener, Snap, Eyelet
and	
MS27983-3	Fastener, Snap, Stud
	-or-
MS279083-1	Fastener, Snap, Button
and	
MS27983-2N	Fastener, Snap, Socket
	-or-
MS27980-1B	Fastener, Snap, Button
and	
MS27980-6B	Fastener, Snap, Socket
	-or-
MS27980-8B	Fastener, Snap, Eyelet
and	
MS27980-7B	Fastener, Snap, Stud

a. Remove damaged fastener using care not to damage cushion or webbing.

b. Install new fastener.

13. REPLACEMENT OF QUICK-CONNECTOR SNAP TACKING.

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove loose or broken tacking.

CAUTION

Use of hot needles or soldering irons to aid in tacking of lift web is forbidden.

b. With container and lift web in position, tack quick-connector snaps to container bottom using size 6 thread, doubled and waxed. Make tacking as follows:

(1) After threading needle, tie overhand knot about 6-in. from end of thread.

(2) Starting from inside of container, pass needle thru lift web (Figure 8, #1). Tacking shall pass thru snap slot and between lift web strap and shank.

(3) Pass tacking around shank, and down thru container and lift web straps (Figure 8, #2).

(4) Pass tacking thru lift web straps and container (Figure 8, #3), around hook, and back thru container and lift web straps (Figure 8, #4).

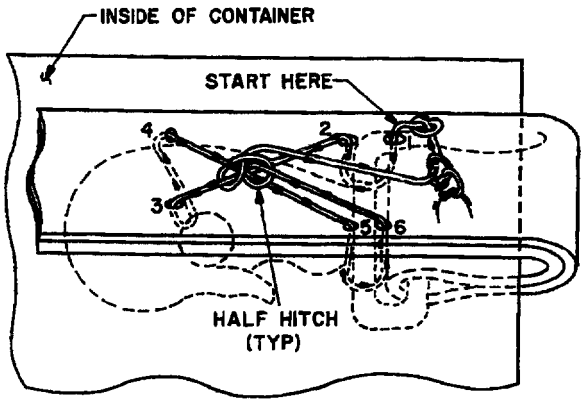

Figure 8. Replacement of Quick-Connector Snap to Container

(5) Pass tacking back thru lift web straps and container (Figure 8, #5) around shank, and thru snap-hook slot (Figure 8, #6).

(6) Form two half-hitches. Pull thread tight and tie off. Ending on inside of container (Figure 8).

14. CONTAINER REPAIRS.

15. REPLACEMENT OF CONTAINER.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. Completely remove tackings securing lift web from container.

b. Inspect container per WP 010 02.

c. Position container under lift web, with inside facing packing table and ripcord pin protector flap facing canopy. Lift web cross-connector strap shall be positioned on top of container, just inside container frame (Figure 9).

d. Position container on end with side locking cone flap on table and lift webs inserted thru slots on upper corners of container. Lift web cross-connector strap shall be positioned at upper edge of container and spring-loaded guards of quick-connector snap facing away from container (Figure 9).

e. Attach lift webs to container per Paragraph 16.

16. REPLACEMENT OF STANDARD SOFT PACK (SSP) CONTAINER.

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type III Six 10-in. Lengths
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all rackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove ties securing riser quick-connector snaps to SSP outer container.

b. Remove tackings securing SSP outer container to parachute container. Remove parachute container.

c. Inspect parachute container per WP 010 02.

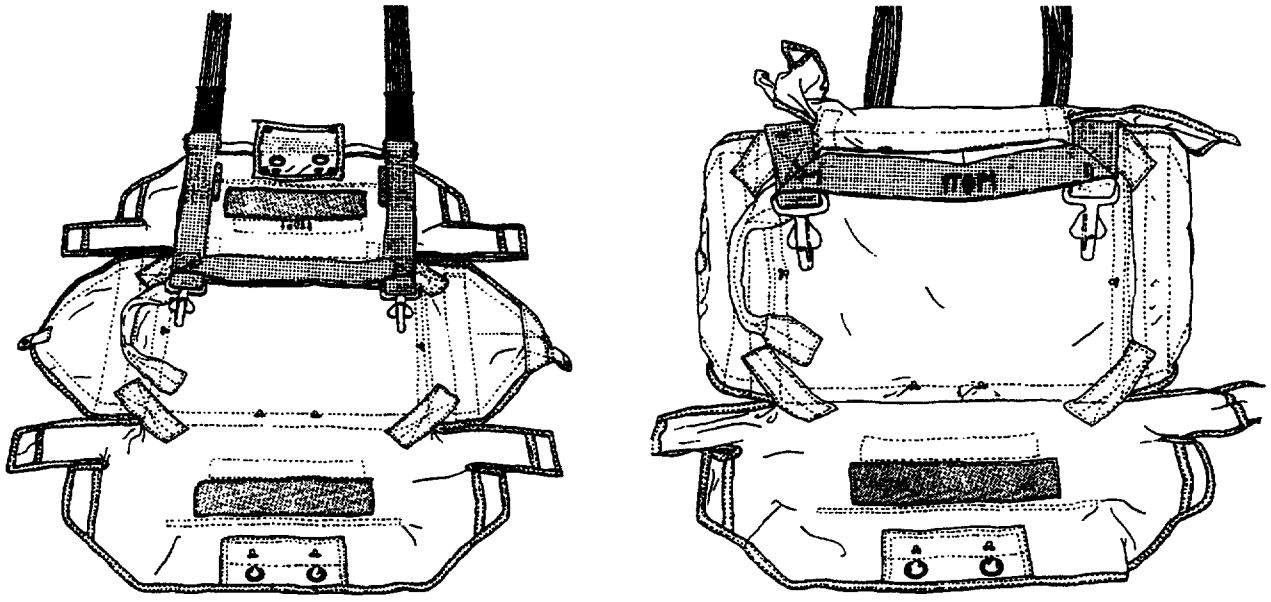

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Figure 9. Attachment of Risers to Container

d. Attach SSP outer container to parachute container.

e. Position SSP outer container on top of parachute container, with outer container adapters facing parachute container, and open end facing locking cones (Figure 10).

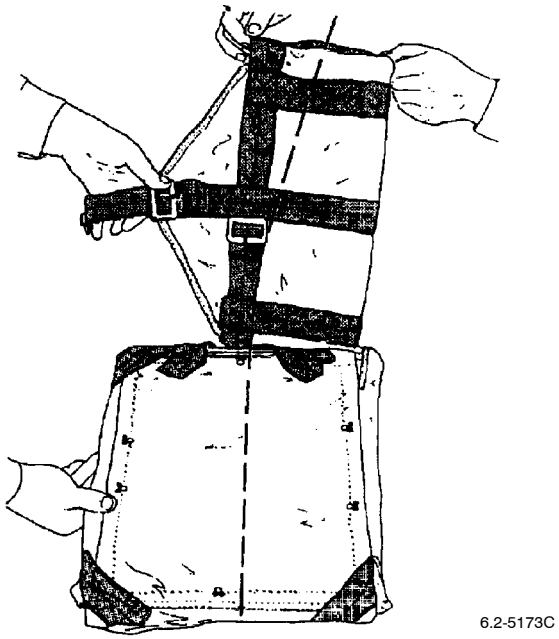

Figure 10. Position SSP Container

f. Tack four corners of SSP outer container to bottom of parachute container. Tack outer container main panel on each side of vertical strap to parachute container. Pass all tackings around parachute container wire frame. Tackings shall be made with two turns of size 6 thread, doubled and waxed; tie off (Figure 11).

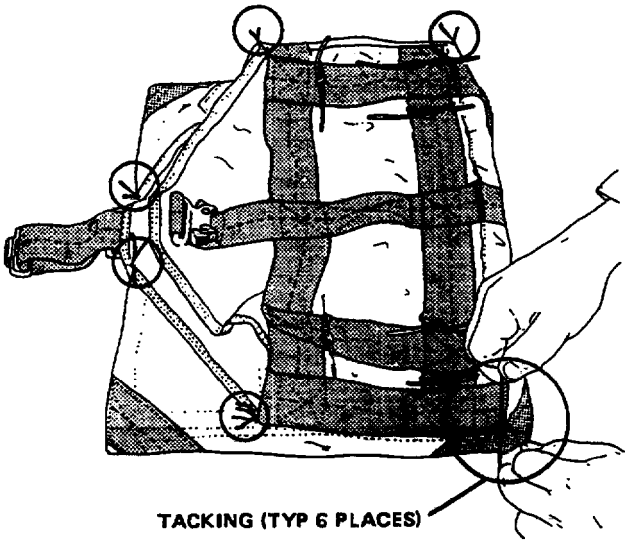

Figure 11. Tack Four Corner

g. Insert combination carrying case and equipment container into SSP outer container. Position parachute container under lift web with inside facing packing table and ripcord pin protector flap facing canopy. Remove tension hooks from connector links and packing table (Figure 12).

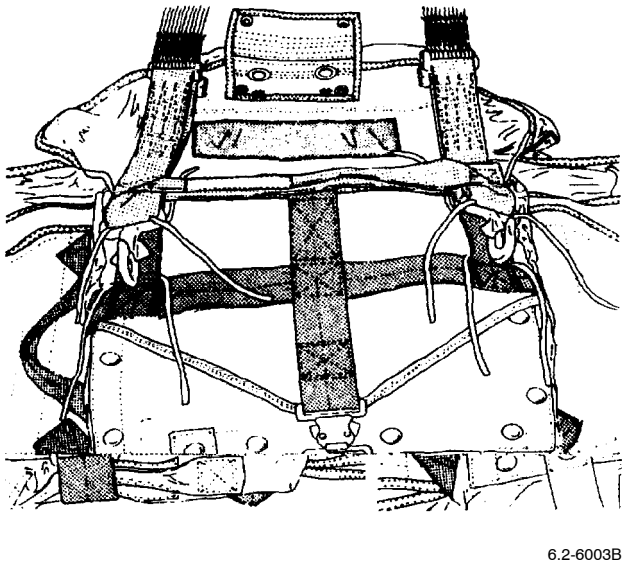

Figure 12. Insert Combination Carrying Case

h. Lift web quick-connector snap to outer SSP container using six 10-in. lengths of nylon cord. Pass cord thru each side each square knot with one turn of size 6 thread, single and waxed; tie off (Figure 13).

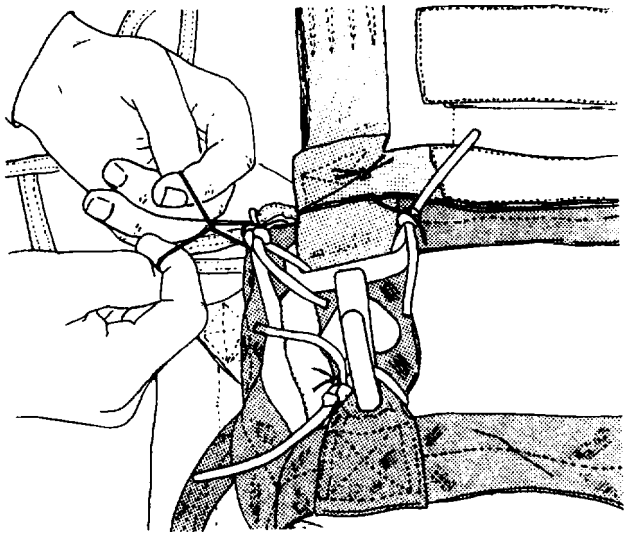

Figure 13. Tie Quick-Connector Snap to Container

i. Rotate parachute container, from ripcord pin protector flap side over, so that SSP faces packing table. Connector links shall be positioned on top of container lift webs thru top side flap slots. Tack both sides lift webs to container passing one turn of size E thread, single and waxed, thru webbing and around container frame; tie off (Figure 14).

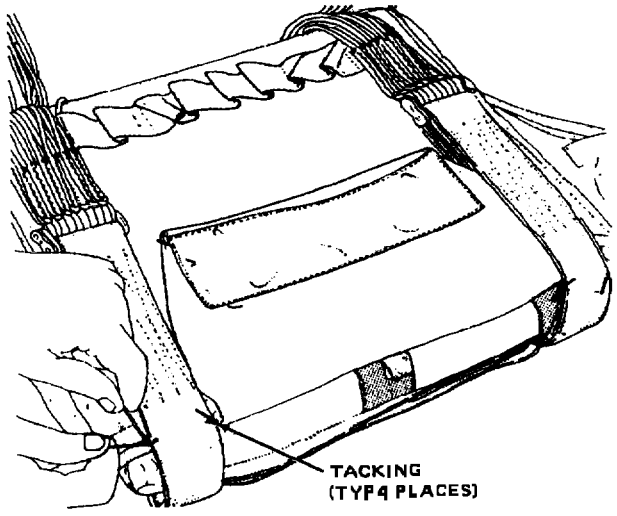

Figure 14. Rotate Parachute Container

j. Remove combination carrying case and equipment container from SSP outer container.

k. Pull parachute container out from under connector links so that inside of parachute container faces packing table and ripcord pin protector flap faces canopy. Fold side and end flaps under container and insert tension hooks into connector links and packing table (Figure 15).

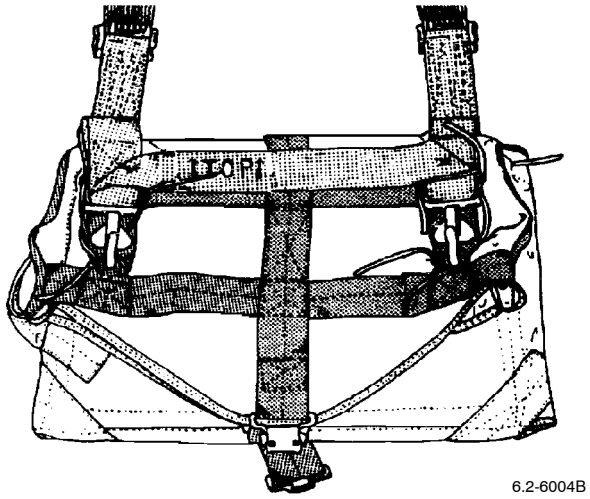

Figure 15. Pull Parachute Container Out from Under Connector Links

17. LIFT WEB REPAIRS.

a. Repair of lift webs is limited to the following:

(1) Cleaning of contaminated areas.

(2) Repair of stitching if less than three stitches are loose or broken.

(3) Removal/repair/replacement of four-line release flutes.

b. Replace lift webs for any of the following:

(1) Cuts, tears, or holes in webbing.

(2) Loose or broken stitching in excess of three stitches.

(3) Damaged quick-connector snaps.

(4) Twists, fading, wear, fraying, contamination, and abrasion.

18. REPLACEMENT OF LIFT WEB.

Support Equipment

Part Number	Nomenclature
Refer to WP 005 00	Bodkin
Refer to WP 005 00	Locking Pin, Temporary
—	Screwdriver, Torque

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

NOTE

For Double "L" Connector Link, refer to Paragraph 21 for disassembly, assembly, and inspection instructions.

a. Remove four-line release pull loop tacking.

b. Insert a temporary locking pin in last daisy chain loop to prevent inadvertent release of daisy chain.

c. Carefully break tackings at top of flute and pull lanyard pull loop up thru flute.

d. Remove torque seal from screwhead. Remove connector link yoke and plate assembly from each connector link. Remove lift web from connector links.

e. Loosely reattach connector link yoke and plate assembly.

f. Completely remove tacking securing lift web assembly to container.

g. Inspect lift web per WP 010 02.

h. Attach lift web to container per Paragraph 13.

i. Lay out lift web and container on packing table with corresponding lift webs facing each other and positioned at connector links.

j. Remove connector link yoke and plate assemblies from connector links. Slide riser loops onto connector link bars.

k. Reattach yoke and plate assemblies to connector link bars. The spring-loaded guard of quick-connector snaphooks and lift webs with four-line release flute shall face up on packing table and screwheads face outboard.

l. Check suspension line continuity (Figure 2). (QA)

m. Tighten screws on yoke and plate assemblies to a torque value of 20 to 25 in-lbs. (QA)

n. Apply torque seal to screwhead.

o. Using a bodkin or equal tool, insert and pull release lanyard pull loops thru flute. Pull loops should extend completely thru flute with tops of loops butted up against lower edge of flute.

p. Tack release lanyard to flute with one turn of size FF thread, single and waxed. Tacking shall pass thru outer cover of flute, thru the release lanyard, thru and around last daisy chain loop and then back thru flute; tie off.

q. With lanyard pull loop fully extended, tack lift webs together. Tack at center of lift web and 1/2-in. above bottom of lanyard pull loop with one turn of size FF thread, single and waxed; tie off.

19. RIPCORD REPAIRS.

a. Repair of the ripcord assembly is limited to the following:

(1) Cleaning contaminated areas per WP 004 00.

b. Replace ripcord assembly for any of the following:

(1) Bent, broken, or cracked locking pins.

(2) Corroded, frayed, or permanently bent cable.

(3) Loose cable swage ball.

(4) Corroded, cracked, or bent handle.

20. REPLACEMENT OF RIPCORD.

a. Inspect ripcord per WP 010 02.

b. Replace ripcord assembly in the proper step of packing procedures.

21. REPLACEMENT OF MS22021-1 CONNECTOR LINK (SPEED LINK) WITH MS22002-1 (DOUBLE "L") CONNECTOR LINK.

NOTE

New canopies received from supply may have the Double 'L" Connector Links installed.

Instructions for attachment of Firing Lanyards, PDVL's, Four-Line Release Systems, etc., will remain the same and will be contained in the application parachute manual.

Materials Required

Specification or Nomenclature	Part Number
MS22002-1	Connector Link (Double "L")
F-900 Torque Seal (Color Optional)	Sealing Compound
—	Torque Screwdriver
MIL-S-43243 (See WP 002 00)	Separator, Link or Equivalent

a. Remove yoke and plate assembly from parachute connector link, P/N MS22021-1.

b. Slide suspension lines from connector link onto a temporary locking pin or rod.

c. Remove cross-connector strap.

d. Slide riser loop off connector link bar and dispose of connector link, P/N MS22021-1.

e. Remove screws from the double "L" connector link, P/N MS22002-1 and separate the two halves of the link.

f. It may be necessary to use a separator device to separate the two halves of the connector link if a separator device is not available, loosen both screws of the connector link by four turns. Place a long bar between the connector link bars to hold the link in place. Using a rawhide or rubber mallet, tap one screw head and then the other screw head several times until the connector link bars separate.

g. Install suspension lines on the new connector link bar. The short leg of the "L" connector is to be positioned to the inside (Figure 16).

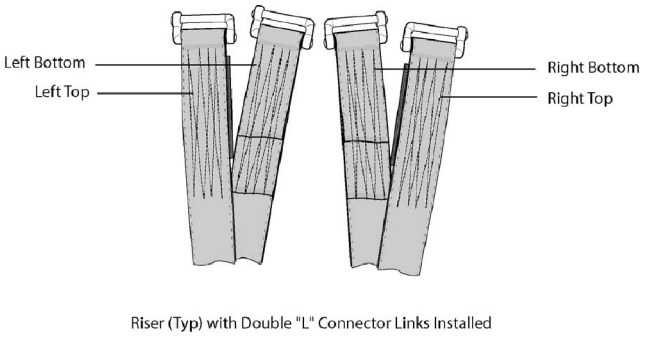

Figure 16. Double "L" Connector Link Layout

h. Install cross-connector strap.

i. Slide riser loop onto opposite connector link bar.

j. Mate both halves of the connector link together.

k. Install screws (2 each).

NOTE

Screws must make a minimum of 6 full turns prior to applying torque.

l. Check suspension line continuity. (QA)

m. Tighten screws to a torque value of 15 in-lbs. (QA)

WARNING

Care must be taken when tightening screws as screwdriver may slip and cause minor injury.

NOTE

It may be necessary to check the torque value on each screw more than once due to the interference fit design feature of the connector link.

n. Apply torque seal to both screw heads and allow to dry before proceeding with remainder of parachute packing.

o. Repeat steps a through l on each riser group.

p. Re-identify the parachute canopy by using an indelible black pen to cross out the existing part number and marking the new superceding part number per Illustrated Parts Breakdown (IPB) WP 010 04.

ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

NC-3 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 580AS100-5 AND 580AS100-6

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1 thru 5	11						

Reference Material

None

List of Figures

Title	Page
NC-3 Personnel Parachute Assembly	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the NC-3 Personnel Parachute Assembly (Figure 1).

2. USABLE ON CODES.

a. The usable on codes in this WP refer to the aircraft applications for the NC-3 Personnel Parachute Assembly.

b. The following usable on codes apply to this WP:

A, B – C-130

3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in WP 010 02.

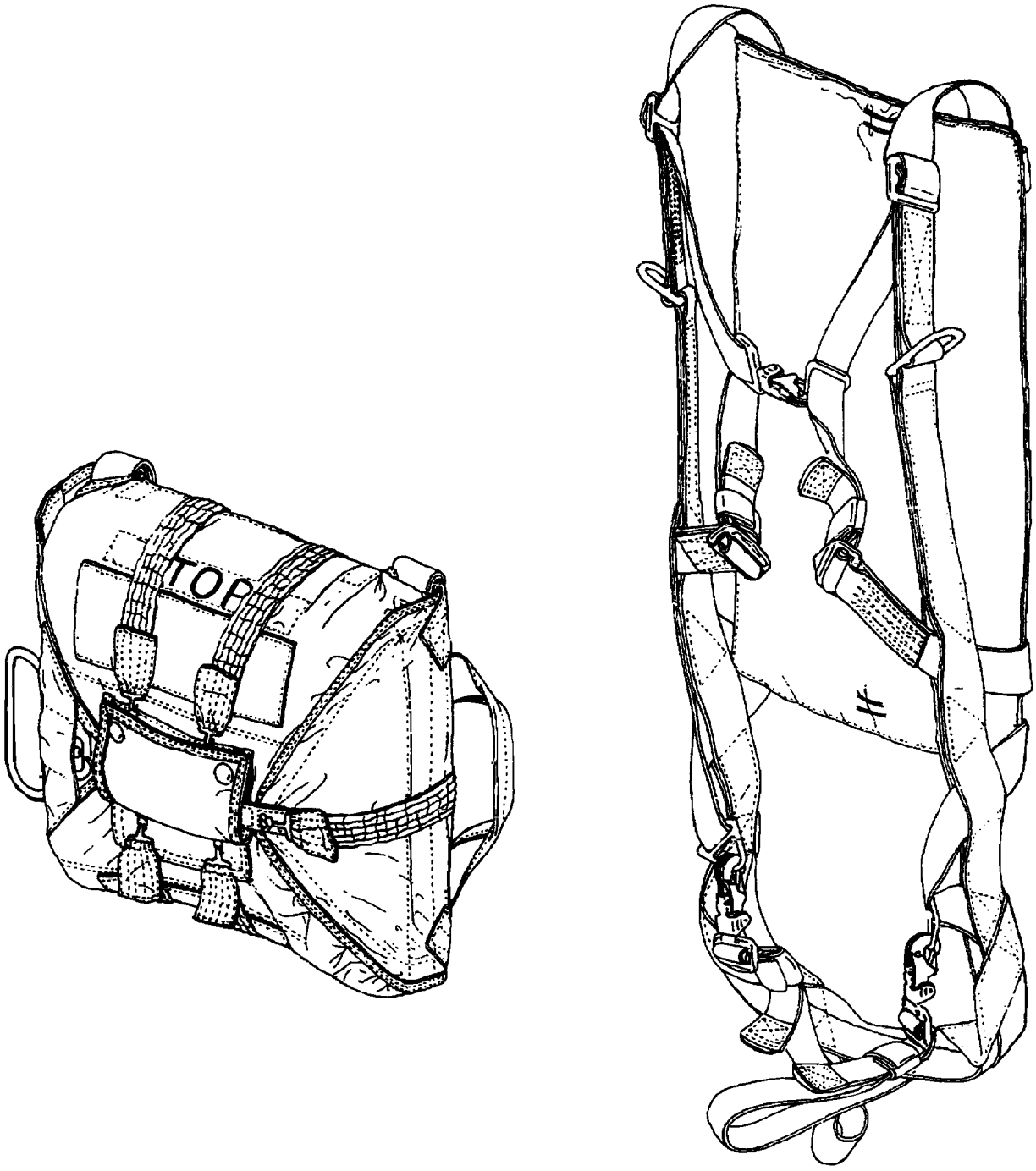

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Figure 1. NC-3 Personnel Parachute Assembly (Sheet 1 of 4)

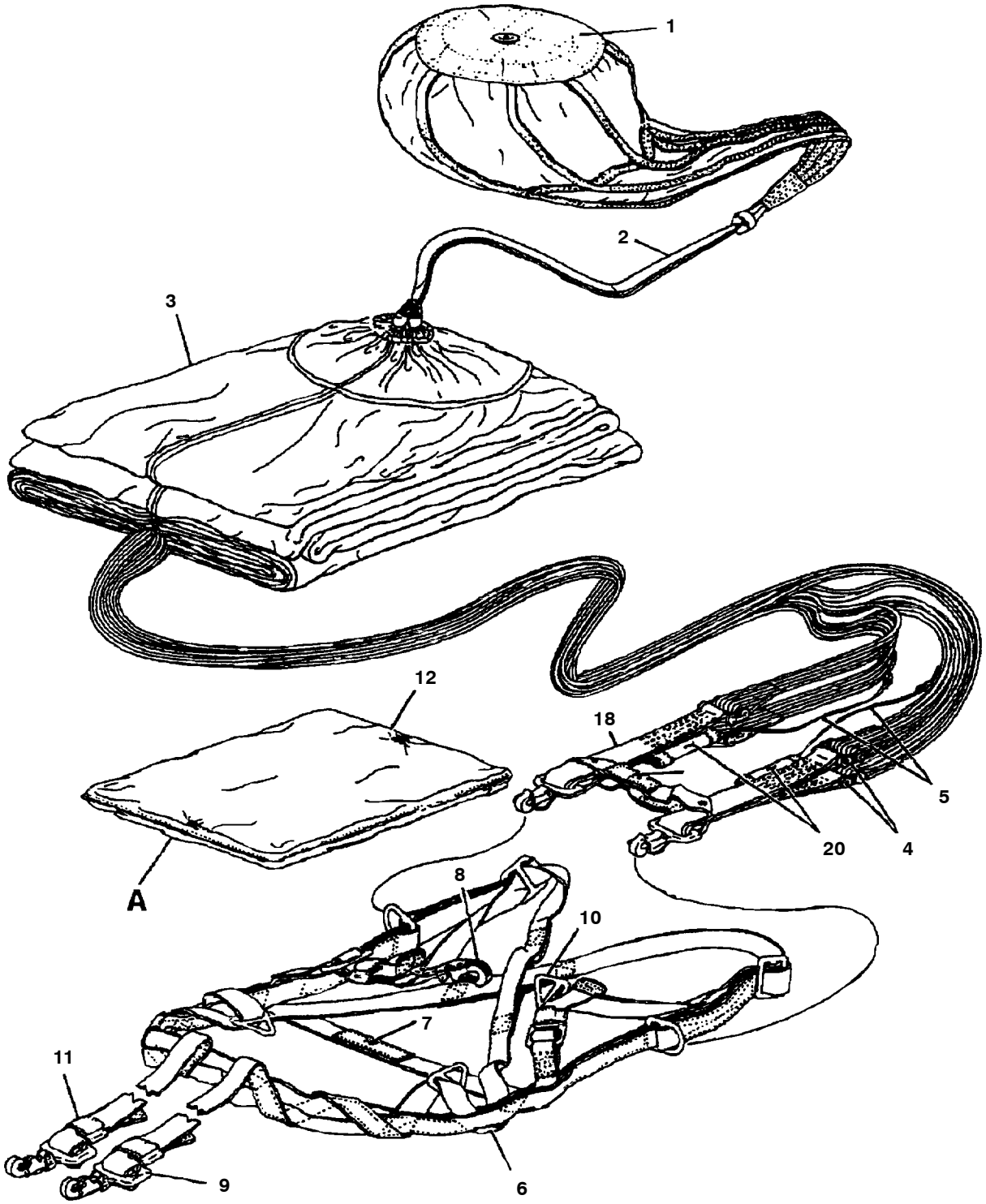
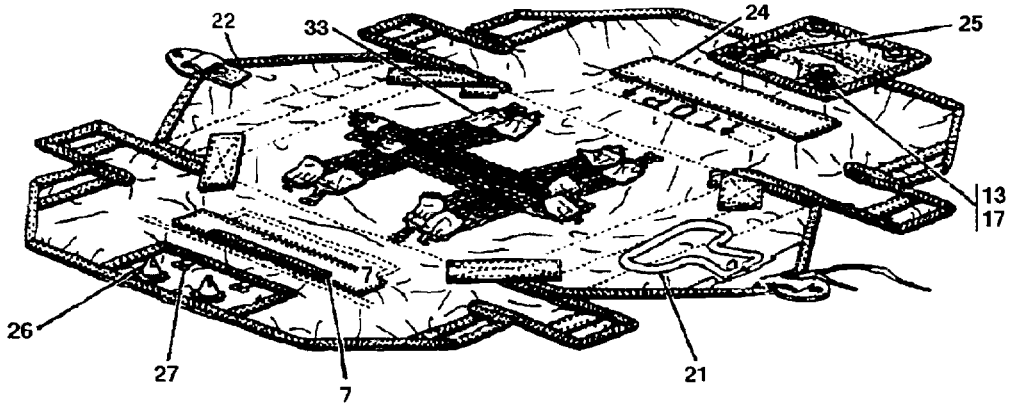
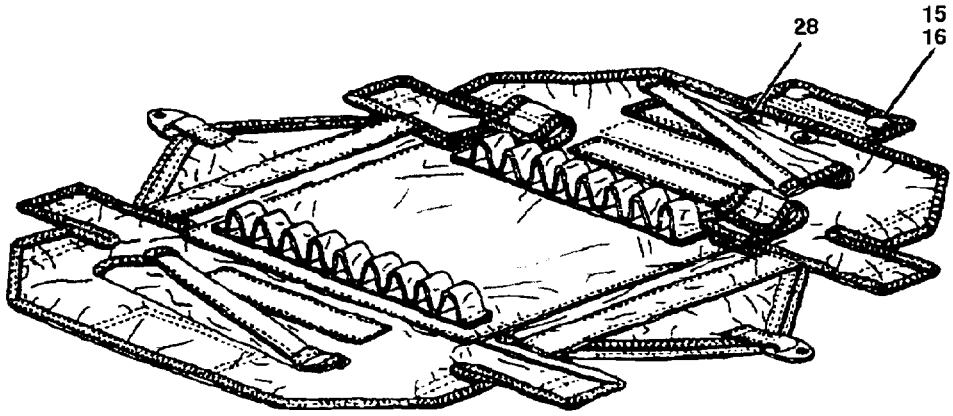


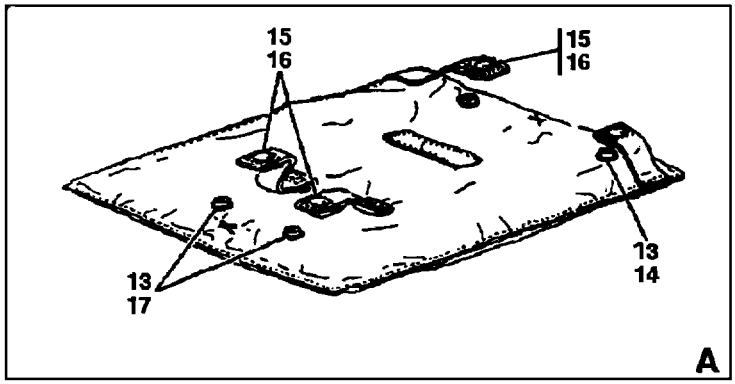
Figure 1. NC-3 Personnel Parachute Assembly (Sheet 2 of 4)



CONTAINER (OUTSIDE)



CONTAINER (INSIDE)



6.2-5761

Figure 1. NC-3 Personnel Parachute Assembly (Sheet 3 of 4)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	580AS100-5	PARACHUTE ASSEMBLY, NC-3 REGULAR	REF	A	AGOGG
	580AS100-6	PARACHUTE ASSEMBLY, NC-3 OVERSIZE	REF	B	AGOGG
1	60A125E16-1	. PARACHUTE ASSEMBLY, PILOT	1		PCGZZ
2	666AS100-1	. STRAP, PILOT PARACHUTE CONNECTOR ...	1		PCGZZ
3	814AS110-1	. CANOPY ASSEMBLY /USE UNTIL ..... EXHAUSTED/	1		PCGGG
	60A113E5-18	. CANOPY ASSEMBLY	1	*	PCGGG
4	MS22021-1	. . LINK, REMOVABLE CONNECTOR	4		PAGZZ
5	666AS101-1	. . LANYARD, FOUR-LINE RELEASE	2		MGGZZ
6	675AS102-1	. HARNESS ASSEMBLY, REGULAR	1	A	PCOGG
	675AS103-1	. HARNESS ASSEMBLY, OVERSIZE	1	B	PCOGG
7	676AS100-1	. . LABEL	3		MDGZZ
8	MS22017	. . SNAP, PARACHUTE HARNESS EJECTOR ...	1	*	PAGZZ
	68D37721-3	. . SNAP, PARACHUTE HARNESS EJECTOR ...	1	*	PAGZZ
9	MS22018	. . SNAP PARACHUTE HARNESS ..... QUICK FIT EJECTOR	2		PAGZZ
10	MS22020-1	. . LINK, PARACHUTE HARNESS TRIANGLE ..	3		PAGZZ
11	675AS102-10	. . KEEPER STRAP SUBASSEMBLY	4		MGGZZ
12	60A130E1-1	. . CUSHION ASSEMBLY	1		PAOGG
13	MS27980-8B	. . . FASTENER, EYELET	6		PAGZZ
14	MS27980-7B	. . . FASTENER, STUD	2		PAGZZ
15	MS27983-1	. . . FASTENER, BUTTON	4		PAGZZ
16	MS27983-2N	. . . FASTENER, SOCKET	4		PAGZZ
17	MS27983-3	. . . FASTENER, STUD	4		PAGZZ
18	675AS105-11	. WEB ASSEMBLY, LIFT	1		PCGGG
19	666AS102-6	. . FLUTE, FOUR-LINE RELEASE LANYARD ..	2		MGGZZ
20	675AS107-1	. RIPCORD ASSEMBLY	1		PAGZZ
21	675AS101-32	. CONTAINER ASSEMBLY	1		PCGGG
22	621AS100-1	. . LABEL, IDENTIFICATION	1		MDGZZ
23	MS22048GC1	. . GROMMET	2		PAGZZ
24	60A116C16-1	. . CONE	2		PAGZZ
25	60A113C28-1	. . EYE	12		PAGZZ
26	60A113C25-1	. . WASHER, GROMMET	2		PAGZZ
27	60A113D11-5	. . SPRING ASSEMBLY, CONTAINER ..... OPENING	6	*	PAGZZ
	MS70105-3	. . SPRING ASSEMBLY, CONTAINER ..... OPENING	6	*	PAGZZ

Figure 1. NC-3 Personnel Parachute Assembly (Sheet 4 of 4)

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ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

NB-6 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 565AS100-1, 565AS100-2, 565AS100-13, and 565AS100-14

List of Effective Work Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1 thru 2	8	3 thru 7	0	8	8		

Reference Material

Illustrated Parts Breakdown . . . . . WP 011 04
Intermediate and Depot Repair Procedures, NB-6 Personnel Parachute Assembly . . . . . WP 011 03
Seat Survival Kits . . . . . NAVAIR 13-1-6.3

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Title	Page
Configurations	2
Description	2
General	2
Principles of Operation	2
Automatic Operation Above Pre-Set Activation Altitude	2
Automatic Operation Below Pre-Set Activation Altitude	8
Manual Operation	2
Repack Schedule	8
Subassembly Configurations	2

Record of Applicable Technical Directives

None

1. DESCRIPTION.

2. GENERAL. The NB-6 Personnel Parachute Assembly is a backtype parachute, consisting of a multicolored (white, olive green , international orange, and sand shade), 26 ft. diameter, conical, nylon canopy with 22 gores. Water deflation pockets are provided on alternate gores. The canopy is packed in a container assembly and secured to the aircrew's back by means of a harness assembly (Figure 1).

3. CONFIGURATIONS. Four different configurations of the NB-6 parachute assembly may be used in-service. The difference is the size of the harness (NB-6 R (regular) or NB-6 0 (oversize)), and the addition or absence of an automatic parachute ripcord release and lanyard assembly. Refer to the Illustrated Parts Breakdown (Work Package (WP) 011 04) for exact configuration requirements. When circumstances dictate, a crewmember may be required to wear cold weather gear, and this excessive bulk may restrict the use of the existing length of the chest adjusting strap. To preclude this condition, a chest strap extender is authorized for use. For fabrication procedures of the chest strap extender refer to the repair procedures (WP 011 03). The four configurations of the NB-6 assembly may also be used in-service with a seat cushion and standard soft pack (SSP) or with the SP-1A seat pan assembly and SSP depending on aircraft application. The SSP is one of several types of packaged LR-1 liferaft assemblies. (NAVAIR 13-1-6.3)

4. SUBASSEMBLY CONFIGURATIONS. The subassemblies listed below and shown in (Figure 2) make up the various configurations of the NB-6 assembly. Refer to WP 011 00 for detailed information on subassemblies.

Pilot Parachute Assembly

Pilot Parachute Connector Strap

Canopy Assembly

Harness Assembly

Back Pad

Lanyard

Lumbar Pad

Ripcord Assembly

Automatic Parachute Ripcord Release Assembly

Container Assembly

5. PRINCIPLES OF OPERATION.

6. MANUAL OPERATION. After emergency bailout, the following operations take place:

a. Manually pulling the ripcord removes the ripcord pins (overriding the ripcord release if installed) from the container locking cones, permitting the grommets and locking cones to separate.

b. The container spring opening assemblies pull the side flaps apart, allowing the pilot parachute to spring from the container and fill with air.

c. The aircrew falling away from the pilot parachute causes the canopy to be extracted from the container followed by the suspension lines. The canopy begins to inflate during this operation.

d. As load is applied the connector link tacking breaks. The risers are then pulled from the container, and the canopy inflates. This permits the aircrew to descend suspended in the harness.

e. Upon landing, the aircrew releases the harness by actuating the harness quick fit ejector snaps.

7. AUTOMATIC OPERATION ABOVE PRE-SET ACTIVATION ALTITUDE. After emergency bailout the following functions take place, assuming the aircrew does not manually deploy the parachute.

a. The automatic parachute ripcord release arming pin is withdrawn as the aircrew exits the aircraft. The release aneroid mechanism locks the firing pin and hammer, which prevents the release from firing.

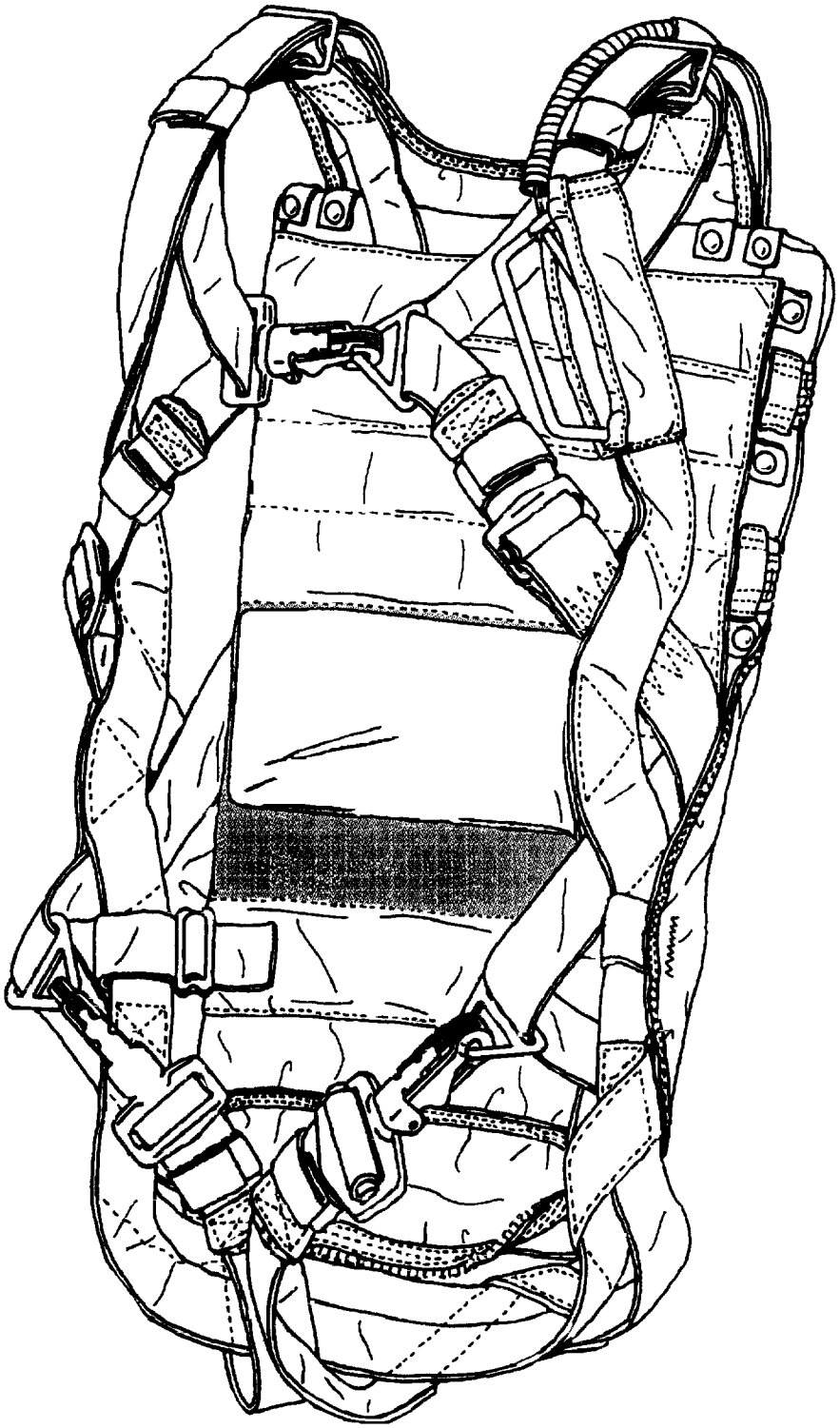
b. As the aircrew falls, increasing air pressure causes the release aneroid to contract.

c. Upon passing through the pre-set altitude, the aneroid contracts and removes the sear from the firing hammer lock.

d. The release hammer firing pin strikes the cartridge.

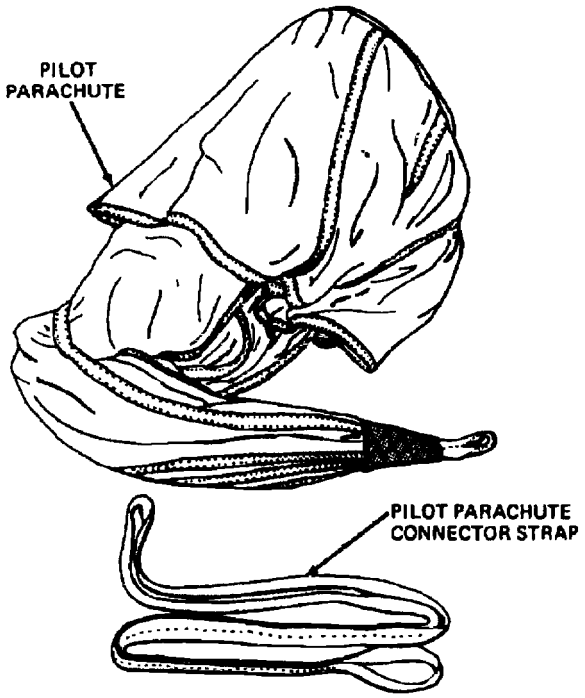
e. The release cartridge fires after a preset time delay of 2 sec.

f. The release piston is forced forward in the barrel, pulling the power cable that is attached to the top ripcord pin.



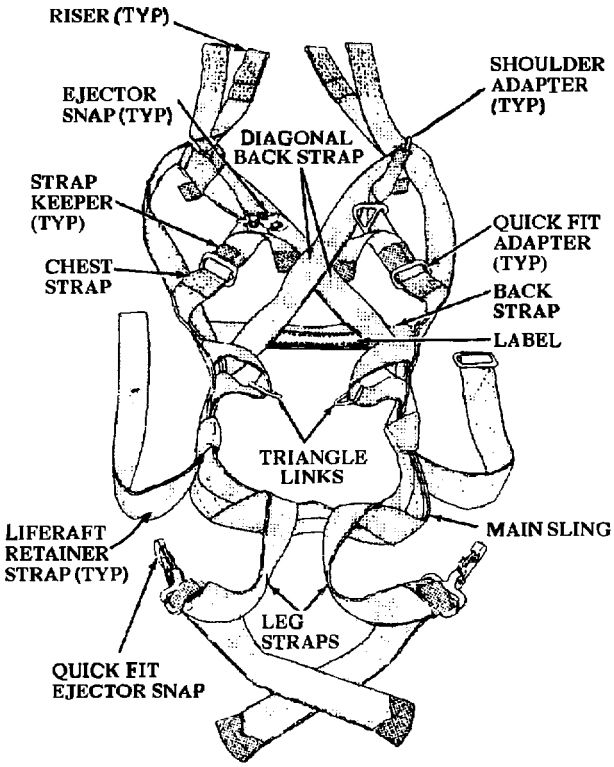
6.2-5445

Figure 1. Personnel Parachute Assembly, NB-6



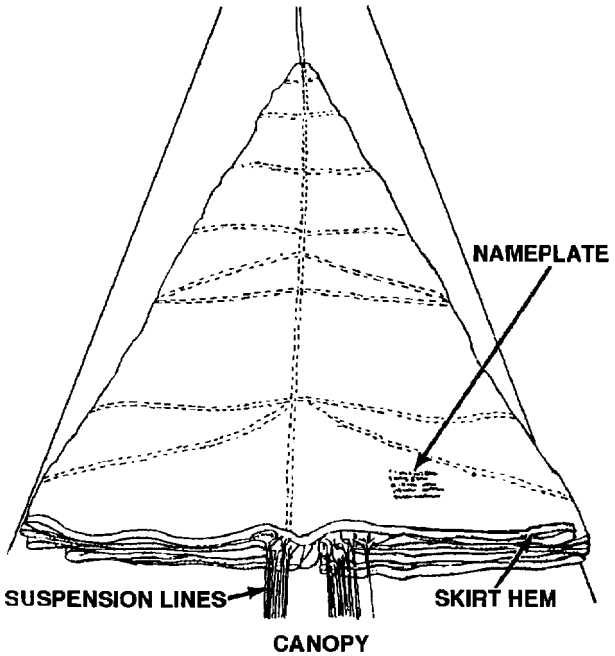
PILOT PARACHUTE AND CONNECTOR STRAP ASSEMBLIES

6.2-5150A



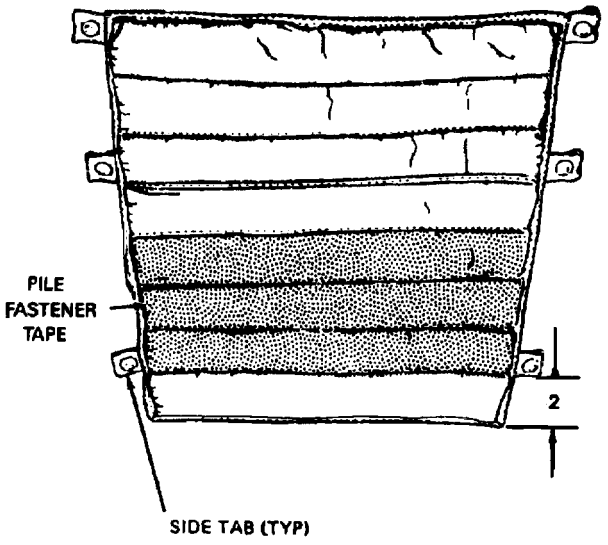
HARNESS ASSEMBLY

6.2-5150C



CANOPY

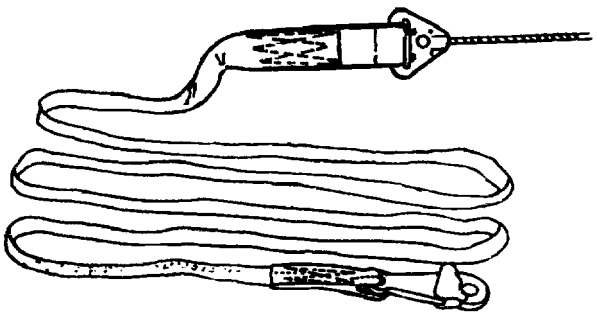
6.2-5150B



BACK PAD

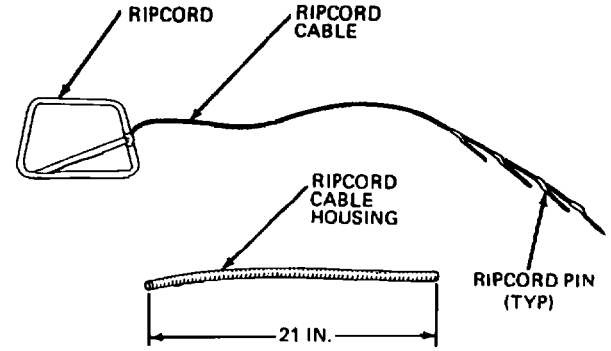
6.2-5150D

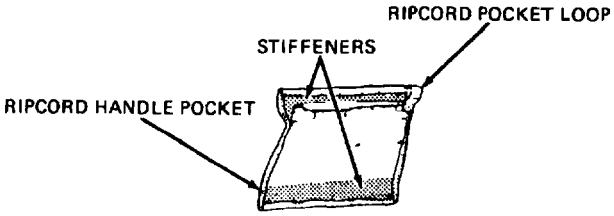
Figure 2. Subassemblies, NB-6 (Sheet 1 of 4)



LANYARD ASSEMBLY

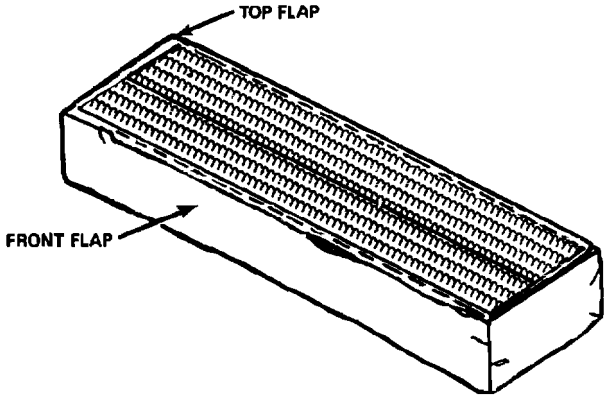
6.2-5151A





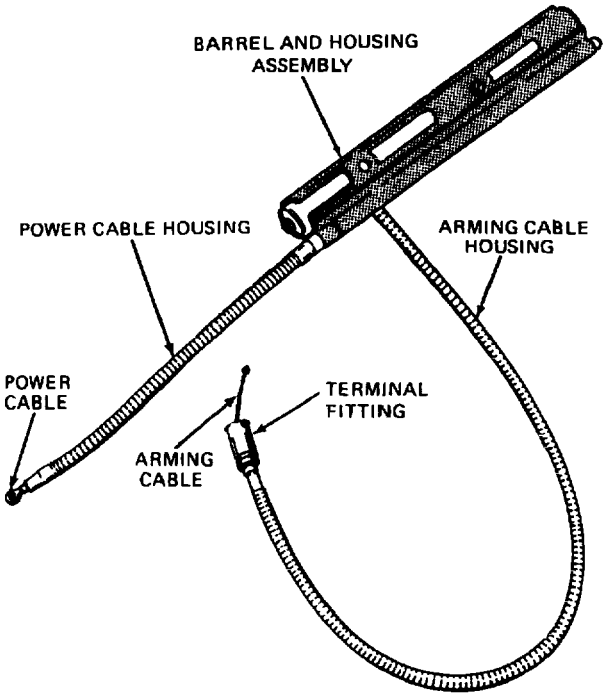
RIPCORD ASSEMBLY

6.2-5151C



LUMBAR PAD

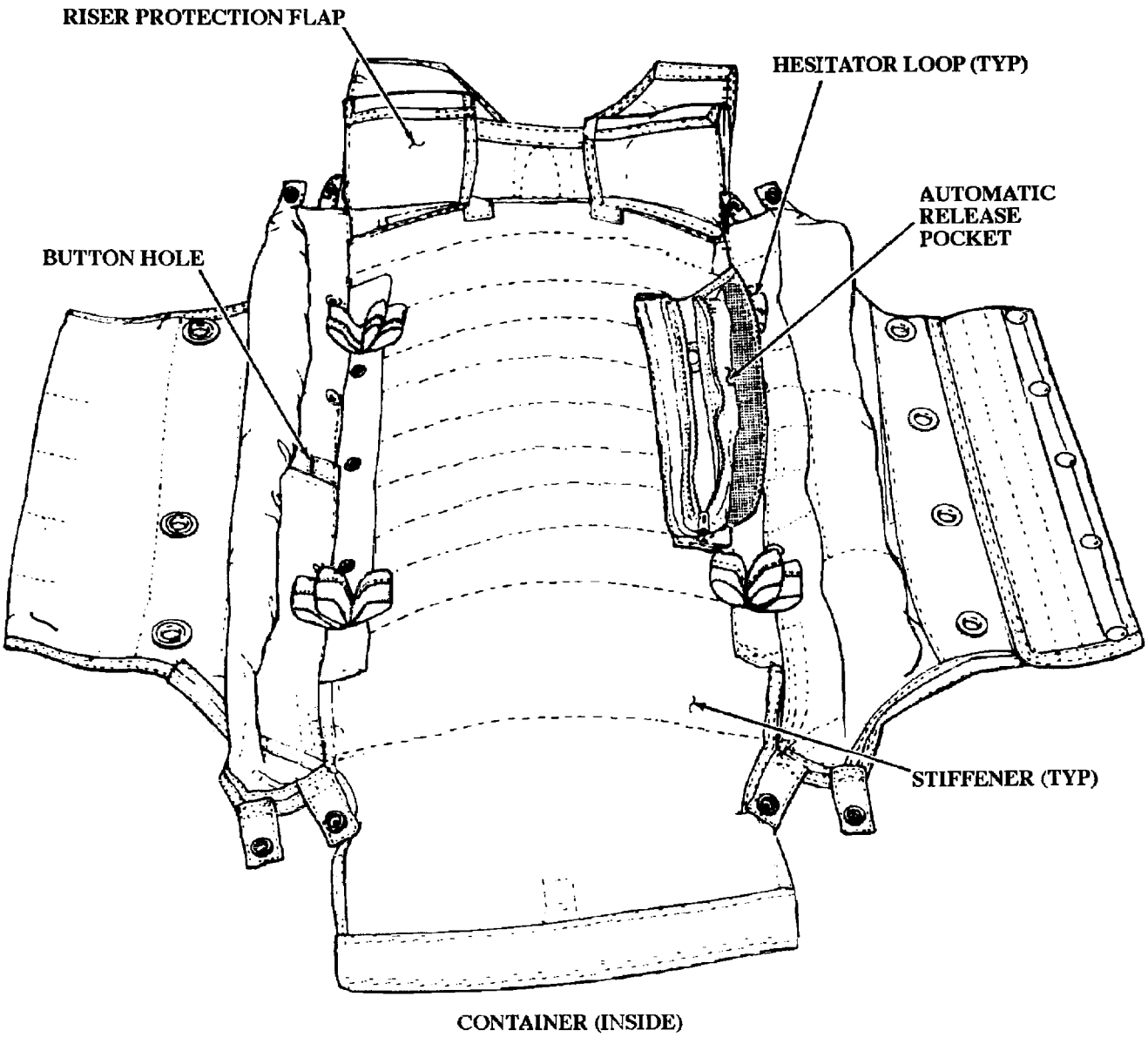
6.2-5151B



AUTOMATIC PARACHUTE RIPCORD RELEASE

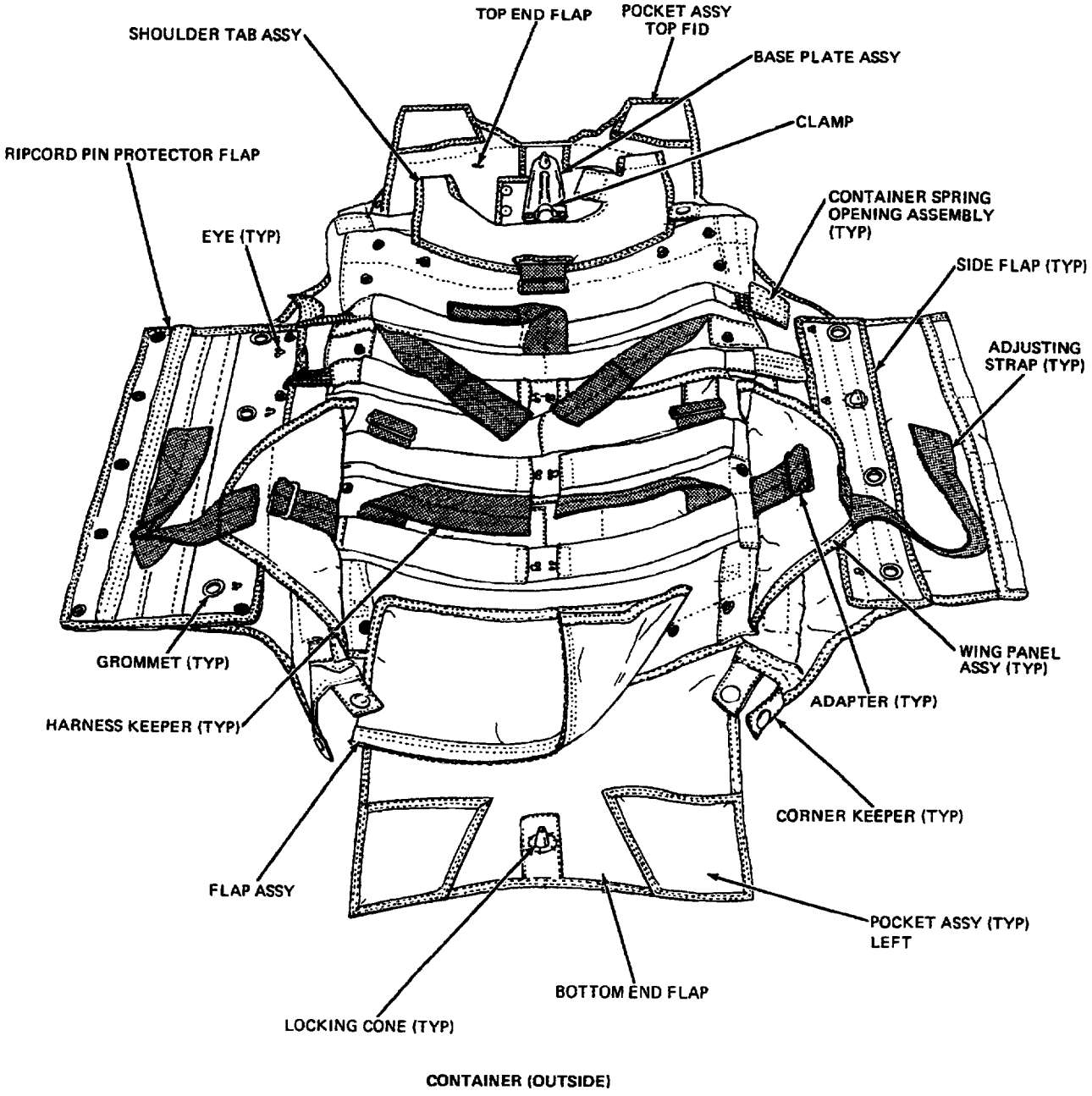
6.2-5151D

Figure 2. Subassemblies, NB-6 (Sheet 2 of 4)



6.2-5014

Figure 2. Subassemblies, NB-6 (Sheet 3 of 4)



6.2-5015

Figure 2. Subassemblies, NB-6 (Sheet 4 of 4)

g. The ripcord pins are pulled by the action of the release power cable, permitting the container grommets and locking cones to separate.

h. The container spring opening assemblies pull the side flaps apart, allowing the pilot parachute to spring from the container and inflate with air.

i. The aircrew falling away from the pilot para-chute causes the canopy to be extracted from the container followed by the suspension lines. The canopy begins to inflate during this operation.

j. The connector link tacking breaks as load is applied. The risers are then pulled from the container, and the canopy inflates. This permits the aircrew to descend suspended in the harness.

k. Upon landing, the aircrew releases the harness by actuating the harness quick fit ejector snaps.

8. AUTOMATIC OPERATION BELOW PRE-SET ACTIVATION ALTITUDE. After emergency bailout the following functions take place, assuming the aircrew does not manually deploy the parachute.

a. As the aircrew exits the aircraft, the automatic parachute ripcord release arming pin is withdrawn automatically releasing the release firing pin and hammer.

b. The release hammer firing pin strikes the cartridge.

c. The release cartridge fires after a 2.0 sec. time delay.

d. The release piston is forced forward in the barrel, pulling the power cable that is attached to the top ripcord pin.

e. The ripcord pins are pulled by the action of the release power cable, permitting the container grommets and locking cones to separate.

f. The container spring opening assemblies pull the side flaps apart, allowing the pilot parachute to spring from the container and fill with air.

g. The aircrew falling away from the pilot parachute causes the canopy to be extracted from the container, followed by the suspension lines. The canopy begins to inflate during this operation.

h. As load is applied the connector link tacking breaks. The risers are then pulled from the container, and the canopy inflates. This permits the aircrew to descend suspended in the harness.

i. Upon landing, the aircrew releases the harness by actuating the harness quick fit ejector snaps.

9. REPACK SCHEDULE.

a. Scheduled repack cycle is 420 days.

ORGANIZATIONAL MAINTENANCE

REPAIR PROCEDURES

NB-6 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 565AS100-1, 565AS100-2, 565AS100-13, and 565AS100-14

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

Intermediate and Depot Maintenance, Common Repair Procedures . . . . . WP 004 00
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdowns, Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00

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Replacement of Harness-to-Shoulder Tab Ties	3
Replacement of Ripcord Pin Retention Tie	4
Replacement of Spring Opening Assembly	3
Harness Assembly	2
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Replacement of Seat Cushion/Seat Pan Tackings	5
Attachment of SP-1A Seat Pan and SSP (If Required)	8
Replacement of Standard Soft Pack (SSP)	5

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains instructions for organizational level repair to ensure that the parachute assembly remains in Ready-For-Issue (RFI) status.

b. Refer to WP 004 00 for common repairs.

c. When performing repairs detailed in this WP, follow these guidelines:

(1) Review all applicable instructions prior to starting repair.

(2) Ensure that all necessary support equipment and materials required are available prior to starting repair.

(3) When required, remove enough material from it's source for immediate use only. Ensure the material identification ticket remains with the source material at all times. Material that cannot be identified will not be used.

(4) To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

(5) A Quality Assurance (QA) inspector shall examine the finished work.

2. HARNESS ASSEMBLY.

3. REPLACEMENT OF LIFERAFT RETAINING STRAP TACKINGS WHEN NO SURVIVAL KIT IS INSTALLED.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Tack liferaft retaining strap at adapter by passing one turn of size 6 thread, single and waxed, thru strap, around center bar of adapter, and thru retaining straps; tie off (Figure 1).

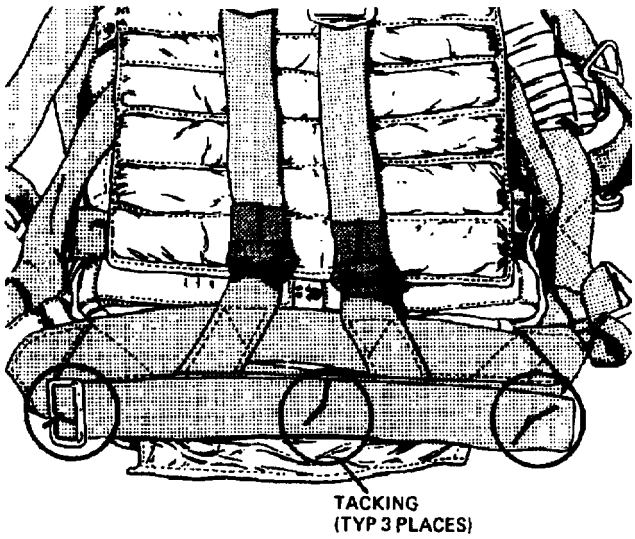


Figure 1. Replacement of Liferaft Retaining Strap Tackings When no Survival Kit is Installed

b. Tack end of liferaft retaining strap by first folding strap end under 2-in. and tacking to strap beneath with one turn of size 6 thread, single and waxed; tie off (Figure 1).

c. Tack center of liferaft retaining straps by passing one turn of size 6 thread, single and waxed thru straps and main sling; tie off (Figure 1).

4. CONTAINER ASSEMBLY.

5. REPLACEMENT OF HARNESS KEEPER ADAPTER TACKINGS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. If necessary, remove back pad.

b. Tack five end straps at adapters with one turn of size 6 thread, single and waxed. Pass tacking thru straps and around center bar of adapter; tie off (Figure 2).

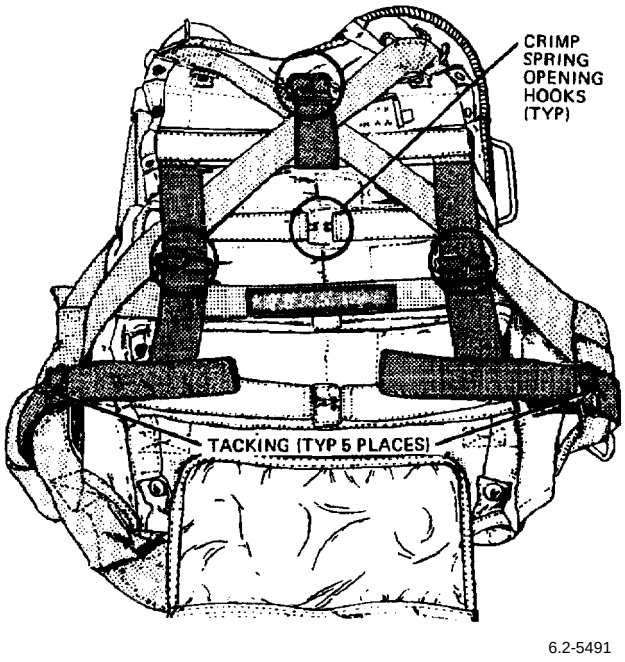


Figure 2. Replacement of Harness Keeper Adapter Tackings

c. If removed, reattach back pad.

6. REPLACEMENT OF HARNESS-TO-SHOULDER TAB TIES.

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type III

a. Cut a 10-in. length of Type III nylon cord.

b. Remove and discard inner cores and sear ends of casing.

c. Pass nylon casing thru shoulder tab loop (Figure 3).

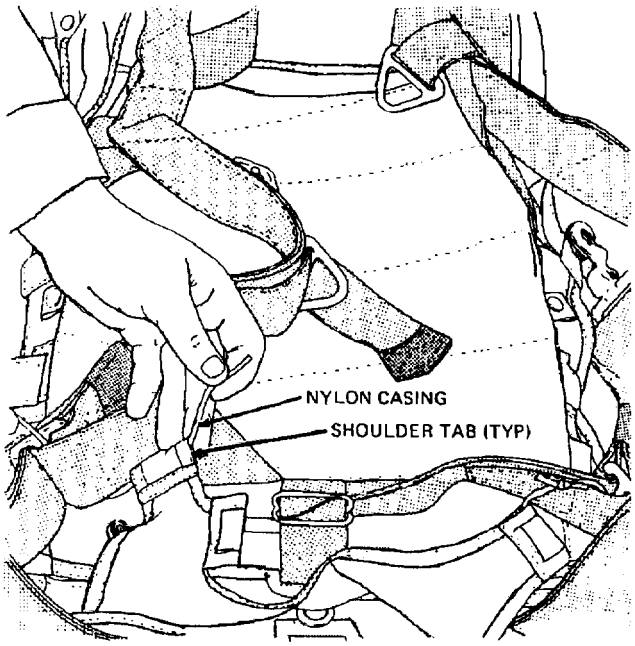


Figure 3. Replacement of Ties Securing Shoulder Tabs to Harness

d. Pass one end of nylon casing thru harness adapter webbing loop. Tie ends of casing together with a square knot.

7. REPLACEMENT OF SPRING OPENING ASSEMBLY.

a. Measure length of replacement spring opening assembly (60A113D11-2). Required length is 9 1/4 ± 1/8-in. when measured from end of one hook to end of other hook with no tension applied.

b. Inspect spring opening assembly for broken spring, contamination, corrosion, cuts, fraying, bent or broken hooks, elasticity, and loose or broken stitching.

c. Draw a pull cord thru spring opening channel.

d. Attach one end of pull cord to hook on spring opening assembly and then draw cord thru channel.

e. Attach spring opening assembly hooks to container eyelets with hook facing container.

f. Crimp hook attached to eyelet on centerline of container (Figure 2).

8. REPLACEMENT OF RIPCORD PIN RETENTION TIE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size A, Type I or II, Class A

a. Completely remove broken retention tie from ripcord pin and cable.

b. Loop a 12-in. length size A thread, single and waxed, under bottom ripcord pin. Secure by bringing thread ends together and forming 3 to 5 half-hitches above ripcord pin ferrule. Top off with a binder knot (Figure 4).

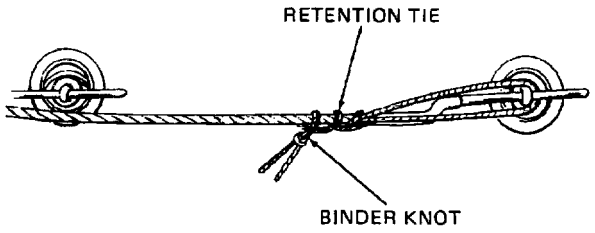


Figure 4. Replacement of Ripcord Pin Retention Tie

c. Trim excess thread 1/2-in. from knot.

9. SURVIVAL KIT.

10. REPLACEMENT OF LIFERAFT RETAINING STRAP AND OUTER CONTAINER VERTICAL AND HORIZONTAL STRAP TACKINGS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Liferaft Retaining Strap.

(1) Remove combination carrying case and equipment container from outer container.

(2) Tack adapter by passing one turn of size 6 thread, single and waxed, thru strap and around center bar of adapter; tie off (Figure 5).

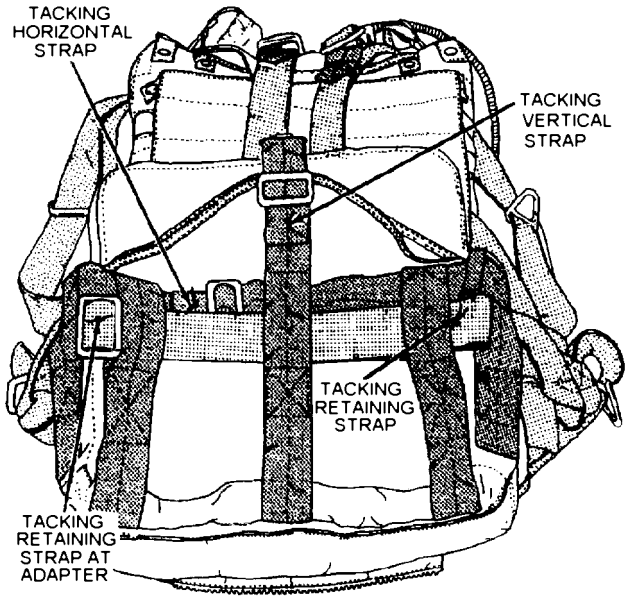


Figure 5. Replacement of Liferaft Retaining Strap and Outer Container Vertical and Horizontal Strap Tackings

(3) Fold excess strap under and tack strap to outer container with one turn of size 6 thread, single and waxed; tie off (Figure 5).

(4) Reinstall combination carrying case and equipment container into outer container.

b. Outer Container Vertical and Horizontal Strap Tackings.

(1) Remove combination carrying case and equipment container from outer container.

(2) Fold horizontal and/or vertical straps under, tucking end under adapter. Tack folded strap to strap beneath with one turn of size 6 thread, doubled and waxed; tie off (Figure 5).

(3) Reinstall combination carrying case and equipment container into outer container.

11. REPLACEMENT OF SEAT CUSHION/SEAT PAN TACKINGS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

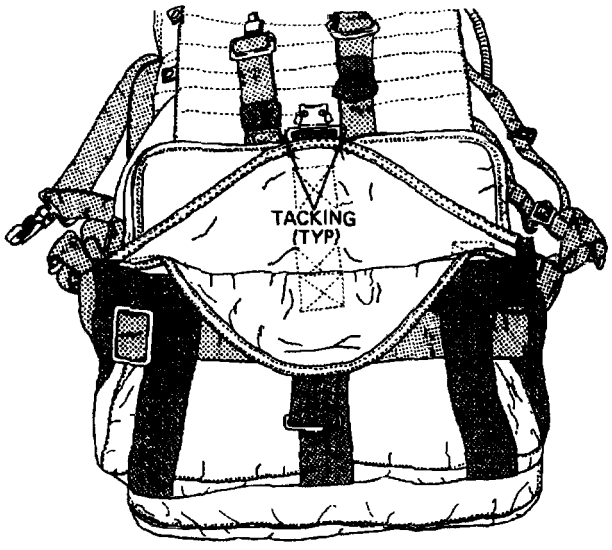
NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Main Panel Tackings.

(1) Remove combination carrying case and equipment container.

(2) Tack main panel to seat cushion/seat pan at mark on either side of quick-disconnect shackle with one turn of size 6 thread, doubled and waxed; tie off (Figure 6).



6.2-5493

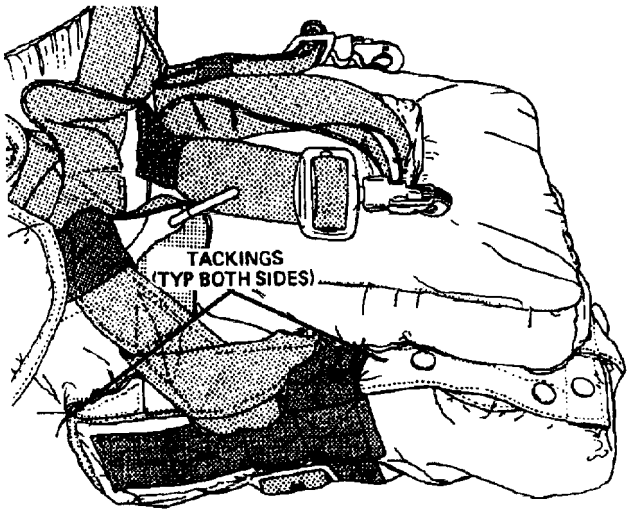
Figure 6. Replacement of Outer Container Seat Cushion/Seat Pan Main Panel Tackings

(3) Reinstall combination carrying case and equipment container.

b. Cushion/Seat Pan Four Corner Tackings.

(1) Remove combination carrying case and equipment container.

(2) Tack each corner of outer container to seat cushion/seat pan with one turn of size 6 thread, doubled and waxed; tie off (Figure 7).



6.2-5494

Figure 7. Replacement of Outer Container to Seat Cushion/Seat Pan Four Corner Tackings

(3) Reinstall combination carrying case and equipment container.

12. REPLACEMENT OF STANDARD SOFT PACK (SSP).

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove combination carrying case and equipment container from SSP outer container.

b. Remove all tackings and unreeve harness retaining straps and leg straps. Remove SSP and seat cushion.

c. Position packed assembly on packing table with back pad facing up. Slide seat cushion between harness main sling and back pad with slot turned toward top of parachute container (Figure 8).

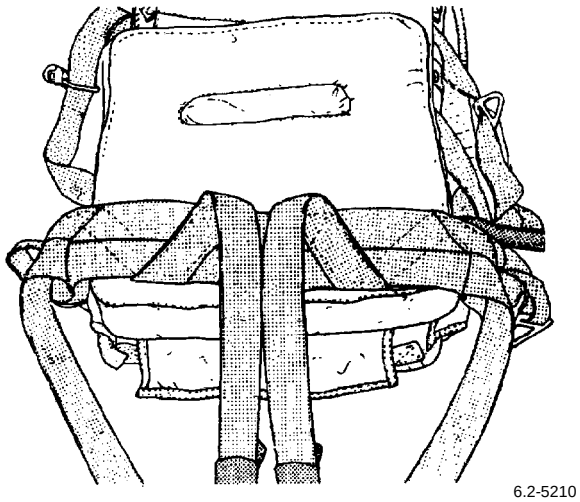


Figure 8. Position Packed Assembly

d. If installed, remove and discard the six Type III nylon cord ties from SSP outer container.

e. Turn SSP outer container over so that horizontal strap adapter faces up.

f. Position combination carrying case and equipment container on packing table with shoulder straps facing up. Insert combination carrying case and equipment container into SSP outer container. The carrying case and equipment container strap handle must be positioned at open end of outer container (Figure 9).

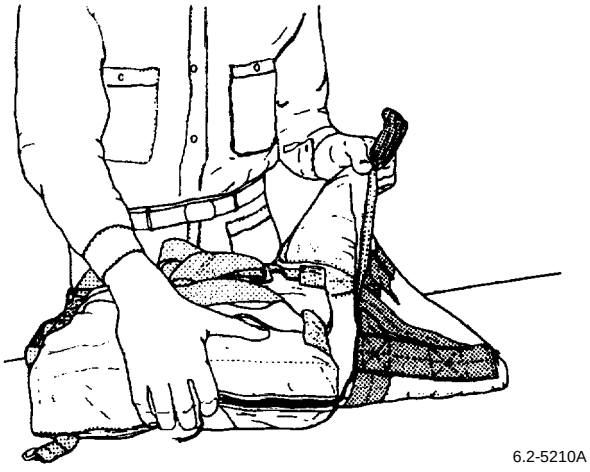


Figure 9. Position Combination Carrying Case

g. Pull outer container main panels over combination carrying case and equipment container. Secure vertical strap quick-disconnect shackle outside of strap handle. Reeve horizontal and vertical straps snugly thru adapter.

h. Mark ends of vertical and horizontal straps at edge of each adapter (Figure 10).

Figure 10. Mark Vertical and Horizontal Straps

i. Disconnect vertical strap quick-disconnect shackle and remove combination carrying case and equipment container from outer container.

j. Adjust horizontal and vertical strap adapters to markings made in step h. Fold both straps under and tuck ends under each adapter. Tack folded-under strap to strap beneath with one turn of size 6 thread, doubled and waxed; tie off (Figure 11).

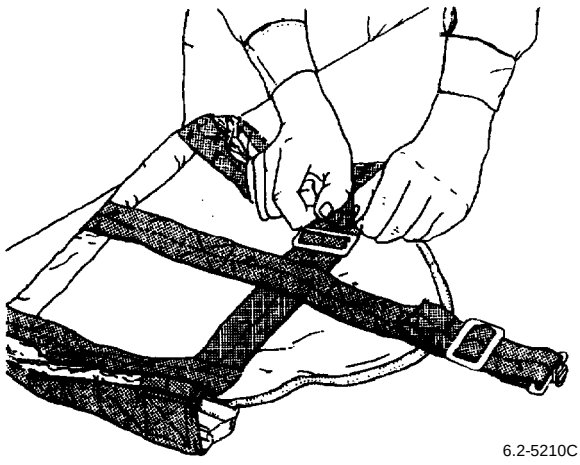
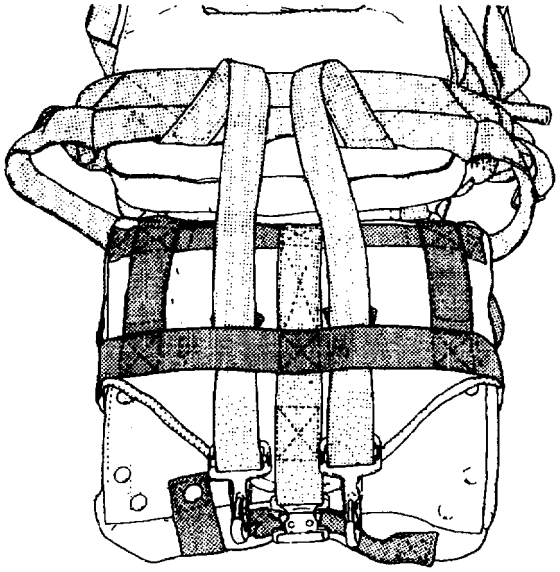


Figure 11. Adjust Horizontal and Vertical Straps

k. Insert combination carrying case and equipment container into outer container and fasten vertical strap quick-disconnect shackle.

l. Place SSP on packing table next to parachute container and pass leg strap thru keepers on SSP (Figure 12).



6.2-5211

Figure 12. Pass Leg Straps Thru Keepers

m. Rotate SSP onto seat cushion and pass harness leg straps thru slot in seat cushion (Figure 13).

6.2-5211A

Figure 13. Rotate SSP onto Seat Cushion

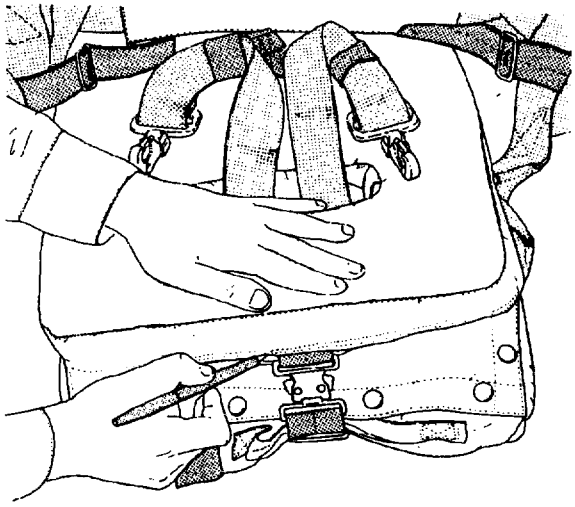
n. Reeve liferaft retaining straps thru keepers on sides and top of SSP. Remove combination carrying case and equipment container from SSP outer container. Tack around center bar of liferaft retaining strap adapter with one turn of size 6 thread, single and waxed; tie off. Tack center and end of retaining strap to SSP outer container with one turn of size 6 thread, single and waxed; tie off (Figure 14).

6.2-5211B

Figure 14. Reeve Raft Retaining Straps Thru Keepers

o. Insert combination carrying case and equipment container into SSP outer container.

p. Center seat cushion slightly behind SSP quick-disconnect shackle. Mark SSP outer container main panel edges and seat cushion on each side of vertical strap for future tacking (Figure 15).

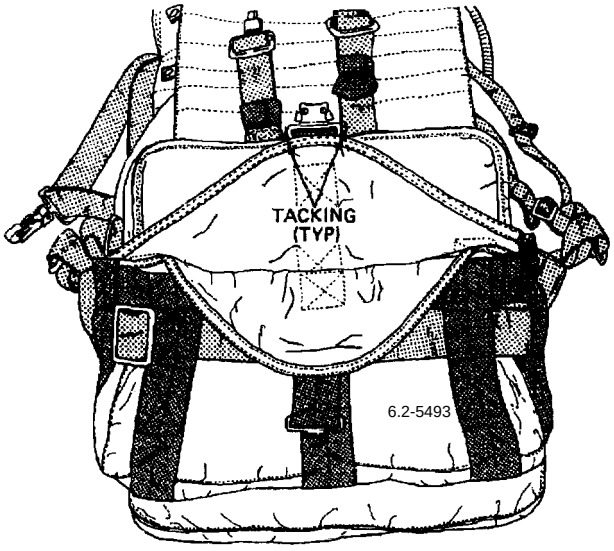


6.2-6059

Figure 15. Center Seat Cushion Behind SSP

q. Remove combination carrying case and equipment container from SSP outer container.

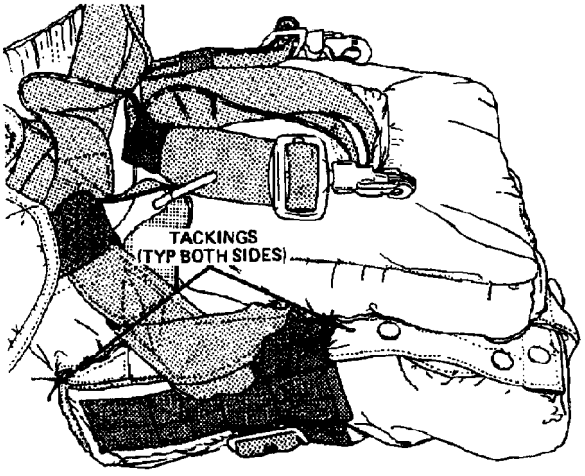
r. Tack main panel edges to seat cushion at locations marked in step p with one turn of size 6 thread, doubled and waxed; tie off. Note that when seat cushion is tacked, it will hang over back of SSP outer container (Figure 16).



1101-17

Figure 16. Tack Main Panel Edges

s. Tack four corners of SSP outer container to seat cushion using one turn of size 6 thread, doubled and waxed; tie off. If necessary, compress seat cushion slightly to stitch rear corner tackings. Insert combination carrying case and equipment container. Ensure that quick-disconnect shackle is fastened (Figure 17). (QA)



1101-18

Figure 17. Tack Four Corners

13. ATTACHMENT OF SP-1A SEAT PAN AND SSP (IF REQUIRED).

Materials Required

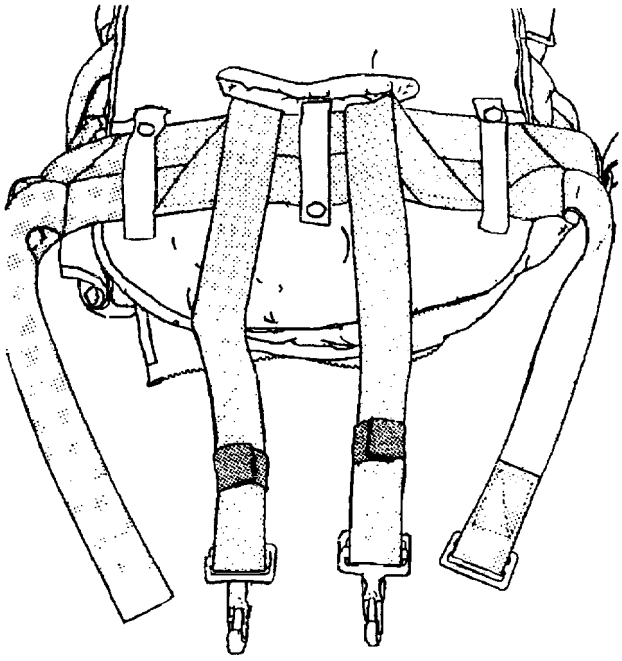
Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove tackings securing seat cushion to SSP outer container; remove seat cushion.

b. Position packed assembly on packing table with back pad facing up. Slide seat cushion between harness main sling and back pad with slot turned toward top of parachute container (Figure 18).



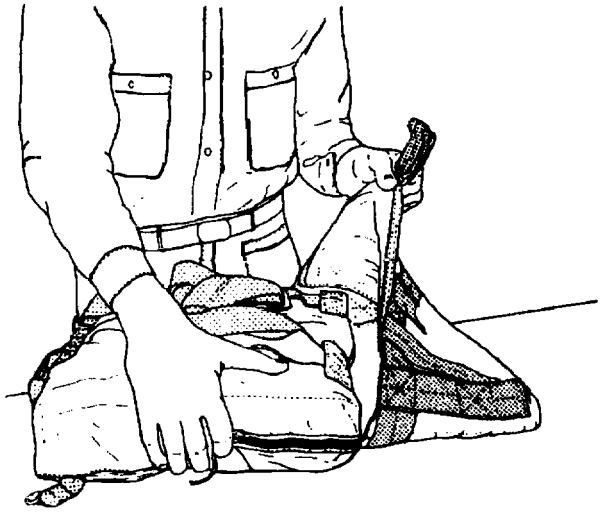
6.2-5213A

Figure 18. Position Packed Assembly

c. If installed, remove and discard the six Type III nylon cord ties from SSP outer container.

d. Turn SSP outer container over so that horizontal strap adapter faces up.

e. Position combination carrying case and equipment container on packing table with shoulder straps facing up. Insert combination carrying case and equipment container into SSP outer container. The carrying case and equipment container strap handle must be positioned at open end of outer container (Figure 19).



1101-20

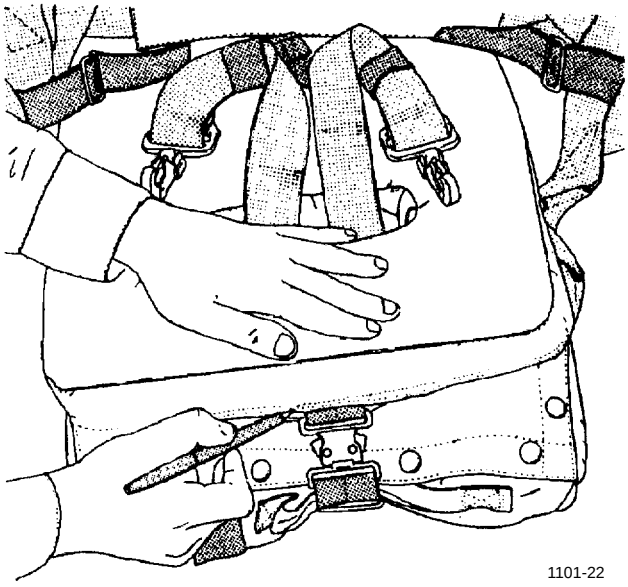
Figure 19. Position Combination Carrying Case

f. Reeve raft retaining straps thru keepers on sides and top of SSP. Remove combination carrying case and equipment container from SSP outer container. Tack around center bar of raft retaining strap adapter with one turn of size 6 thread, single and waxed; tie off. Tack thru SSP outer container tack center and end of retaining strap to SSP outer container with one turn of size 6 thread, single and waxed; tie off (Figure 20).

6.2-5214B

Figure 20. Reeve Raft Retaining Straps

g. Center seat cushion slightly behind SSP quick-disconnect shackle. Mark SSP outer container main panel edges and seat cushion on each side of vertical strap for future tacking (Figure 21).

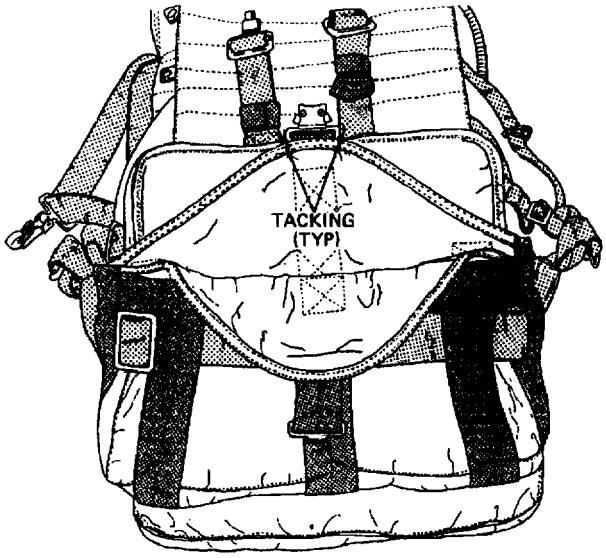


1101-22

Figure 21. Center-Seat Cushion

h. Remove combination carrying case and equipment container from SSP outer container.

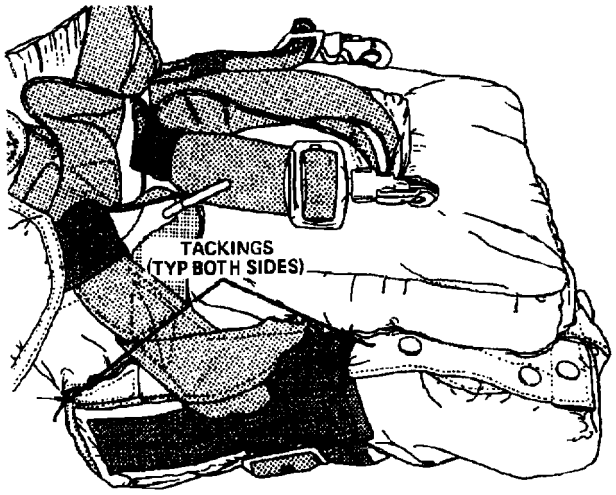
i. Tack main panel edges to seat cushion at locations marked in step g, with one turn of size 6 thread, doubled and waxed; tie off. Note that when seat cushion is tacked, it will hang over back of SSP outer container (Figure 22).



1101-23

Figure 22. Tack Main Panel Edges

j. Tack four corners of SSP outer container to seat cushion using one turn of size 6 thread, doubled and waxed; tie off. If necessary, compress seat cushion slightly to stitch rear corner tackings. Insert combination carrying case and equipment container. Ensure that quick-disconnect shackle is fastened (Figure 23). (QA)



1101-24

Figure 23. Tack Container to Cushion

INTERMEDIATE AND DEPOT MAINTENANCE

PACKING PROCEDURES

NB-6 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 565AS100-1, 565AS100-2, 565AS100-13, and 565AS100-14

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1	11	6	9	8	9	12 thru 31	9
2 thru 4	9	7	10	9 thru 11	11	32	10
5	11						

Reference Material

Cartridge Actuated Devices (CADS) and Propellant Actuated Devices (PADS) (IETM) . . . . . NAVAIR 11-100-1.1
Organizational, Intermediate and Depot Maintenance, Illustrated Parts Breakdown,
NB-6 Personnel Parachute Assembly . . . . . WP 011 04
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration . . . . . WP 003 00

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Record of Applicable Technical Directives

None

1. GENERAL.

a. Packing instructions are provided with the assumption that they will be carried out under ideal conditions in a parachute loft (WP 003 00). When a parachute assembly must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

b. In no case shall the packing of a parachute assembly be interrupted after the packing operation has been started. If the packing operation is interrupted due to unforeseen circumstances, the parachute assembly shall be completely repacked per the instructions contained in this work package (WP).

c. Quality Assurance (QA) points have been included in the packing procedures. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Witnessing of QA steps may be delayed by QA if their satisfactory completion is verified in later steps.

d. During packing procedures, packer shall be positioned on left side of packing table, and helper on right side when viewed from harness/riser end of table.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
711-07076	Altitude Chamber
Refer to WP 005 00	Fid
Refer to WP 005 00	Guide Tube
Refer to WP 005 00	Long Bar (2)
Refer to WP 005 00	Packing Hook
Refer to WP 005 00	Ripcord Pin Lock
DPP-50	Scale, Spring
Refer to WP 005 00	Shot Bag (4)
11-1-3512	Small Line Separator
Refer to WP 005 00	Temporary Locking Pin (4)
Refer to WP 005 00	Temporary Locking Pin Plate

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type I or IA
711-07077	Test Slug (3)
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon, Size A, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
V-T-295	Thread, Nylon, Size 3, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. Ensure that all support equipment and materials required are available prior to starting.

b. Inspect packing tools for nicks, burrs, or sharp edges that may cause damage to the parachute assembly.

c. Count and record number of packing tools.

d. Clean packing table.

3. LAYOUT OF RIGGED PARACHUTE ASSEMBLY.

a. Completely open parachute container and detach spring opening assemblies and corner keepers.

b. Remove canopy from container and then remove tacking securing connector links to container.

c. Stretch canopy and suspension lines full length on a clean packing table.

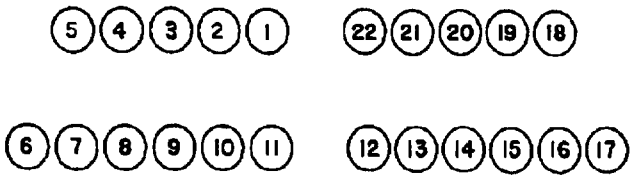
d. Locate gore 22 (nameplate gore) and place uppermost in center of packing table.

e. Attach tension strap hook to canopy vent lines.

f. At skirt hem, separate suspension lines into two equal groups with lines 1 thru 11 on packer's side and 12 thru 22 on helper's side. Grasping each group of lines, walk from skirt hem to connector links, removing any dips and twists between the two groups.

g. Position container on packing table with inside facing up and ripcord pocket on packer's side of table.

h. Place connector link holding lines 1 thru 5 on top of connector link holding lines 6 thru 11. Place connector link holding lines 22 thru 18 on top of connector link holding lines 12 thru 17. Insert tension hooks into connector links and insert hooks into packing table (Figure 1).



6.2-5447

Figure 1. Arrangement and Orientation of Suspension Lines on Connector Links

i. Pull suspension lines taut and adjust apex hem.

4. AUTOMATIC PARACHUTE RIPCORD RELEASE REMOVAL/DISARMING/DISASSEMBLY (IF INSTALLED).

WARNING

Do not pull arming cable from armed release assembly, as this will cause it to fire.

a. Open release assembly pocket in the parachute container and remove release assembly enough distance to allow disassembly.

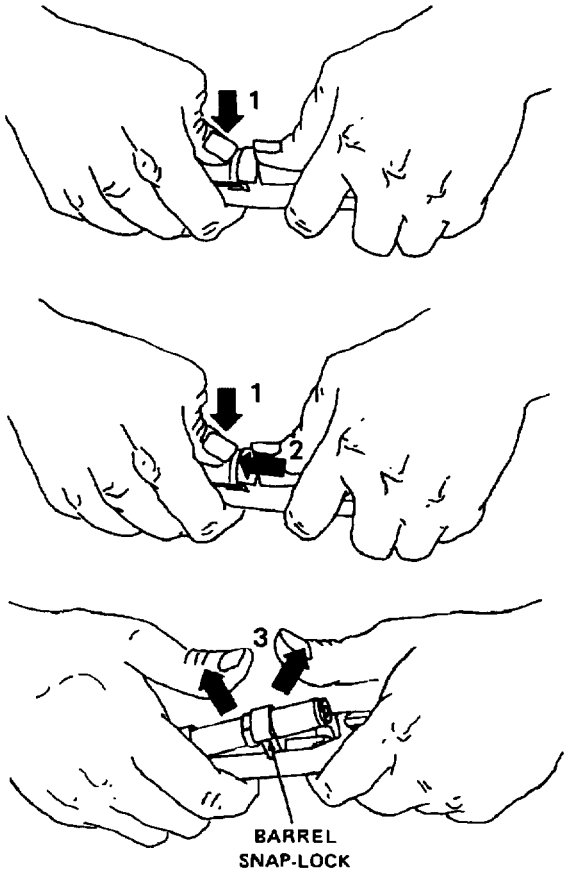
b. Remove cover locking screw and washer (Figure 3).

NOTE

Cover and power cable assembly and receiver and barrel assembly are serialized, matched sets. Do not mix assemblies.

c. Slide cover off receiver and barrel assembly.

d. Disengage barrel by pushing down on snap-lock; slide back and release (Figure 2).



6.2-5362

Figure 2. Disarming Ripcord Release

e. Remove cartridge from barrel immediately after barrel is disengaged. Store cartridge per NAVAIR 11-100-1.1. (QA)

f. Remove arming cable housing from receiver and barrel by depressing retainer release (Figure 3). Remove arming cable housing from receiver, leaving arming cable pin installed.

g. Ensure that arming cable pin is positively retained by arming pin retainer (Figure 3).

h. Remove arming cable pin from receiver by grasping arming pin and pulling.

i. Remove arming cable and clip from arming cable housing.

j. Remove lanyard assembly from lanyard stowage channel.

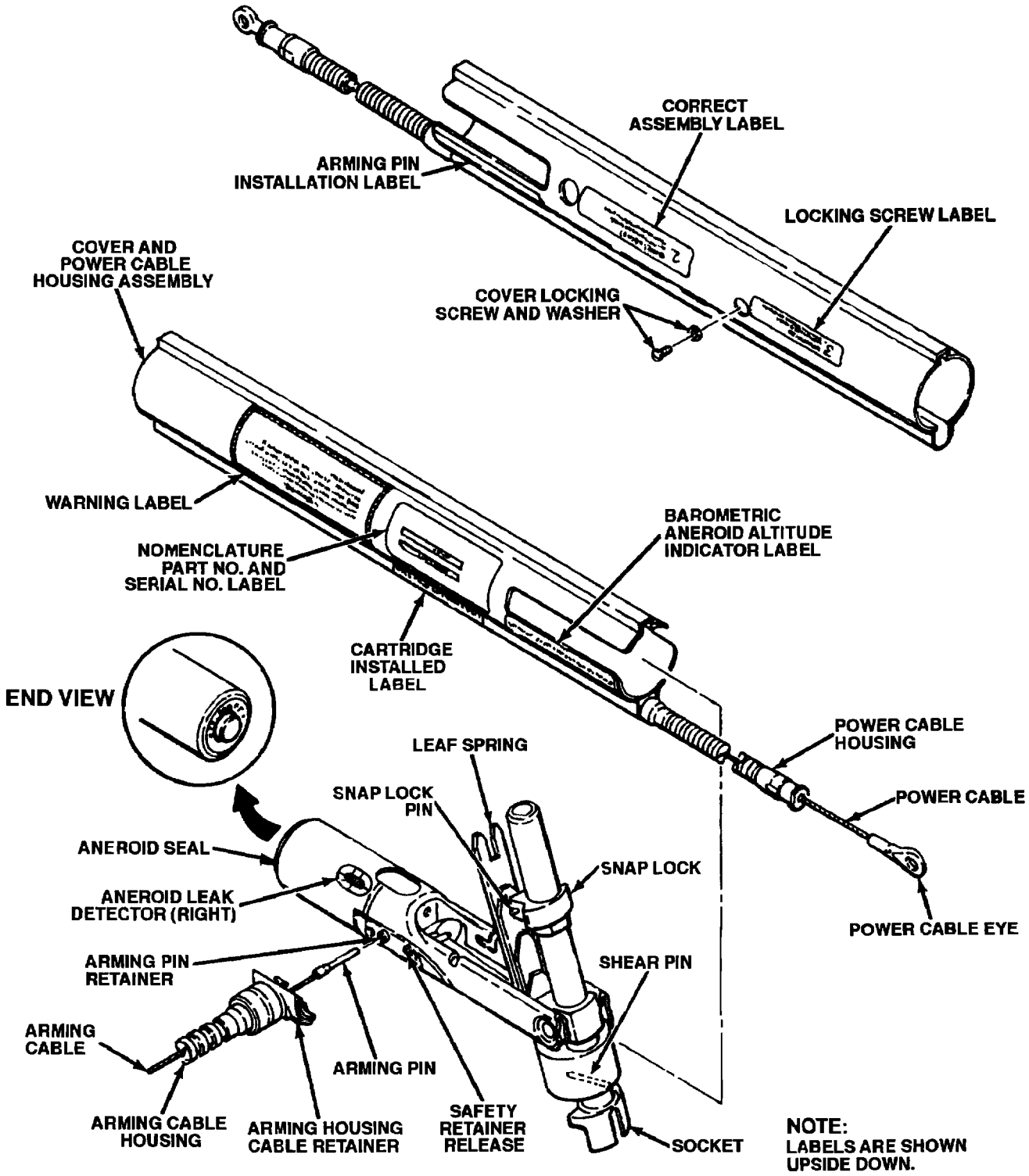


Figure 3. Automatic Parachute Ripcord Release, Model 7000

5. INSPECTION (SPECIAL).

a. Maximum scheduled repack cycle is 420 days.

6. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Parachute Harness Sensing Release Unit Cartridge) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be rebased if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Components without a service/total life shall be removed from service if the components do not pass inspection, as determined by Quality Assurance Representative (QAR) or Collateral Duty Inspector (CDI).

g. Check date placed in-service and date of manufacture on each parachute part for service/total life as follows:

Nomenclature	Service Life (Yr)	Total Life (Yr)
Canopy Assembly	None	15
Cartridge M284	Refer to NAVAIR 11-100-1.1	
Harness Assembly	None	15
Lanyard Assembly	2	7
Pilot Parachute		15
Pilot Parachute Connector Strap		15

(1) Markings for completeness, legibility, and agreement with information on Parachute Record (OPNAV 4790/101).

(2) Compare configuration of parachute assembly to that shown in NAVAIR 13-1-6.2 Record of Applicable Technical Directives, and Illustrated Parts Breakdown.

7. AUTOMATIC PARACHUTE RIPCORD RELEASE.

NOTE

Do not mismatch cover and power cable housing assembly and barrel and receiver assembly.

a. Serial numbers on the cover and power cable housing and receiver and barrel assembly for matched numbers. (QA)

b. Receiver and barrel assembly for nicks, cracks, gouges, distortion, corrosion, or other damage which could cause malfunction in-service.

c. Decals and labels for legibility and security of attachment.

d. Cover and power cable housing for nicks, gouges, distortion, corrosion, and security of power cable housing.

e. Power cable for freedom of movement and secure attachment of swaged ball and power cable eye (Figure 4).

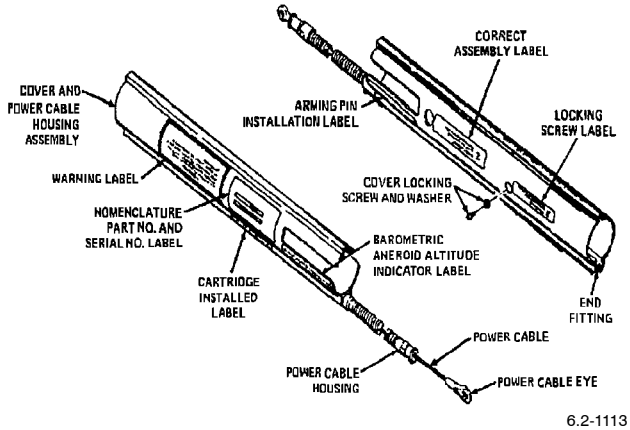


Figure 4. Attachment of Swaged Ball and Power Cable Eye

f. Arming cable clip retainer and retainer pin for distortion, corrosion, and other damage.

g. Arming cable housing for bends, retention of end furrel, retention of housing retainer.

h. Aneroid for evidence of expansion and correct indication.

i. Ensure proper retention of arming pin retainer by inserting arming pin in retainer while barrel is unlocked. Press pin into place firmly until locked into pin groove. Pin should now be held securely.

j. Manually pull arming cable pin from retainer, ensuring that pin was properly secured. (QA)

k. Sealing compound on aneroid; seal must be intact. Cracks due to normal aging of seal material are acceptable (Figure 5).

WARNING

Do not twist socket, as this will break shear pin.

l. Socket for visible damage and retention of socket and piston by shear pin.

m. Snap-lock pin for security and damage.

n. Teflon seal (inside of barrel) for placement.

o. Firing pin for flattening, gouges, and other damage.

p. Leaf springs on receiver and barrel assembly for damage; leaf spring retaining screw for condition and presence of torque seal (Figure 6).

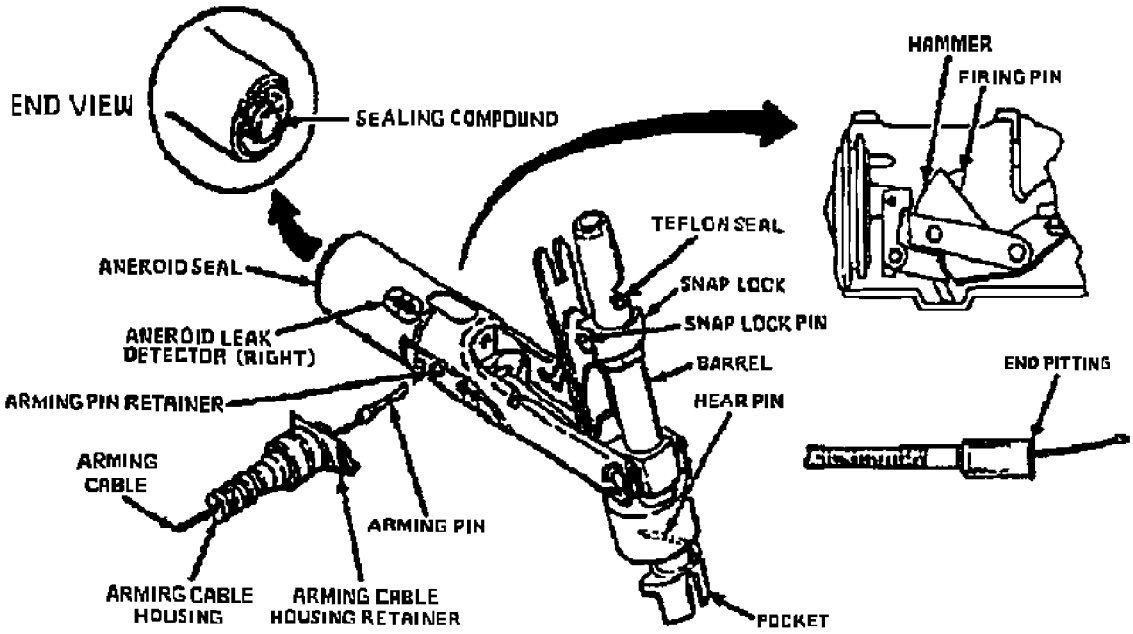


Figure 5. Sealing Compound Check

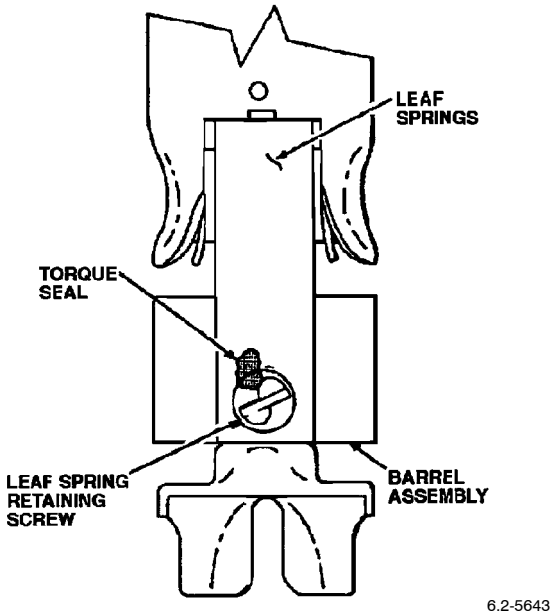


Figure 6. Presence of Torque Seal

8. RIPCORD RELEASE FIRING ALTITUDE CHECK.

a. Install test chamber substitute arming pin in ripcord release.

CAUTION

Do not release firing mechanism without test slug installed, as this will distort the firewall.

b. Install test slug.

CAUTION

At no time will a tool or other device be used to open or close the ripcord release.

c. Press barrel down into position in receiver, ensure snap-lock pins lock barrel in position.

d. Perform firing altitude check:

NOTE

Determine whether actuator being tested is pre-set for 10,000 ft. or 14,000 ft. The ripcord release firing check must simulate firing ± 1,000 ft. of pre-set altitude.

(1) Install barrel and receiver in test chamber. (QA)

(2) Set altimeter to 29.92 in. Hg. (QA)

(3) Evacuate chamber to a minimum of 25,000 ft. pressure altitude. (QA)

(4) Decrease altitude at a rate of 175 to 200 ft./sec. (QA)

(5) Actuate arm toggle to withdraw arming pin at approximately 20,000 ft. pressure altitude. (QA)

(6) Verify altitude at which ripcord release firing pin strikes test slug. (QA)

(7) Remove test slug from barrel; check primer for indent; indent must be present and centered. (QA)

CAUTION

Test slug must be removed from barrel after each use.

(8) Repeat firing altitude check two additional times; using a new test slug each time; the ripcord release must pass all three firing altitude checks. (QA)

(9) Discard test slugs. (QA)

(10) Remove ripcord release from altitude chamber. (QA)

9. RIPCORD RELEASE END FITTING REMOVAL TEST.

NOTE

The arming cable and housing shall be removed from the automatic parachute ripcord release assembly.

a. Helper shall hold arming cable housing steady on packing table.

b. Attach gage to the swaged ball using Type I or IA nylon cord.

c. Using a straight steady pull, observe amount of pull required to remove end fitting from arming cable housing. Allowable force is 17 lbs. ± 3 lbs. (QA)

10. SUSPENSION LINE CONTINUITY CHECK.

a. Packer shall grasp line 1 on left side of gore 22 and raise suspension line to a height sufficient to ensure that suspension line continuity is maintained (Figure 1) and is free of dips and twists from skirt hem to connector link, and continue procedure with suspension lines 2 through 14. (QA)

b. Use the same procedure as in step a on right side of gore 22, except packer shall start with suspension line 22 and work through suspension line 11. (QA)

11. CANOPY ASSEMBLY.

a. Canopy skirt hem, fabric surface, diagonal seams, radial seams, vent hem, and water deflation pockets for cuts, holes, ruptures, contamination, deterioration, and loose or broken stitching.

b. Suspension lines and canopy apex lines for fraying, ruptures, protruding inner core lines, burns, contamination, and presence of twists.

c. Attachment of suspension lines at skirt hem for security and condition of V-tabs.

d. Connector links for corrosion, distortion, nicks, burrs, sharp edges, and cracks.

NOTE

For Double "L" Connector Link, refer to WP 011 03 for disassembly, assembly, and inspection instructions.

e. Connector links for defective yoke and plate assemblies. Maximum of 1/32-in. play allowable in plate.

f. Torque seal unbroken with yoke and plate assemblies installed with knurled portion facing up and screwheads facing outboard (Figure 7). (QA)

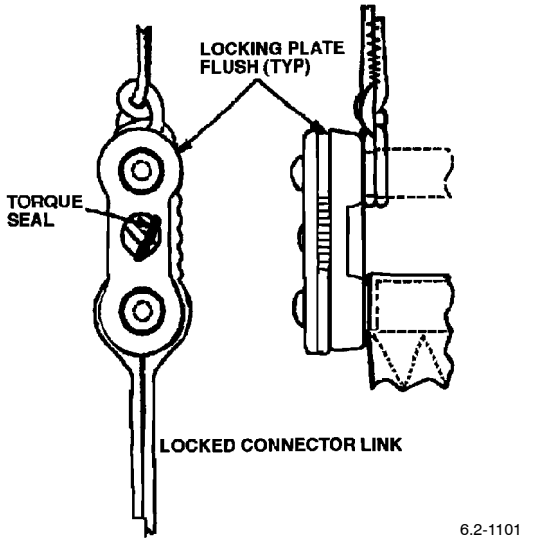


Figure 7. Torque Seal Unbroken

12. PILOT PARACHUTE AND CONNECTOR STRAP.

a. Fabric surfaces, and seams for cuts, tears, burns, fraying, and loose or broken stitching.

b. Vane material for cuts, tears, burns, fraying, and deterioration.

c. Seams area at crown for seam separation.

d. Spring assembly for distortion.

e. Loose or broken tacking (4 places) at bottom of the coil spring.

f. Connector strap for cuts, tears, burns, fraying, and loose or broken stitching.

g. Connector strap for proper attachment at apex lines and pilot parachute loop.

h. Connector strap for loose or broken tacking of lark's head knot at pilot parachute loop.

i. Proper length is 23 1/2 ± 1/2-in. unattached.

13. HARNESS AND RISERS.

a. Webbing for contamination, rust at points of contact with metal parts, cuts, twists, fading, wear, fraying, burns, abrasions, and loose or broken stitching.

b. Elastic keepers for condition, number (6), and proper location.

c. Triangle links for damage, corrosion, and security of attachment.

d. Ejector snaps and adapters for damage, corrosion, security of attachment, and ease of operation.

14. CONTAINER AND BACKPAD.

a. Grommets, cones, snap fasteners for security of attachment, cracks, corrosion, nicks, and gouges.

b. Slide fasteners for condition and proper operation.

c. Fabric areas for seam separations, loose or broken stitching, cuts, tears, contamination, and deterioration.

d. Hardware for corrosion, bends, dents, nicks, sharp edges, and security of attachment.

e. Spring opening assemblies for broken springs, contamination, corrosion, cuts, fraying, bent or broken hooks, elasticity, and loose or broken stitching. Proper length is 9 1/4 ± 1/4-in. measured with no tension from end of one hook to end of other hook.

f. Spring opening eyes (8) for security of attachment.

g. Ripcord release pocket slide fastener for proper operation.

h. Backpad for contamination, cuts, tears, burns, loose or broken stitching, missing or defective keepers and snap fasteners.

i. Proper attachment of back pad to container.

15. RIPCORD AND RIPCORD POCKET.

a. Ripcord cable for corrosion, bends, fraying, broken strands, and security of swaged terminal ball.

b. Locking pins for bends, dents, cracks, security of attachment to cable, and corrosion.

c. Grip for bends, dents, cracks, and corrosion.

d. Housing for corrosion, bends, dents, loose swaged end ferrules, breaks, and cracks.

e. Pocket fabric areas and elastic for contamination, cuts, tears, burns, fraying, loose or broken stitching.

f. Pocket for loose or broken tackings.

16. PACKING.

17. AUTOMATIC PARACHUTE RIPCORD RELEASE ASSEMBLY AND ARMING (IF INSTALLED).

NOTE

Right side of release assembly contains the aneroid leak detector.

WARNING

Ripcord release with proper altitude setting, time delay cartridge, arming cable housing, and lanyard assembly must be used.

a. Ensure ripcord release has proper altitude setting, arming cable housing, and lanyard assembly. (QA)

b. Ensure arming cable housing is routed through hole in left side of release pocket and button hole in left side of container.

c. Insert arming cable into cable housing.

d. Attach clip retainer to cable housing.

e. With receiver and barrel assembly in the open position, install arming pin release assembly by inserting and locking (arming pin is fully seated when an audible click is heard) the arming pin into the arming pin retainer, ensuring the arming cable housing exits out the left side of container (Figure 8). (QA)

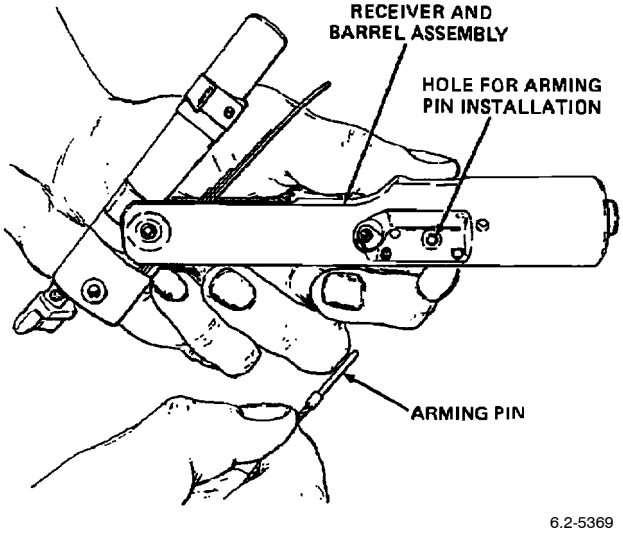


Figure 8. Installation of Arming Pin

WARNING

To ensure proper penetration of cartridge primer; firing pin/hammer assembly must be completely retracted. If edge where curved surface meets flat surface of hammer assembly is not aligned directly above arming pin, release assembly is not properly armed.

f. Ensure that firing pin/hammer assembly is completely retracted. The firing pin/hammer is completely retracted if top edge of hammer is aligned above arming pin (Figure 9). (QA)

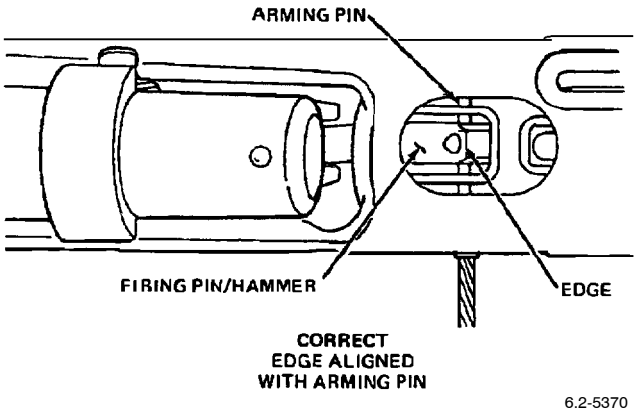


Figure 9. Verification of Firing Pin/Hammer Retraction

g. Connect arming cable housing retainer to receiver and barrel assembly. Ensure that safety retainer secures housing to receiver (Figure 10).

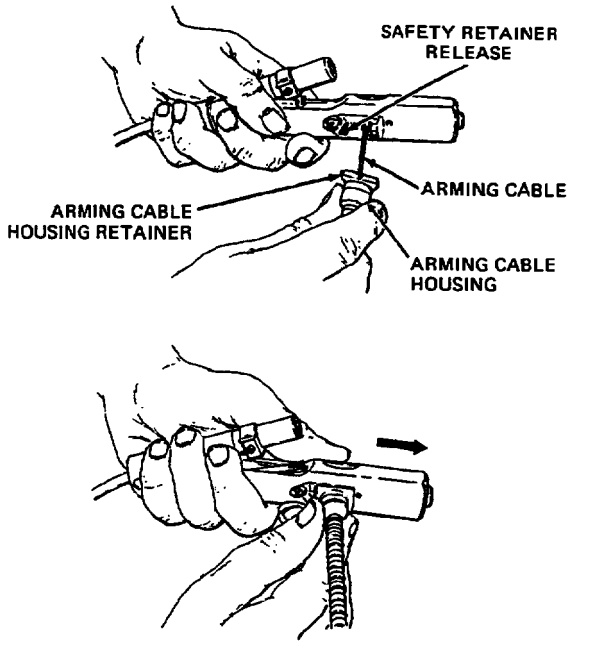


Figure 10. Attachment of Arming Cable Housing

WARNING

Complete arming and installation is mandatory from this point as a safety measure.

h. Enter nomenclature, part number, lot number DODIC, date of manufacture, can open date, and expiration date on Parachute Record (OPNAV 4790/101). (QA)

WARNING

Before installing delay cartridge in the automatic parachute release, be sure that the arming pin has been inserted thru both the hammer and lock.

i. Insert proper cartridge per WP 011 04.

WARNING

If arming pin is improperly installed, cartridge will fire while locking barrel.

j. While pressing barrel down, look thru inspection hole in receiver and ensure that hammer assembly does not swing toward firewall. If hammer swings, arming pin is improperly installed. Do not attempt to assemble release assembly further, as this could discharge cartridge. Disassemble improperly armed release assembly and rearm.

k. Press barrel down into position in receiver. As barrel reaches proper position, exert forward pressure on snap-lock, causing snap-lock pins to lock barrel in position. Ensure that snap-lock is aligned with alignment arrow (Figure 11).

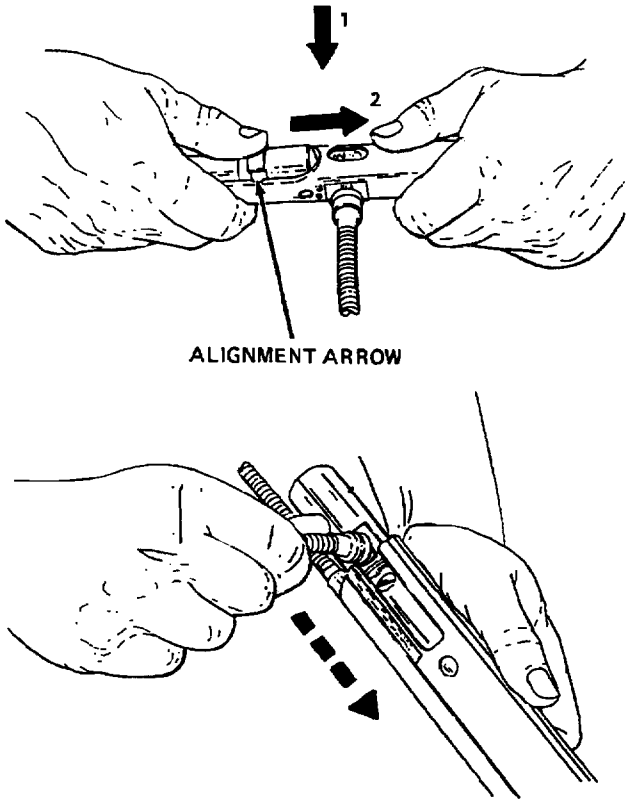


Figure 11. Installation of Arming Pin

l. Position cover and power cable housing assembly with power cable facing container.

m. Position receiver and barrel assembly so that locking screw hole aligns with locking screw hole in cover and power cable housing assembly (Figure 11).

n. Hold release assembly as shown in (Figure 11) and slide receiver and barrel assembly into cover and power cable assembly until holes for screws are aligned.

o. Install cover locking screw and lockwasher. Apply torque seal to locking screw.

WARNING

After the automatic parachute release has been assembled with the delay cartridge, the firing pin is in a cocked position. Movement of the arming cable from the parachute release in excess of 0.5-in. will cause actuation of the device.

18. AUTOMATIC PARACHUTE RIPCORD RELEASE ARMED CHECKOUT AND INSTALLATION (IF INSTALLED).

a. Ensure arming device pin protrudes (about 1/32-in.) from arming pin retainer (Figure 12).

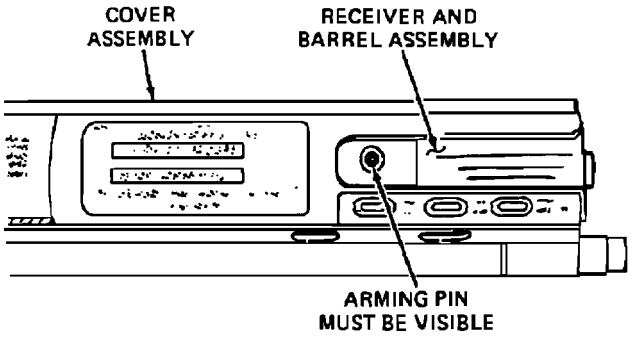


Figure 12. Ensure Arming Device Pin Protrudes

b. Ensure roll pin is visible and centered ± 1/8-in. in viewing hole (Figure 13).

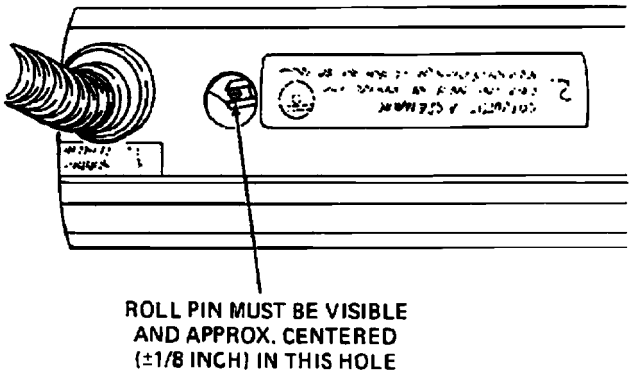


Figure 13. Ensure Roll Pin is Visible

c. Ensure cover locking screw is installed, and torque seal is applied (Figure 14).

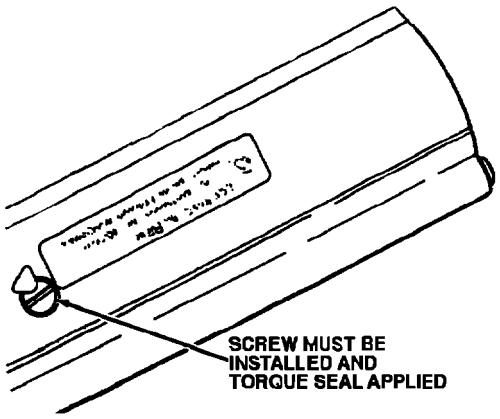
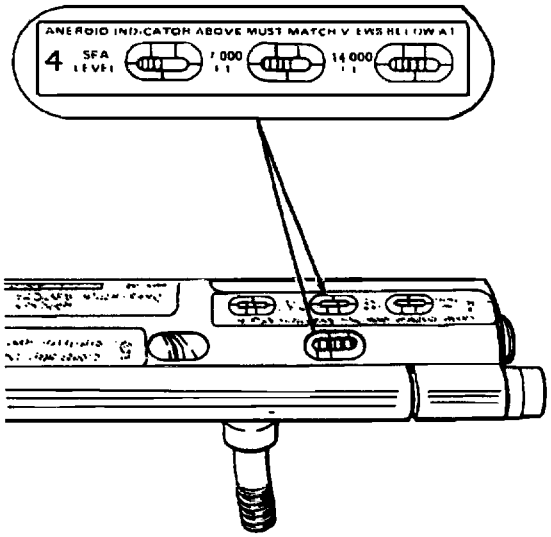


Figure 14. Ensure Cover Locking Screw is Installed

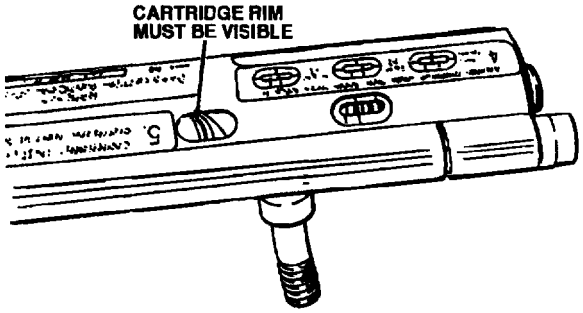
d. Ensure aneroid indicator is in proper position in relation to local elevation (Figure 15).



6.2-6016D

Figure 15. Ensure Aneroid Indicator is in Proper Position

e. Ensure cartridge is installed. Look thru port and verify cartridge rim is visible (Figure 16). (QA)



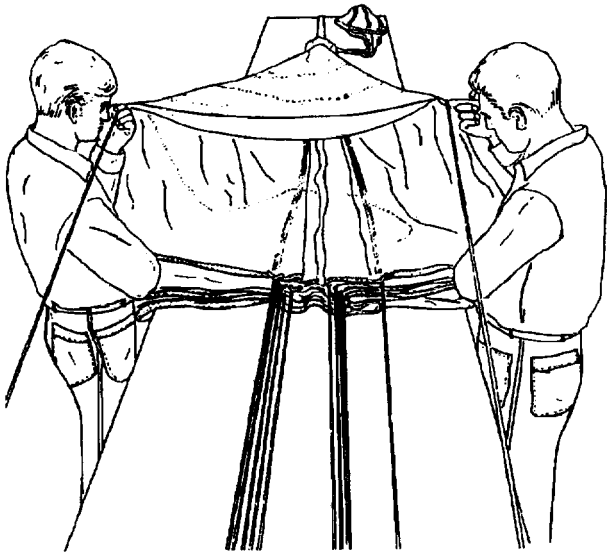
6.2-6016E

Figure 16. Ensure Cartridge is Installed

f. Completely insert ripcord release into pocket and close slide fastener and flap.

19. WHIPPING AND FOLDING OF CANOPY.

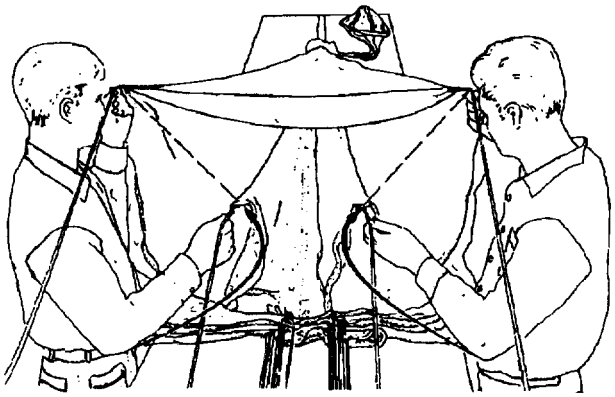
a. The packer and helper shall lift the suspension line on each side of nameplate gore up and out. The skirt hem between lines shall be taut so that canopy apex can be seen on inside. While holding suspension lines up, each man shall whip the gore hanging from line outwards to prepare canopy for folding (Figure 17).



6.2-5184A

Figure 17. Lift Suspension Line on Each Side of Nameplate

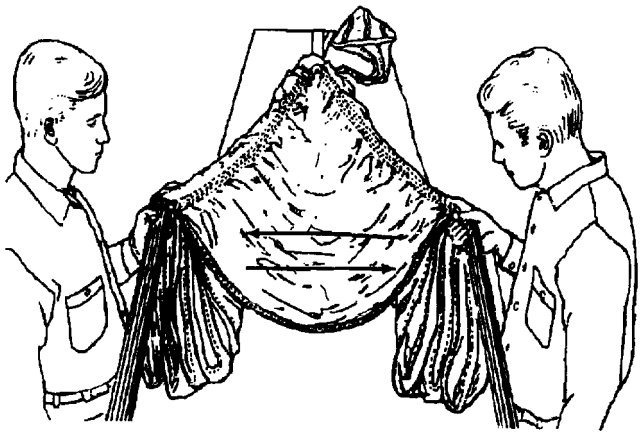
b. Draw next suspension line upwards to suspension line in hand, using a rapid, circular motion (Figure 18).



6.2-5184B

Figure 18. Draw Next Suspension Line Upwards

c. Continue whipping operation for all gores. Ensure that radial seams are not overlapped by gore material. Move whipped gores rapidly back and forth across packing table (Figure 19).

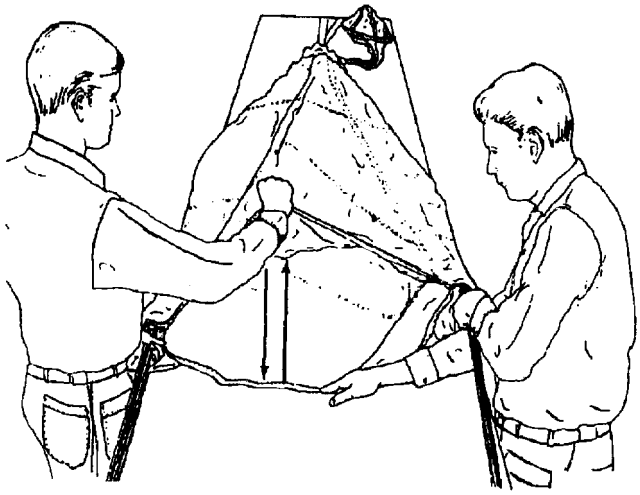


6.2-5184C

Figure 19. Continue Whipping Operation

d. The two groups of suspension lines shall be restricted to the edges of the packing table, with folded gores hanging over sides. Packer and helper shall grasp all folds at the outer edges on skirt hem and hold suspension line groups at edges of packing table. Packer and helper shall simultaneously move folds up and down rapidly, in a whipping motion.

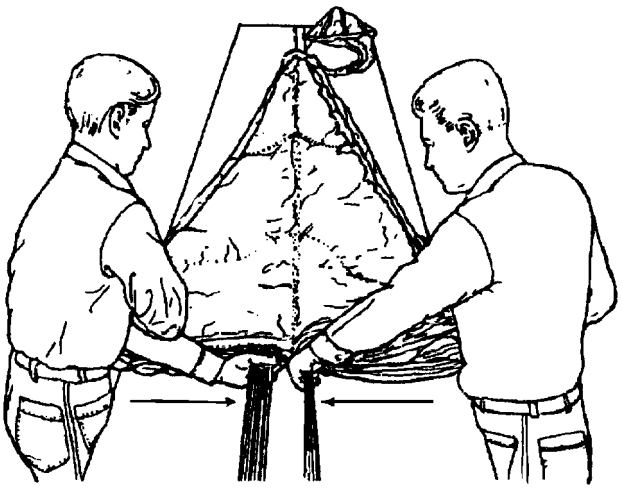
e. Packer shall flap top gore up and down at skirt hem center as helper holds bottom gore at skirt hem center (Figure 20).



6.2-5184D

Figure 20. Packer Shall Flap Top Gore

f. On signal, packer and helper shall draw their respective gores, at skirt hem centers, toward table edge, while at same time bringing suspension line groups to center of packing table (Figure 21).

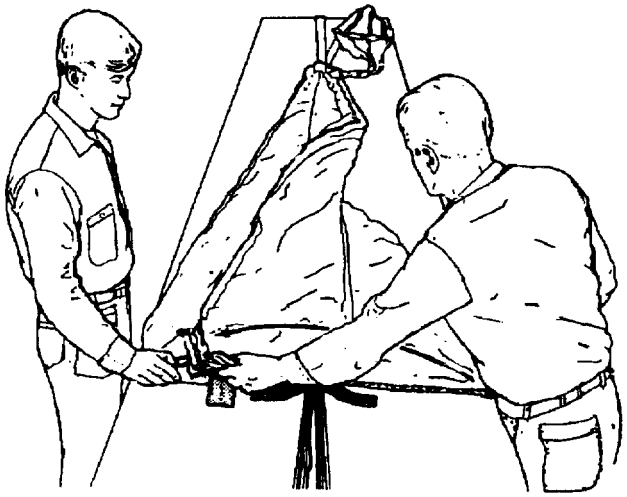


6.2-5185A

Figure 21. Draw Respective Gores to Center

g. Insert suspension line groups into their respective slots in small line separator and place shot bag on lines. Packer shall place second shot bag across skirt hem on left side of suspension lines.

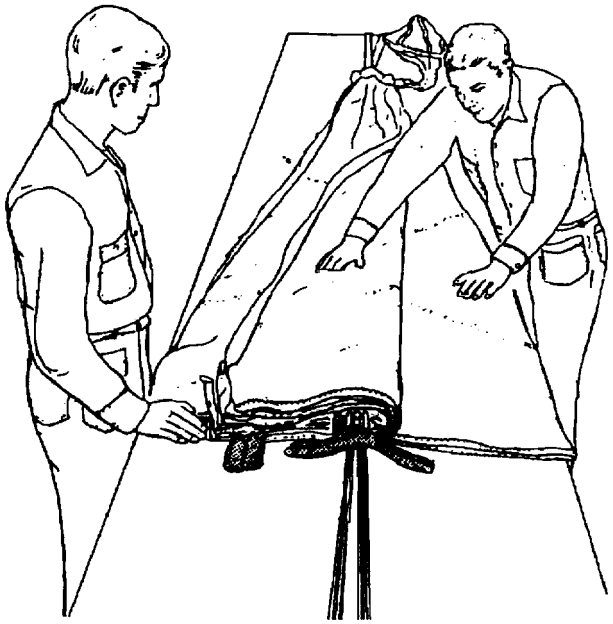
h. Helper shall rotate all gores as a group, except bottom gore, from helper's side of packing table (Figure 22).



6.2-5185B

Figure 22. Rotate All Gores To Packer's Side

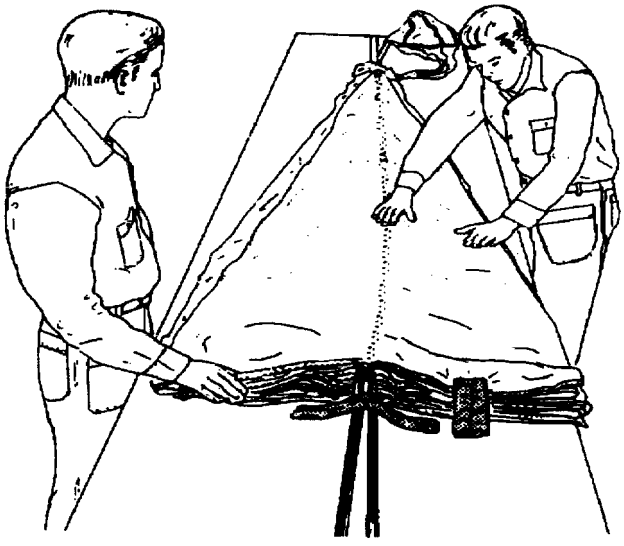
i. Helper shall straighten and smooth bottom gore on helper's side of packing table throughout its length to apex (Figure 23).



6.2-5185C

Figure 23. Helper Shall Straighten and Smooth Gores

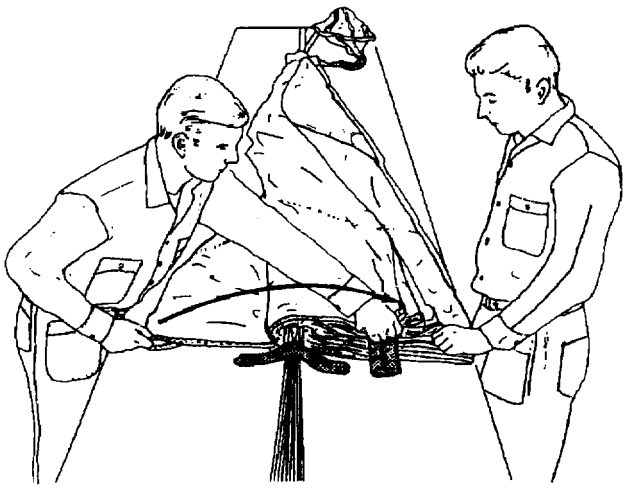
j. Packer shall return folded gores above shot bag to helper's side of packing table. Helper shall straighten and smooth each gore and place the shot bag on skirt hem (Figure 24).



6.2-5185D

Figure 24. Packer Return Folded Gores Above Shot Bag

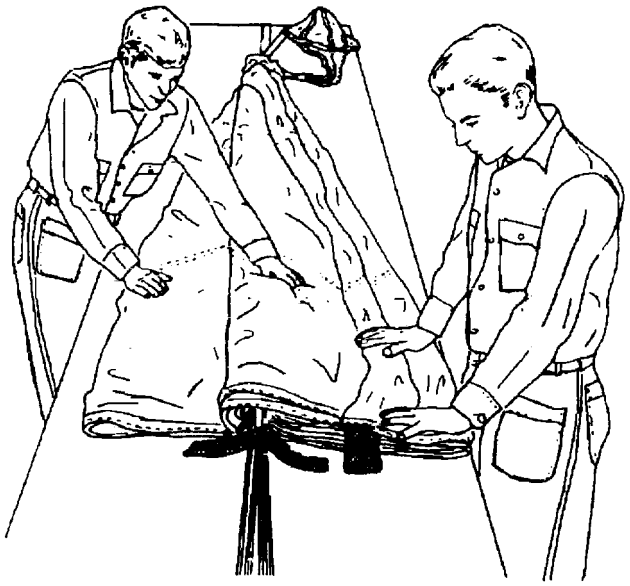
k. Packer shall rotate all gores as a group, except bottom gore, from packer's side to helper's side of packing table (Figure 25).



6.2-5186A

Figure 25. Packer Shall Rotate All Gores

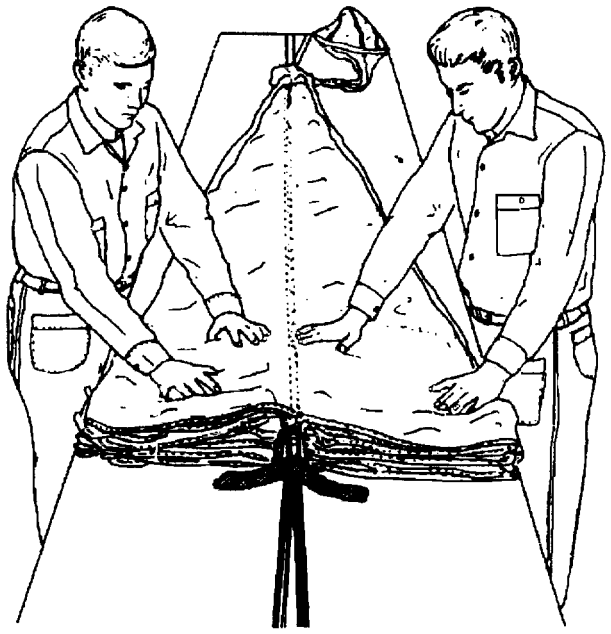
l. Packer shall straighten and smooth bottom gore on packer's side of packing table throughout its length to apex (Figure 26).



6.2-5186B

Figure 26. Packer Shall Straighten and Smooth Gores

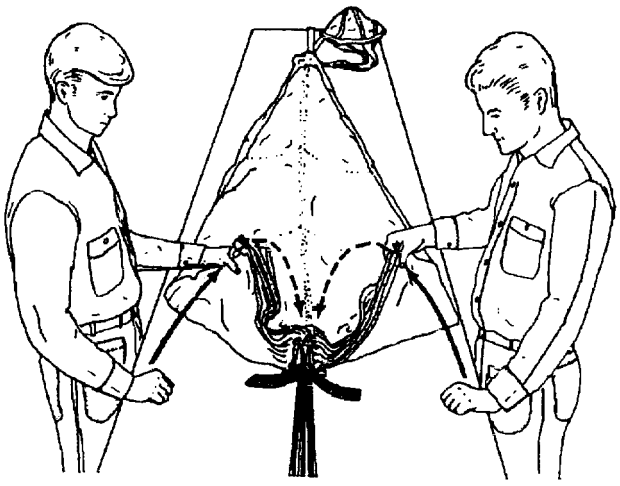
m. Helper shall return folded gores above shot bag to packer's side of packing table. Packer shall straighten and smooth each gore. Remove shot bag from skirt hem (Figure 27).



6.2-5186C

Figure 27. Helper Shall Return Gores Above Shot Bag

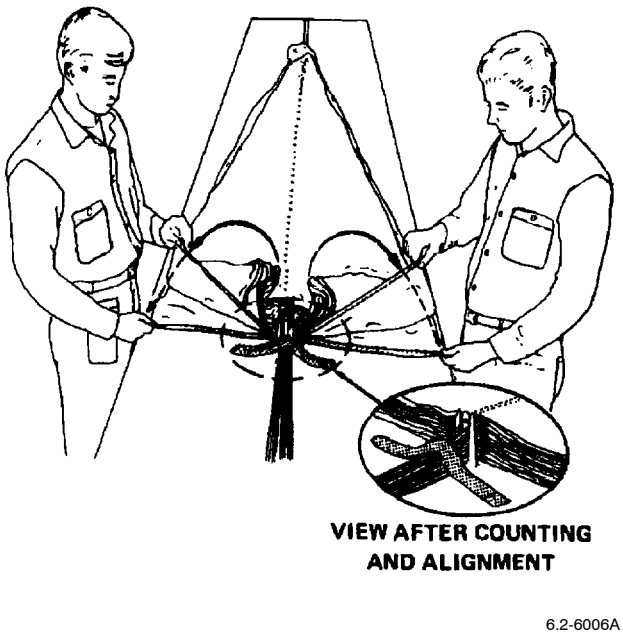
n. Packer and helper shall grasp skirt hem at mid-section of gores and rotate towards suspension lines (Figure 28).



6.2-5186D

Figure 28. Grasp Skirt Hem and Rotate Towards Suspension Lines

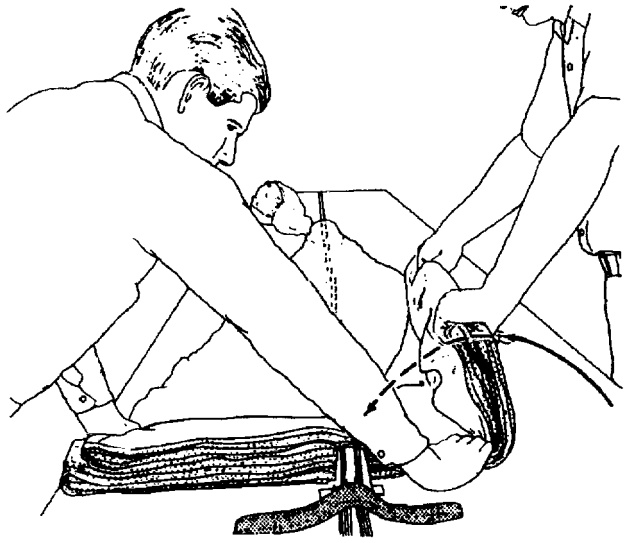
o. Packer and helper shall grasp the bottom most gore fold and extend outwards, aligning the edge of the skirt hem and suspension line "V" tab reinforcements. The remaining 10 gores shall be aligned in a similar manner. Ensure that all "V" tab reinforcements face same direction and that 11 gores have been counted on each side (Figure 29).



6.2-6006A

Figure 29. Grasp Gore Folds and Extend Outwards

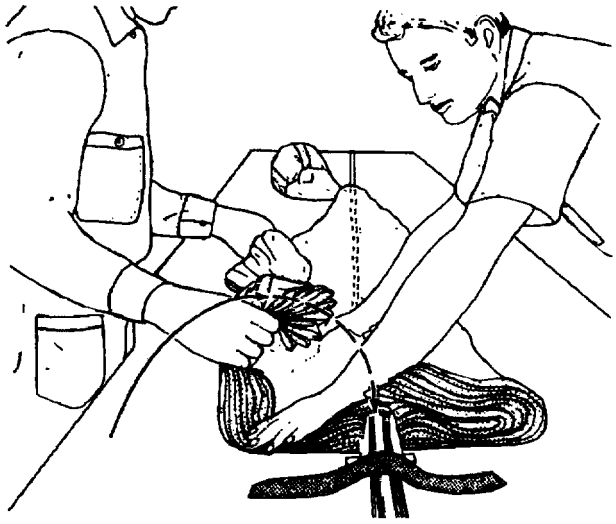
p. Canopy shall be folded by packer placing his hand on helper's side of skirt hem at center. Helper shall rotate gores to center of canopy (Figure 30).



6.2-6006B

Figure 30. Helper Rotate Gores to Center of Canopy

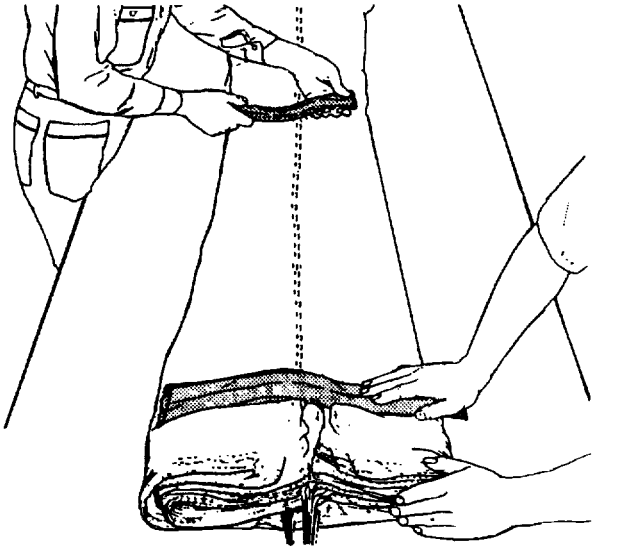
q. Helper shall place his hand on packer's side of skirt hem at center. Packer shall rotate gores to center of canopy. The two groups of folded gores shall butt together. Note that canopy cannot be folded throughout entire length but breaks about two-thirds the distance to apex (Figure 31).



6.2-6006C

Figure 31. Packer Rotate Gores to Center of Canopy

r. Place one shot bag slightly behind skirt hem and another on middle of canopy. Remove small line separator (Figure 32).



6.2-6006D

Figure 32. Placement of Shot Bags

20. SUSPENSION LINES STOWAGE WITHOUT RIPCORD RELEASE.

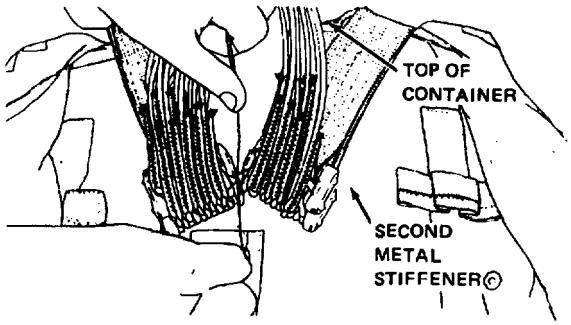
NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed by a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Release tension from canopy and remove tension strap and place pilot parachute on top of canopy.

b. Remove connector links from tension hooks and remove tension hooks from packing table.

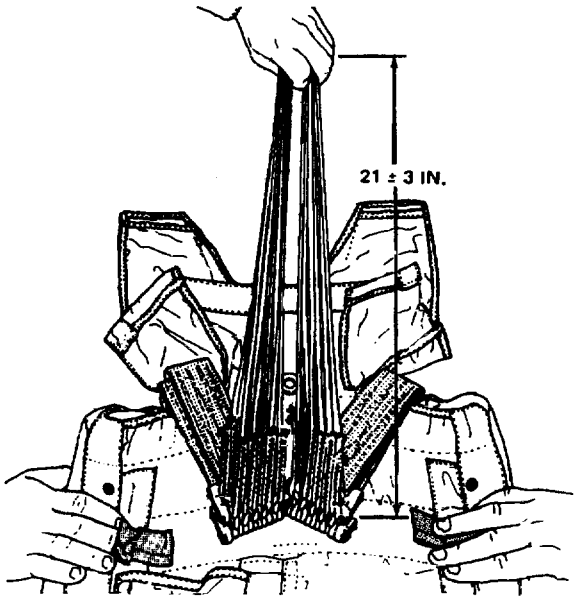
c. Place connector links on centerline of container above second metal stiffener from top edge. Tack connector links to cloth on top of second metal stiffener with one turn of size 3 thread, single and waxed, or one turn of size FF thread, doubled and waxed; tie off (Figure 33).



6.2-6018A

Figure 33. Tack Connector Links to Cloth

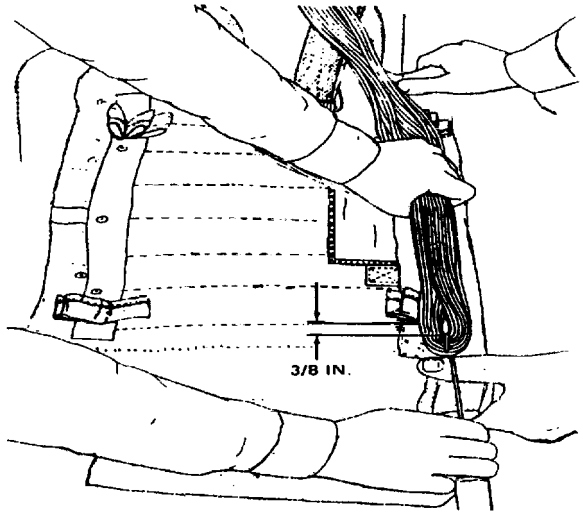
d. Packer shall grasp both groups of suspension lines in his left hand 21 ± 3-in. from connector links to make first bight. Adjustment in this measurement may be necessary to obtain the required 21 ± 3-in. between the last stow and canopy skirt hem specified in Paragraph m, below. Ensure that there is an equal amounts of suspension line in both groups, from connector links to hand. Canopy shall be drawn along packing table only in enough lengths to permit each bight to be performed (Figure 34).



6.2-6018B

Figure 34. Grasp Both Groups of Suspension Line

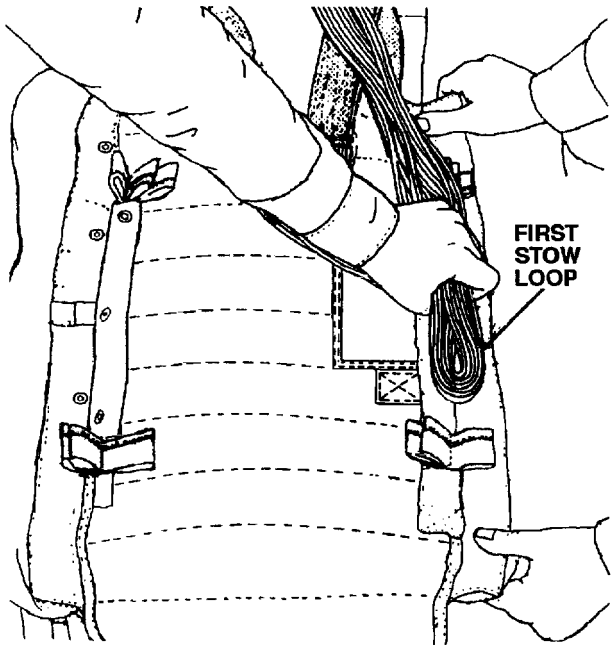
e. Packer shall form first bight in suspension lines over hesitator loop farthest from canopy and closest to helper. Draw bight 3/8-in. past hesitator loop edge (measured from loop edge to end of hook). Helper shall assist packer during stowing operations by holding pack steady and by holding completed bight while next bight is being formed (Figure 35).



6.2-6018C

Figure 35. Form First Bight of Suspension Lines

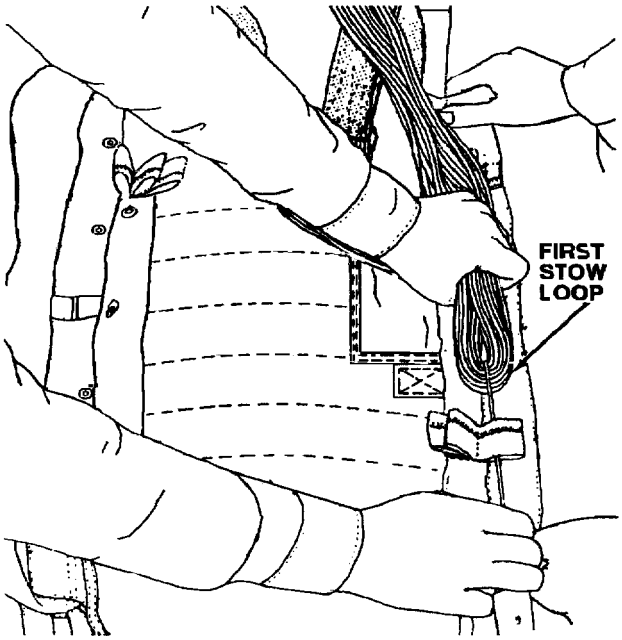
f. Keeping light tension on suspension line bight with packing hook, reposition and deposit bight in front of hesitator loop. Carefully withdraw packing hook (Figure 36).



6.2-5244A

Figure 36. Light Tension on Suspension Lines

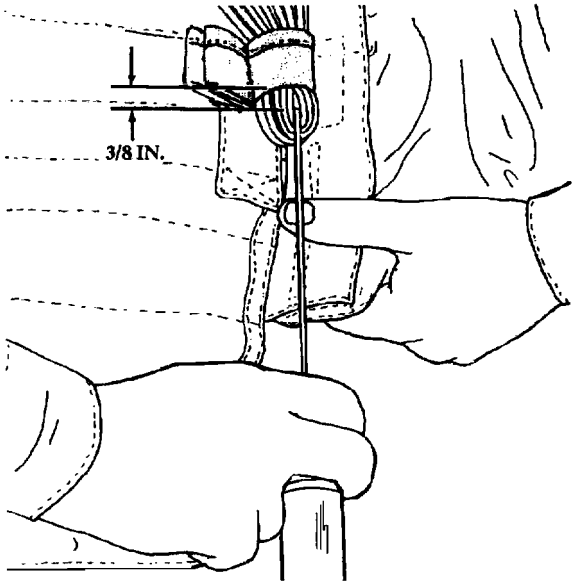
g. Packer shall engage hook in suspension lines and draw bight thru hesitator loop (Figure 37).



6.2-5244B

Figure 37. Engage Hook in Suspension Lines

h. After stowing bight, there shall be 3/8-in. clearance between packing hook and hesitator loop (Figure 38).



6.2-5244C

Figure 38. After Stowing Bight There Should Be 3/8-in Clearance

i. Packer shall draw suspension lines and folded canopy toward container to form another bight. The second bight shall be drawn thru hesitator loop opposite first one. Maintain 3/8-in. clearance between packing hook and hesitator loop (Figure 39).

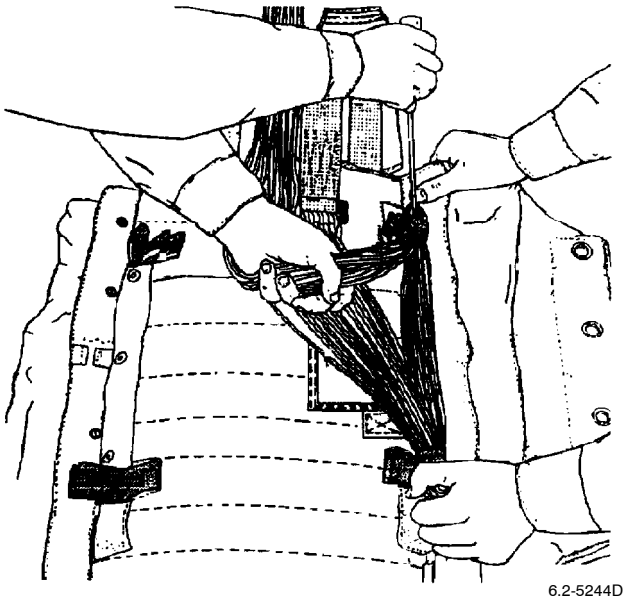


Figure 39. Draw Suspension Lines and Folded Canopy Towards Container

j. Third bight is formed in same manner as in preceding steps. Bight is pulled thru hesitator loop next to first stow. Stow bight 4 thru 6 in same manner.

k. Cross suspension lines over automatic release pocket to opposite side of container and stow bight 7 (Figure 40).

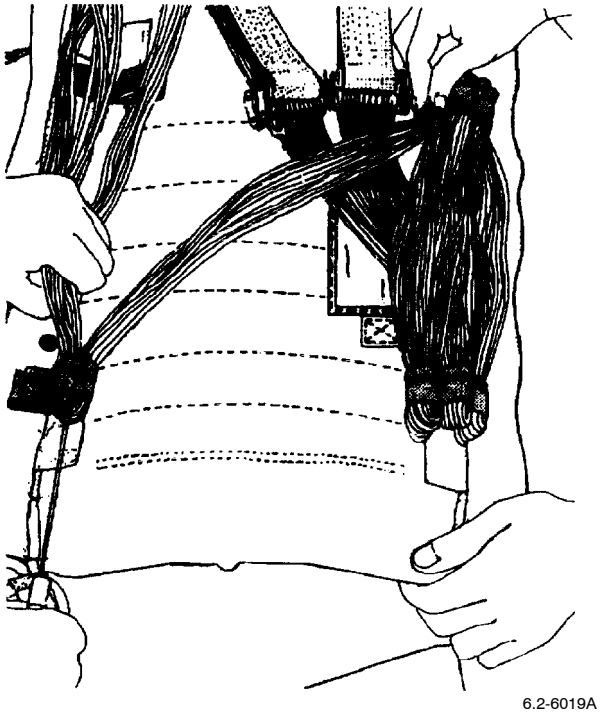


Figure 40. Cross Suspension Lines Over Automatic Release Pocket

l. Continue stowing suspension line bights in hesitator loops 8 thru 12. As each stow is completed, ensure suspension lines are not rotated or loose and that there are no suspension lines left out of hesitator loops. Stowed bight shall extend 3/8-in. beyond hesitator loops. Straighten all hesitator loops using temporary locking pin (Figure 41).

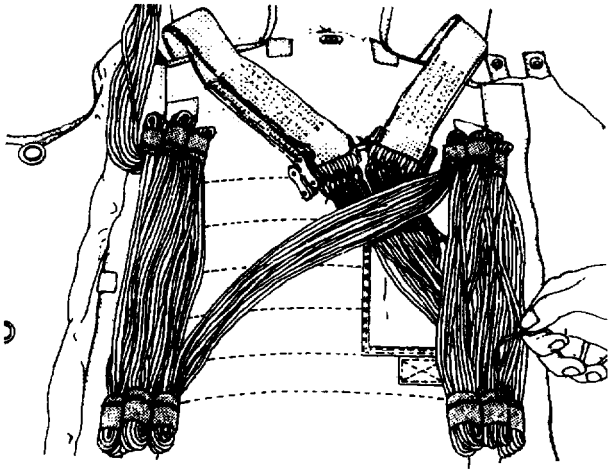


Figure 41. Continue Stowing Suspension Line

m. When suspensions are in all hesitator loops, there shall be a distance of 21 ± 3-in. between last stow and canopy skirt hem. Remove shot bags from canopy (Figure 42). (QA)

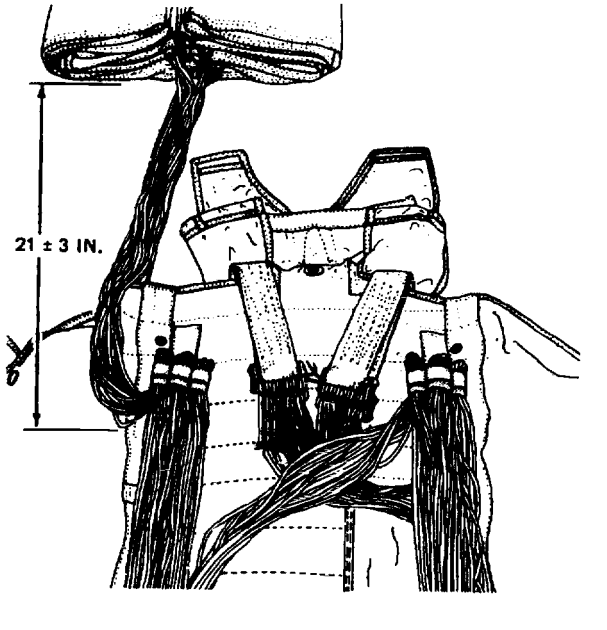


Figure 42. Distance Between Last Stow Should Be 21 ± 3-in.

n. Place riser protector flaps on top of risers (Figure 43).

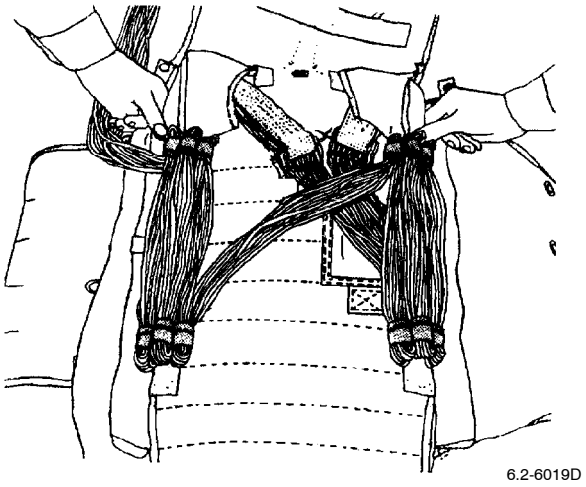


Figure 43. Placement of Riser Protector Flaps

21. SUSPENSION LINES STOWAGE WITH RIPCORD RELEASE.

a. Release tension from canopy and remove tension strap and place pilot parachute on top of canopy.

b. Remove connector links from tension hooks and remove tension hooks from packing table.

c. Place connector links in center of container on top of second metal stiffener from top edge. Connector links should be located directly above ripcord release arming cable housing. Tack connector links to cloth above second metal stiffener using one turn of size 3 thread, single and waxed, or one turn of size FF thread, doubled and waxed; tie off (Figure 44).

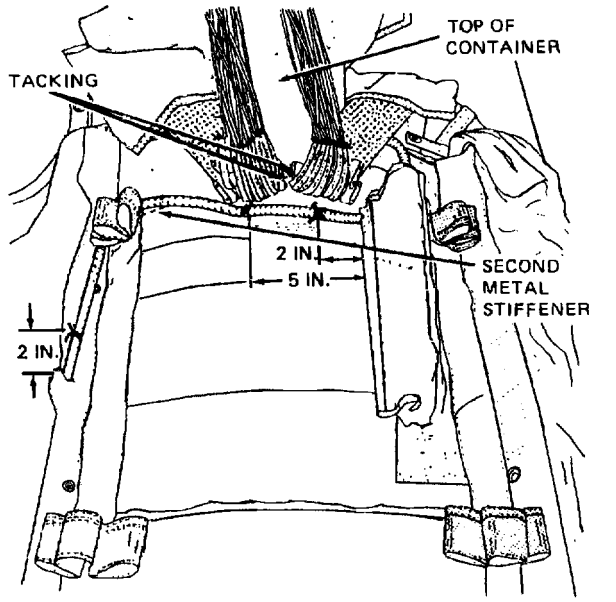


Figure 44. Placement of Connector Links

d. Packer shall grasp both groups of suspension lines in his left hand 21 ± 3-in. from connector links to make first bight. Adjustment in this measurement may be necessary to obtain the required inches between the last stow and canopy skirt hem in Paragraph m, below. Ensure there are equal amounts of suspension line in both groups, from connector links to hand. Canopy shall be drawn along packing table only in sufficient lengths to permit each bight to be formed (Figure 45).

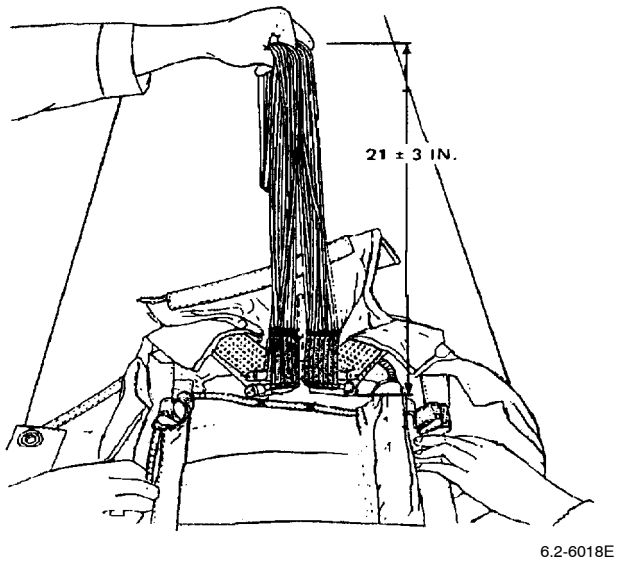


Figure 45. Grasping Both Groups

e. Packer shall form first bight in suspension lines over hesitator loop farthest from canopy and closest to helper. Draw bight 3/8-in. past hesitator loop edge (measured from loop edge to end of hook). Helper shall assist packer during stowing operations by holding pack steady and by holding completed bight while next bight is being formed (Figure 46).

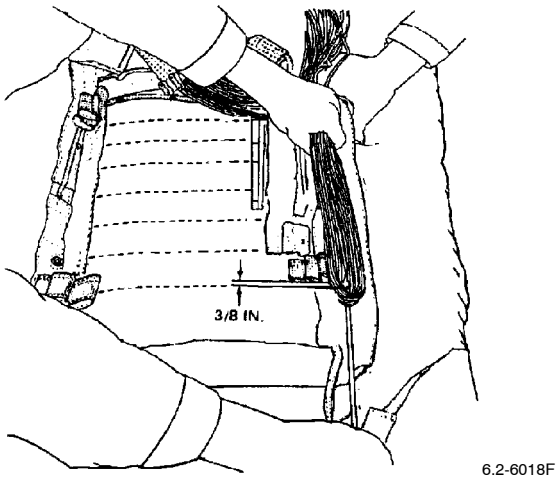


Figure 46. Form First Bight

f. Keeping light tension on suspension line bight with packing hook, reposition and deposit bight in front of hesitator loop. Carefully withdraw packing hook (Figure 47).

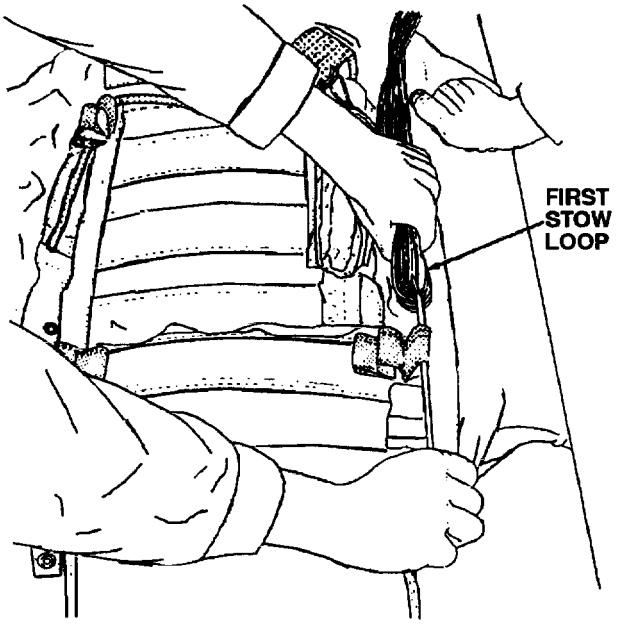


Figure 47. Keep a Light Tension on Suspension Lines

g. Packer shall engage hook in suspension lines and draw bight thru hesitator loop (Figure 48).

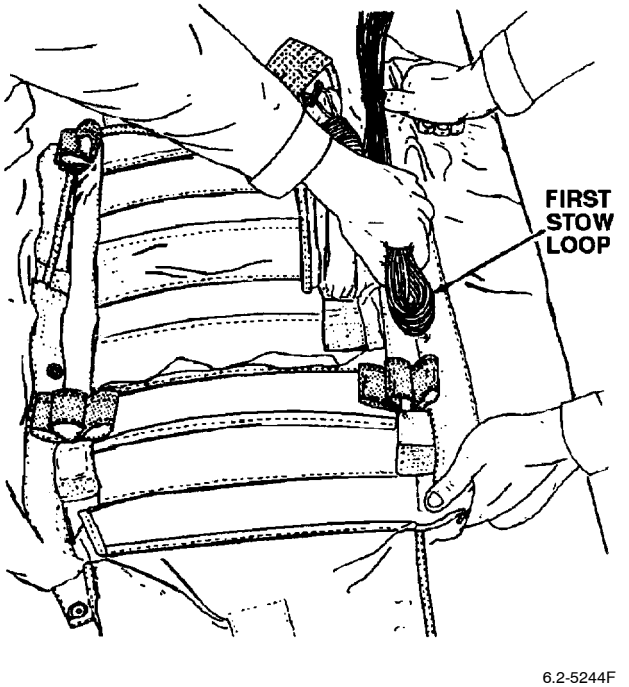


Figure 48. Packer Engaging Hook

h. After stowing bight, there shall be 3/8-in. clearance between packing hook and hesitator loop (Figure 49).

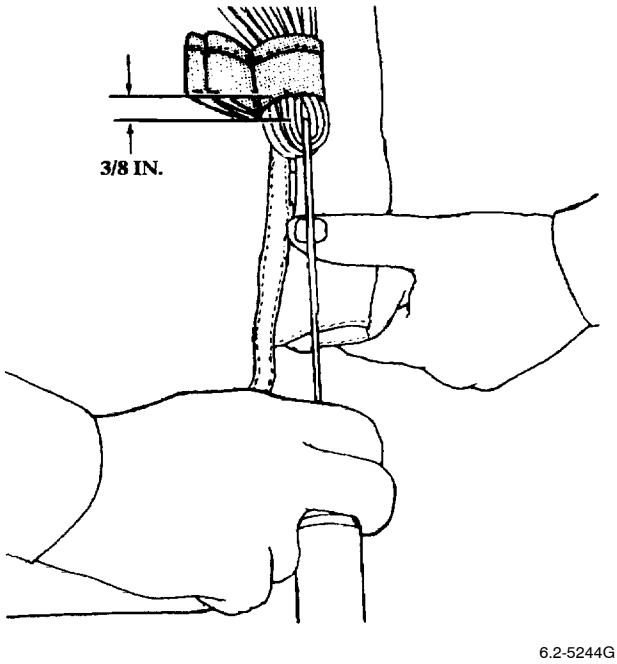


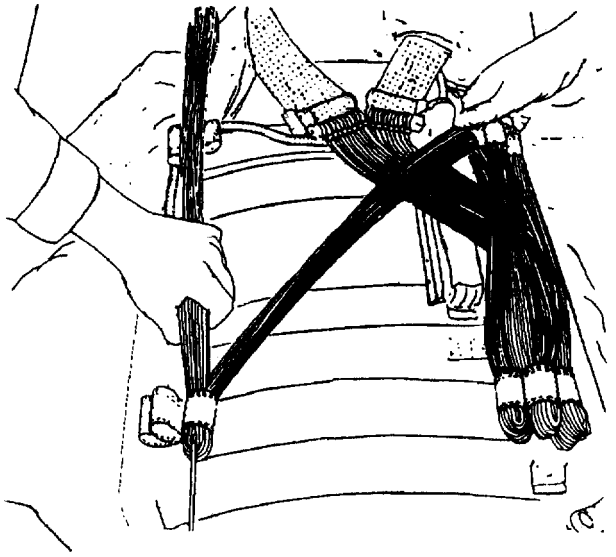
Figure 49. 3/8-in. Clearance Between Hook and Hesitator Loop

i. Packer shall draw suspension lines and folded canopy toward container to form another bight. the second bight shall be drawn thru hesitator loop opposite first one. Maintain 3/8-in. clearance between packing hook and hesitator loop (Figure 50).

Figure 50. Draw Suspension Lines and Folded Canopy Towards Container

j. Third bight is formed in same manner as in preceding steps. Bight is pulled thru hesitator loop next to first stow. Stow bights 4 thru 6 in same manner.

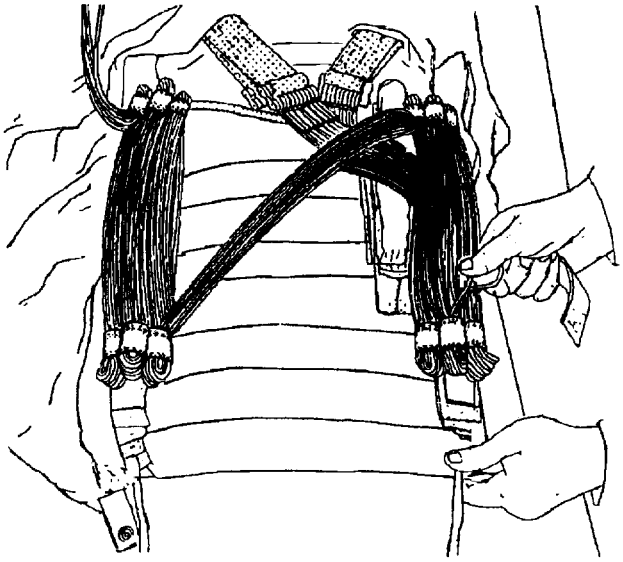
k. Cross suspension lines over automatic release pocket to opposite side of container and stow bight 7 (Figure 51).



6.2-6019E

Figure 51. Cross Suspension Lines Over Automatic Release Pocket

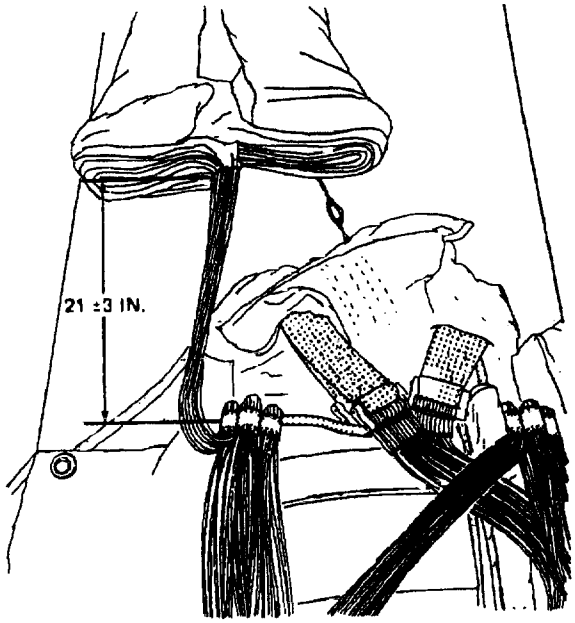
l. Continue stowing suspension line bights in hesitator loops 8 thru 12, maintaining 3/8-in. clearance between packing hook and hesitator loop. As each stow is completed, ensure suspension lines are not rotated or loose and there are no suspension lines left out of hesitator loops. Straighten all hesitator loops using temporary locking pin (Figure 52).



6.2-6019F

Figure 52. Continue Stowing Suspension Lines

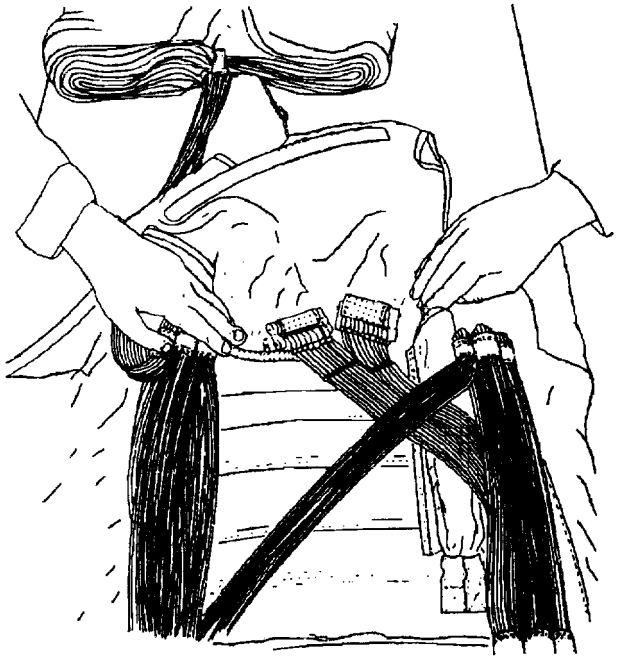
m. When suspension lines are in all hesitator loops, there shall be 21 ± 3-in. between last stow and canopy skirt hem. Remove shot bags from canopy (Figure 53). (QA)



6.2-6019G

Figure 53. Leave 21 ± 3-in. After Last Stow and Canopy Skirt Hem

n. Place riser protection flaps on top of risers (Figure 54).



6.2-6019H

Figure 54. Placement of Riser Protector Flaps

22. STOWAGE OF CANOPY.

a. Six folds shall be made when stowing canopy. Use the following illustration as a guide while stowing canopy (Figure 55).

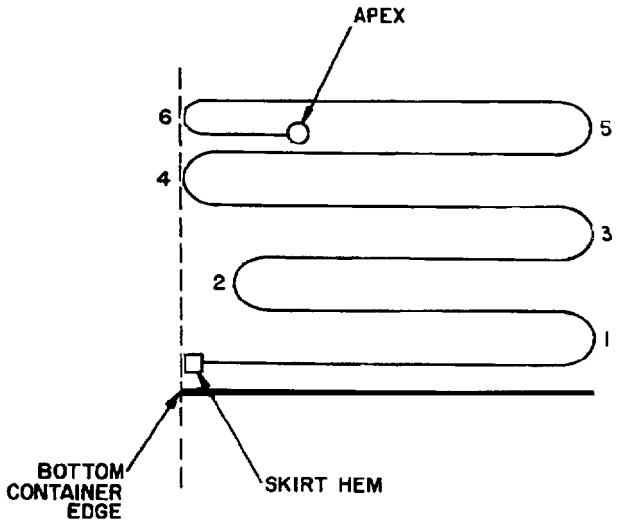


Figure 55. Make Six Fold Before Stowing

b. Helper shall place long bar over suspension lines at center of container. Packer shall grasp canopy skirt hem on each side of suspension lines and draw canopy across container (Figure 56).

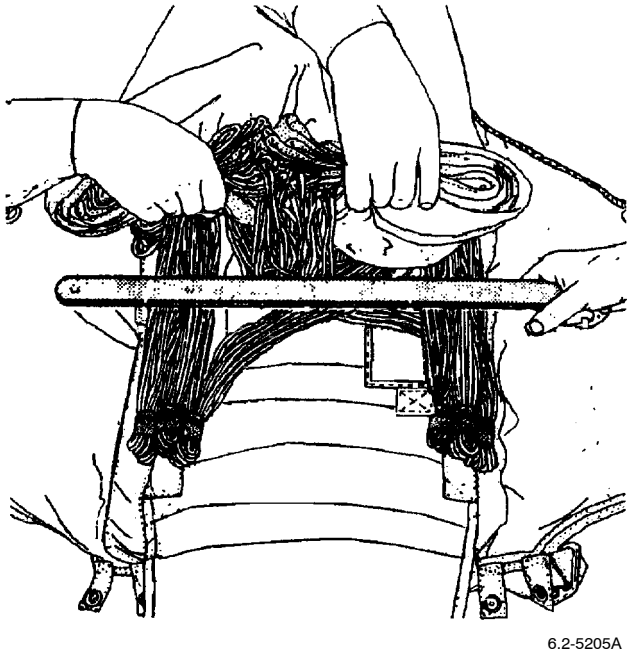


Figure 56. Placement of Long Bar

c. The skirt hem shall be aligned with bottom container edge. Allow folded canopy to spread about 2-in. over sides of container (Figure 57).

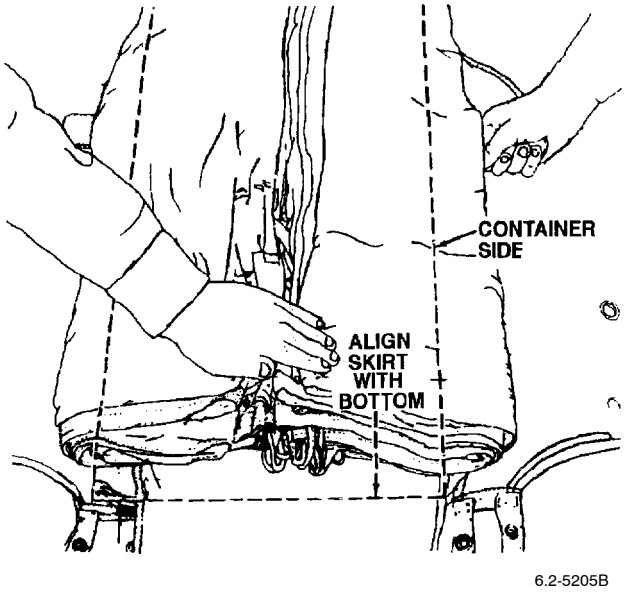


Figure 57. Alignment of Skirt Hem

d. To make first and second folds, helper shall remove bar from between canopy and container and place it on top of canopy, parallel with top container edge. Packer shall grasp canopy about one container length from long bar and draw it across container (Figure 58).

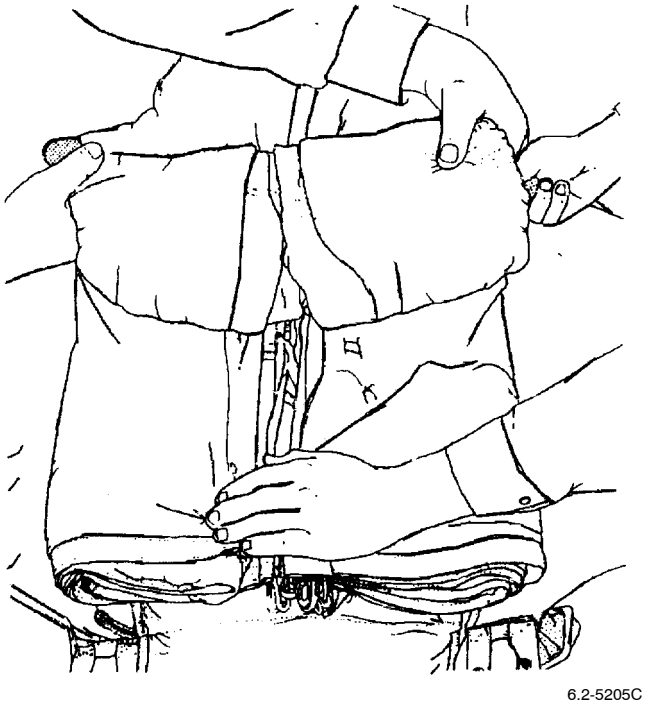
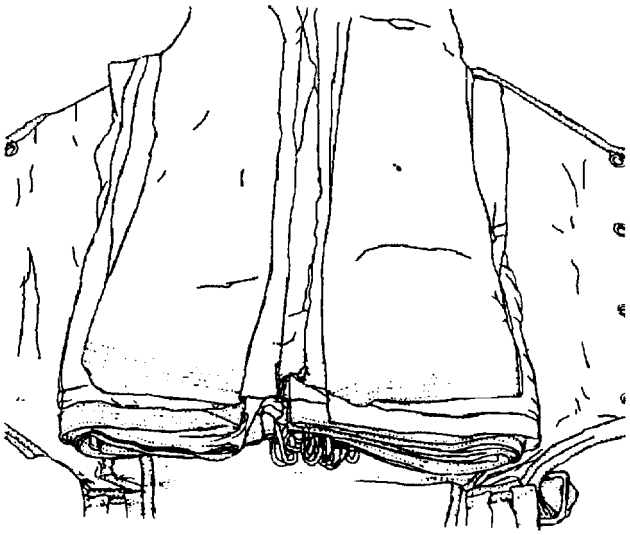


Figure 58. Make First and Second Folds

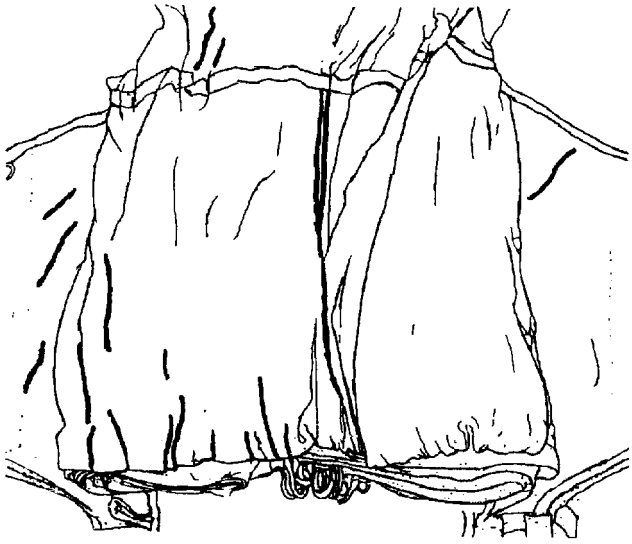
e. Second fold shall be positioned slightly behind skirt hem. Sides of canopy shall spread about 2-in. over sides of container (Figure 59).



6.2-6021A

Figure 59. Positioning of Second Fold

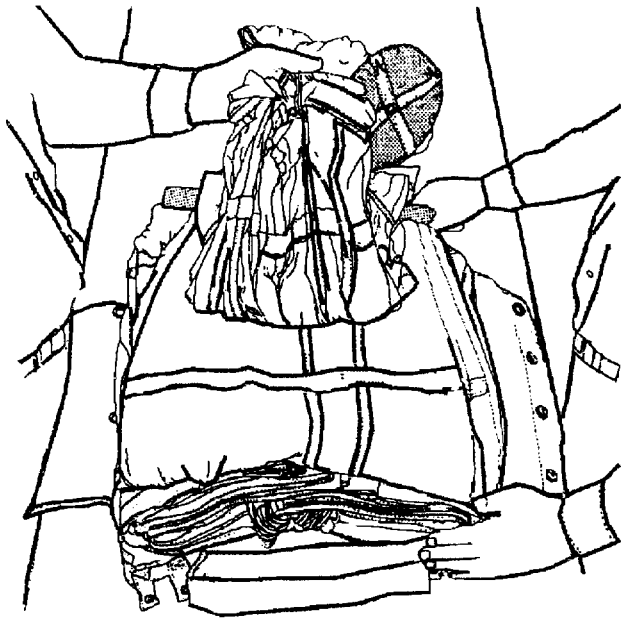
f. To make third and fourth folds, helper shall use long bar in same manner as with first and second folds. Fourth fold is extended to align with skirt hem (Figure 60).



6.2-6021B

Figure 60. Make Third and Fourth Folds

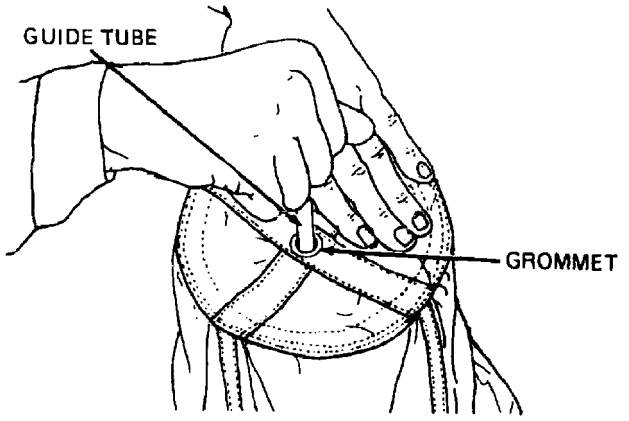
g. Continue accordion folding rest of canopy into container, maintaining about 2-in. canopy spread over sides of container. As apex of canopy is drawn close to container, pilot parachute shall be placed back onto packing table (Figure 61).



6.2-788

Figure 61. Continue Accordion Folding of Canopy

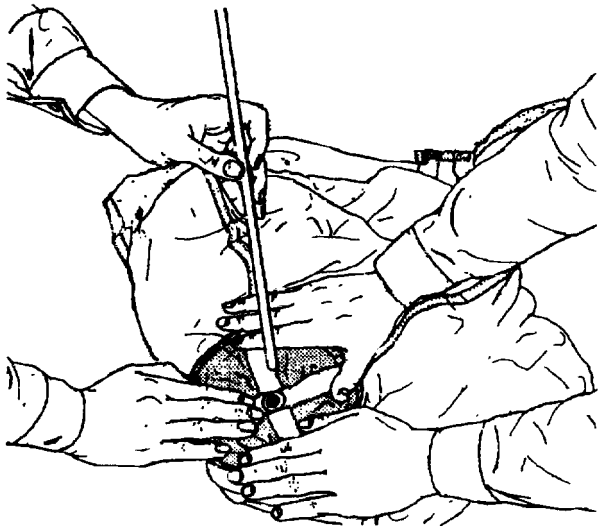
h. Position pilot parachute vertically on packing table and insert guide tube into grommet in crown of pilot parachute. Extend guide tube to bottom of pilot parachute and position over locking cone on spring base plate (Figure 62).



6.2-6021C

Figure 62. Position of Pilot Parachute

i. Compress pilot parachute spring and remove guide tube from locking cone. Locking cone shall protrude thru grommet. Insert temporary locking pin into to hole of locking cone (Figure 63).



6.2-6022A

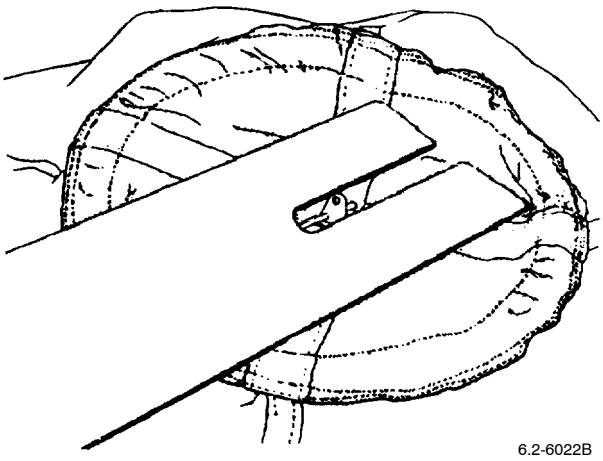
Figure 63. Compress Pilot Parachute Spring

WARNING

Ensure that pilot parachute cloth is not twisted around or entangled in compressed pilot parachute spring.

j. Remove any pilot parachute cloth twisted around or entangled in compressed spring.

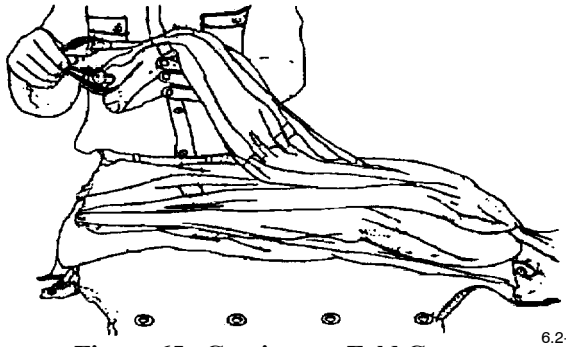
k. Insert temporary locking pin plate into bottom hole of locking cone and then remove temporary locking pin from top hole of locking cone (Figure 64).



6.2-6022B

Figure 64. Insert Temporary Locking Pin Plate

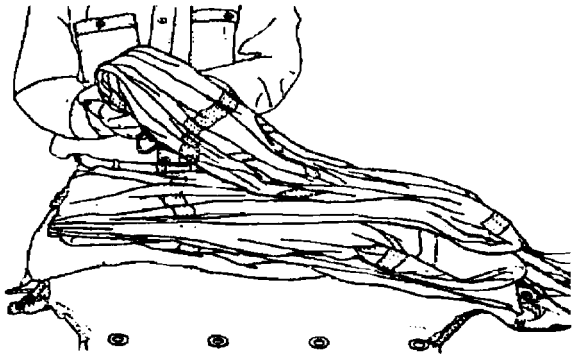
l. When sufficient canopy remains to continue folding operation, canopy shall be folded under 9-in. from apex (Figure 65).



6.2-789

Figure 65. Continue to Fold Canopy

m. Folded under portion of canopy shall be positioned on top of canopy to form uppermost fold. Adjust canopy so folds are neat and square (Figure 66).

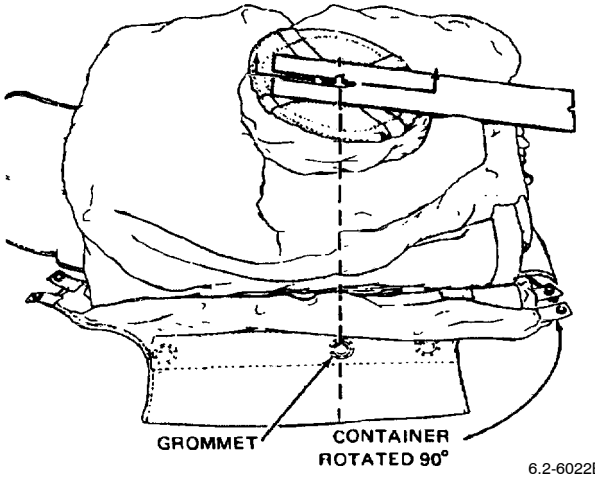


6.2-790

Figure 66. Fold Upper Portion of Canopy

n. Inspect pilot parachute connector strap and remove entanglements.

o. Place pilot parachute on top of canopy with pin plate positioned on helper's side of table. Align pilot parachute locking cone with second side flap grommet from bottom end of container. Roll pilot parachute cloth under outer edge of crown (Figure 67).

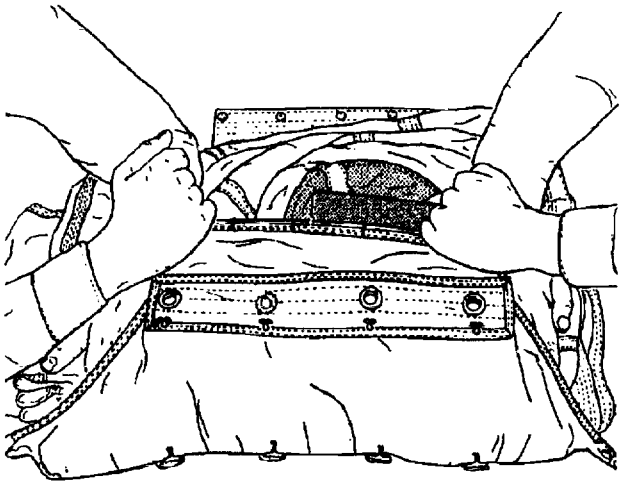


6.2-6022E

Figure 67. Placement of Pilot Parachute

23. CLOSING OF CONTAINER WITHOUT RIPCORD RELEASE INSTALLED.

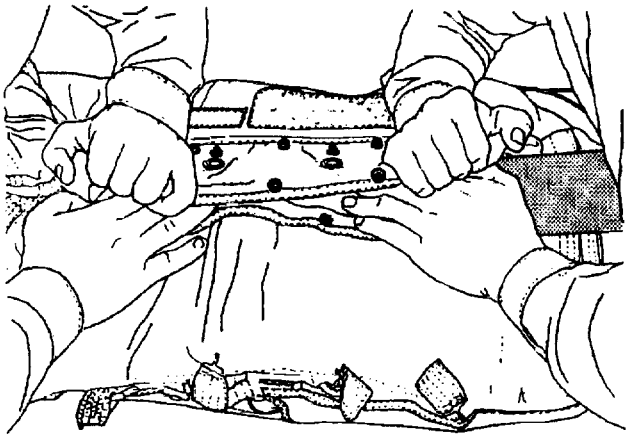
a. Packer and helper shall hold canopy and compress pilot parachute in place and pull the container side flap with locking cone over canopy. Place second grommet from container bottom over locking cone in pilot parachute (Figure 68).



6.2-5206A

Figure 68. Hold Canopy and Compress Pilot Parachute

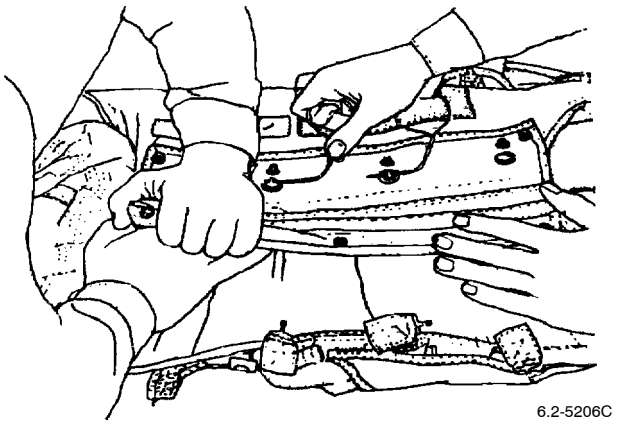
b. Packer and helper shall pull the container side flap with grommets over canopy while holding side flap with locking cone in place. Keep canopy and pilot parachute movement to a minimum (Figure 69).



6.2-5206B

Figure 69. Pull Up Container Side Flaps

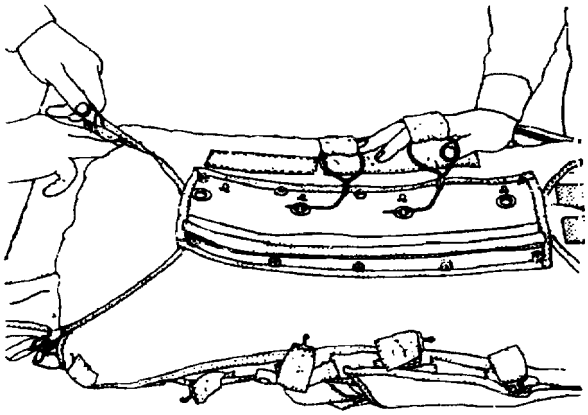
c. Place grommets over locking cones and insert temporary locking pins toward top end flap (Figure 70).



6.2-5206C

Figure 70. Place grommets over Locking Cones

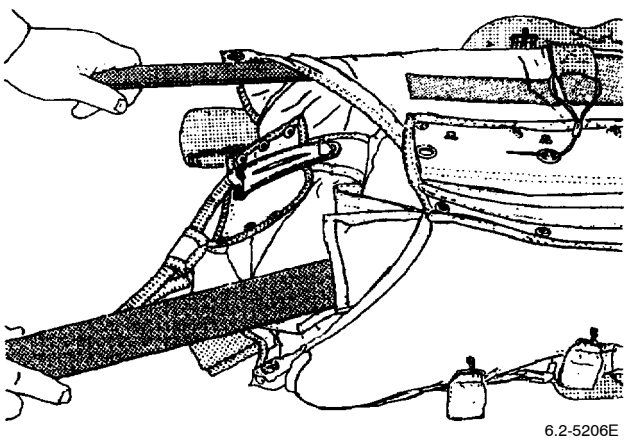
d. Remove temporary locking pin plate from pilot parachute locking cone and straighten canopy folds at both ends of container (Figure 71).



6.2-5206D

Figure 71. Remove Temporary Locking Pin

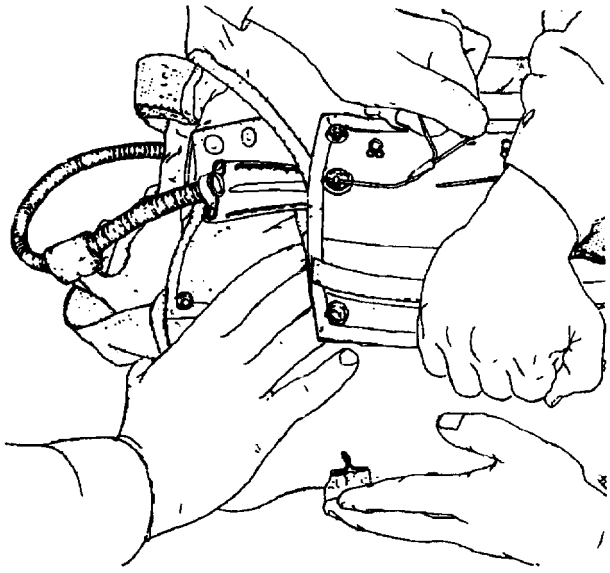
e. Packer shall tuck top container end flap under the side flaps using two long bars inserted in pockets (Figure 72).



6.2-5206E

Figure 72. Tuck Under Top Container End Flap

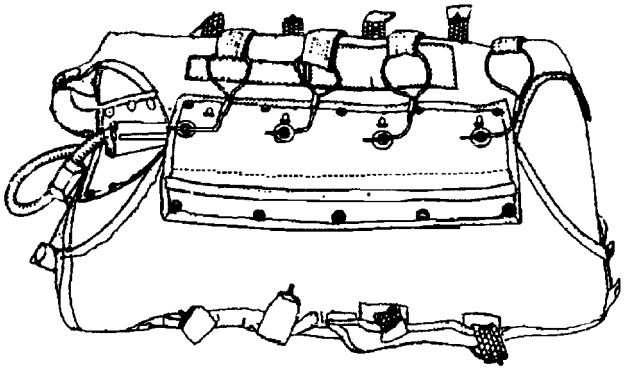
f. Place side flap grommets over top end flap locking cone. Insert temporary locking pin toward top end flap (Figure 73).



6.2-6023A

Figure 73. Place Side Flap Grommets Over End Flap

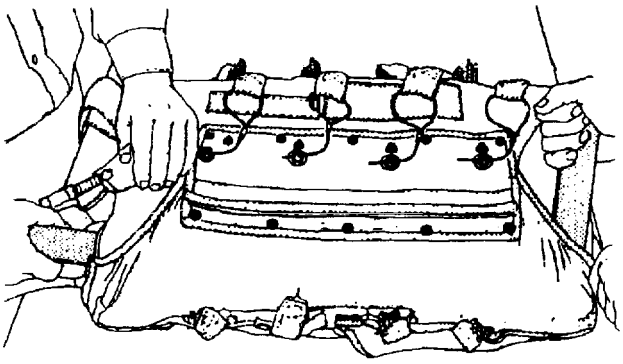
g. Place side flap grommets over bottom end flap locking cone. Insert temporary locking pin toward top end flap (Figure 74).



6.2-6023B

Figure 74. Place Flap Grommets Over Bottom End Flap

h. Push cover flaps into container using packing fid inserted into pockets. Remove wrinkles and smooth corners of container using packing fid (Figure 75).



6.2-6023C

Figure 75. Push Cover Flaps Into Container

i. Insert ripcord cable into ripcord housing (Figure 76).

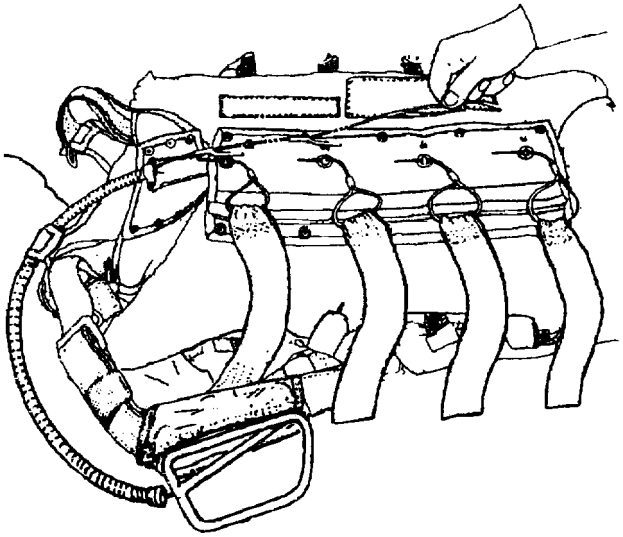


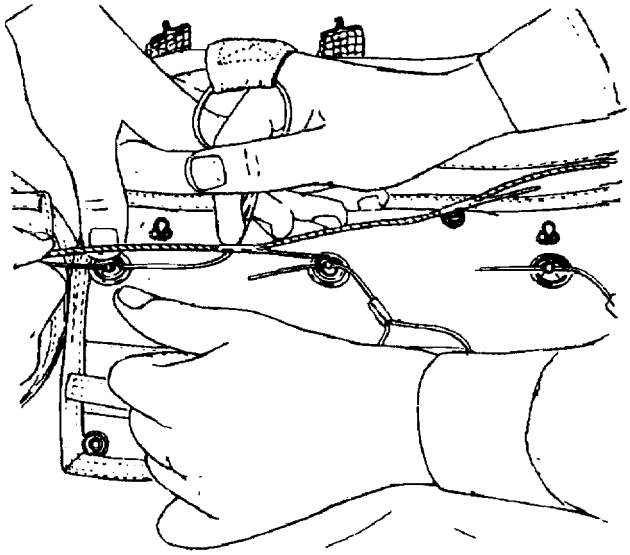
Figure 76. Insert Ripcord Cable

6.2-6023D

WARNING

Use of the ripcord pins as an alignment aid during installation may cause bending of pins and result in excessive pull forces.

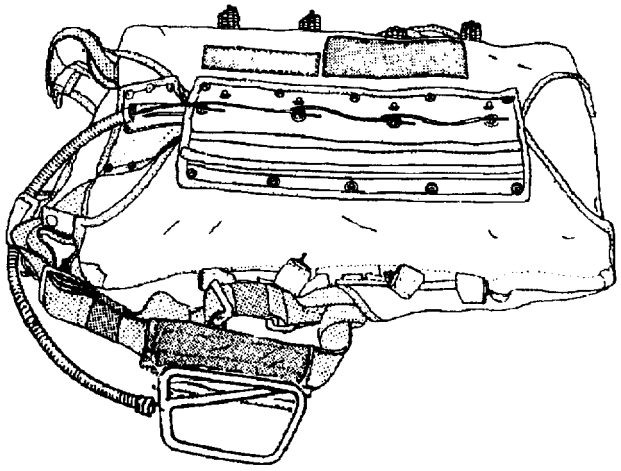
j. Helper shall hold side flap grommets over locking cone nearest packer. Helper then removes temporary locking pin, as packer, at same time, inserts top ripcord pin (Figure 77).



6.2-6023E

Figure 77. Helper Will Hold Side Flap Grommets Over Cones

k. Working from packer's end to helper's end, remove temporary locking pins and at same time insert ripcord pins (Figure 78).



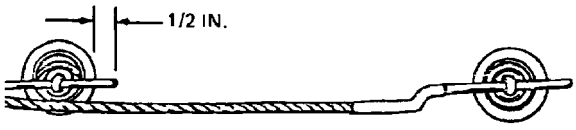
6.2-6024A

Figure 78. Remove Temporary Locking Pins

WARNING

Ripcord pins must be centered in locking cones.

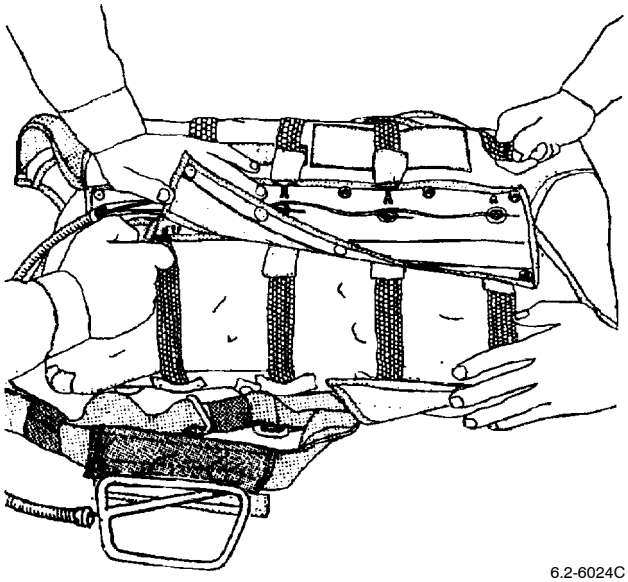
l. Insure ripcord pins are centered in locking cones so that shoulder of ripcord pin is not jammed against hole in locking cone, but extends more than 1/2-in. beyond base of cone (Figure 79).



6.2-6024B

Figure 79. Center Ripcord Pins

m. Attach container spring opening assemblies to container eyes (Figure 80).

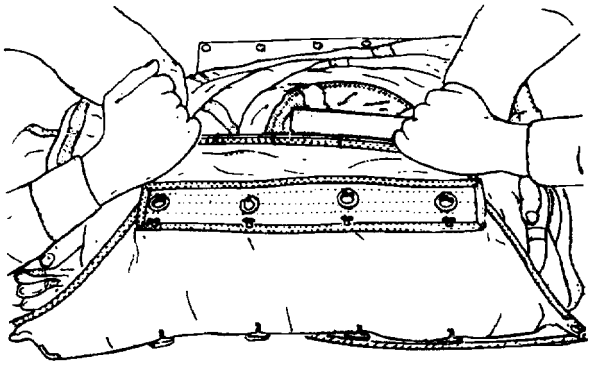


6.2-6024C

Figure 80. Attach Container Spring Opening Assemblies

24. CLOSING CONTAINER WITH RIPCORD RELEASE INSTALLED.

a. Packer and helper shall hold canopy and compress pilot parachute in place and pull the container side flap with locking cone over canopy. Place second grommet from container bottom over locking cone in pilot parachute (Figure 81).



6.2-5379A

Figure 81. Compress Pilot Parachute

b. Packer and helper shall pull the container side flap with grommets over canopy while holding side flap with locking cone in place. Keep canopy and pilot parachute movement to a minimum (Figure 82).

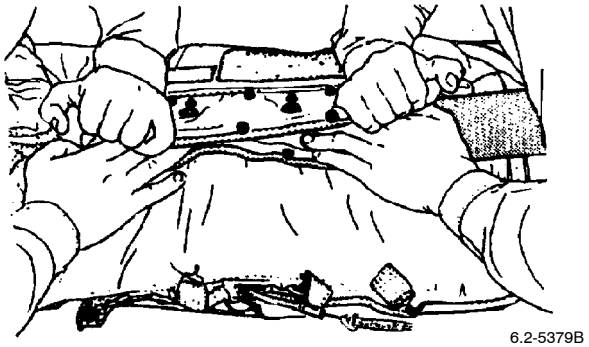


Figure 82. Pull Side Flaps With Grommets Over Canopy

c. Place grommets over locking cones and insert temporary locking pins toward top end flap (Figure 83).

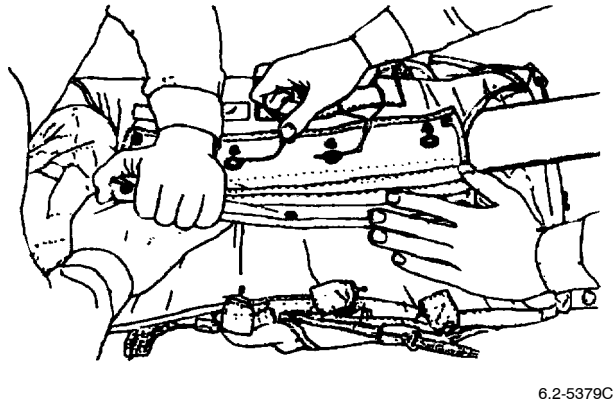


Figure 83. Place Grommet Over Locking Cones

d. Remove temporary locking pin plate from pilot parachute locking cone and straighten canopy folds at both ends of container (Figure 84).

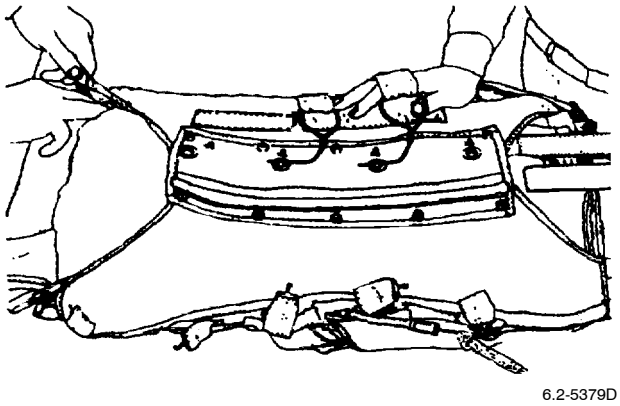


Figure 84. Remove Temporary Locking Pin Plate

e. Packer shall tuck top container end flap under the side flaps using two long bars inserted in pockets (Figure 85).

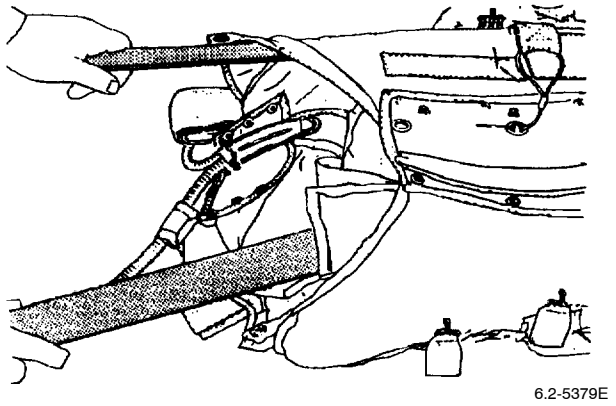


Figure 85. Tuck Container End Flap Under

f. Place side flap grommets over top end flap locking cone. Insert temporary locking pin toward top end flap (Figure 86).

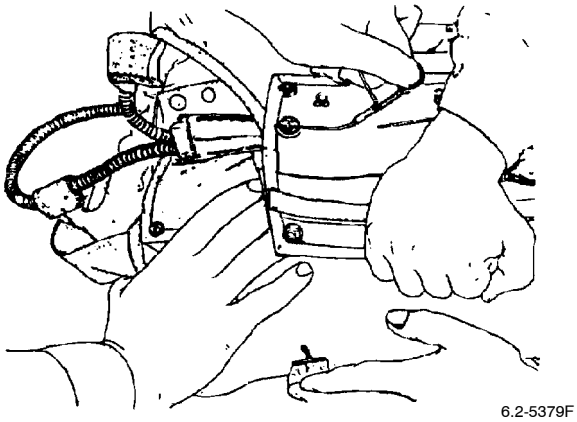


Figure 86. Place Side Flap Grommets Over Top End Flap

g. Place side flap grommets over bottom end flap locking cone. Insert temporary locking pin towards top end flap (Figure 87).

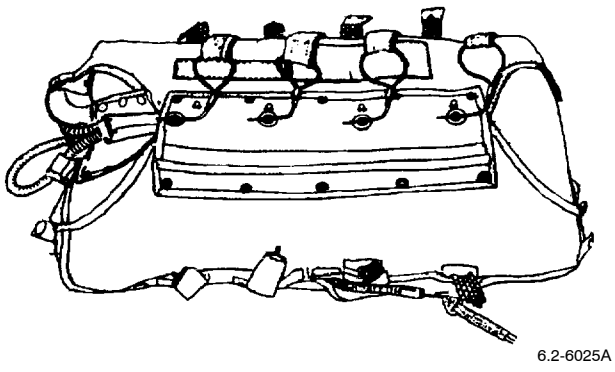
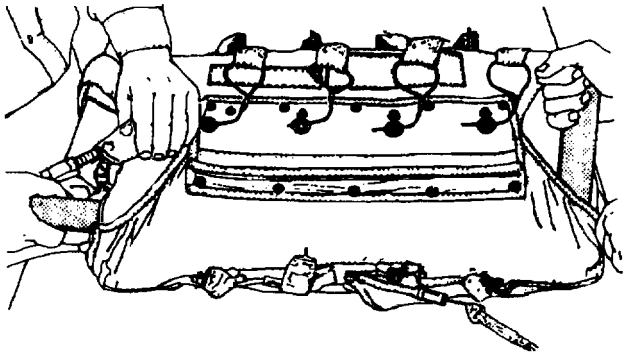


Figure 87. Place Side Flap Grommets Over Bottom End Flap

h. Push corner flaps into container using packing fid inserted into pockets remove wrinkles and smooth corners of container using packing fid (Figure 88).



6.2-6025B

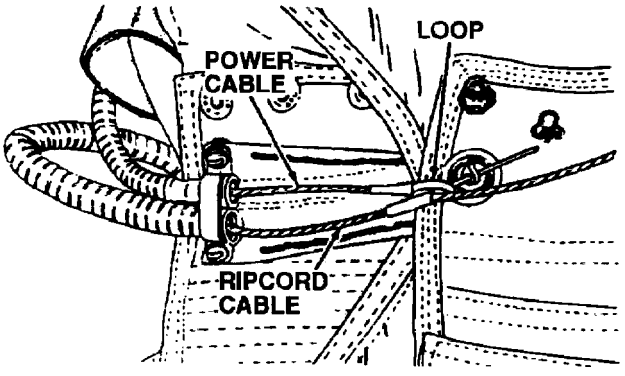
Figure 88. Push Corner Flaps Into Container

i. Insert ripcord cable into ripcord housing.

WARNING

Use of the ripcord pins as an alignment aid during installation may cause bending of pins and result in excessive pull forces.

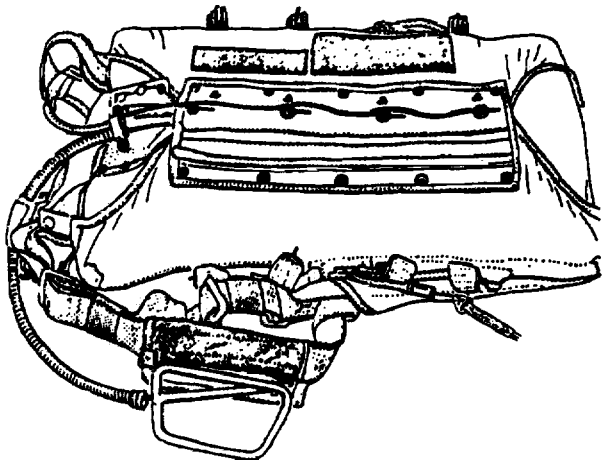
j. Pass top ripcord pin thru beveled side of eye in end of automatic release power cable. Packer and helper shall hold side flap grommets over locking cone nearest base plate as helper removes temporary locking pin. Packer, at same time, shall insert top ripcord pin (Figure 89). (QA)



6.2-3235

Figure 89. Pass Top Ripcord Pin Thru Beveled Side of Eye

k. Working from packer's end to helper's end remove temporary locking pins and at same time insert ripcord pins (Figure 90).



6.2-6025C

Figure 90. Remove Temporary Locking Pins

WARNING

Ripcord pins must be centered in locking cones.

l. Ensure ripcord pins are centered in locking cones so that shoulder of ripcord pin is not jammed against hole in locking cone, but extends more than 1/2-in. beyond locking cone (Figure 79).

m. Attach container spring opening assemblies to right side of container eyes.

25. RIPCORD RELEASE LANYARD STOWAGE (IF INSTALLED).

a. Attach spring opening assemblies on left side of container. Route second spring opening assembly from bottom thru uppermost channel on stowage pocket. Route bottom spring opening assembly thru lower channel on stowage pocket (Figure 91).

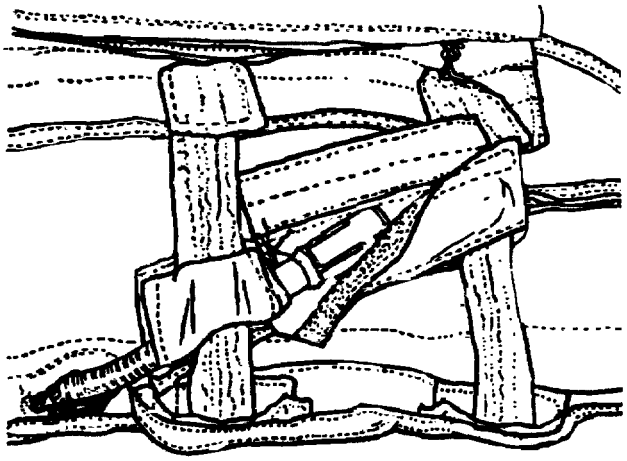


Figure 91. Attach Spring Opening Assemblies

b. Tack base of stowage pocket to bottom spring opening assembly about 3-in. from hook with three turns of size 6 thread, doubled and waxed; tie off (Figure 92).

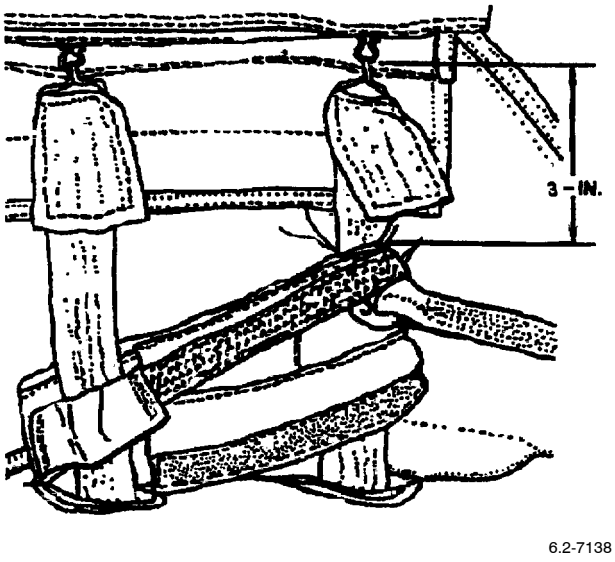


Figure 92. Tack Base of Stowage Pocket

c. Tack lanyard assembly plate to upper flap of stowage pocket with one turn of size E thread, single and waxed; tie off (Figure 93).

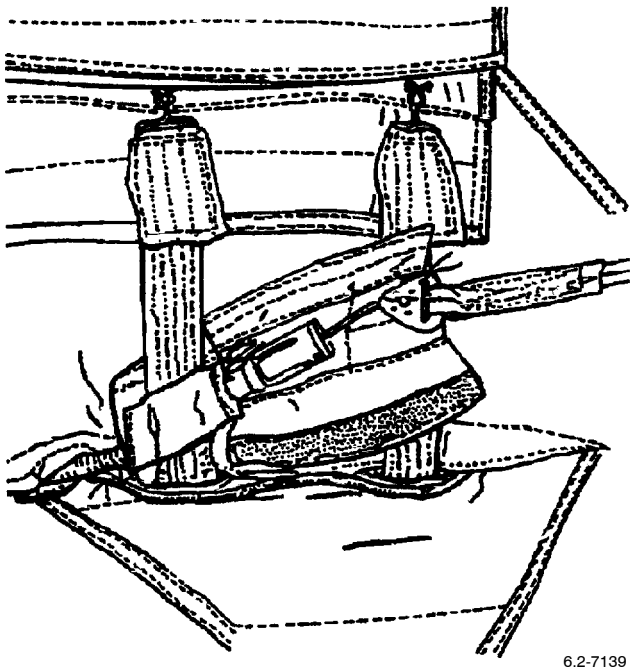


Figure 93. Tack Lanyard Assembly

d. Fake lanyard assembly in stowage pocket and close by securing pile tape on bottom flap with hook pile on top flap (Figure 94).

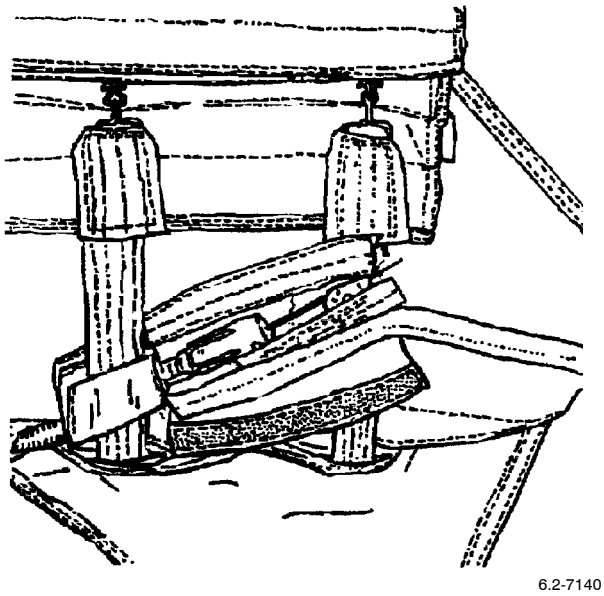


Figure 94. Fake Lanyard Assembly

e. Stow ripcord release lanyard assembly in container by first laying it out on packing table and removing all twists. Form a bight in lanyard 36-in. from eye of snaphook.

f. Using a draw cord stow first bight into flute closest to stowage pocket. Draw bight from bottom to top of container, and adjust so 18 ± 2-in. of lanyard remain between bottom of flute and eye of snap-hook (Figure 95).

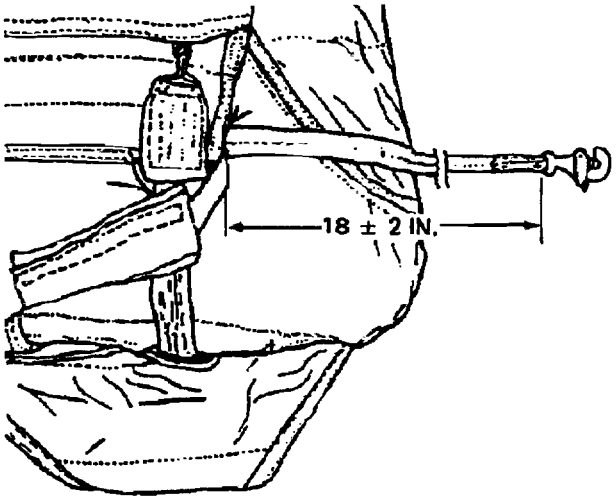


Figure 95. Using a Draw Cord Form First Bight

g. Tack lanyard to bottom of flute with one turn of size E thread, single and waxed; tie off.

26. RIPCORD PIN PULL CHECK.

a. Insert ripcord pin lock on bottom ripcord pin (Figure 96).

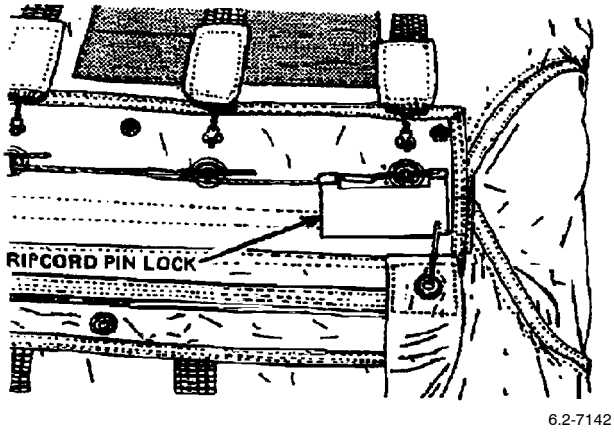


Figure 96. Insert Ripcord Pin Lock

b. Attach spring scale to ripcord handle with a nylon cord.

c. Using the scale apply a straight steady force to the ripcord handle until initial movement of the ripcord pin is observed. Most allowable force is 27 lbs. (QA)

d. Record force required to move pins on Parachute Record.

WARNING

Ripcord pinlock must be removed.

e. Remove ripcord pin lock. (QA)

f. If necessary reposition ripcord pins so they are centered in locking cones with end of each pin extended more than 1/2-in. beyond cone.

g. Loop a 12-in. length of size A thread, single and waxed under bottom ripcord pin. Secure pin by bringing thread ends together and tying three to five half-hitches around ripcord cable above ripcord pin ferrule. Top off with a binder knot. Trim excess within 1/2 to 3/4-in. (Figure 97). (QA)

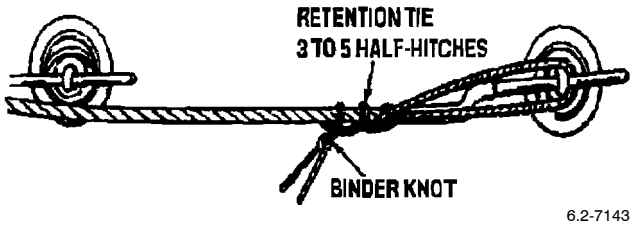


Figure 97. Loop a Length of Size A Thread Under Ripcord Pin

h. Snap ripcord pin protector flap and base plate protector flap closed.

i. Turn container over so back pad faces up. Fasten the two corner straps at each corner to container (Figure 98).

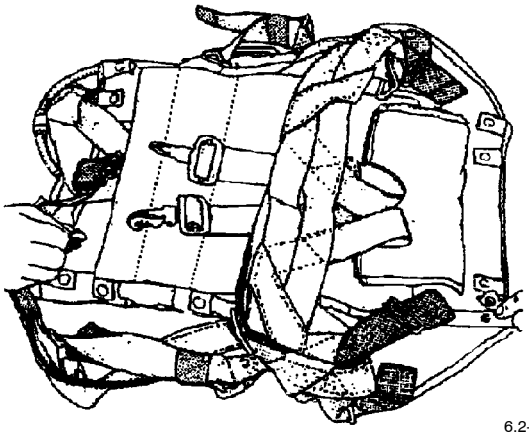


Figure 98. Turn Container Over

j. Insert ripcord handle into pocket.

27. STANDARD SOFT PACK (SSP) INSTALLATION (IF INSTALLED).

a. Insert combination carrying case and equipment container SSP outer container or SP-1A seat pan, as applicable. Ensure strap handle is positioned at open end of container.

28. FINAL CHECKOUT.

a. Account for all packing tools.

b. Examine packed parachute for general condition. (QA)

c. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA)

d. QA inspector shall examine completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

e. QA inspector shall sign Parachute Record (OPNAV 4790/101).

f. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

INTERMEDIATE AND DEPOT MAINTENANCE

REPAIR PROCEDURES

NB-6 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 565AS100-1, 565AS100-2, 565AS100-13, and 565AS100-14

List of Effective Work Package Pages

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1 thru 21	9						

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Common Repairs . . . . . WP 004 00
Organizational Repair Procedures, NB-6 Personnel Parachute Assembly . . . . . WP 011 01
Parachute Loft Requirements/Administration . . . . . WP 003 00
Support Equipment . . . . . WP 005 00

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Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This work package (WP) contains instructions for the maintenance, repair, replacement, and fabrication of various parachute parts or subassemblies to ensure that proper items of equipment remain in a Ready-For-Issue (RFI) status. Selected repairs shall be documented on the Parachute Record. For common repairs refer to WP 004 00.

2. PILOT PARACHUTE AND CONNECTOR STRAP REPAIRS.

a. Repair of the pilot parachute and/or connector strap is limited to the following:

(1) Cleaning of contaminated areas.

(2) Replacement of loose or broken tacking.

(3) If any holes 1-in. or less, replace pilot parachute.

b. Replace pilot parachute and/or connector strap for any of the following:

(1) Service/total life has expired per WP 011 02.

(2) Seam separations and loose or broken stitching (yarn separation is acceptable) that may affect safe operation of the parachute assembly.

(3) If any holes 1-in. or less, replace pilot parachute.

(4) Pilot parachute spring is broken or distorted.

(5) Pilot parachute locking cone or grommet is loose or damaged.

(6) Connector strap finished length is incorrect.

3. REPLACEMENT OF PILOT PARACHUTE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Inspect replacement pilot parachute per WP 011 02.

b. Remove tacking at Lark's head knot and then remove pilot parachute.

c. Pass large loop of connector strap thru loop in pilot parachute. Form a Lark's head knot by passing entire pilot parachute thru large loop of connector strap and pull tight (Figure 1).

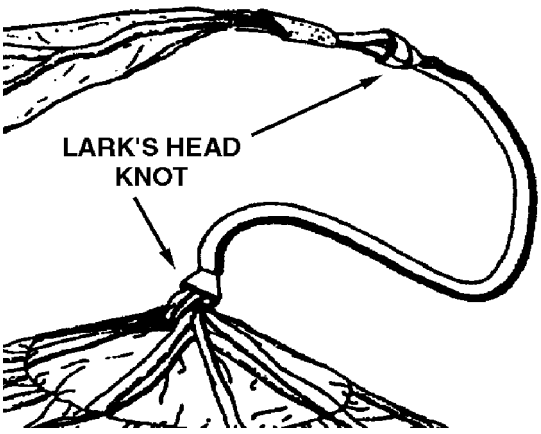

Figure 1. Pilot Parachute and Connector Strap Replacement

d. Tack lark's head knot with two turns of size 6 thread, single and waxed; tie off (Figure 1). (QA)

e. Mark date placed in service on pilot parachute per WP 004 00. (QA)

4. REPLACEMENT OF PILOT PARACHUTE CONNECTOR STRAP.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove tacking at lark's head knot and then remove pilot parachute connector strap.

b. Inspect replacement connector strap for cuts, fraying, and loose or broken stitching.

c. Measure length of pilot parachute connector strap. Proper unattached length is 23 1/2 ± 1/2-in.

d. Grasp a suspension line at canopy vent, count, and hold 14 consecutive lines.

e. Pass small loop end of connector strap thru and around all apex lines. Pass large loop end of connector strap thru small loop end; pull tight, forming a Lark's head knot (Figure 1).

f. Pass large loop end of connector strap thru loop in pilot parachute. Form a Lark's head knot by passing entire pilot parachute thru large loop of connector strap (Figure 1).

g. Tack Lark's head knot at pilot parachute with two turns of size 6 thread, single and waxed; tie off (Figure 1).

h. Mark date placed in service on connector strap per WP 004 00. (QA)

5. REPLACEMENT OF PILOT PARACHUTE CONNECTOR STRAP LOOSE OR BROKEN TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove broken and loose tacking.

b. Pull Lark's head knot tight.

c. Tack Lark's head knot at pilot parachute with two turns of size 6 thread, single and waxed; tie off. (QA)

6. REPLACEMENT OF PILOT PARACHUTE LOOSE OR BROKEN TACKING (PLATE ASSEMBLY).

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove broken and loose tacking.

NOTE

The plate assembly is attached at the base of the coil spring.

b. Locate the four holes in the plate assembly within the pilot parachute fabric.

c. Tack thru holes with two turns of size 6 thread, doubled and waxed, tie off. (QA)

7. CANOPY ASSEMBLY REPAIRS.

a. For canopy service life, refer to WP 011 02.

8. REPLACEMENT OF CANOPY ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Temporary Locking Pin
—	Torque Screwdriver

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

For Double "L" Connector Link, refer to Paragraph 31 for disassembly, assembly, and inspection instructions.

a. Remove pilot parachute and connector strap from vent lines. Retain for reinstallation.

b. Remove four-line release rigging from connector links and then remove lanyard from riser flutes.

c. Remove connector link yoke and plate assemblies.

d. Remove connector links from riser loops and then reinstall yoke and plate assemblies.

e. Dispose of canopy assembly per current supply directives.

f. Lay out replacement canopy assembly and stretch it to its full length on packing table.

g. Attach tension strap hook to canopy vent lines.

h. Locate gore 22 (nameplate gore) and place it uppermost in center of packing table.

i. At skirt hem, separate suspension lines into two equal groups with lines 1 thru 11 on packer's side and 12 thru 22 on helper's side (Figure 2). Grasping each group of lines, walk from skirt hem to connector links removing any dips and twists between the two groups.

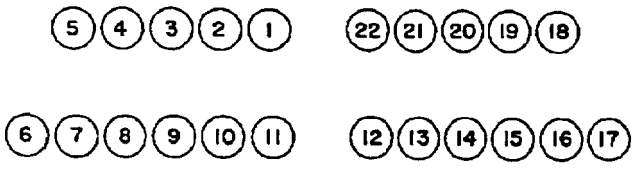

Figure 2. Placement of Connector Links

j. Place connector link holding lines 1 thru 5 on top of connector link holding lines 6 thru 11. Place connector link holding lines 22 thru 18 on top of connector link holding lines 12 thru 17. Insert tension hooks into connector links and insert hooks into packing table (Figure 2).

k. Pull suspension lines taut.

l. Check suspension line continuity on right side of gore 22. Packer shall grasp line 22 at skirt hem and raise to a sufficient height to ensure line is free of dips and twists. Continue this procedure with lines 21 thru 12 (Figure 2). Helper shall be positioned at connector links to check lines selected by the packer.

m. Check suspension line continuity on left side of gore 22. Packer shall grasp line 1 at skirt hem and raise to a sufficient height to ensure line is free of dips and twists. Continue this procedure with lines 2 thru 11 (Figure 2). Helper shall be positioned at connector links to check lines selected by the packer.

n. Continue to inspect canopy assembly per WP 011 02.

o. Reattach pilot parachute and connector strap per Paragraphs 3 and 4.

p. Place harness and container on packing table with risers facing each other and positioned at connector links. Container will face up and harness will face down on table.

q. Remove connector links from tension hooks. Remove tension hooks from packing table.

r. Remove connector link yoke and plate assemblies from each connector link. Insert bottom connector links into bottom riser loops and top connector links into top riser loops.

NOTE

Ensure that knurled portions of connector link yoke and plate assemblies face up and screwheads face outboard.

s. Reattach yoke and plate assemblies to connector links and tighten screws to a torque value of 20 to 25 in-lbs. Apply torque seal to each connector link screwhead. (QA)

t. Replace tension hooks on packing table, insert tension hooks into connector links and then tension canopy.

u. Mark date placed in service on canopy assembly per WP 011 02. (QA)

v. Make proper entries on Parachute Record (OPNAV 4790/101).

9. HARNESS ASSEMBLY REPAIRS.

a. Repair of the harness assembly is limited to the following:

(1) Cleaning of contaminated areas.

(2) Repair of stitching if less than three stitches are loose or broken.

(3) Replacement of harness hardware, if replacement does not require the removal of harness stitching.

(4) Replacement of elastic strap keepers.

b. Replace the harness assembly for any of the following:

(1) Service/total life has expired per WP 011 02.

(2) Cuts, tears, or holes in harness webbing.

(3) Loose or broken stitching in excess of three stitches.

(4) Twists, fading, excessive wear, fusing, fraying, burns, contamination, or abrasion.

(5) If damaged hardware must be replaced by removal of harness stitching, replace harness.

10. FABRICATION OF CHEST STRAP EXTENDER.

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon, Type XXVII, Class 1, 1A, or 2
MS22017	Snap, Parachute, Ejector
MS22020-1	Link, Parachute, Triangle
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. Inspect ejector snap and triangle link per WP 011 02.

b. Cut a 7 1/2-in. length of nylon webbing; sear ends.

c. Reeve nylon webbing around bar of snap and bar of link as shown in (Figure 3).

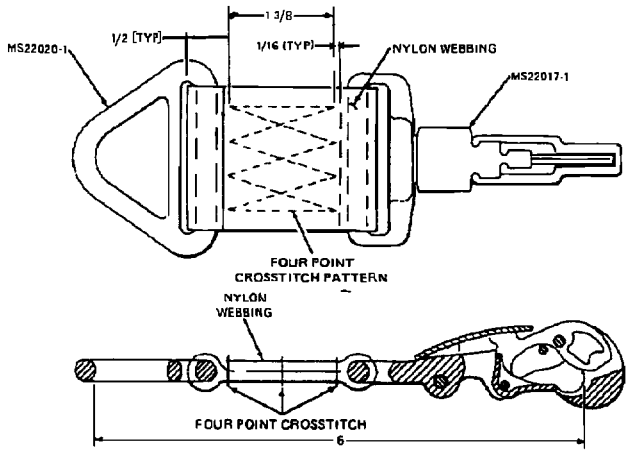

Figure 3. Fabrication of Chest Strap Extender

d. Using size 6 thread, stitch strap with a four-point crosstitch pattern (Figure 3).

11. REPLACEMENT OF LABEL.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove back pad.

b. Carefully remove old label.

c. Cut tackings on harness keeper straps and unreeve straps.

d. Rotate harness off container.

e. Mark required information on replacement label.

f. Machine stitch replacement label to harness in center of horizontal backstrap with label positioned to face wearer.

g. Reattach harness to container per Paragraph 13.

12. ATTACHMENT OF RIPCORD HOUSING TO CONTAINER WITHOUT RIPCORD RELEASE INSTALLED.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Reeve ripcord housing thru shoulder tab on container (Figure 4).

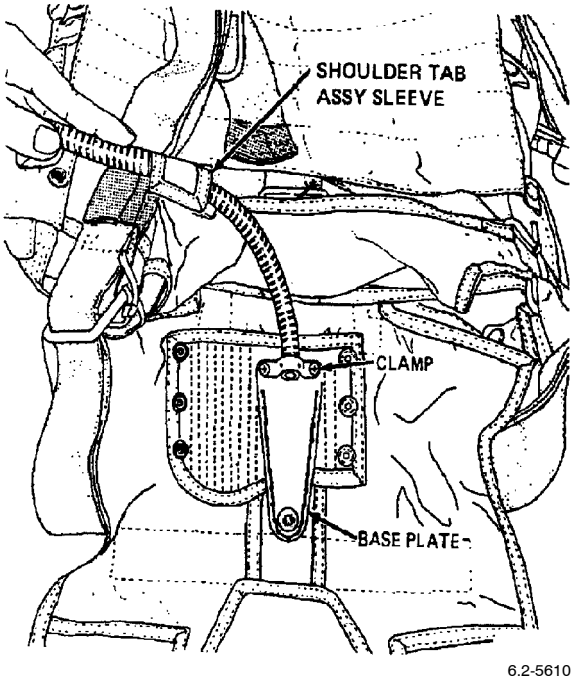

Figure 4. Attachment of Ripcord Housing to Container Without Ripcord Release Installed

b. Clamp end of housing to base plate, using single housing clamp (60A113C29-1). Tighten clamp screws and apply torque seal to screw heads.

c. Route opposite end of ripcord housing along the inside of the harness assembly, to ripcord pocket loop. Ensure that housing does not pass thru or around harness assembly (Figure 5).

d. Tack ripcord housing per WP 004 00.

13. REPLACEMENT OF HARNESS ASSEMBLY.

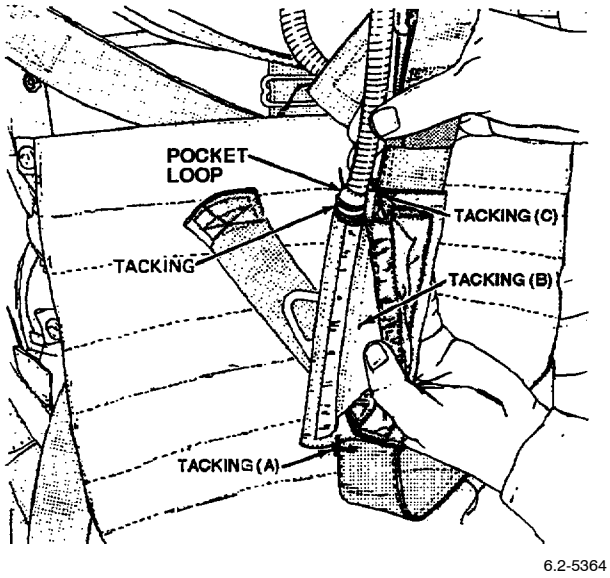

Figure 5. Replacement of Ripcord Pocket Tackings

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type III
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. If attached, remove survival kit and tackings.

b. Remove backpad.

c. Remove ties securing shoulder tabs to harness web loops.

d. Remove tackings on harness keeper straps.

e. Remove all harness keeper straps from adapters and then remove harness from container.

f. Remove connector link yoke and plate assemblies.

g. Slide harness riser loop off connector link bar.

h. Reinstall yoke and plate assemblies.

i. Ensuring the suspension line continuity is maintained (Figure 2), insert connector links onto tension hooks.

j. Remove ripcord from ripcord pocket and housing.

k. Remove tackings securing ripcord pocket to harness and remove pocket.

l. Inspect replacement harness per WP 011 02.

m. Place harness assembly on packing table with exposed ends or corresponding risers facing each other and positioned at connector links. An aircrew wearing the harness would position head toward canopy and facing packing table (Figure 6).

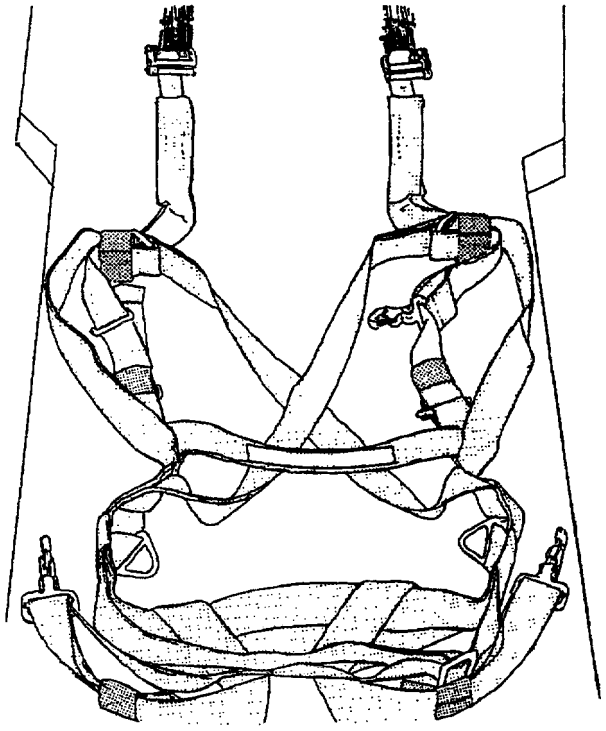

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Figure 6. Position of Harness on Packing Table for Attachment of Connector Links

n. Remove connector link yoke and plate assemblies from each connector links.

o. Insert bottom connector links into bottom riser loops and top connector links into top riser loops.

p. Reinstall yoke and plate assemblies to bottom connector links, ensuring that knurled portions of plate face up and screwheads face outboard.

q. Remove connector link yoke and plate assemblies from top connector links.

r. Insert top connector links into top riser loops.

s. Reinstall yoke and plate assemblies to top connector links ensuring that knurled portions of plate face up and screwheads face outboard.

t. Check suspension line continuity (Figure 2).

u. Tighten screws on top and bottom connector links to a torque value of 20 to 25 in-lbs. (QA)

v. Apply torque seal to each connector link screwhead.

14. ATTACHMENT OF HARNESS AND BACKPAD.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
PIA-C-5040	Cord, Nylon, Type III

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Position container on top of harness risers with inside of container facing risers and top edge of container positioned at harness shoulder adapters (Figure 7).

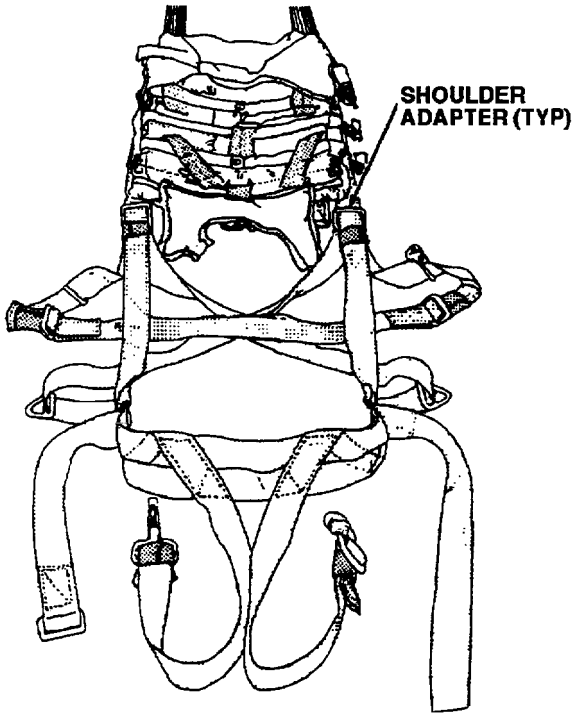

Figure 7. Position Container on Top of Harness

b. Rotate harness assembly at shoulder adapters and place on top of container (Figure 8).

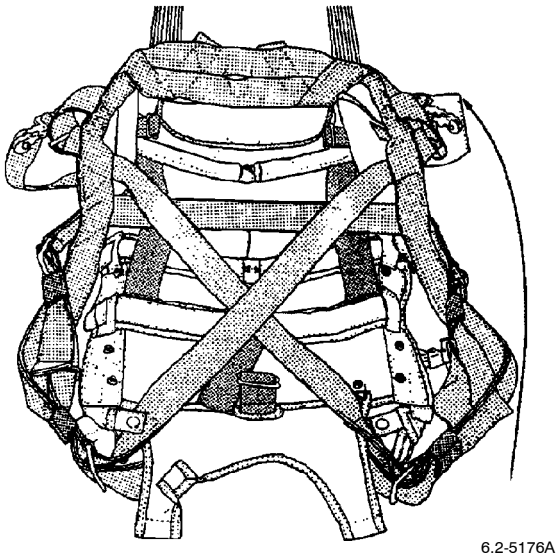

Figure 8. Rotate Harness

c. Position diagonal back straps under upper center harness keeper straps on container and reeve straps together (Figure 9).

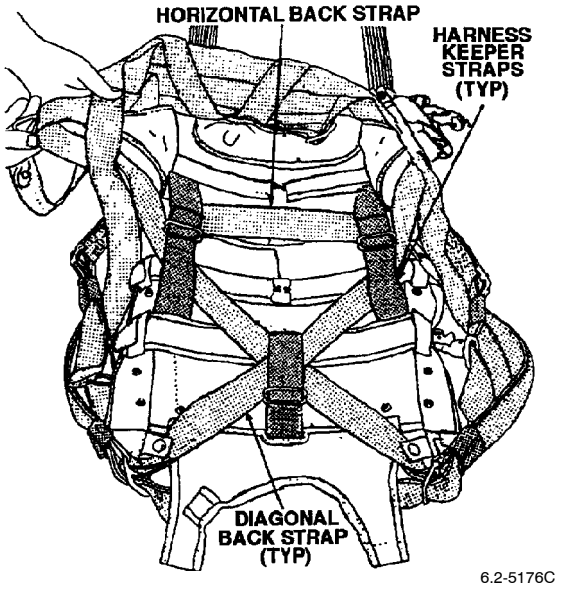

Figure 9. Position Diagonal Back Straps

d. Position both diagonal back straps and horizontal back strap under the two keeper straps located on each side of the container and reeve upper and lower keeper straps together (Figure 10).

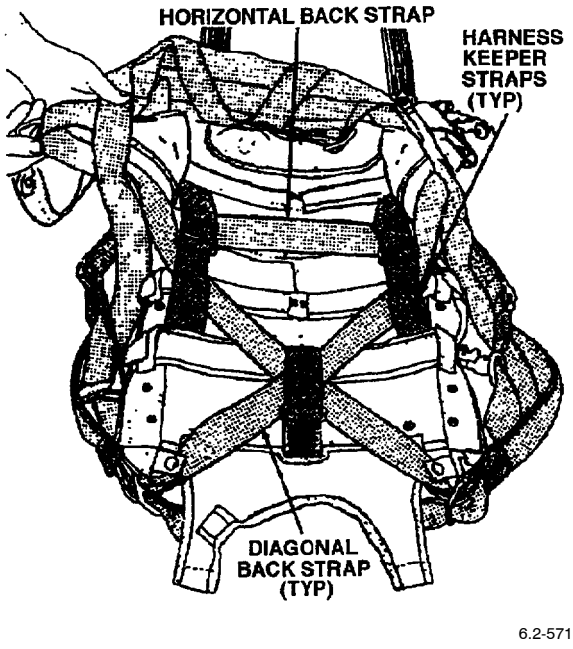

Figure 10. Positioning of Both Diagonal Back Straps

e. Pass keeper strap located on each wing panel thru opening formed by each upper leg strap extension and around harness webbing; then reeve keeper straps together (Figure 11).

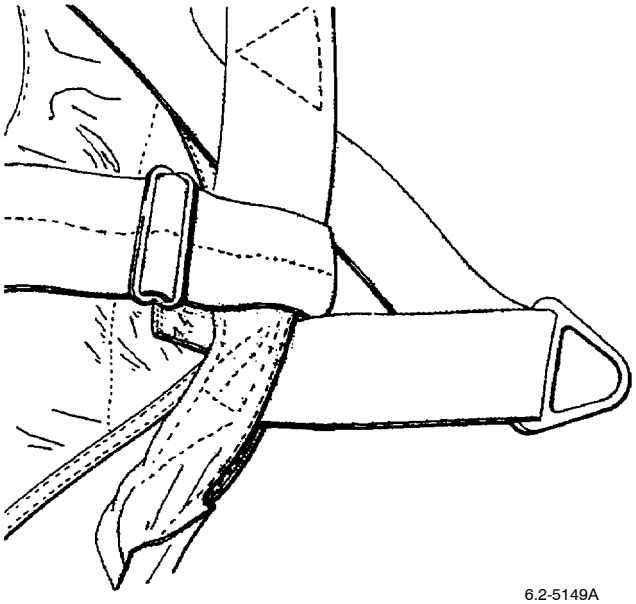

Figure 11. Pass Keeper Strap

f. Tack each strap at adapter with one turn of size 6 thread, single and waxed. Pass tacking thru straps and around center bar of adapter; tie off (Figure 12).

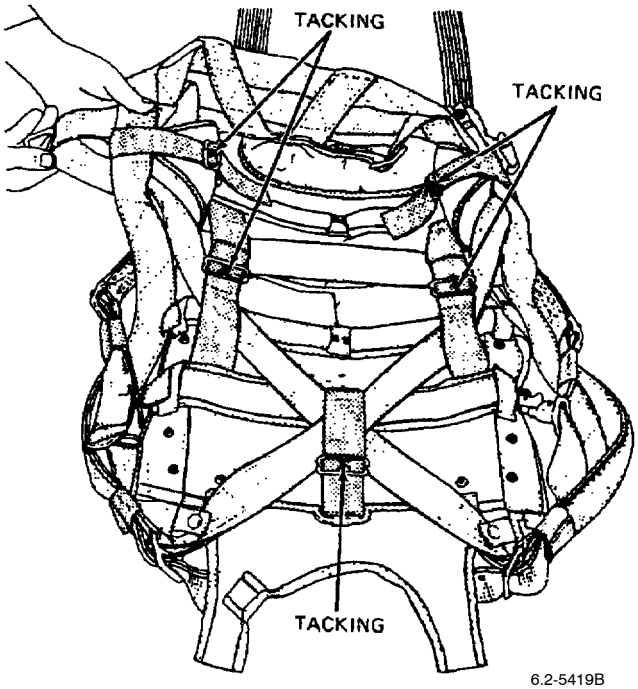

Figure 12. Tack Each Strap

g. Attach back pad to container, securing six back pad side tabs (Figure 13).

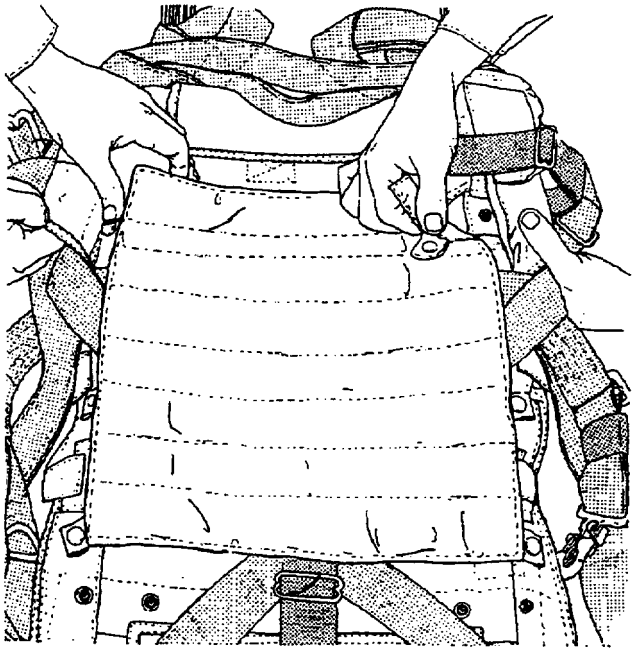

Figure 13. Attach Back Pad

h. Cut two 10-in. lengths of Type III nylon cord (OD color). Remove and discard inner core and sear ends of casing.

i. Tie shoulder tabs to web loops securing center bar of each shoulder adapter using the 10-in. nylon casing. Tie ends with a square knot (Figure 14).

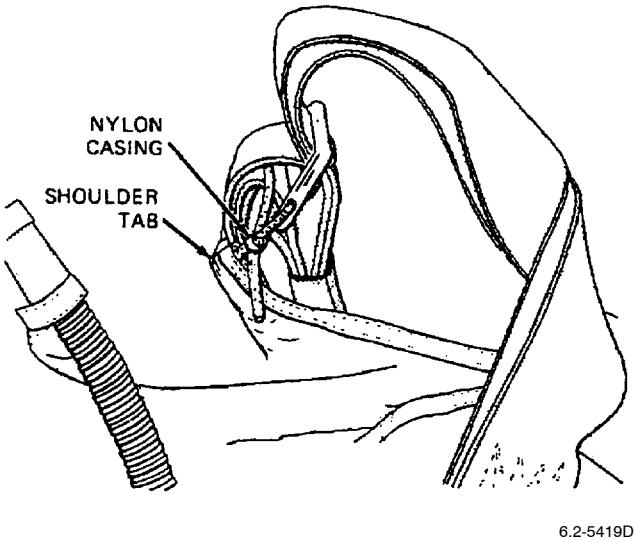

Figure 14. Tie Shoulder Tabs

j. Continue with next paragraph for stowage of raft retention strap when no survival kit is attached.

NOTE

If seat cushion or seat pan and SSP are to be attached, do not perform steps k thru n.

k. Reeve raft retaining strap completely thru strap adapter, positioning adapter against main sling of harness. Fold strap end 2-in. under and tack to strap beneath with one turn of size 6 thread, single and waxed; tie off (Figure 15).

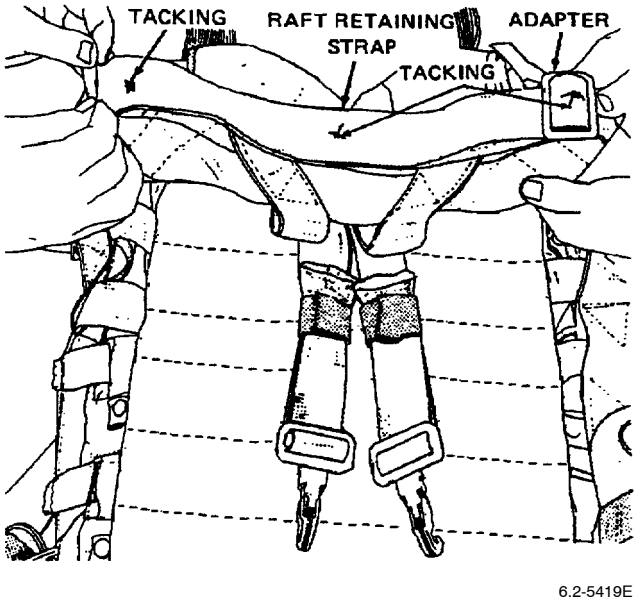

Figure 15. Reeve Raft Retaining Strap

l. Tack raft retaining strap at adapter by passing one turn of size 6 thread, single and waxed, around each side of adapter center bar and thru retaining straps; tie off (Figure 15).

m. Tack both raft retaining straps together at center, thru main sling, with one turn of size 6 thread, single and waxed; tie off (Figure 15).

n. Attach ripcord pocket to harness per WP 004 00.

o. Attach ripcord housing per WP 004 00.

p. If installed, attach survival kit by reeving leg straps thru keepers on SSP and then up thru slot in seat cushion or seat pan, as applicable.

q. Mark date placed in service on identification and service life label per WP 004 00.

15. AUTOMATIC ACTUATOR REPAIRS.

16. REPAIR OF ARMING CABLE END FITTING.

Support Equipment

Part Number	Nomenclature
DPP-50	Scale, Spring
—	Pliers, Common

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type I or IA

a. Adjust retaining clips by placing pliers around retaining clips and applying uniform pressure. Ensure that retaining clips are not distorted.

b. Retest arming cable removal per WP 011 02.

c. Using a straight steady pull, observe amount of pull required to remove end fitting from arming cable housing. Allowable force is 17 lbs. ±3 lbs.

17. REPLACEMENT OF AUTOMATIC PARACHUTE RIPCORD RELEASE.

WARNING

The ripcord release shall be thoroughly inspected and in operational condition before being installed.

a. Remove dual housing clamp securing ripcord housing and power cable housing (Figure 16).

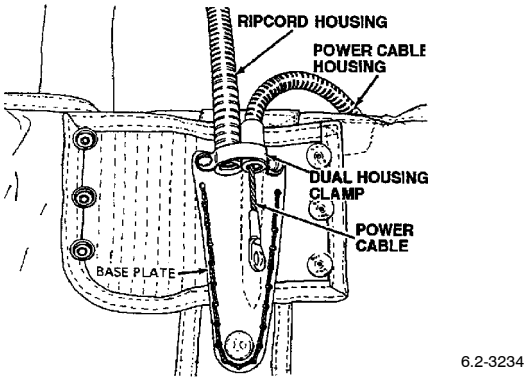

Figure 16. Attachment of Ripcord Release Power Cable and Manual Ripcord Housing to Base Plate

b. Remove ripcord release from container.

c. Inspect replacement ripcord release per WP 011 02.

d. Position power cable housing so it exits container thru right riser slot on top end flap.

e. Clamp one end manual ripcord housing and free end of power cable housing to base plate using double clamp (P/N 565AS102-1). Power cable housing shall be on right side of base plate. One flat side of power cable housing shall face ripcord housing and the other flat side shall face base plate (Figure 16).

18. REPLACEMENT OF RIPCORD RELEASE ARMING CABLE HOUSING TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove tackings securing housing to container.

WARNING

Ensure that canopy does not become pierced when tacking housing to container.

b. Tack arming cable housing to second metal stiffener from top of container at two places located 2 and 5-in. measured from inboard edge of buttonhole on automatic ripcord release pocket (Figure 17).

c. Tack arming cable housing to inside of container at a point 2-in. from buttonhole with three turns of size 6 thread, doubled and waxed; tie off (Figure 17).

19. FABRICATION OF LANYARD ASSEMBLY P/N 812AS100-1D.

Support Equipment Required

Part Number	Nomenclature
DPP-50	Scale, Spring

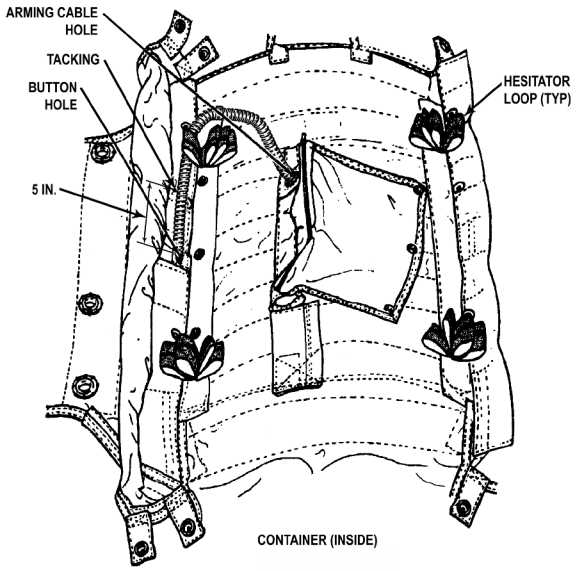

Figure 17. Tacking of Arming Cable Housing to Inside of Container

Materials Required

Specification or Part Number	Nomenclature
711-07026	Cable, Arming
MIL-C-7219	Cloth, Nylon, Type III, Class 3
MS27756	Hook, Snap
782AS100-4	Plate (2)
MS20470DD2-3	Rivet, Solid (4)
V-T-295	Thread, Nylon, Size A, Type I or II, Class A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MIL-W-5625	Webbing, Textile, Nylon Tubular, 1/2-in. Width (1000 lb Breaking Strength)

a. Clamp one end of webbing to a suitable table and extend about 8 ft. Tie a bowline knot to which a spring scale is attached. Apply 5 lb. of tension for 15 to 20 sec; mark at four places as indicated in (Figure 18).

WARNING

Do not allow hot drippings or ends of nylon webbing to come in contact with skin or clothing.

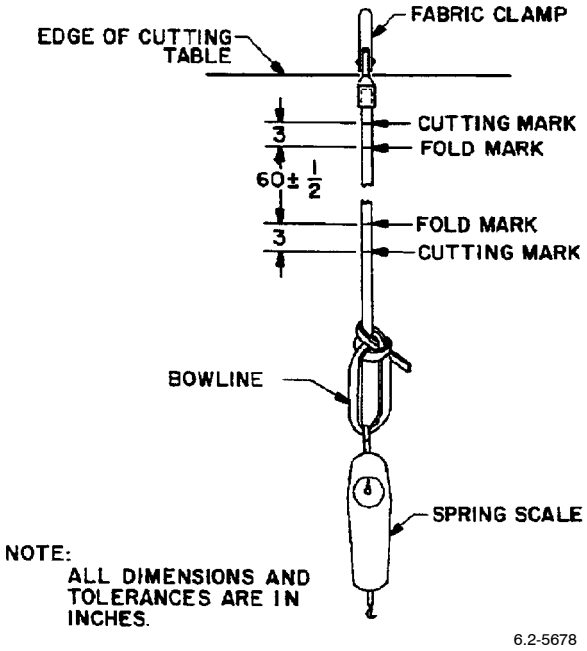

Figure 18. Measuring and Cutting Lanyard Webbing

b. Cut and sear tubular nylon webbing using a hot wire or a hot knife. Avoid forming sharp edges.

c. Cut two lengths of nylon cloth, 1 1/2 by 6-in. to be used as chafing cover for lanyard.

d. Using size E thread machine stitch a 1-1/2 by 6-in., length of nylon cloth (chafing cover) to tubular nylon webbing (lanyard) at both ends (Figure 19).

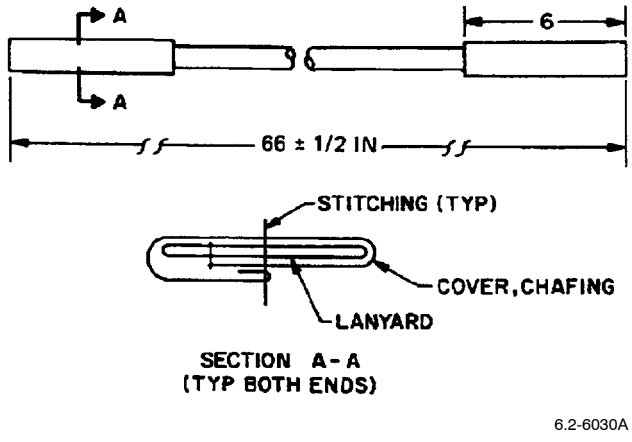

Figure 19. Machine Stitch

e. Thread chafing cover and lanyard thru end fitting (P/N 782AS100-1), temporarily tack in place with size A thread, and then machine stitch using a 3 point cross stitch pattern (Figure 20).

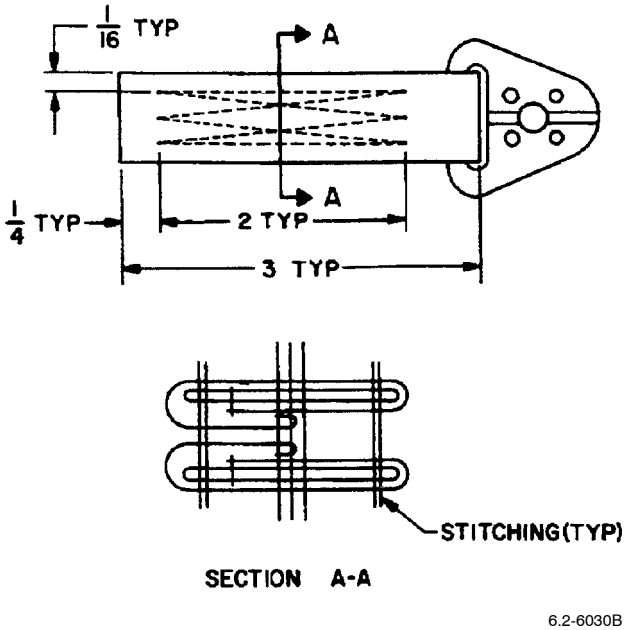

Figure 20. Thread Chafing Cover and Lanyard

f. Thread opposite end of lanyard thru eye in snap hook. Temporarily tack in place with size A thread, and then machine stitch using a 3 point cross stitch pattern (Figure 21).

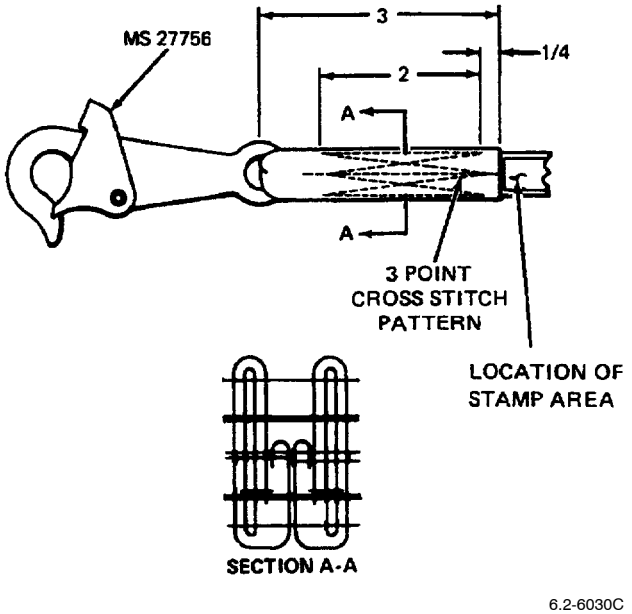

Figure 21. Thread Opposite End of Lanyard

g. Rubber stamp in 1/4-in. characters along long axis of lanyard, with marking ink, the following information:

Part Number 812AS100-1D
Date of Manufacture _____
Date Placed in Service _____

h. Install arming cable ball into plates; rivet together in 4 places (Figure 22).

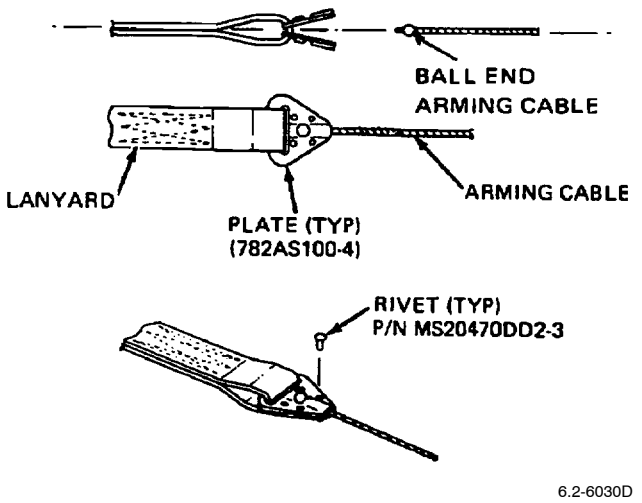

Figure 22. Install Arming Cable

20. FABRICATION OF LANYARD STOWAGE POCKET.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MIL-F-21840	Tape, Hook, 1/2-in. wide, 5-in.
MIL-F-21840	Tape, Pile, 1/2-in. wide, 5-in.
PIA-W-4088	Webbing, Nylon, Type VIII, 11-in. Class 1, 1A, or 2
PIA-T-5038	Webbing, Textile, Nylon, 1-in Wide, 7-in. Type IV
PIA-T-5038	Webbing, Textile, Nylon, 1 1/2-in Wide, 5-in. Type IV

a. Measure and mark nylon webbing (Figure 23).

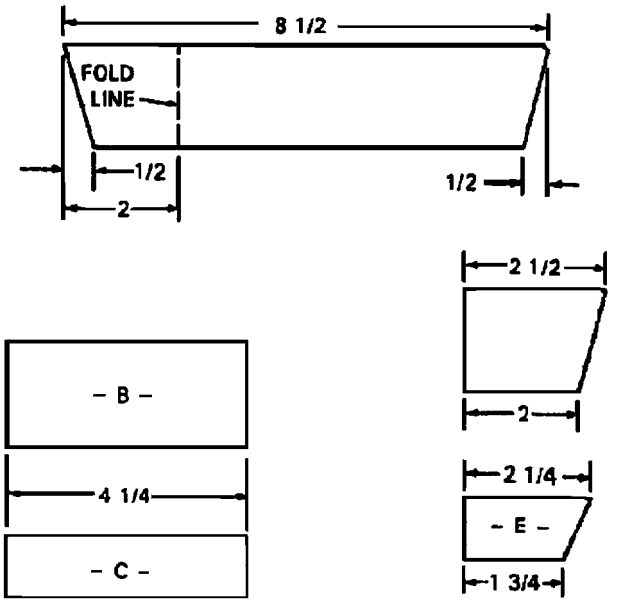

Figure 23. Measure and Mark

b. Cut a 4 1/4-in. length of 1/2-in wide hook and pile fastener tape and attach the pile tape to piece B and the hook fastener to piece C. Sew with size E thread (Figure 24).

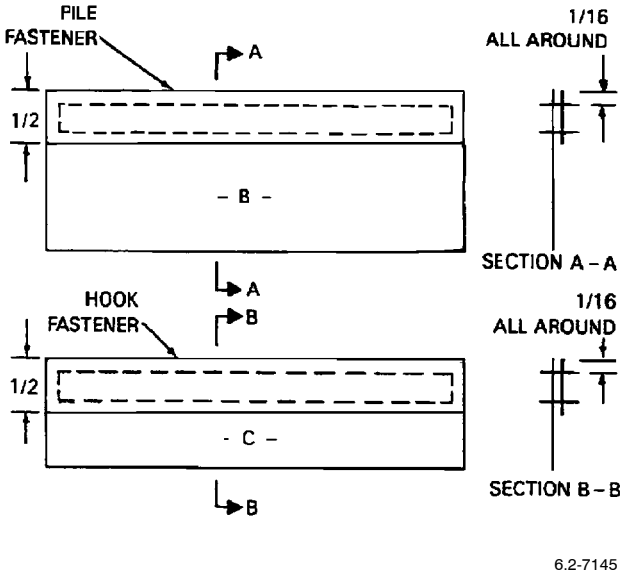

Figure 24. Cut Hook and Pile Tape

c. Position pieces B and C on fold line of piece A with the pile tape of piece B facing up and the hook tape of piece C facing down. Attach these pieces to piece A. Sew with size E thread (Figure 25).

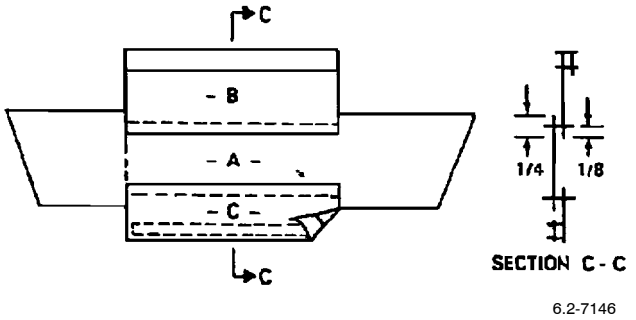

Figure 25. Position Pieces B and C

d. Place piece E on top of piece D and sew with size E thread, to form a channel (Figure 26).

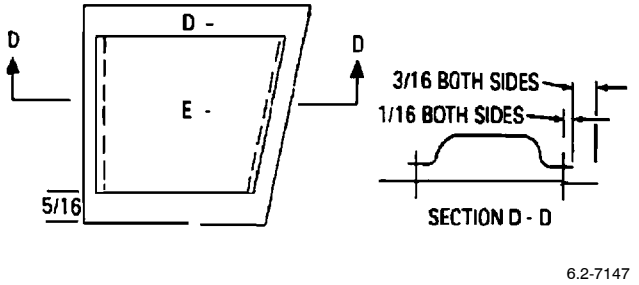

Figure 26. Place Piece E on Top of Piece D

e. Place the newly constructed piece D on top of piece A and stitch 1/8-in. from the edges of piece A, with size E thread, to form another channel (Figure 27).

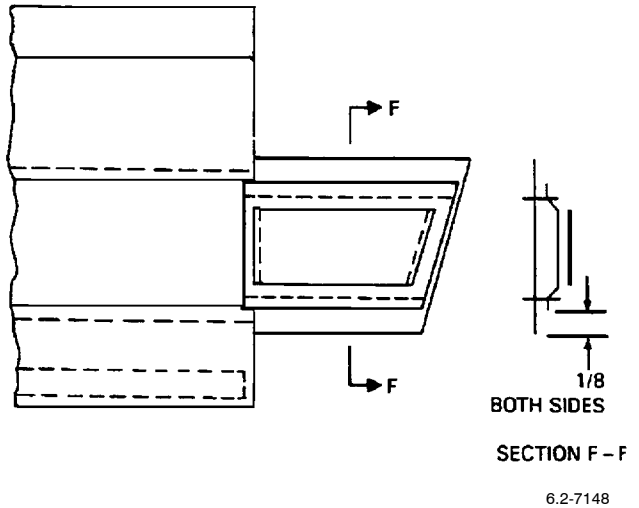

Figure 27. Place Constructed Piece D on Top of Piece A

f. Fold opposite end of piece A under itself at fold line marked earlier and stitch with two rows of size E thread, to form another channel (Figure 28).

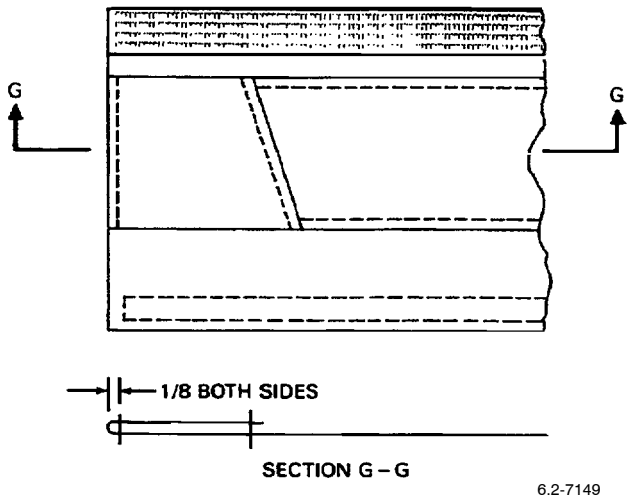

Figure 28. Fold Opposite End of Piece A Under Itself

21. INSTALLATION OF LANYARD STOWAGE POCKET.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Route arming cable housing on inside of parachute container by inserting it thru channel under hesitator loops and thru side of buttonhole. Position end of housing so that it extends 4-in. from outside of buttonhole (Figure 29).

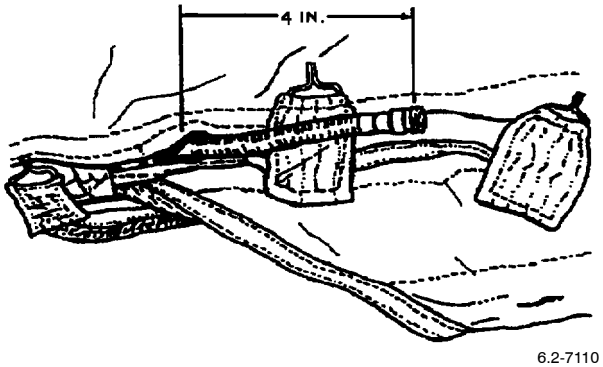

Figure 29. Route Arming Cable Housing

b. Tack arming cable housing to inside of container at a point 2-in. from buttonhole with three turns of size 6 thread, doubled and waxed; tie off (Figure 30).

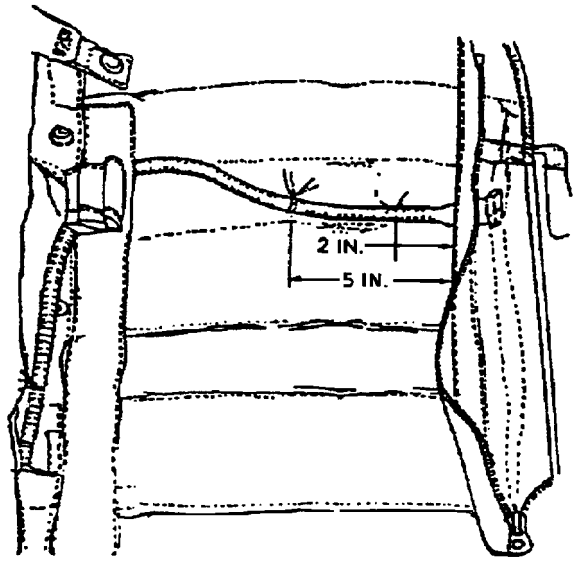

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Figure 30. Tacking of Arming Cable Housing to Inside of Container

c. Tack arming cable housing at second metal stiffener from top of container two places located 2-in. and 5-in. measured from inboard edge of buttonhole on automatic ripcord release pocket (Figure 30).

d. Route terminal end of arming cable assembly thru the lowermost channel of the stowage pocket. Tack arming cable housing to stowage pocket where housing exits channel with three turns of size 6 thread, doubled and waxed; tie off (Figure 31).

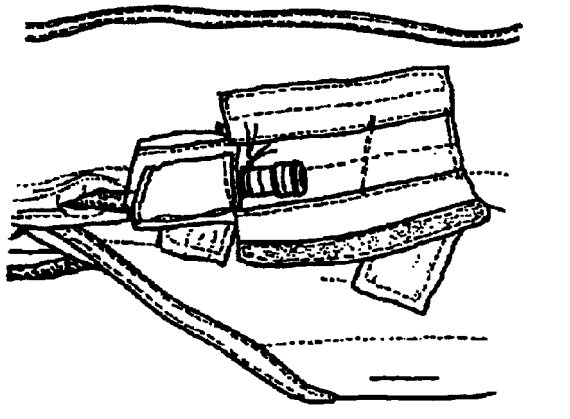

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Figure 31. Route Terminal End of Arming Cable Housing

22. REPLACEMENT LANYARD STOWAGE POCKET.

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

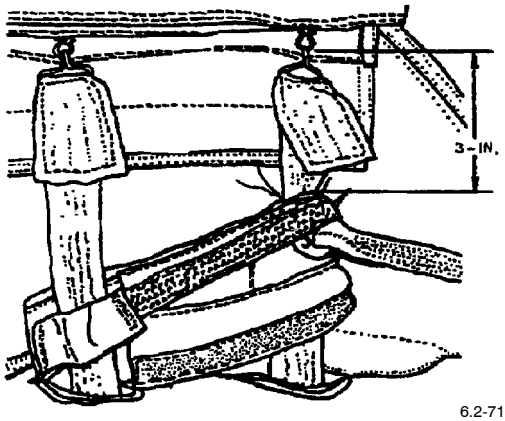
Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove all tackings and remove spring opening assemblies from channels in stowage pocket.

b. Tack arming cable housing to the stowage pocket at the point where housing exits the channel with three turns, of size 6 thread, doubled and waxed; tie off (Figure 31).

c. Route second spring opening assembly from the bottom thru uppermost channel on stowage pocket. Route bottom spring opening assembly thru lower channel on stowage pocket.

d. Tack base of stowage pocket to bottom spring opening assembly about 3-in. from hook with three turns of size 6 thread, doubled and waxed; tie off (Figure 32).



6.2-7138

Figure 32. Tack Base of Stowage Pocket

e. Tack lanyard assembly plate to upper flap of stowage pocket with one turn of size E thread, single and waxed; tie off (Figure 33).

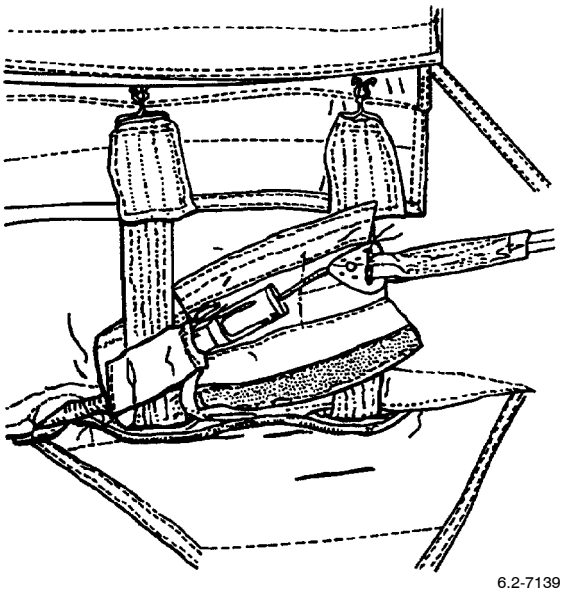


Figure 33. Tack Lanyard Assembly Plate

f. Fake lanyard assembly in stowage pocket and close by securing pile tape on bottom flap with hook tape on top flap.

23. STOWAGE OF LANYARD.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Pack parachute assembly per WP 011 02.

b. Attach spring opening assemblies on left side of container. Route the second spring opening assembly from bottom thru uppermost channel on stowage pocket. Route bottom spring opening assembly thru lower channel provided on stowage pocket (Figure 34).

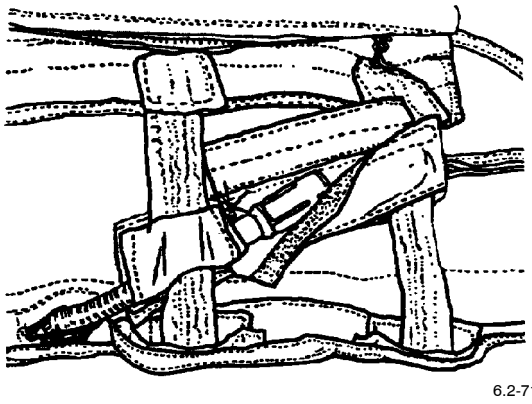


Figure 34. Attach Spring Opening Assemblies

c. Tack base of stowage pocket to bottom spring opening assembly about 3-in. from hook with three turns of size 6 thread, doubled and waxed; tie off (Figure 35).

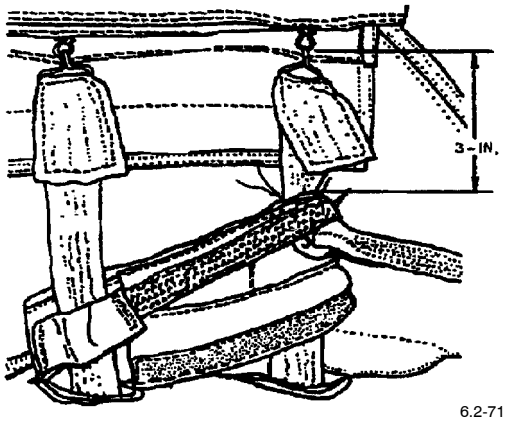


Figure 35. Tack Base of Stowage Pocket

d. Tack lanyard assembly plate to upper flap of stowage pocket with one turn of size E thread, single and waxed; tie off (Figure 36).

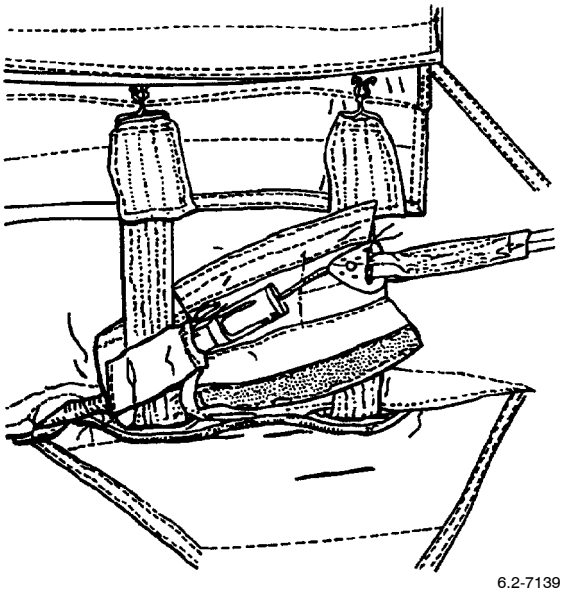


Figure 36. Tack Lanyard Assembly Plate

e. Fake lanyard assembly in stowage pocket and close by securing the pile tape on bottom flap with hook tape on top flap (Figure 37).

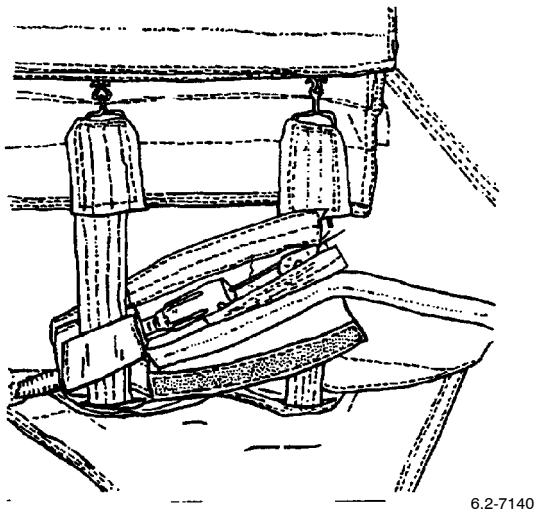


Figure 37. Fake Lanyard Assembly in Stowage Pocket

f. Prepare to stow ripcord release lanyard assembly in container by first laying it out on packing table and removing all twists. Then form a bight in lanyard 36-in. from eye of snaphook.

g. Using a draw cord, stow first bight into flute closest to stowage pocket. Draw a bight from bottom to top of container and adjust it so 18 ±2-in. of lanyard remain between bottom of flute and eye of snaphook (Figure 38).

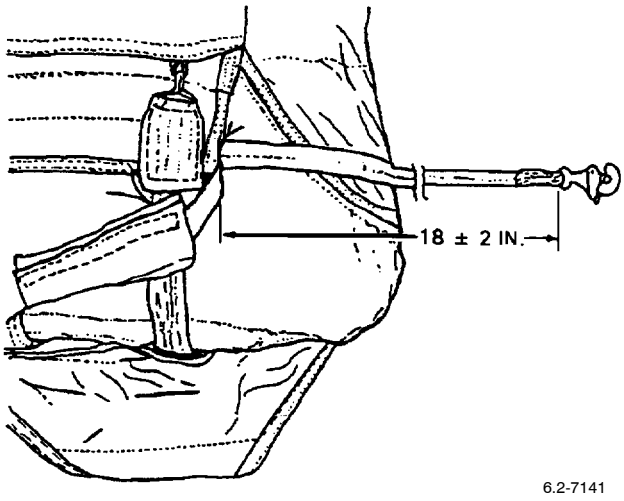


Figure 38. Stow First Bight into Flute

h. Tack lanyard to bottom of flute with one turn of size E thread, single and waxed; tie off.

24. CONTAINER ASSEMBLY REPAIRS.

a. For container service life, refer to WP 011 02.

25. REPLACEMENT OF CLAMP BASE ASSEMBLY AND/OR LOCKING CONE ON CONTAINER TOP FLAP.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
60A113D16-1	Base Assembly, Clamp
	-or-
60A113C24-1	Cone, 0.410 Grip

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Cut and remove stitching retaining base assembly and locking cone from top flap. Remove base assembly and locking cone.

b. If base assembly is to be replaced, remove clamp and screws and retain for reinstallation. If locking cone is to be replaced, leave clamp with ripcord housing/power cable housing attached to base assembly.

c. Using a sufficient length of size 6 thread, doubled and waxed, to complete repair and to tie an overhand knot 3 to 4-in. from end of thread for tie-off when stitching is completed.

d. Position replacement base assembly/locking cone in exact location of damaged or missing base assembly/locking cone. Ensure that ripcord locking pin hole is aligned in same direction as that removed.

e. Start hand stitching from inside of container at widest end of base assembly, using a running stitch thru each hole in the base assembly and applicable holes in locking cone. Stitch to last hole in sequence; then stitch back around base assembly to starting hole. Tie off. Trim ends to 1/2-in.

f. If base assembly was replaced, reinstall clamp and ripcord housing/power cable housing per Paragraph 17.

26. REPLACEMENT OF SLIDE FASTENER ON PARARAFT FLAP ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
814AS807-1	Slide Fastener

a. Carefully remove stitching holding damaged slide fastener to pararaft flap assembly.

b. Place replacement slide fastener on pararaft flap assembly in the same position as the one removed.

c. Starting with the bottom end of the slide fastener, align the slide fastener tape flush with the edge of the flap assembly and sew with three rows of stitching about 1/8-in. apart.

d. At the top stop end of the slide fastener remove any excess tape and sear.

27. REPLACEMENT OF CONTAINER.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. Remove tackings and survival kit.

b. If survival kit is not attached, remove raft retaining strap tackings.

c. Remove backpad.

d. Remove ties securing shoulder tabs to harness web loops.

e. Remove tackings on harness keeper straps.

f. Remove all harness keeper straps from adapters and then remove harness from container.

g. Remove ripcord housing and if installed, ripcord release power cable housing from base plate clamp.

h. If installed, remove ripcord release from container.

i. Inspect replacement container per WP 011 02.

j. Attach container to harness per Paragraphs 13 and 14.

NOTE

If ripcord release is to be installed, do not perform steps k and l.

k. Reeve free end of ripcord housing thru shoulder tab sleeve.

l. Clamp ripcord housing to base plate using single housing clamp.

NOTE

Perform step m if ripcord release is to be installed.

m. Attach ripcord housing, automatic parachute ripcord release arming, and power cable housing, per Paragraphs 17 and 18.

n. If installed, attach survival kit by reeving leg straps through keepers on standard soft pack and then up thru slot in seat cushion or seat pan, as applicable.

o. On parachute assembly label, marking shall be 1/4-in. high and include serial number from canopy name plate, assembly activity (contractor CAGE code or Navy activity code), contract number from canopy name plate, month/-year for date of assembly, and complete assembly dash number from illustrated parts breakdown.

28. REPAIR OF RIPCORD PIN PROTECTIVE FLAP.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
PIA-W-4088	Webbing, Nylon, Type IV, Class 1, 1A, or 2

a. Cut a six inch length of webbing.

b. Using size E thread, sew webbing to outside of ripcord pin protector flap.

29. REPAIR OF BACKPAD.

a. Repair of the backpad is limited to the following:

(1) Cleaning contaminated areas per WP 004 00.

(2) Replacement of snap fasteners per WP 004 00.

(3) Repair of holes, tears and loose or broken stitching per WP 004 00.

(4) Replacement of pile fastener tape per Paragraph 30.

b. Replace backpad for any holes, tears, or other damage deemed beyond repair.

30. INSTALLATION OF BACKPAD PILE FASTENER TAPE (FOR 565AS100-13/-14 PARACHUTE).

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MIL-F-21840	Fastener Tape Pile, 2-in. wide, Type II, Class 1

a. Mark a horizontal line 2-in. from the bottom of the backpad.

b. Align one of the 14-in. pieces of pile fastener tape with the 2-in. mark and sew together using size E thread. Sew the remaining pieces of pile fastener tape to the backpad above the first piece (Figure 39).

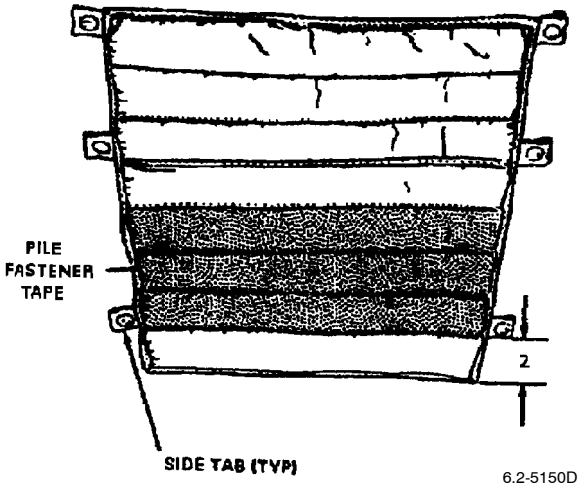


Figure 39. Alignment of Pile Fastener Tape

c. Reidentify back pad as 60A113D6-8.

31. REPLACEMENT OF MS22021-1 CONNECTOR LINK (SPEED LINK) WITH MS22002-1 (DOUBLE "L") CONNECTOR LINK.

NOTE

New canopies received from supply may have the Double 'L" Connector Links installed.

Instructions for attachment of Firing Lanyards, PDVL's, Four-Line Release Systems, etc., will remain the same and will be contained in the application parachute manual.

Materials Required

Specification or Nomenclature	Part Number
MS22002-1	Connector Link (Double "L")
F-900 Torque Seal (Color Optional)	Sealing Compound
—	Torque Screwdriver
MIL-S-43243 (See WP 002 00)	Separator, Link or Equivalent

a. Remove yoke and plate assembly from parachute connector link, P/N MS22021-1.

b. Slide suspension lines from connector link onto a temporary locking pin or rod.

c. Remove cross-connector strap.

d. Slide riser loop off connector link bar and dispose of connector link, P/N MS22021-1.

e. Remove screws from the double "L" connector link, P/N MS22002-1 and separate the two halves of the link.

f. It may be necessary to use a separator device to separate the two halves of the connector link if a separator device is not available, loosen both screws of the connector link by four turns. Place a long bar between the connector link bars to hold the link in place. Using a rawhide or rubber mallet, tap one screw head and then the other screw head several times until the connector link bars separate.

g. Install suspension lines on the new connector link bar. The short leg of the "L" connector is to be positioned to the inside (Figure 40).

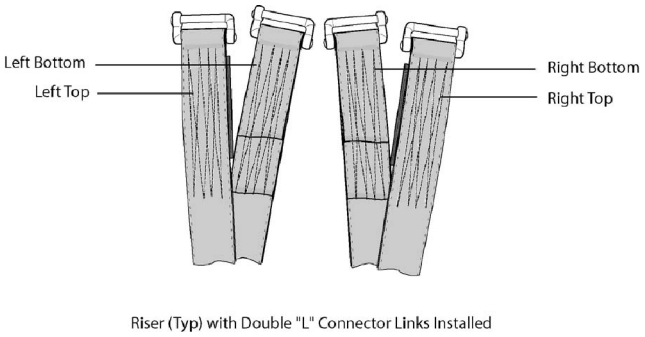


Figure 40. Double "L" Connector Link Layout

h. Install cross-connector strap.

i. Slide riser loop onto opposite connector link bar.

j. Mate both halves of the connector link together.

k. Install screws (2 each).

NOTE

Screws must make a minimum of 6 full turns prior to applying torque.

l. Check suspension line continuity. (QA)

m. Tighten screws to a torque value of 15 in-lbs. (QA)

WARNING

Care must be taken when tightening screws as screwdriver may slip and cause minor injury.

NOTE

It may be necessary to check the torque value on each screw more than once due to the interference fit design feature of the connector link.

n. Apply torque seal to both screw heads and allow to dry before proceeding with remainder of parachute packing.

o. Repeat steps a through l on each riser group.

p. Re-identify the parachute canopy by using an indelible black pen to cross out the existing part number and marking the new superceding part number per Illustrated Parts Breakdown (IPB) WP 011 04.

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ORGANIZATIONAL, INTERMEDIATE AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

NB-6 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 565AS100-1, 565AS100-2, 565AS100-13, and 565AS100-14

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1	11	2 thru 6	9				

Reference Material

Intermediate and Depot Maintenance, Packing Procedures, NB-6 Personnel Parachute Assembly ..... WP 011 02

Alphabetical Index

Title	Page
Introduction	1
Service/Total Life	1
Usable On Codes	1

List of Figures

Title	Page
NB-6 Personnel Parachute Assembly	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the NB-6 Personnel Parachute Assembly (Figure 1).

2. USABLE ON CODES.

a. The usable on codes in this WP refer to the aircraft applications for the NB-6 Personnel Parachute Assembly.

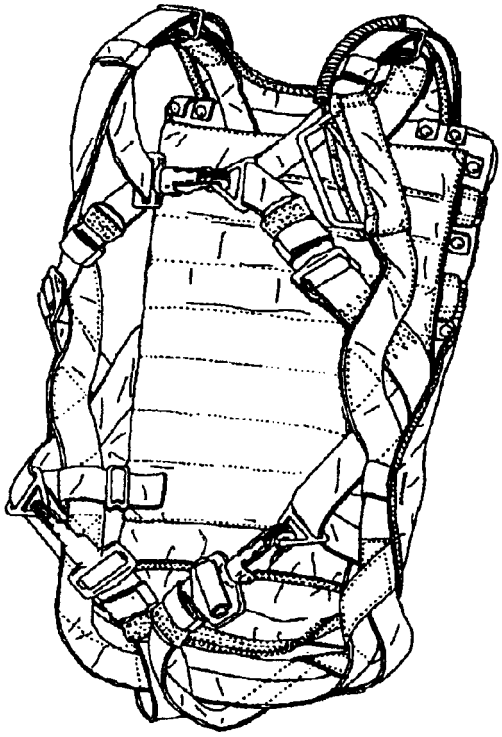
b. The following usable on codes apply to this WP:

A, B – T-34B

C, D – T-34C

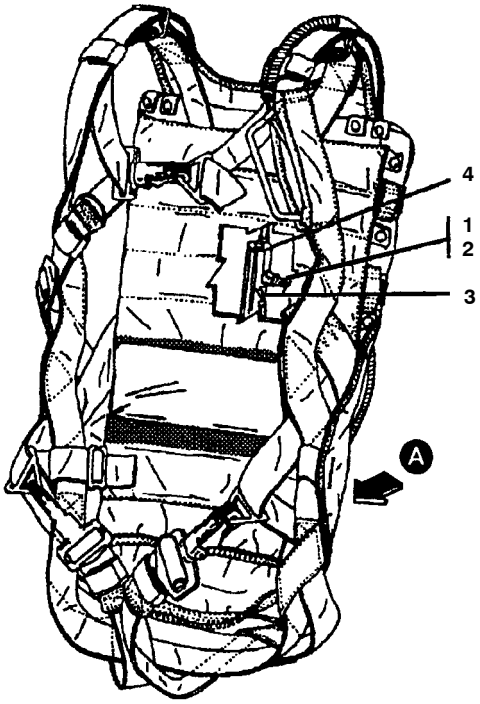
3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in WP 011 02.



-1, -2 ASSEMBLIES

6.2-5763



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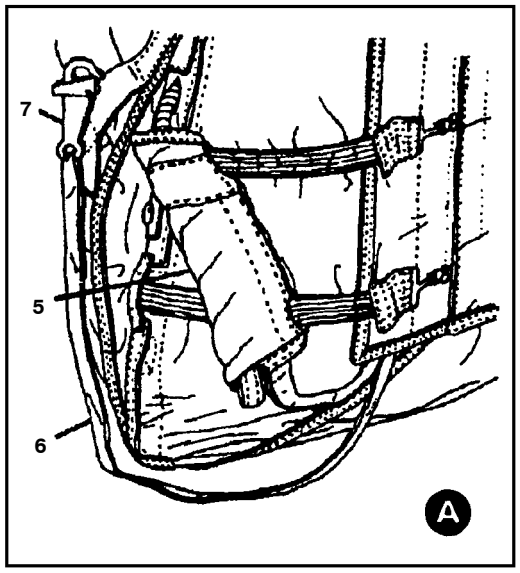

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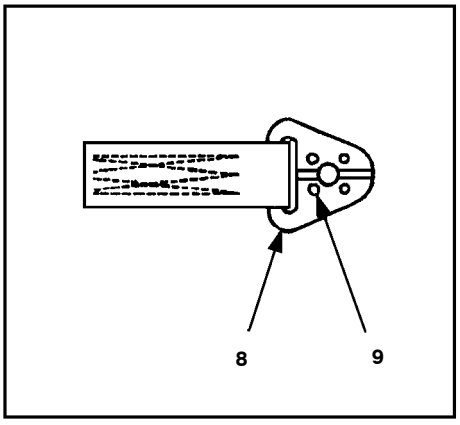

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Figure 1. NB-6 Personnel Parachute Assembly (Sheet 1 of 5)

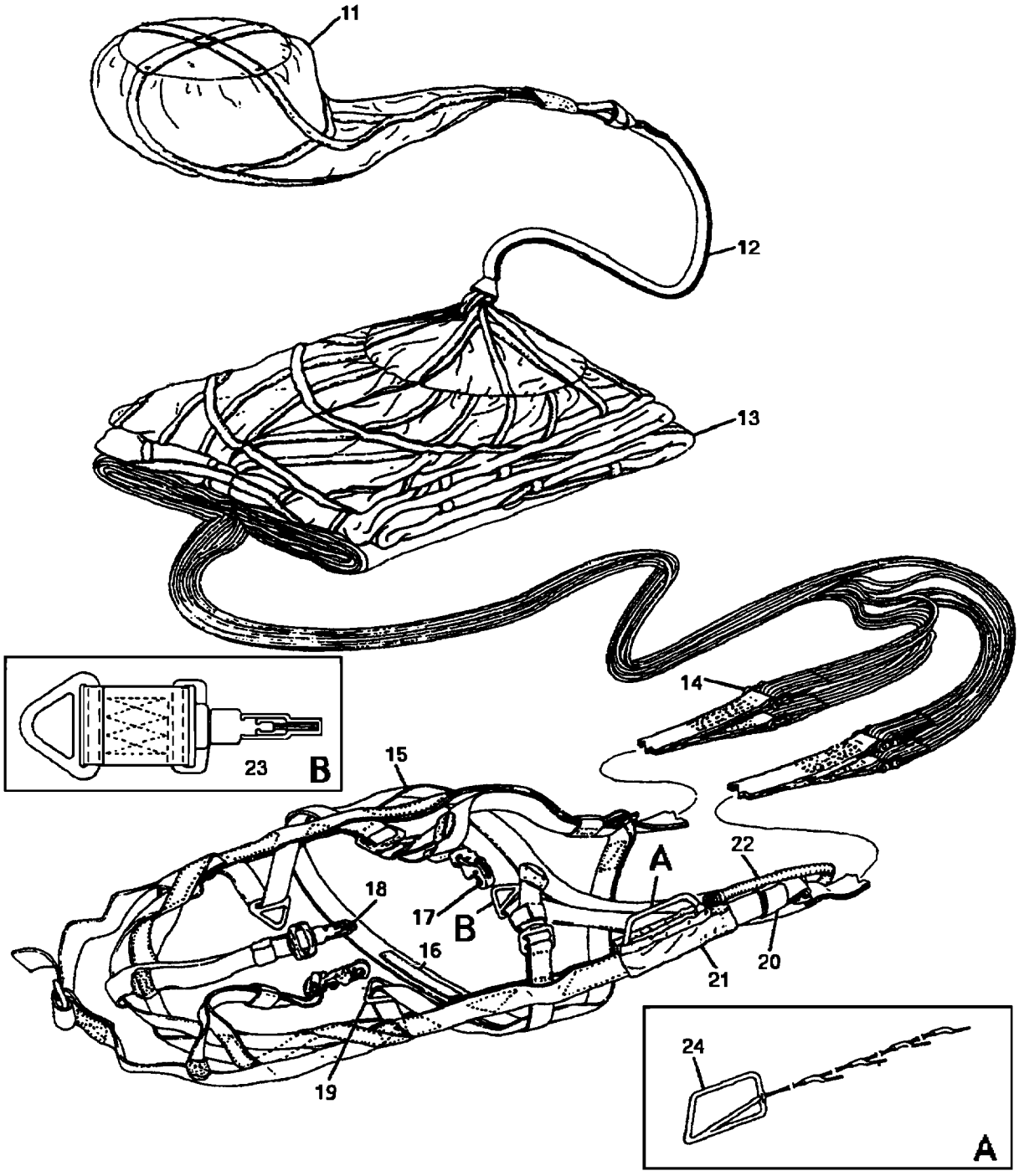
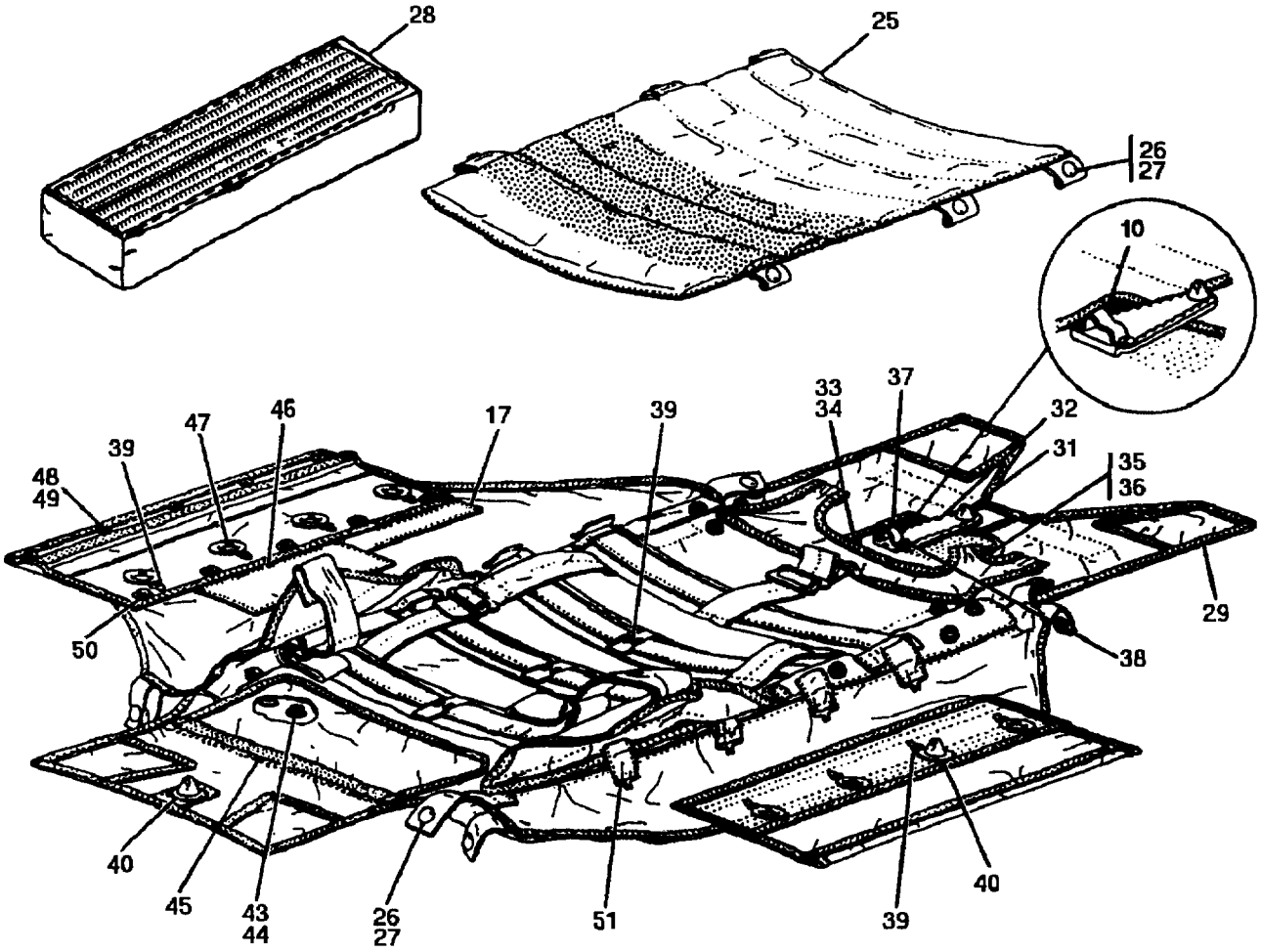


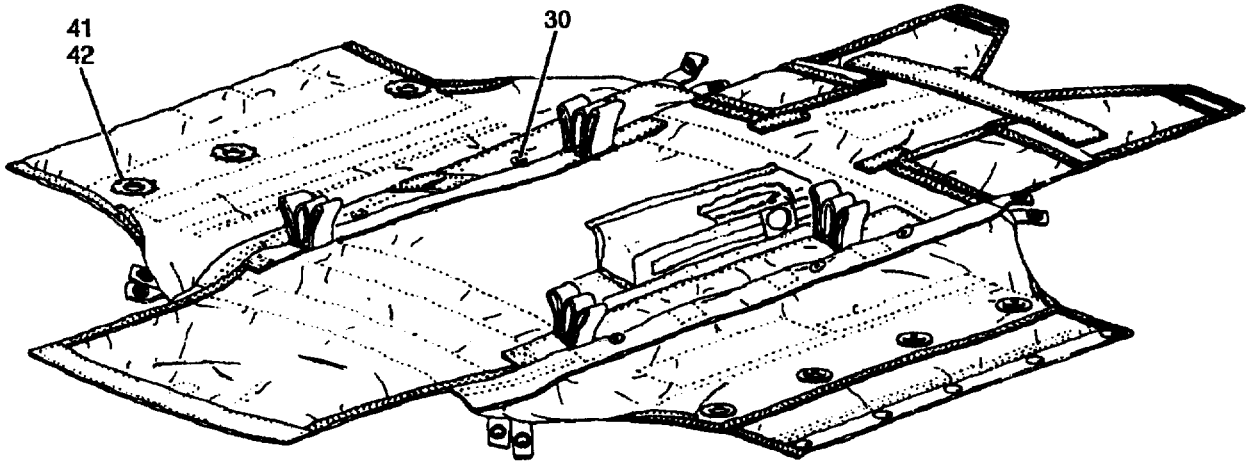
Figure 1. NB-6 Personnel Parachute Assembly (Sheet 2 of 5)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	565AS100-1	PARACHUTE ASSEMBLY, COMPLETE, NB-6, REGULAR	REF	A	AGOGG
	565AS100-2	PARACHUTE ASSEMBLY, COMPLETE, NB-6, OVERSIZE	REF	B	AGOGG
	565AS100-13	PARACHUTE ASSEMBLY, COMPLETE, NB-6, REGULAR	REF	C	AGOGG
	565AS100-14	PARACHUTE ASSEMBLY, COMPLETE, NB-6, OVERSIZE	REF	D	AGOGG
1	711-07025	. HOUSING, ARMING CABLE /52497/	1	C,D	PAGZZ
2	711-07026	. CABLE, ARMING /52497/	1	C,D	PAGZZ
3	2519704	. CARTRIDGE, DELAY, MK 5 MOD 2 (M284)	1	C,D	PCGZA
4	711-07022-34	. RELEASE, AUTOMATIC PARACHUTE RIPCORD, MOD 7000 /52497/	1	C,D	PAGDD
	711-07022-30	. RELEASE, AUTOMATIC PARACHUTE RIPCORD, MOD 7000 /52497/ (USE UNTIL EXHAUSTED)	1	C,D	PAGDD
5	60A113D51-1	. STOWAGE POCKET, ARMING CABLE	1	C,D	PAGZZ
6	812AS100-1D	. LANYARD ASSEMBLY	1	C,D	MGGZZ
7	MS27756	. . SNAPHOOK, PARACHUTE LANYARD	1		PAGZZ
8	782AS100-4	. . PLATE	2	C,D	PAGZZ
9	MS20470DD2-3	. . RIVET, SOLID	4	C,D	PAGZZ
10	565AS102-1	. CLAMP, DOUBLE	1	C,D	PAGZZ
11	60A125E16-1	. PARACHUTE ASSEMBLY, PILOT	1		PCGZZ
12	666AS100-1	. STRAP, PILOT PARACHUTE CONNECTOR	1		PCGZZ
13	60A114E3-1	. CANOPY ASSEMBLY	1	*	PCGGG
	60A114E3-27	. CANOPY ASSEMBLY (WITH DOUBLE "L" CONNECTOR LINK INSTALLED)	1	*	PCGGG
14	MS22021-1	. . LINK, REMOVABLE CONNECTOR	4	*	PAGZZ
	MS22002-1	. . CONNECTOR LINK (DOUBLE "L")	4	*	PAGZZ
15	60A113E3-14	. HARNESS ASSEMBLY, REGULAR	1	A,C	PCGGG
	60A113E4-14	. HARNESS ASSEMBLY, OVERSIZE	1	B,D	PCGGG
16	676AS100-1	. . LABEL	2		MDGZZ
17	MS22017	. . SNAP, PARACHUTE HARNESS EJECTOR	1		PAGZZ
	68D37721-3	. . SNAP, PARACHUTE HARNESS EJECTOR	1	*	PAGZZ
18	MS22018	. . SNAP, PARACHUTE HARNESS QUICK FIT EJECTOR	2		PAGZZ
19	MS22020-1	. . LINK, PARACHUTE HARNESS TRIANGLE	3		PAGZZ
20	60A113E3-2	. . KEEPER STRAP SUBASSEMBLY	6		MGGZZ
21	60A113D9-1	. . POCKET ASSEMBLY	1		PCGZZ
22	MS70104-4	. . HOUSING, RIPCORD	1		PAGZZ
23	830AS100-1	. CHEST STRAP EXTENDER (AS REQUIRED)	1		MGGZZ
24	60A113D7-1	. RIPCORD ASSEMBLY	1		PAGZZ
25	60A113D6-8	. PAD ASSEMBLY, BACK	1	C,D	MGGGG
	60A113D6-1	. PAD ASSEMBLY, BACK	1	A,B	PAGGG

Figure 1. NB-6 Personnel Parachute Assembly (Sheet 3 of 5)



CONTAINER (OUTSIDE) AND BACKPAD



CONTAINER (INSIDE)

6.2-5765

Figure 1. NB-6 Personnel Parachute Assembly (Sheet 4 of 5)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
26	MS27983-1	. . FASTENER, BUTTON	7		PAGZZ
27	MS27983-2N	. . FASTENER, SOCKET	7		PAGZZ
28	60A113D50-1	. LUMBAR PAD	1	C,D	PAOZZ
29	60A114E2-53	. CONTAINER ASSEMBLY	1		PCGGG
30	MS27980-10B	. . FASTENER, EYELET	6		PAGZZ
31	60A113C24-1	. . CONE, 0.410 GRIP	1		PAGZZ
32	60A113D16-1	. . BASE ASSEMBLY, CLAMP	1		PAGZZ
33	MS27981-5B	. . FASTENER, EYELET	3		PAGZZ
34	MS27981-4B	. . FASTENER, STUD	3		PAGZZ
35	MS27981-1B	. . FASTENER, BUTTON	3		PAGZZ
36	MS27981-3B	. . FASTENER, SOCKET	3		PAGZZ
37	60A113C29-1	. . CLAMP, SINGLE CABLE	1	A,B	PAGZZ
38	MS51957-44	. . SCREW	2		PAGZZ
39	60A113C28-1	. . EYE	4		PAGZZ
40	60A113C31-1	. . CONE, 0.338 GRIP	2		PAGZZ
41	60A113C25-1	. . WASHER, GROMMET	3		PAGZZ
42	MS22048GC1	. . GROMMET	3		PAGZZ
43	MS27983-3	. . FASTENER, STUD	14		PAGZZ
44	MS27980-8B	. . FASTENER, EYELET	19		PAGZZ
45	814AS807-1	. . FASTENER, SLIDE	1		PAGZZ
46	585AS100-1	. . LABEL, PARACHUTE ASSEMBLY	1		MDGZZ
47	MS22048C2	. . GROMMET AND WASHER, PARACHUTE PACK	4		PAGZZ
48	MS27980-1B	. . FASTENER, BUTTON	5		PAGZZ
49	MS27980-6B	. . FASTENER, SOCKET	5		PAGZZ
50	MS27980-7B	. . FASTENER, STUD	5		PAGZZ
51	60A113D11-2	. . SPRING ASSEMBLY, CONTAINER OPENING	8	*	PAOZZ
	MS70105-6	. . SPRING ASSEMBLY, CONTAINER OPENING	8	*	PAOZZ

Figure 1. NB-6 Personnel Parachute Assembly (Sheet 5 of 5)

ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

NB-7 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 566AS100-11 and 566AS100-14

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1 thru 2	1	3 thru 6	0				

Reference Material

Illustrated Parts Breakdown . . . . . WP 012 04

Alphabetical Index

Title	Page
Configurations	2
Description	2
General	2
Principles of Operation	2
Manual Operation	2
Repack Schedule	2
Subassembly Configurations	2

Record of Applicable Technical Directives

None

1. DESCRIPTION.

2. GENERAL. The NB-7 Personnel Parachute Assembly is a back-type parachute consisting of a multicolored (white, olive green, international orange, and sand shade), 28 ft. diameter, flat, circular, nylon canopy with 28 gores used with a PCU-33/P or PCU-56/P parachute restraint harness. Water deflation pockets are provided on alternating gores. The canopy is packed in a container assembly (Figure 1) and secured to the aircrewmember's back by means of a PCU-33/P or PCU-56/P parachute restraint harness.

3. The parachute assembly is mated to a seat survival kit by a slide fastener and then installed in the aircraft seat. The harness incorporates the parachute restraint harness and provides attachment points for the parachute assembly and survival kit. When aboard the aircraft and seated, the aircrewmember connects the canopy release fittings on the parachute risers to the canopy release adapters on the harness.

4. CONFIGURATIONS. Two different configurations for the NB-7 parachute assembly may be used in-service. The difference is the addition or absence of the parachute harness sensing release unit. Refer to the Illustrated Parts Breakdown WP 012 04 for exact configuration requirements.

5. SUBASSEMBLY CONFIGURATIONS. The subassemblies listed below make up the various configurations of the NB-7 parachute assembly and are shown in (Figure 2). Refer to WP 012 04 for detailed information on subassemblies.

Pilot Parachute Assembly

Pilot Parachute Connector Strap

Canopy Assembly

Cross-Connector Straps

Ripcord

Risers

Back Pad

Container Assembly

Parachute Harness Sensing Release Units

6. PRINCIPLES OF OPERATION.

7. MANUAL OPERATION. After emergency bailout, the following operations take place:

a. Manually pulling the ripcord grip removes the ripcord pins from the container locking cones, permitting the grommets and locking cones to separate.

b. The container spring opening assemblies pull the side flaps apart allowing the pilot parachute to spring from the container and inflate.

c. The aircrewmember's falling away from the inflated pilot parachute causes the canopy to be extracted from the container followed by the suspension lines. The canopy begins to inflate during this operation.

d. The riser fasteners disengage from the container fasteners as load is applied. The risers are then pulled from the container, and the canopy inflates. This permits the aircrewmember to descend suspended in the harness.

e. By manually actuating the four-line release system, the aircrewmember may reduce oscillation during descent and maneuver the parachute to a less hazardous landing site.

f. Upon landing, the aircrewmember releases the canopy by actuation of the canopy release fittings.

g. The parachute harness sensing release unit provides an automatic backup method of releasing the risers after the crewmember makes a seawater entry.

8. REPACK SCHEDULE.

a. Scheduled repack cycle is 672 days.

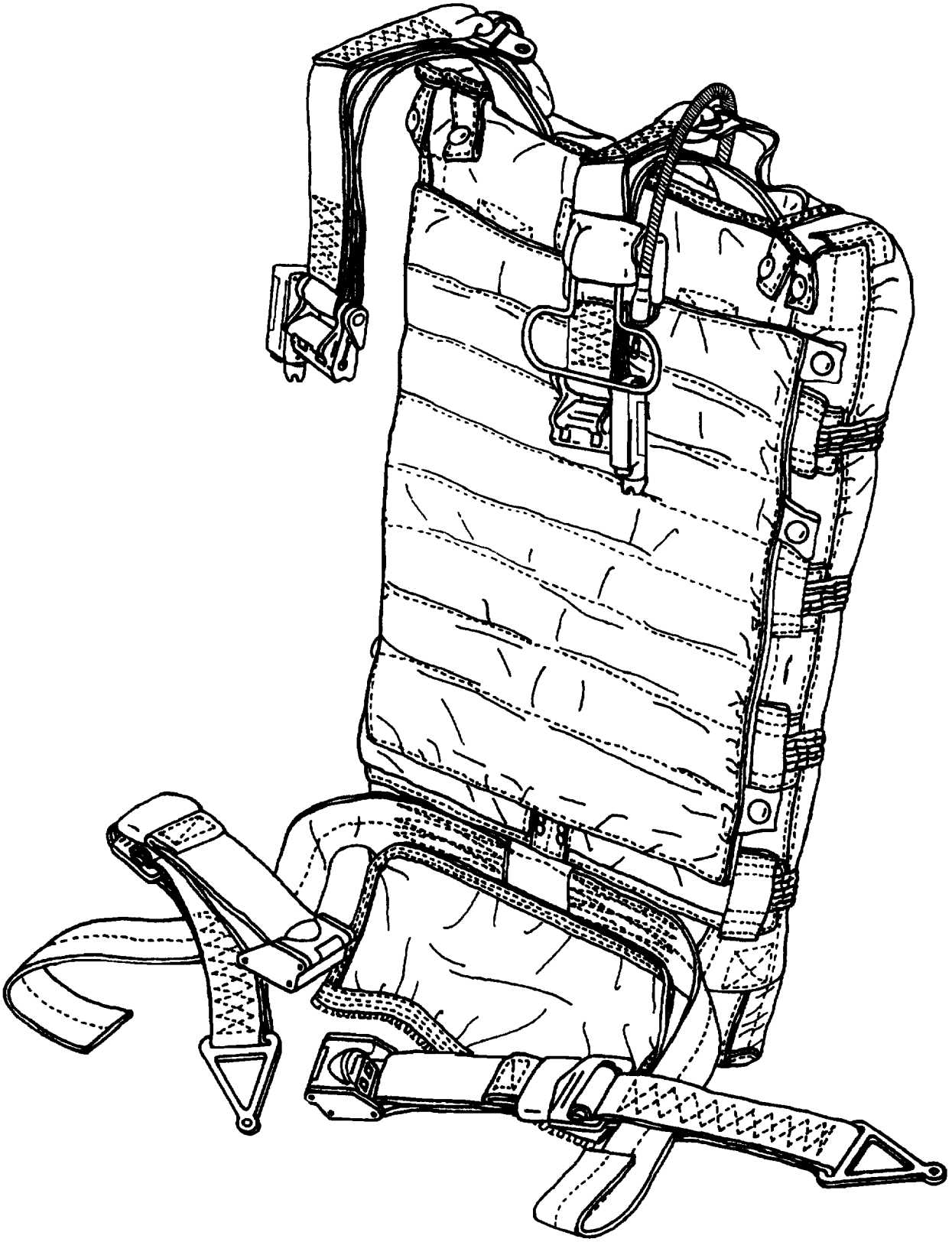


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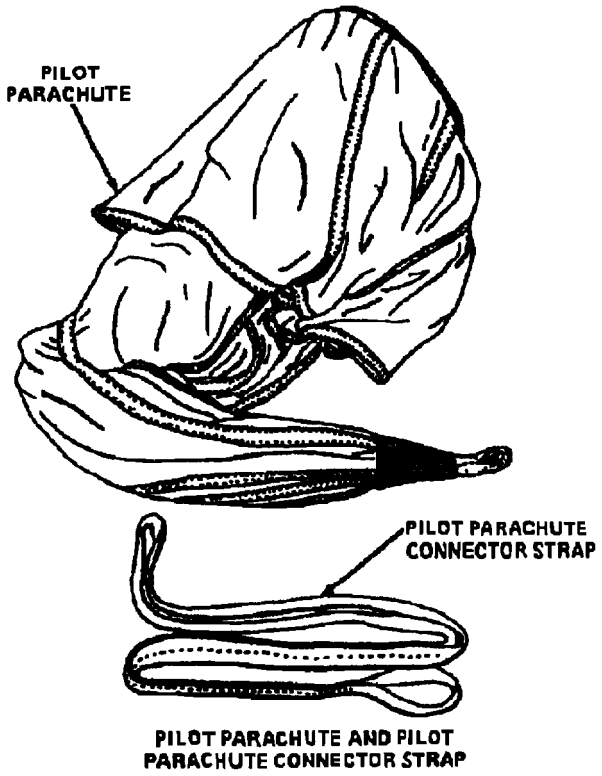
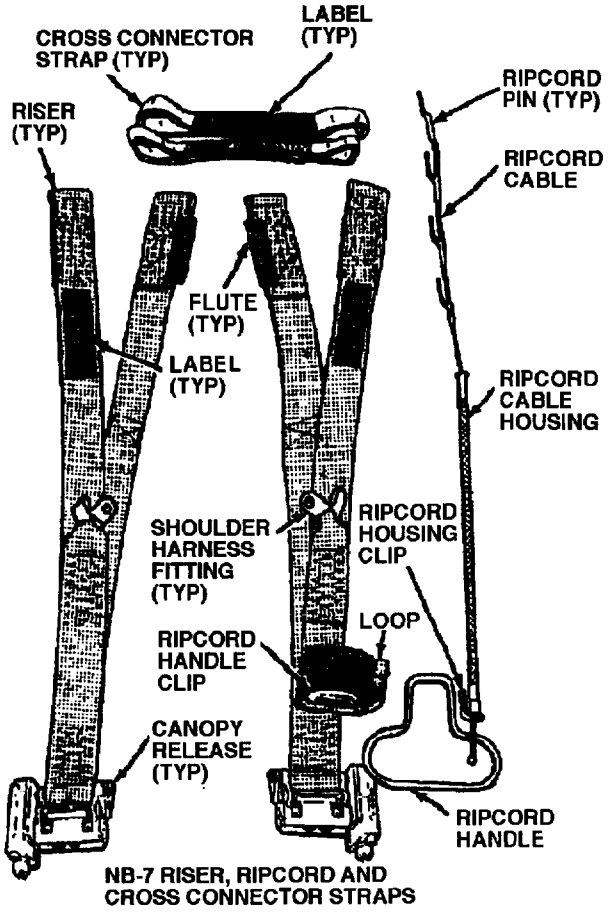
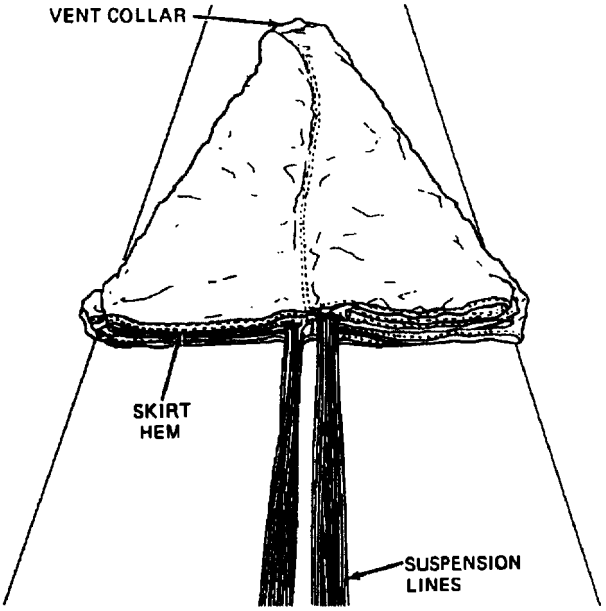
Figure 1. Personnel Parachute Assembly, NB-7







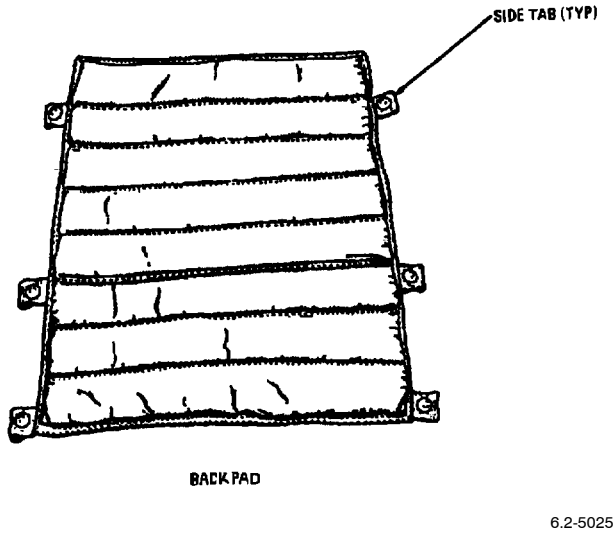


Figure 2. Subassemblies, NB-7 (Sheet 1 of 3)

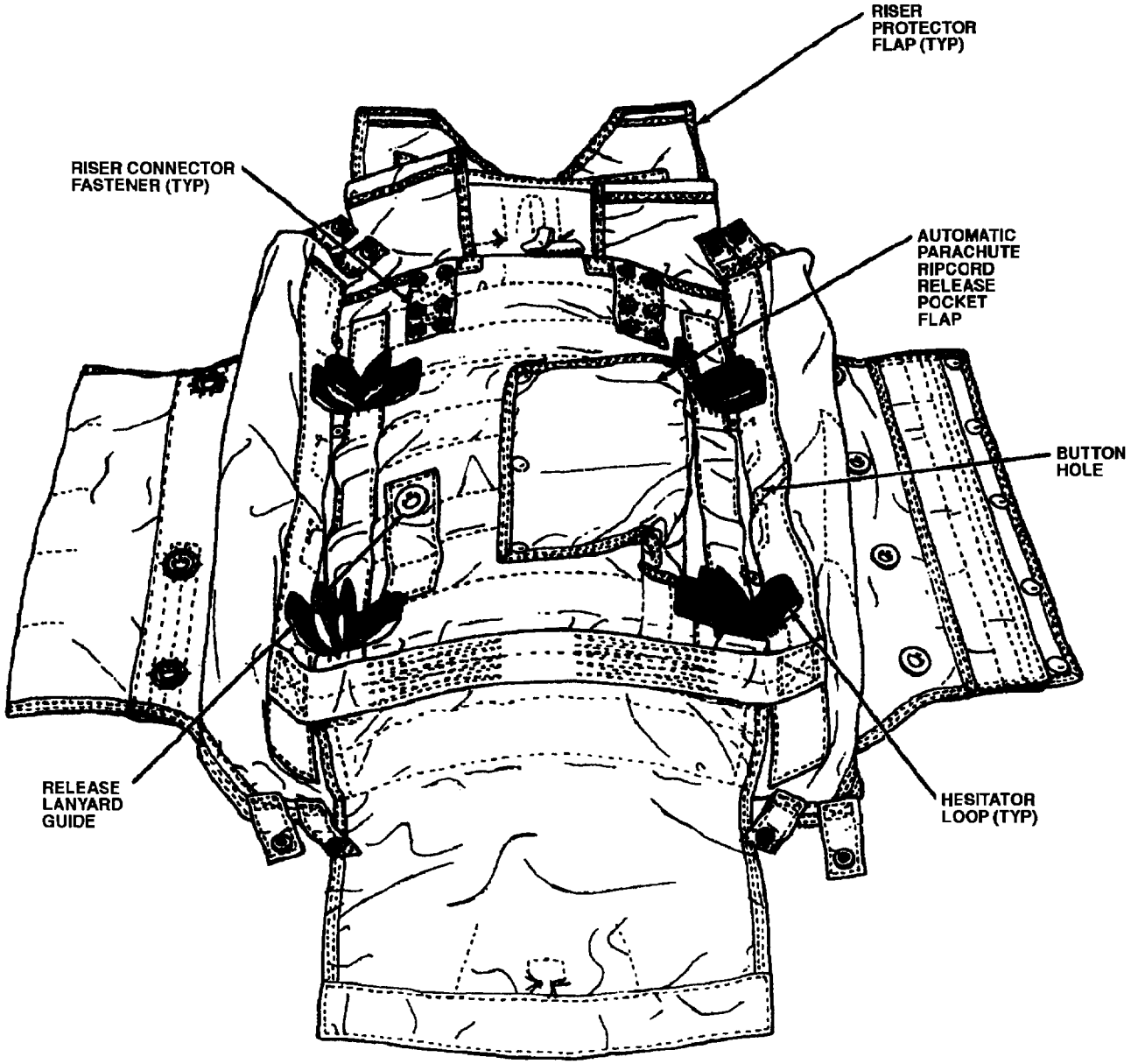


Figure 2. Subassemblies, NB-7 (Sheet 2 of 3)

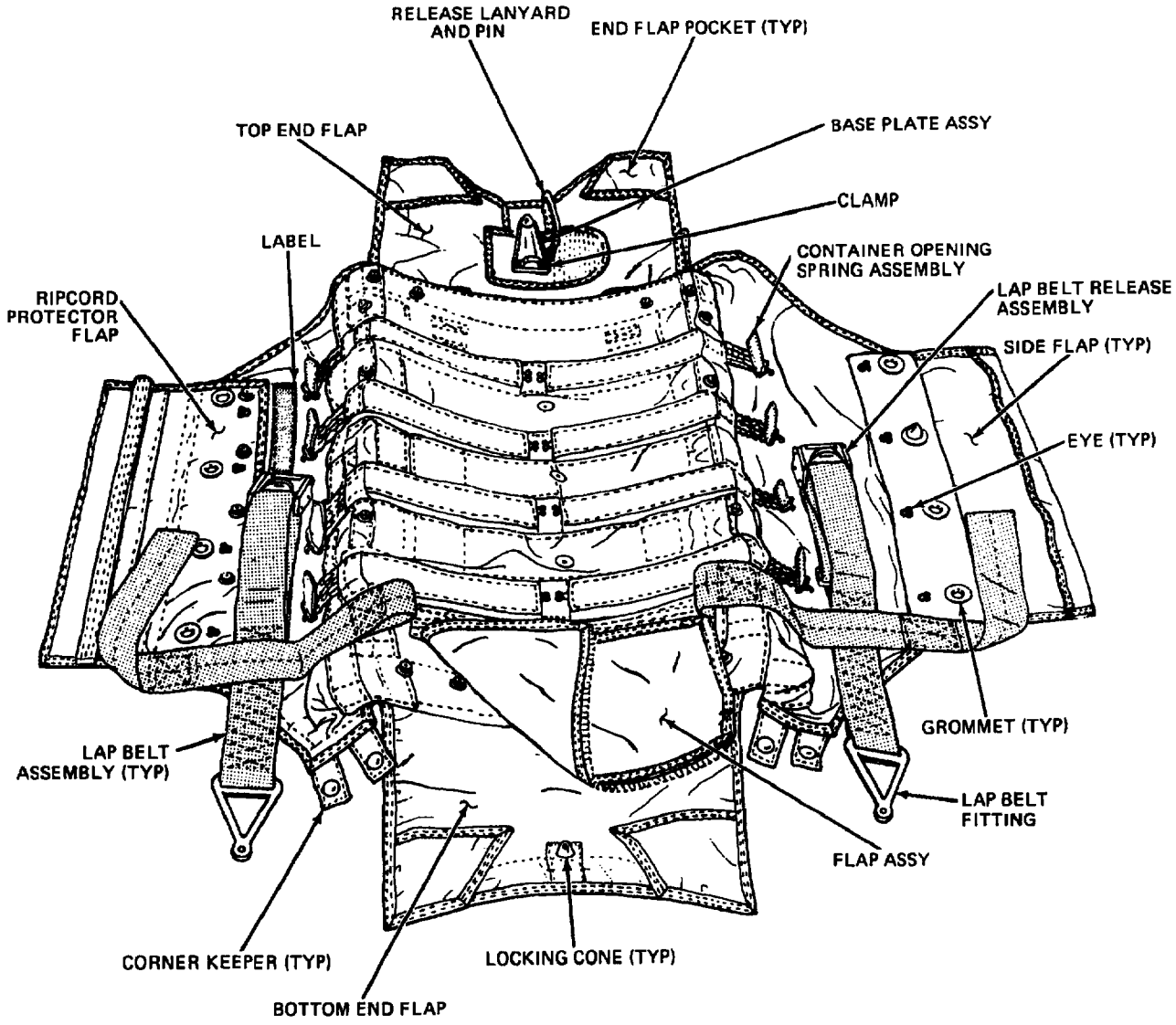


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Figure 2. Subassemblies, NB-7 (Sheet 3 of 3)

ORGANIZATIONAL MAINTENANCE

REPAIR PROCEDURES

NB-7 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 566AS100-11 and 566AS100-14

List of Effective Work Package Pages

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Reference Material

Aviation-Crew Systems Seat Survival Kits (Oxygen Hoses and Non-SDU-Series Kits) . . . . . NAVAIR 13-1-6.3-1

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Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains instructions for organizational level repair to ensure that the parachute assembly remains in Ready-For-Issue (RFI) status.

b. When performing repairs detailed in this WP, proceed per these guidelines:

(1) Review all applicable instructions prior to starting repair.

(2) Ensure that all necessary support equipment and materials required are available prior to starting repair.

(3) When required, remove enough material from its source for immediate use only. Ensure that the material identification ticket remains with the source material at all times. Material that cannot be identified will not be used.

(4) To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

(5) A Quality Assurance (QA) inspector shall examine the finished work.

2. RISER ASSEMBLY.

3. REPLACEMENT OF RIPCORD HOUSING CLIP TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. If necessary, reinsert ripcord housing clip into webbing loop attached to riser (Figure 1).

b. Insert ripcord grip into retainer.

c. Tack thru loop and thru hole in housing clip with one turn of size E thread, single and waxed; tie off (Figure 1). (QA)

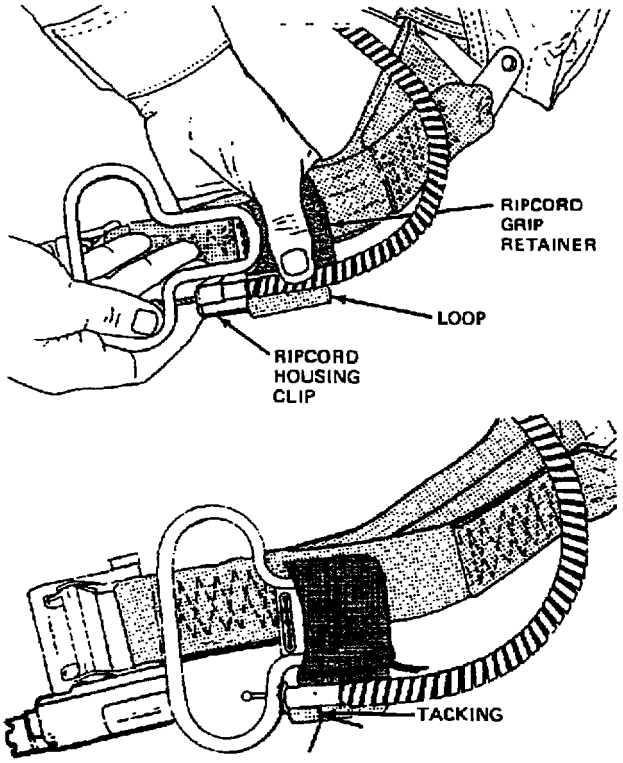

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Figure 1. Replacement of Ripcord Housing Clip Tacking

4. CANOPY RELEASE ASSEMBLY.

a. Repair of the canopy release assembly is limited to the following:

(1) Replacement of broken torque seal on screwhead.

(2) Cleaning of dirt, grease, and other contaminating agents.

b. Replace canopy release assembly for any of the following:

(1) Failure of actuating lever to meet torque requirement.

(2) Inoperable release.

(3) Corrosion, contamination, pitting, cracks, dents, and other damage. Inspect the release lever left and right arms for cracks.

5. REPLACEMENT OF CANOPY RELEASE ASSEMBLY.

Support Equipment

Part Number	Nomenclature
Meter, Torque	TQS-050 (Cage 55719) or TQS6 (Cage 55719)
Driver, Hex Head 1/16 in. bit	TMA2 (Cage 55719) for use w/TQS6

Material Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

CAUTION

After pin has been removed, do not lift canopy release assembly fitting locking cover plate.

a. Remove unserviceable canopy release assembly fitting by removing setscrew on underside of fitting and sliding retention pin out. Remove pin guide tube from riser loop.

b. Inspect replacement canopy release for broken springs, corrosion, dents, or sharp edges. Measure torque of knurled actuating lever as follows:

(1) Hold locking lever in open position and insert torque meter into either hexagonal cavity.

(2) Rotate actuating lever to point just prior to contact with body. The allowable torque is 28 to 50 in-oz.

c. Inspect replacement canopy release assembly for proper locking as follows:

(1) Engage male adapter (with trapezoidal notch) with canopy release assembly (Figure 2).

(2) Verify full locking of canopy release assembly by lifting locking lever and attempting to disengage adapter from canopy release.

NOTE

Any free movement of actuating lever without spring tension is cause for rejection of canopy release.

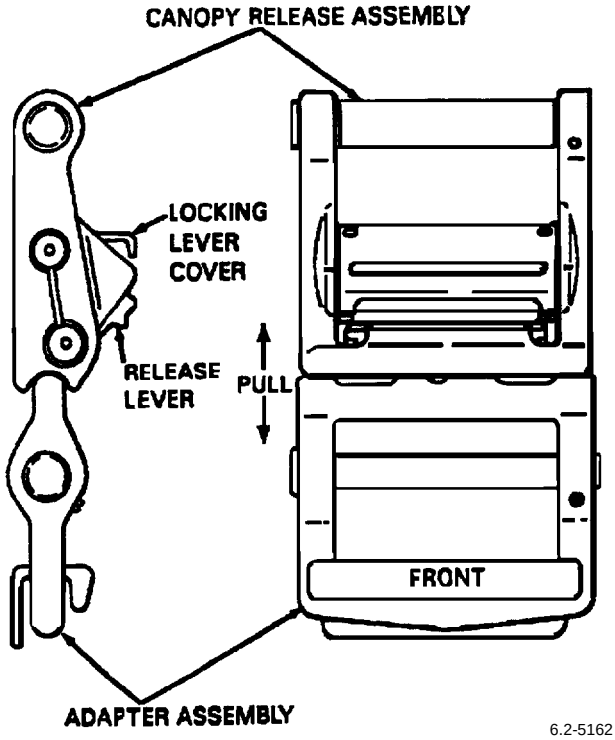

Figure 2. Canopy Release Assembly Locking Inspection

d. Insert new pin guide tube into riser loop (Figure 3).

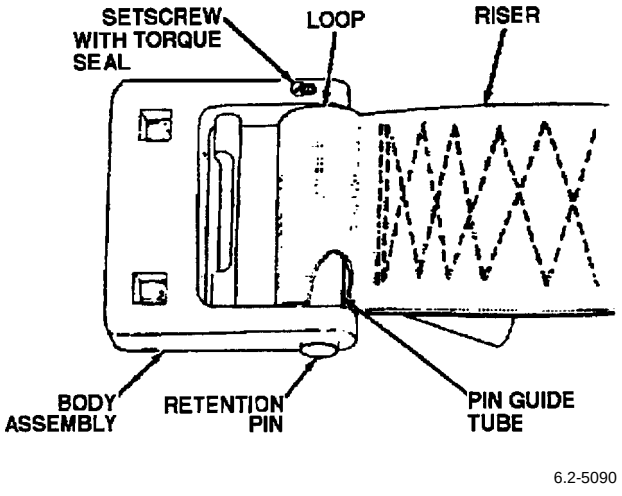

Figure 3. Canopy Release Assembly Replacement

e. Insert riser loop pin guide tube into body of canopy release. Insert retention pin thru pin guide tube.

f. Insert setscrew in hole located on underside of new canopy release assembly and tighten. Apply torque seal to setscrew (Figure 3).

6. REPLACEMENT OF TORQUE SEAL ON CANOPY RELEASE ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Ensure setscrew is tight and seated properly in retention pin.

b. Apply torque seal to setscrew (Figure 3). (QA)

7. REPLACEMENT OF TORQUE SEAL ON CANOPY RELEASE ASSEMBLY WITH SEAWARS INCORPORATED.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Apply torque seal to the plug assembly, sensor plug and electronics package assembly attaching screws (Figure 4).

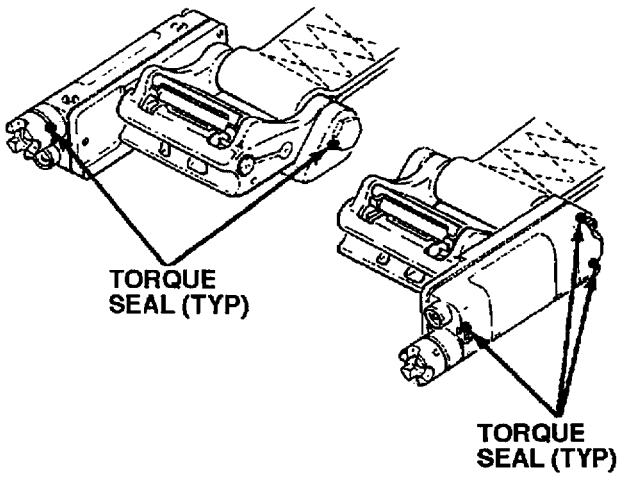

Figure 4. Torque Seal on PHSRU Assembly Replacement

8. LAP BELT ASSEMBLY.

9. REPLACEMENT OF LAP BELT RELEASE ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
1979AS826-1 -or- 015-11365-1 -or- 990060-1	Release Assembly, Lap Belt
MIL-S-22473	Sealing Compound, Grade H

a. Remove two shoulder screws. Pull release assembly away from webbing and slide pin out of harness webbing loop.

b. Inspect new release assembly for operation, corrosion, burrs, and sharp edges.

c. Insert new pin into webbing loop.

d. Apply sealing compound to threads of two shoulder screws. Install screws thru holes in release assembly and into pin (Figure 5).

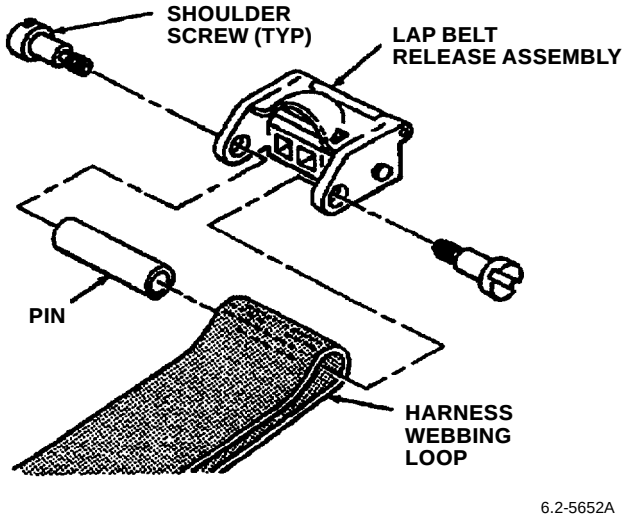

Figure 5. Lap Belt Release Assembly Replacement

10. CONTAINER ASSEMBLY.

11. REPLACEMENT OF RIPCORD PIN RETENTION TIE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Completely remove broken retention tie from ripcord pin and cable.

b. Loop a 12-in. length of size E thread, single and waxed, under bottom ripcord pin. Secure by bringing thread ends together and forming 3 to 5 half-hitches above ripcord pin ferrule. Top off with a binder knot (Figure 6).

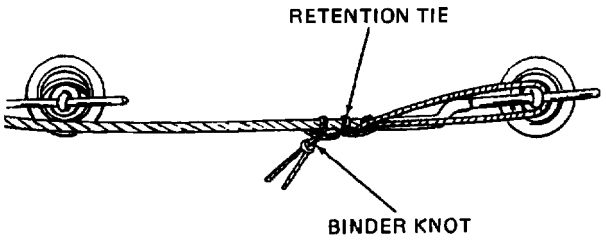

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Figure 6. Ripcord Pin Retention Tie Replacement

c. Trim excess thread 1/2-in. from knot.

12. REPLACEMENT OF SPRING OPENING ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
60A113D11-3	Spring Assembly, Container Opening

a. Measure length of replace spring opening assembly. Required length is 10 3/8 ± 1/4-in. when measured from end of one hook to end of other hook with no tension applied.

b. Inspect spring opening assembly for broken spring, contamination, corrosion, cuts, fraying, bent or broken hooks, elasticity, and loose or broken stitching.

c. Remove back pad from container.

d. Remove defective spring opening assembly from eyelet on container centerline.

e. Attach hook of defective spring opening assembly to hook of replacement spring opening assembly at pull tab end. Pull replacement spring opening assembly thru channel while removing defective spring opening ssembly.

f. Attach hook of replacement spring opening assembly with hook facing down to eyelet on container centerline. Crimp hook to eyelet.

g. Attach remaining hook to corresponding eyelet on container.

h. Attach back pad to container.

13. SURVIVAL KIT.

14. REPLACEMENT OF STANDARD SOFT PACK (SSP) AND VENTILATED SEAT PAN.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Ensure that ventilated seat pan and SSP have been inspected and secured together per NAVAIR 13-1-6.3-1.

b. Attach ventilated seat pan and SSP to parachute container.

c. Place ventilated seat pan and SSP on table with SSP facing down.

d. Place parachute container upside down on table with bottom of parachute container facing rear of seat pan and SSP. Engage slide fastener (Figure 7).

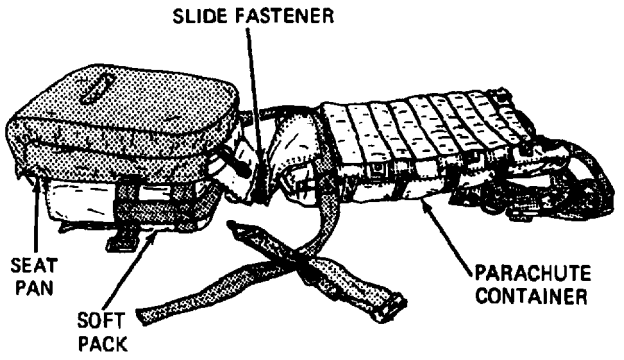

Figure 7. Placement of Parachute Container

e. Rotate parachute container over and place on top of seat pan and SSP.

f. Reeve both pararaft retainer straps thru slots in sides of seat pan (Figure 8).

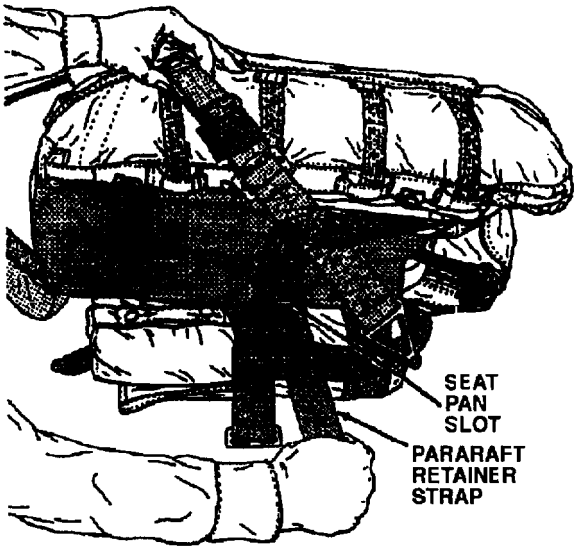

Figure 8. Reeving of Retainer Straps

g. Reeve pararaft retainer straps thru adapters on sides of SSP. Reeve retainer straps back thru adapters.

h. Leave 1 to 1 1/2-in. of strap above adapter. Tack both edges of each strap to strap beneath with two turns of size 6 thread, single and waxed; tie off (Figure 9).

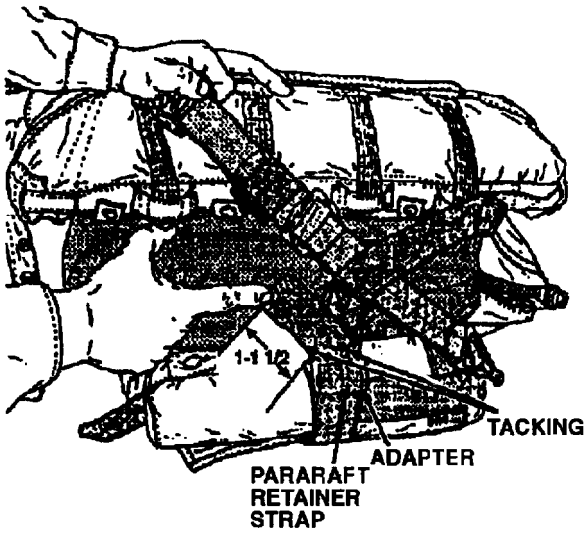

Figure 9. Tacking of Both Straps

15. REPLACEMENT OF RETAINER STRAP TACKINGS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Ensure retainer strap is reeved properly (Figure 9).

b. Tack retainer strap on both strap edges to strap beneath with two turns of size 6 thread, single and waxed; tie off (Figure 9).

INTERMEDIATE AND DEPOT MAINTENANCE

PACKING PROCEDURES

NB-7 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 566AS100-11 and 566AS100-14

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Intermediate and Depot Maintenance, Common Repair Procedures ..... WP 004 00
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdown, Emergency Personnel and Drogue Parachute Systems ..... WP 002 00
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration ..... WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment ..... WP 005 00

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Record of Applicable Technical Directives

None

1. GENERAL.

a. Packing instructions are provided with the assumption that they will be carried out under ideal conditions in a parachute loft (WP 003 00). When a parachute assembly must be packed under unfavorable conditions provisioning must be made to protect it from possible damage and excessive humidity.

b. In no case shall the packing of a parachute assembly be interrupted after the packing operation has been started. If the packing operation is interrupted due to unforeseen circumstance, the parachute assembly shall be completely repacked per instructions contained in this Work Package (WP).

c. Quality Assurance (QA) points have been included in the packing procedures. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Witnessing of (QA) steps may be delayed by (QA) if their satisfactory completion is verified in later steps.

d. During packing procedures, packer shall be positioned on left side of packing table, and helper on right side when viewed from riser end of table.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
TMA2 (use w/TQS6)	Hex Head Driver 1/16-in. Bit
Refer to WP 005 00	Shot Bag (4)
Refer to WP 005 00	Long Bar (2)
Refer to WP 005 00	Fid
—	Guide Tube
TQS-050 or TQS6	Torque Meter
Refer to WP 005 00	Packing Hook
11-1-3512	Small Line Separator
Refer to WP 005 00	Temporary Locking Pin (2)
DPP-50	Scale, Spring
Refer to WP 005 00	Ripcord Pin Lock

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon, Size A, Type I or II, Class A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
V-T-295	Thread, Nylon, Size 3, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
PIA-C-5040	Cord, Nylon, Type I or IA

a. Ensure that all support equipment and materials required are available prior to starting.

b. Inspect packing tools for nicks, burrs, or sharp edges which may cause damage to the parachute assembly.

c. Count and record number of packing tools.

d. Clean packing table.

3. LAYOUT OF RIGGED PARACHUTE ASSEMBLY.

a. Completely open parachute container and detach spring opening assemblies and corner keepers.

b. Remove canopy from container and place on table.

c. Remove release lanyard from connector link.

d. Remove connector link tacking and disengage riser fasteners from container and release lanyard pin from stud.

e. Remove suspension lines from container and then stretch full length on packing table.

f. Locate gore 28 (nameplate gore) and place uppermost in center of packing table.

g. Attach tension strap hook to canopy vent lines.

h. Separate suspension lines into two equal groups with lines 1 thru 14 on packer's side and lines 15 thru 28 on helper's side. Grasping each group of lines, walk from skirt hem to connector links removing any twists between the two groups.

i. Position container on packing table with inside facing up and ripcord pocket on packer's side of table.

j. Place connector link holding lines 1 thru 7 on top of connector link holding lines 8 thru 14. Place connector link holding lines 22 thru 28 on top of connector link holding lines 15 thru 21. Insert tension hooks into connector links and insert hooks into packing table (Figure 1).

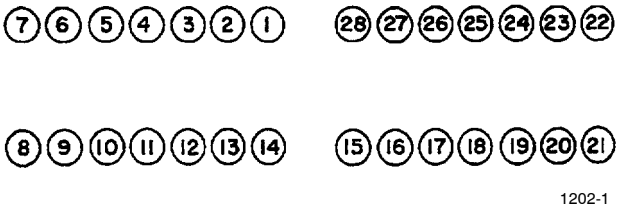


Figure 1. Arrangement and Orientation of Suspension Lines on Connector Links

k. Tension canopy using tension strap.

l. Pull canopy vent collar below upper lateral band. Ensure that upper lateral band is even (Figure 2).

m. Pull vent collar back to original position.

4. INSPECTION (SPECIAL).

a. Maximum scheduled repack cycle is 672 days.

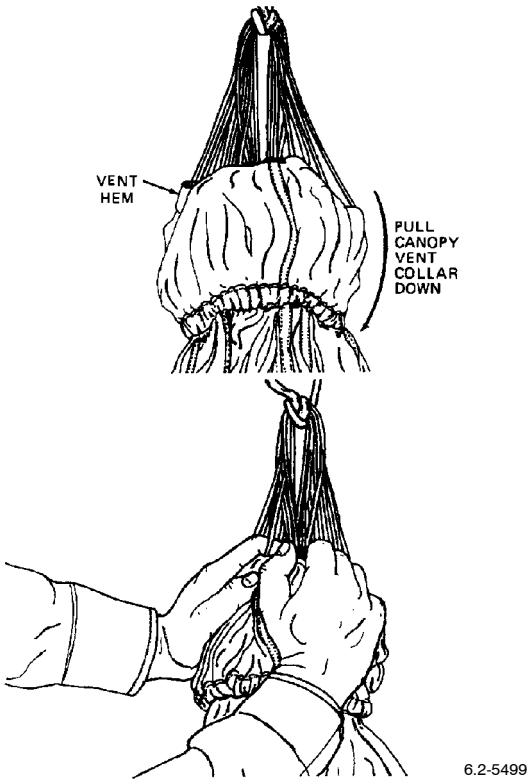


Figure 2. Adjustment of Vent Hem

5. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Parachute Harness Sensing Release Unit Cartridge) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be re-based if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Components without a service/total life shall be removed from service if the components do not pass inspection, as determined by Quality Assurance Representative (QAR) or Collateral Duty Inspector (CDI).

g. Check date placed in-service and date of manufacture on each parachute part for service/total life as follows:

Nomenclature	Service Life (Yr)	Total Life (Yr)
Battery	4	4
Canopy Assembly	None	15
Cartridge MW19	Refer to NAVAIR 11-100-1.1	
Cross-Connector Strap	(See Note 1)	(See Note 1)
Electronics Package Assembly	None	8
Pilot Parachute		15
Pilot Parachute Connector Strap	None	15
Riser Assembly	None	15

Note 1: Replace at Canopy Assembly replacement.

(1) Markings for completeness, legibility, and agreement with information on Parachute Record (OPNAV 4790/101).

(2) Compare configuration of parachute assembly to that shown in NAVAIR 13-1-6.2 Record of Applicable Technical Directives, and Illustrated Parts Breakdown.

6. SUSPENSION LINE CONTINUITY CHECK.

a. Grasp line 1 on left side of gore 28 and raise line to height sufficient to ensure that line is free of dips and twists from skirt hem to connector links. Continue procedure with lines 2 thru 14. (QA)

b. Use same procedure as in step a above on right side of gore 28 except that packer shall start with line 28 and work thru line 15 (Figure 1). (QA)

7. CANOPY ASSEMBLY.

a. Canopy skirt hem, fabric surface, diagonal seams, radical seams, vent hem, water deflation pockets, for cuts, holes, ruptures, contamination, deterioration, and loose or broken stitching.

b. Suspension lines and canopy apex lines for fraying, ruptures, protruding inner core lines, burns, contamination, and presence of twists.

c. Attachment of suspension line at skirt hem for security and condition of V-tabs.

d. Attachment of four-line release anchor loops to suspension lines 3 and 26.

e. Attachment of four-line release lanyards to anchor loops on suspension lines 3 and 26.

f. Activate the four-line release and retack per WP 004 00. (QA)

g. Four-line release system for proper rigging and security of tacking WP 004 00. (QA)

h. Connector links for corrosion, distortion, nicks, burrs, sharp edges, and cracks.

NOTE

For Double "L" Connector Link, refer to WP 012 03 for disassembly, assembly, and inspection instructions.

i. Connector links for defective yoke and plate assemblies. Maximum of 1/32-in. play allowable in plate.

j. Torque seal unbroken with yoke and plate assemblies installed with knurled portion facing up and screwheads facing outboard (Figure 3). (QA)

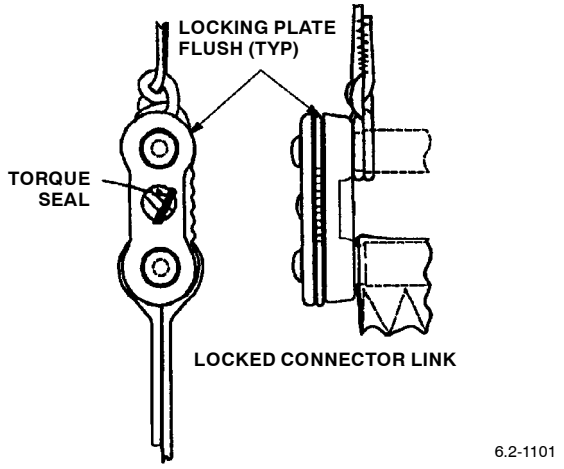


Figure 3. Torque Seal Unbroken

8. PILOT PARACHUTE CONNECTOR STRAP.

a. Fabric surfaces, and seams for cuts, tears, burns, fraying, and loose or broken stitching.

b. Vane material for cuts, tears, burns, fraying, and deterioration.

c. Seam area at crown for seam separation.

d. Spring assembly for distortion.

e. Loose or broken tackings (4 places) at bottom of coil spring.

f. Connector strap for cuts, fraying, burns, loose or broken stitching.

g. Connector strap for proper attachment at apex lines and pilot parachute loop.

h. Connector strap for loose or broken tacking of Lark's head knot at pilot parachute loop.

9. RISERS AND CROSS-CONNECTOR STRAPS.

a. Webbing for contamination, rust at points of contact with metal parts, cuts, twists, fading, wear, fraying, burns, abrasions and loose or broken stitching.

b. Four-line release lanyard flute for wear and proper attachment.

c. Cross-connector straps for proper attachment to connector links.

d. Four-line release and release lanyard pull loops for loose or broken tackings.

e. Snap fastener sockets for proper mating to container, easy release if pulled from connector link end of riser, damage, and security of attachment.

f. Ripcord grip retainer for corrosion, damage, and security of attachment.

g. Cross-connector straps for contamination, cuts, fraying, burns, and loose or broken stitching.

h. Shoulder harness fittings or corrosion, damage, and security of attachment.

10. CANOPY RELEASE ASSEMBLY.

a. Release body for broken actuating and locking lever springs, corrosion, dents, dirt, or sharp edges. Inspect the release lever left and right arms for cracks.

b. Presence and condition of torque seal on setscrew.

c. Measure torque of knurled actuating lever as follows:

(1) Hold locking lever in open position and insert torque meter into either hexagonal cavity. (QA)

(2) Rotate actuating lever to point just prior to contact with body. The allowable torque of 28 to 50-in. oz. (Figure 4).

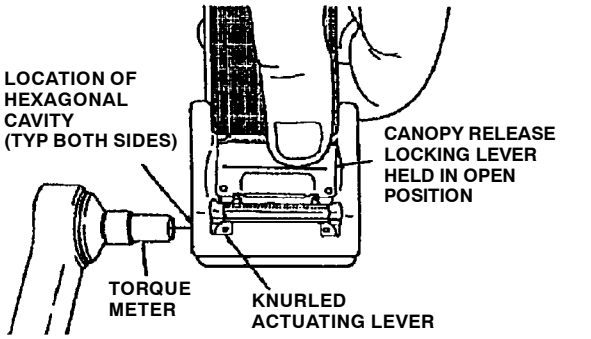


Figure 4. Torque Inspection

11. INSPECTION OF RIPCORD ASSEMBLY.

a. Cable for corrosion, bends, fraying, broken strands and security of attachment of swaged ball.

b. Locking pins for bends, dents, cracks, security of attachment to cable, and corrosion.

c. Grip for bends, dents, cracks, and corrosion.

d. Housing and clip for corrosion, bends, dents, security of attachment, loose ferrules, breaks, and cracks.

12. CONTAINER AND BACK PAD.

a. Grommets, cones, snap fasteners for security of attachment, cracks, corrosion, nicks, and gouges.

b. Slide fasteners for condition and proper operation.

c. Fabric areas release lanyard, and hesitator loops for seam separations, loose or broken stitching, cuts, tears, contamination, and detoriation.

d. Hardware for corrosion, bends, dents, nicks, sharp edges, and security of attachment.

e. Spring opening assemblies for broken springs, contamination, corrosion, cuts, fraying, bent or broken hooks, elasticity, and loose or broken stitching.

f. Spring opening eyes (8) for security of attachment.

g. Snap fastener studs for proper mating with risers, security of attachment, and damage.

h. Release assembly pocket slide fastener for proper operation.

13. LAPBELT ASSEMBLY.

a. Webbing for contamination, cuts, fraying, twists, loose or broken stitching and presence and condition of keeper straps.

b. Adapters for corrosion, nicks, burrs, sharp edges, security of attachment and ease of operation.

c. Lapbelt fittings for corrosion, bends, burrs, wear, and cracks.

d. Slide fastener for condition and security of attachment.

e. Release assemblies for condition, corrosion, security of attachment and proper operation (Figure 5).

14. PACKING.

15. WHIPPING AND FOLDING OF CANOPY.

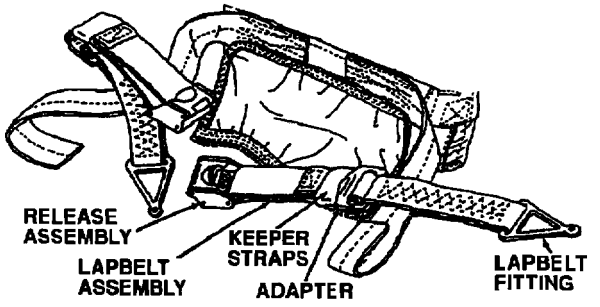


Figure 5. Proper Attachment

a. Packer and helper shall lift suspension line on each side of nameplate gore up and out. Skirt hem between lines shall be taut so that canopy apex can be seen on inside. While holding suspension line up, each man shall whip the gore hanging from line outwards to prepare canopy for folding (Figure 6).

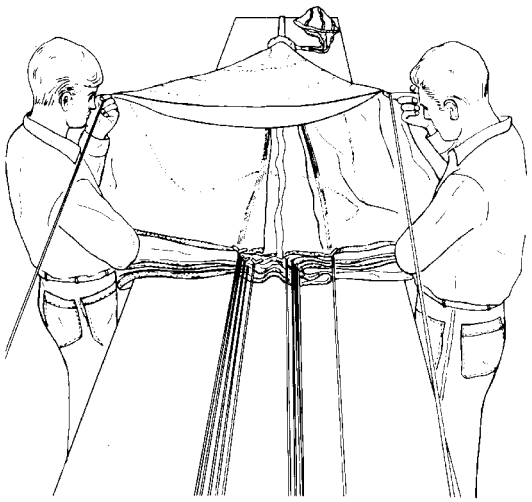


Figure 6. Lift Suspension Line on Each Side of Nameplate

b. Draw next suspension line upwards to suspension line in hand, using a rapid, circular motion (Figure 7).

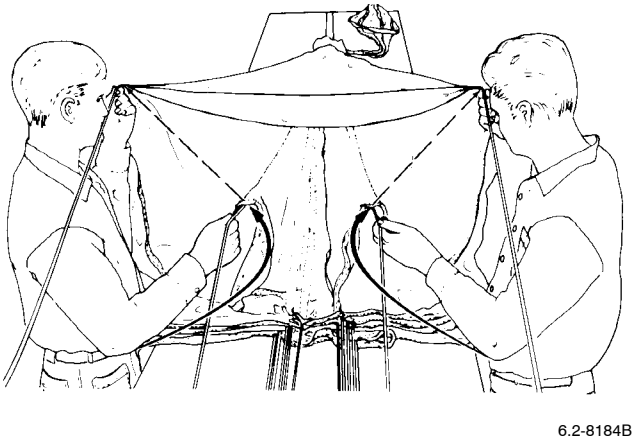
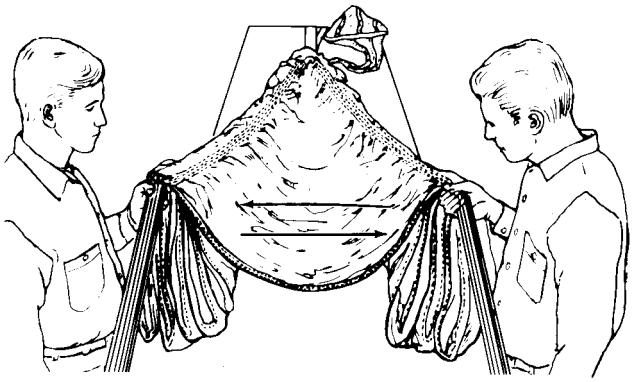


Figure 7. Draw Next Suspension Line Upwards

c. Continue whipping operation for all gores. Ensure radial seams are not overlapped by gore material. Move whipped gores rapidly back and forth across packing table (Figure 8).

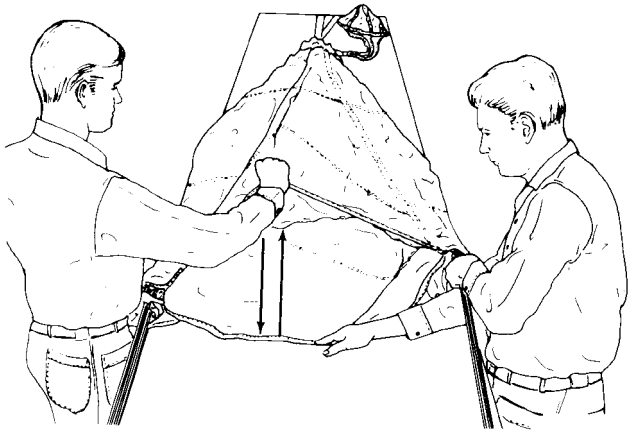


6.2-5184C

Figure 8. Continue Whipping Operation

d. Two groups of suspension lines shall be stretched to edges of packing table with folded gores hanging over sides. Packer and helper shall grasp all folds at outer edges on skirt hem and hold suspension line groups at edges of packing table. Packer and helper shall simultaneously move folds up and down rapidly in a whipping motion.

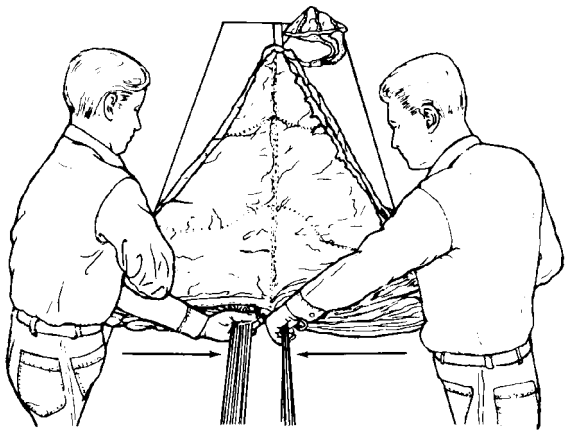
e. Packer shall flap top gore up and down at skirt hem center as helper holds bottom gore at skirt hem center (Figure 9).



6.2-5184D

Figure 9. Packer Shall Flap Top Gore

f. On signal, packer and helper shall draw their respective gores, at skirt hem centers, towards table edge while at same time bringing suspension line groups to center of packing table (Figure 10).

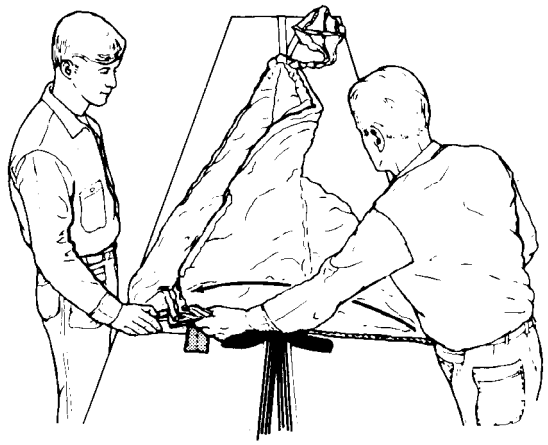


6.2-8185A

Figure 10. Draw Respective Gores to Center

g. Insert suspension line groups into their respective slots in line separator and place shot bag on lines. Packer shall place second shot bag across skirt hem on left side of suspension lines.

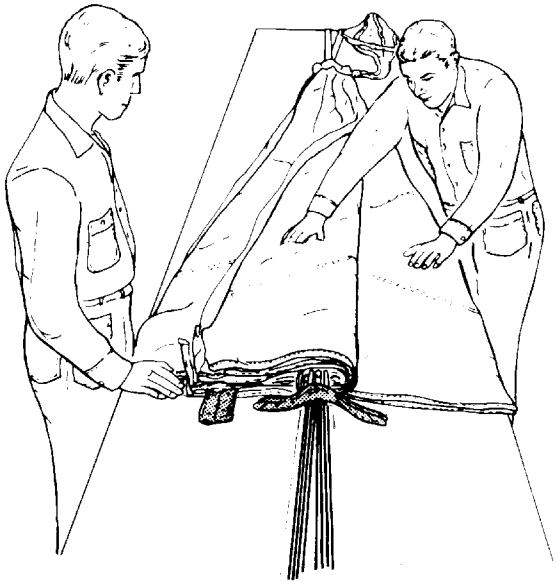
h. Helper shall rotate all gores as a group except bottom gore, from helpers side to packer's side of packing table (Figure 11).



6.2-5185B

Figure 11. Helper Rotate All Gores to Packer's Side

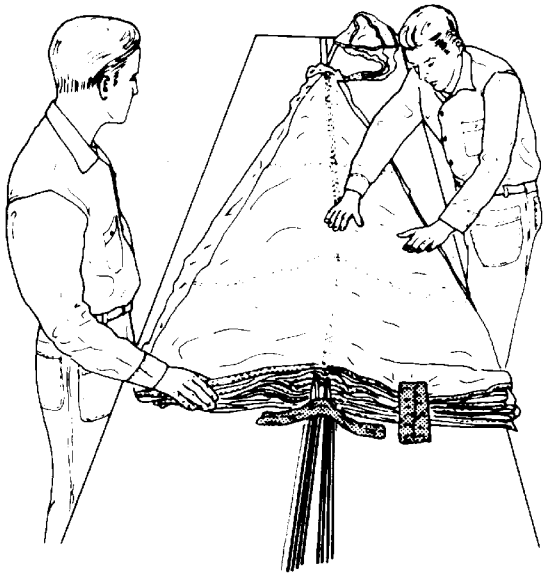
i. Helper shall straighten and smooth bottom gore on helper's side of packing table throughout its length to apex (Figure 12).



6.2-5185C

Figure 12. Helper Shall Straighten and Smooth Gores

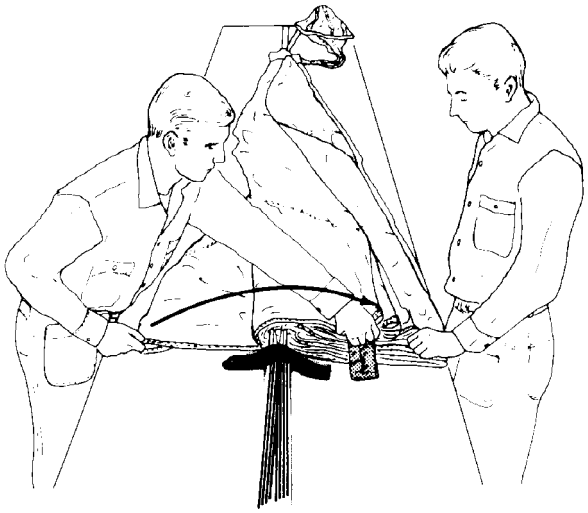
j. Packer shall return folded gores above shot bag to helper's side of packing table. Helper shall straighten and smooth each gore and place the shot bag on skirt hem (Figure 13).



6.2-5185D

Figure 13. Packer Return Folded Gores Above Shot Bag

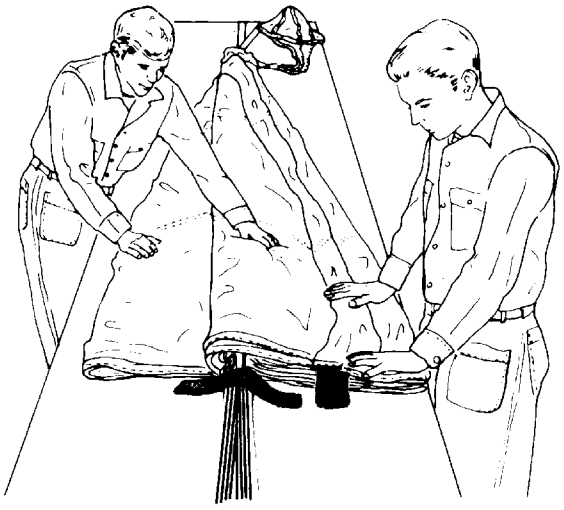
k. Packer shall rotate all gores as a group, except bottom gore, from packer's side to helper's side of packing table (Figure 14).



6.2-5186A

Figure 14. Packer Shall Rotate All Gores

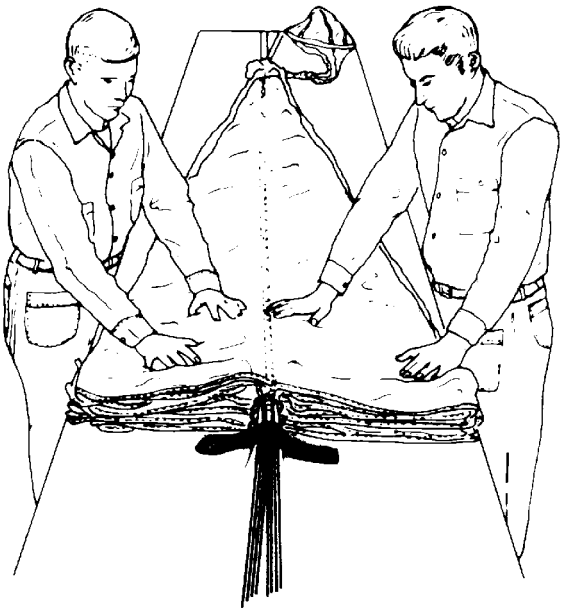
l. Packer shall straighten and smooth bottom gore on packer's side of packing table throughout its length to apex (Figure 15).



6.2-5186B

Figure 15. Packer Shall Straighten and Smooth Gores

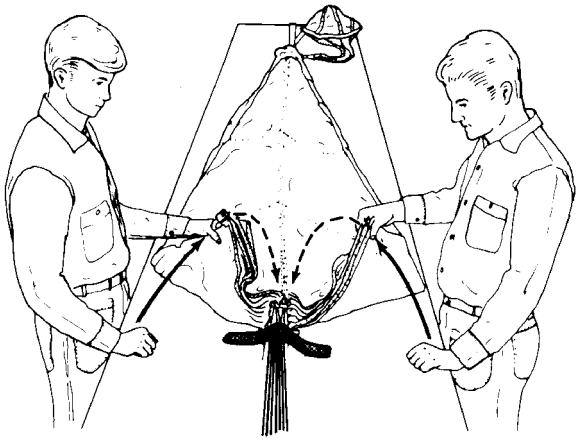
m. Helper shall return folded gores above shot bag to packer's side of packing table. Packer shall straighten and smooth each gore. remove shot bag from canopy (Figure 16).



6.2-5186C

Figure 16. Helper Shall Return Gores Above Shot Bag

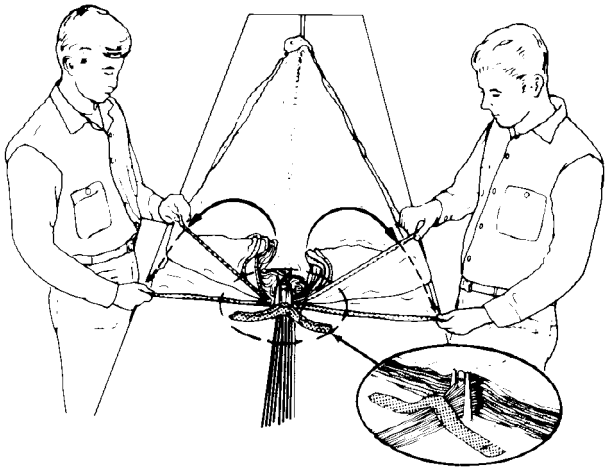
n. Packer and helper shall grasp skirt hem at mid-sections of gores and rotate towards suspension lines (Figure 17).



6.2-5186D

Figure 17. Grasp Skirt Hem and Rotate Towards Suspension Lines

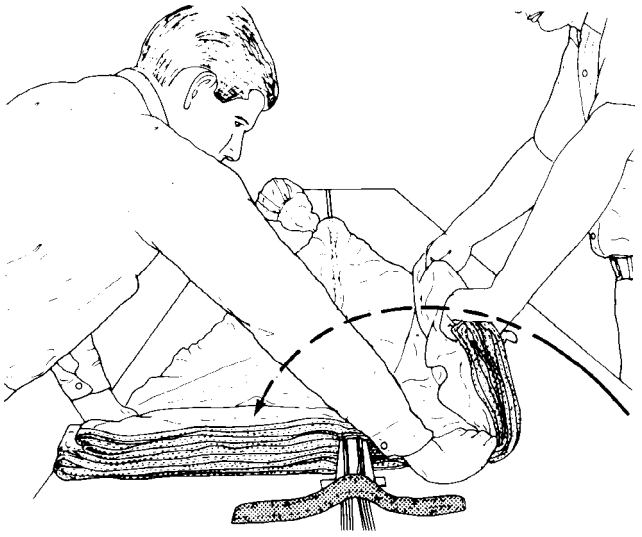
o. Packer and helper shall grasp bottom most gore fold and extend outwards, aligning edge of skirt hem and sus-pension line V-tab reinforcements. Remaining 13 gores shall be aligned in a similar manner. Ensure that all V-tab reinforcements face same direction and that 14 gores have been counted on each side (Figure 18).



6.2-6006A

Figure 18. Grasp Gore Folds and Extend Outwards

p. Canopy shall be folded by packer placing his hand on helper's side at skirt hem. Helper shall rotate gores to center of canopy (Figure 19).



6.2-6006B

Figure 19. Helper Rotate Gores to Center of Canopy

q. Helper shall place his hand on packer's side of skirt hem at center. Packer shall rotate gores to center of canopy. two groups of folded gores shall butt together. Note that canopy cannot be folded throughout entire length but breaks about two-thirds distance to apex (Figure 20).

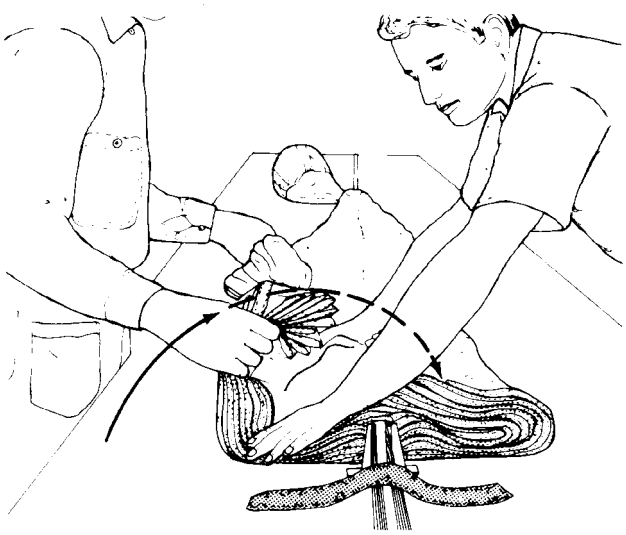


Figure 20. Packer Rotate Gores to Center of Canopy

r. Place one shot bag slightly behind hem and another on middle of canopy. Remove small line separator (Figure 21).

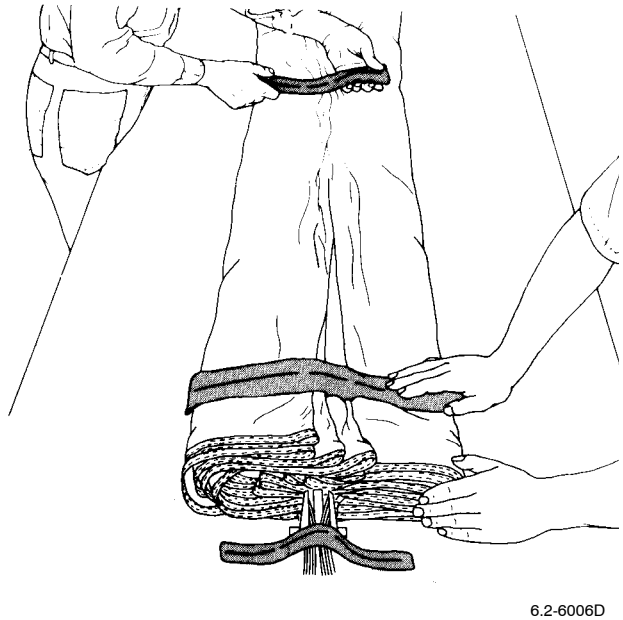


Figure 21. Placement of Shot Bags

16. ATTACHMENT OF RISERS TO CONTAINER.

a. Position container on top of canopy release assemblies with inside facing up. Insert risers into slots located at top end of container (Figure 22).

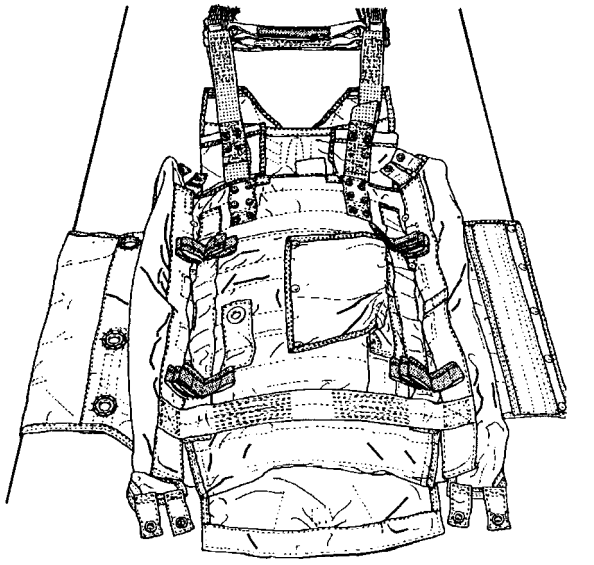


Figure 22. Position Container

b. Slide container towards connector links. Fold each riser back and secure riser fasteners to four bottom fasteners on container (Figure 23).

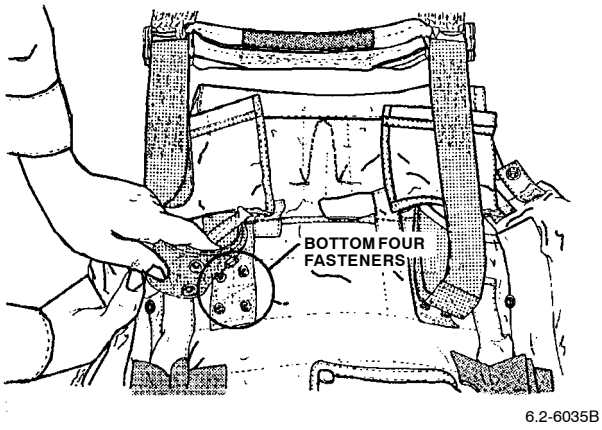


Figure 23. Slide Container Towards Connector Links

c. Release tension and remove tension strap, and place pilot parachute on top of canopy. Remove tension hooks from connector links, then remove hooks from packing table.

17. ATTACHMENT OF RIPCORD HOUSING AND SPACER TO CONTAINER BASE.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Position circular slotted end of base plate clamp under screwhead on base plate. Position manual ripcord housing and spacer under clamp with flat sides of each housing positioned against base plate. Engage clamp in clamping groove of two housing ends. Position elongated slot of clamp over base plate stud. Insert release lanyard locking pin into stud hole to secure clamp (Figure 24). (QA)

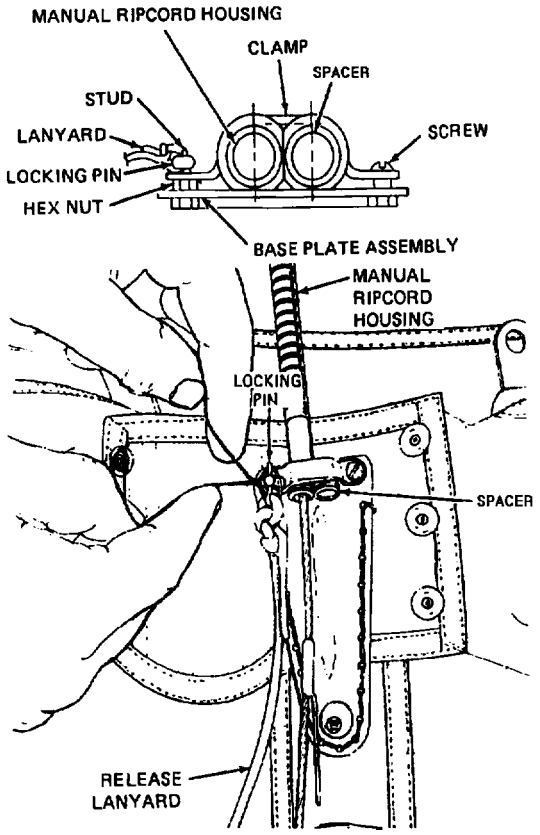


Figure 24. Attachment of Ripcord Housing and Spacer to Container Base

b. Safety-tie locking pin to stud with one turn size FF thread, single and waxed. Pass thread thru lanyard knot; tie off (Figure 24).

18. STOWAGE OF SUSPENSION LINES.

a. Position connector links inside open container (Figure 25).

b. Reeve lanyard thru lanyard guide grommet. Position 36-in. mark on lanyard over bar on bottom of left connector link and secure with a bowline knot followed by an overhand knot.

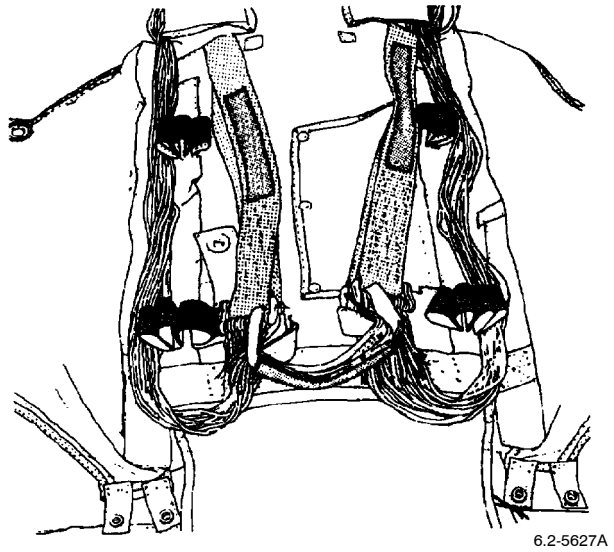


Figure 25. Position Connector Links

c. Position connector links on centerline of container above fifth container stiffener from top end. Tie inboard sides of connector links together, passing one turn size 3 thread, single and waxed, or one turn size FF thread, doubled and waxed, thru fabric above fifth container stiffener; tie off (Figure 26).

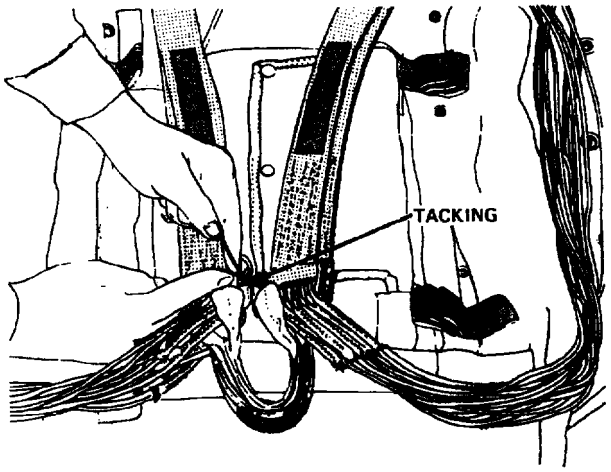


Figure 26. Position Connector Links on Center Line of Container

d. Helper shall position suspension lines at bottom edge of container. Packer shall form first bight over hesitator loop farthest from canopy and farthest from helper. Draw bight 3/4-in. past hesitator loop edge (loop edge to hook body). Ensure that there are equal lengths of suspension line in both groups from connector links to hand. Canopy shall be drawn along packing table only in enough lengths to let each bight to be formed (Figure 27).

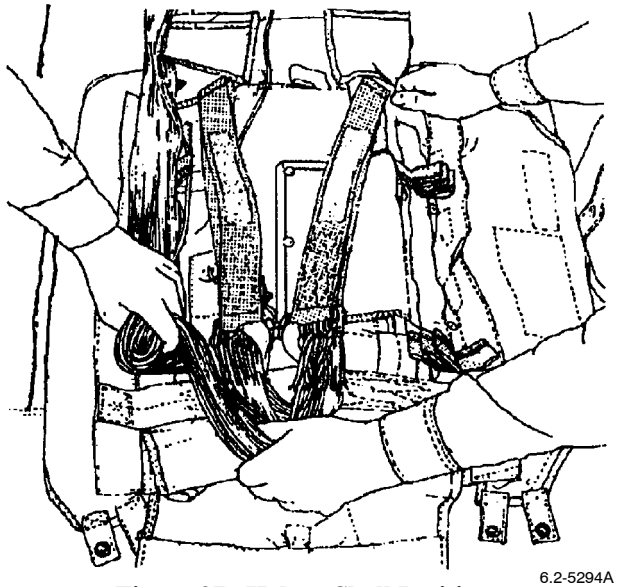


Figure 27. Helper Shall Position Suspension Lines

e. Keeping light tension on suspension line bight with packing hook, reposition and deposit the bight in front of hesitator loop. Carefully withdraw packing hook (Figure 28).

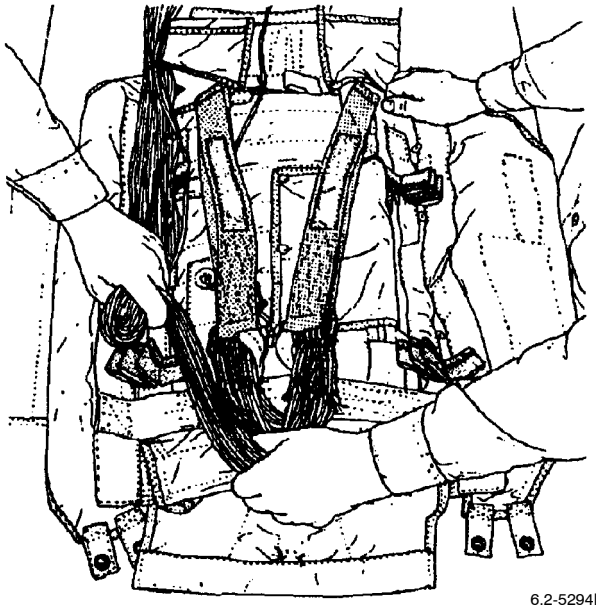


Figure 28. Keep Light Tension on Suspension Line Bight

f. Packer shall insert packing hook thru hesitator loop and draw first bight in suspension lines thru hesitator loop. There shall be a 3/8-in. clearance between packing hook and hesitator loop. When stowing bight 1 thru 8, helper shall assist by holding container steady and by holding finished bight while next bight is being formed (Figure 29).

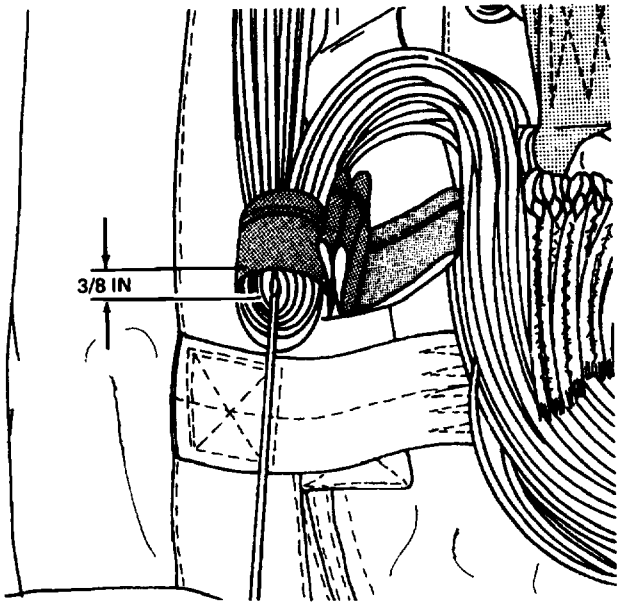


Figure 29. Insert Packing Hook Thru Hesitator Loop

g. Draw suspension lines and folded canopy toward container enough distance to let second suspension line bight to be formed. Draw suspension lines thru hesitator loop opposite first stow, maintaining 3/8-in. clearance between packing hook and hesitator loop (Figure 30).

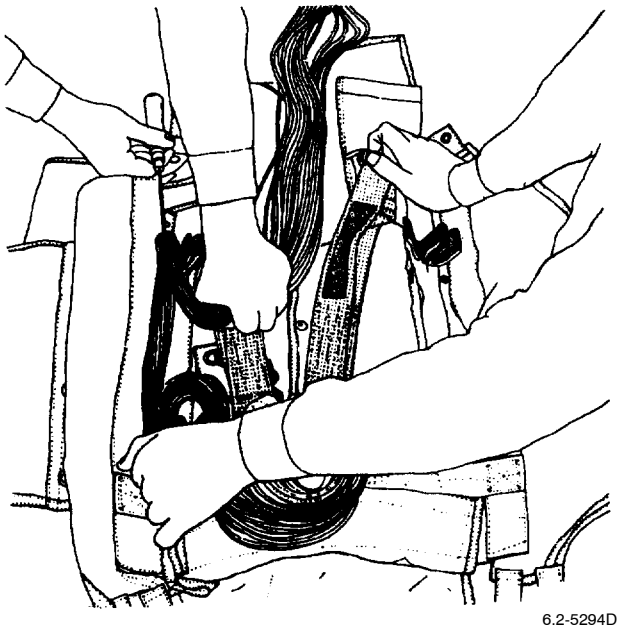


Figure 30. Draw Suspension Lines

h. Third bight is formed in same manner as in previous steps. Bight pulled thru hesitator loop next to first bight stowed (Figure 31).

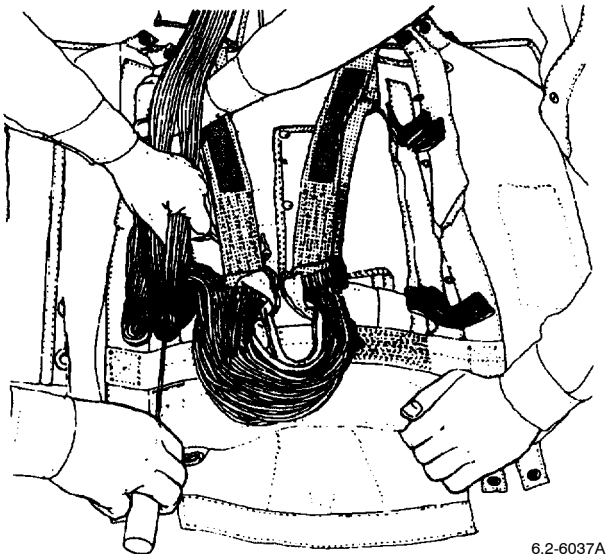


Figure 31. Form Third Bight

i. Store bights 4 thru 8 in same manner as bights 1 thru 3.

j. Helper shall route suspension lines across container and stow bight 9 in first hesitator loop across from hesitator loop 8. When stowing bights 9 thru 16, packer shall assist helper by holding container steady and by holding finished bight while next bight is being formed (Figure 32).

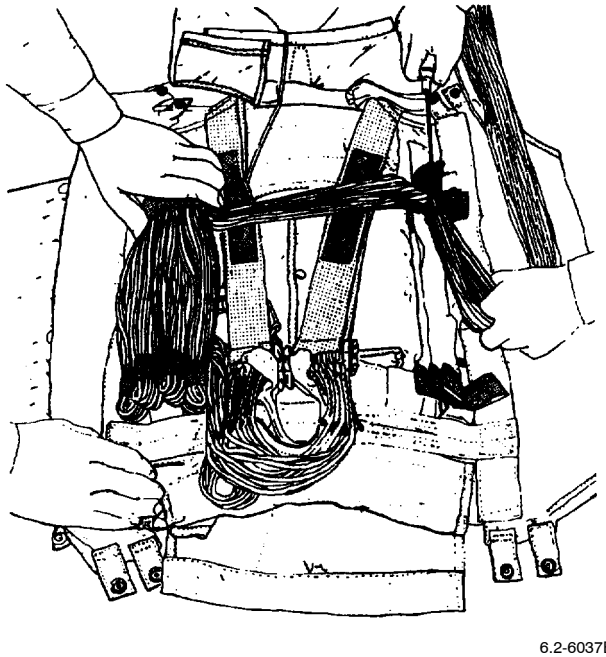


Figure 32. Helper Shall Route Suspension Lines Across Container

k. Helper shall stow bights 10 thru 16 in same manner as bights 1 thru 8.

l. As each stow is completed, ensure that suspension lines are not rotated or loose and there are no suspension lines left out of hesitator loops. Keep 3/8-in. clearance between packing hook and hesitator loop when stowing bights.

m. Straighten all hesitator loops, using temporary locking pin. When suspension lines are in all hesitator loops, there shall be 21 ±3-in. between last stow and skirt hem (Figure 33). (QA)

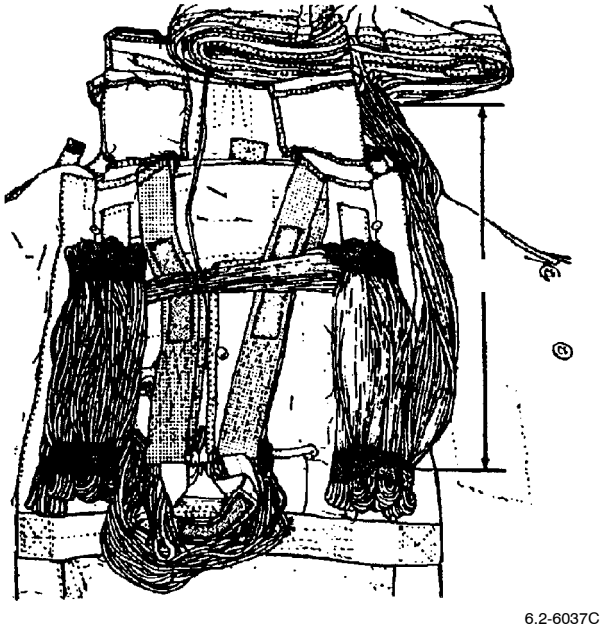


Figure 33. Straighten All Hesitator Loops

19. STOWAGE OF CANOPY.

a. Six folds shall be made when stowing canopy. Use following illustration as a guide while stowing canopy (Figure 34).

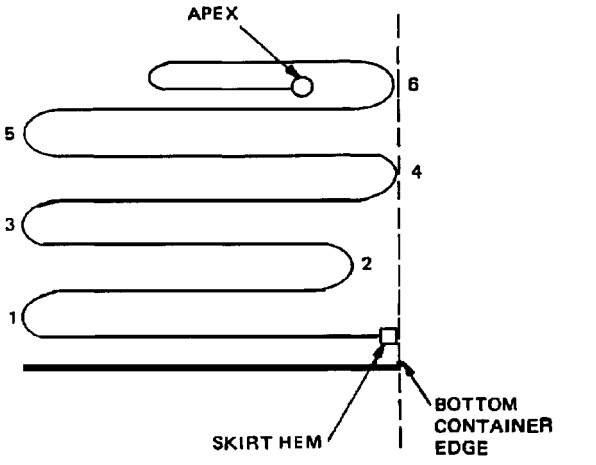
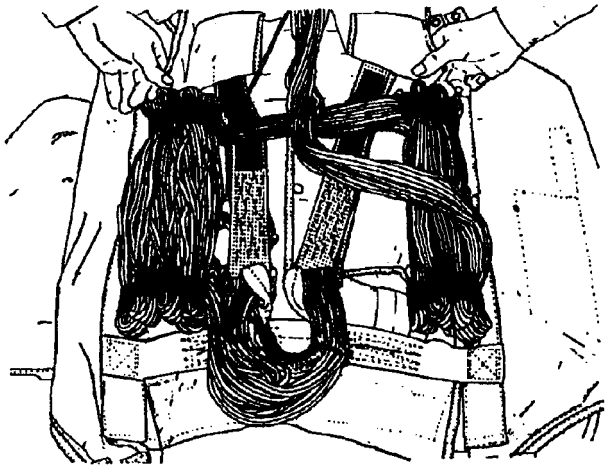


Figure 34. Making of Six Folds

b. Remove shot bags from canopy. (QA)

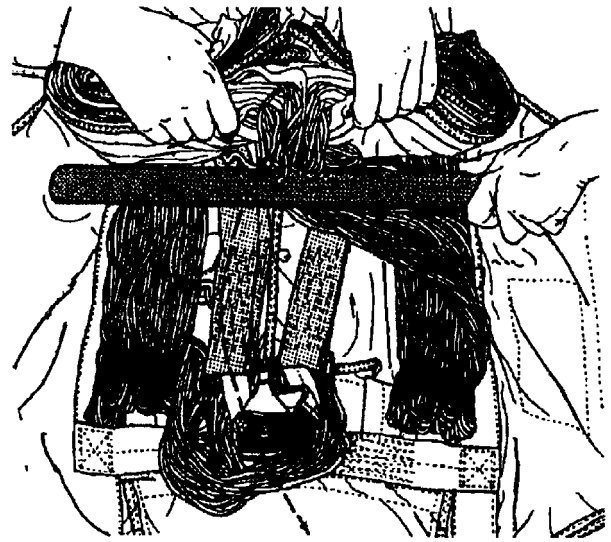
c. Place riser protector flaps on top of risers (Figure 35).



6.2-5971B

Figure 35. Placement of Riser Protector Flaps

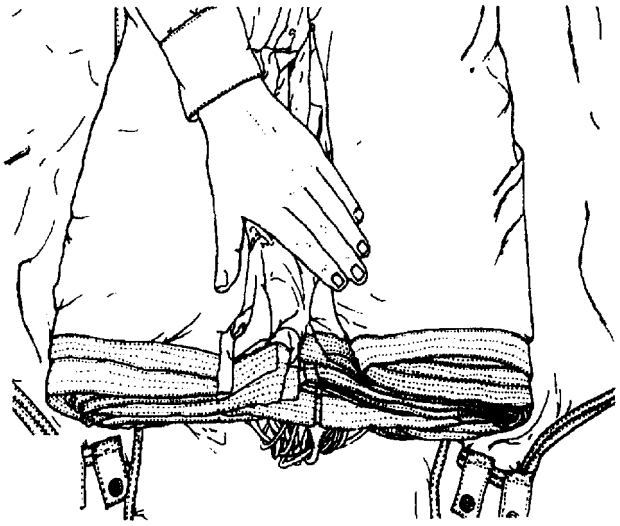
d. Helper shall place long bar over suspension lines at middle of container. Packer shall grasp canopy skirt hem on each side of suspension lines and draw canopy across container (Figure 36).



6.2-5971C

Figure 36. Place Long Bar Over Suspension Lines

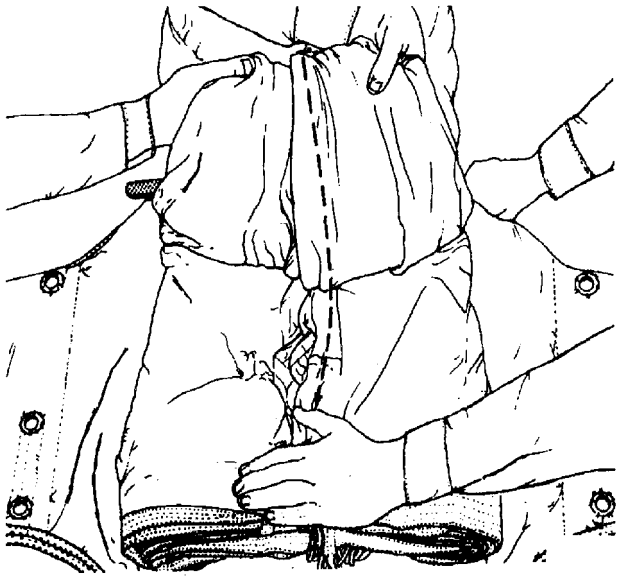
e. Skirt hem shall be aligned with bottom of container edge. Allow folded canopy to spread 1 1/2 ± 1/2-in. over side of container. It may be necessary to move long bar slightly forward to align skirt hem with container edge (Figure 37).



6.2-5971D

Figure 37. Align Skirt Hem With Bottom of Container

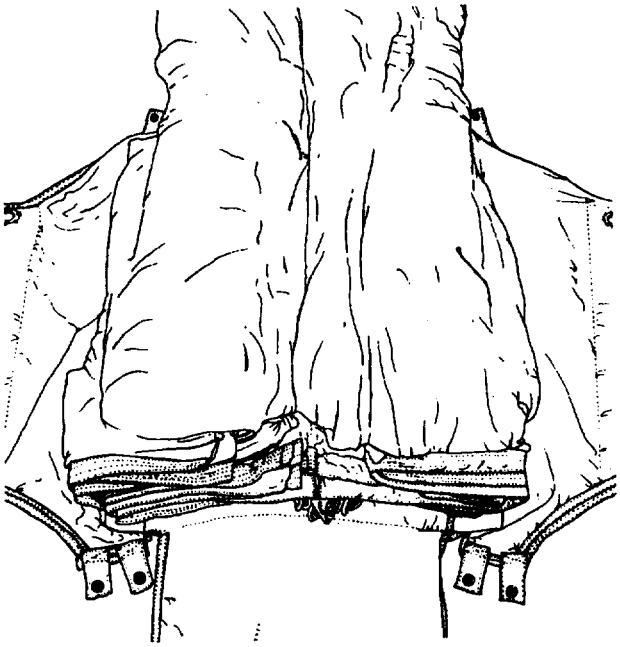
f. To make first and second folds, helper shall remove bar from between canopy and container and place it on top of canopy, parallel with upper container edge. Packer shall grasp canopy one container length from long bar and draw it across container (Figure 38).



6.2-5971E

Figure 38. Make First and Second Folds

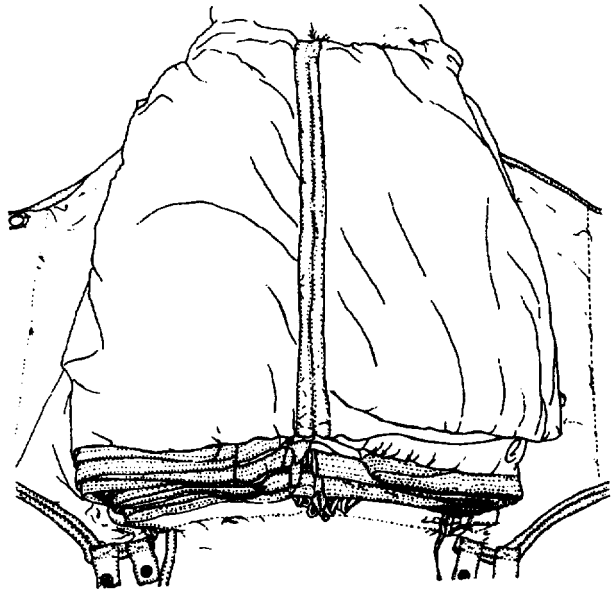
g. Second fold shall be positioned slightly behind skirt hem. Sides of canopy shall spread 1 1/2 ± 1/2-in. over sides of container (Figure 39).



6.2-5297A

Figure 39. Position Second Fold Slightly Behind Skirt

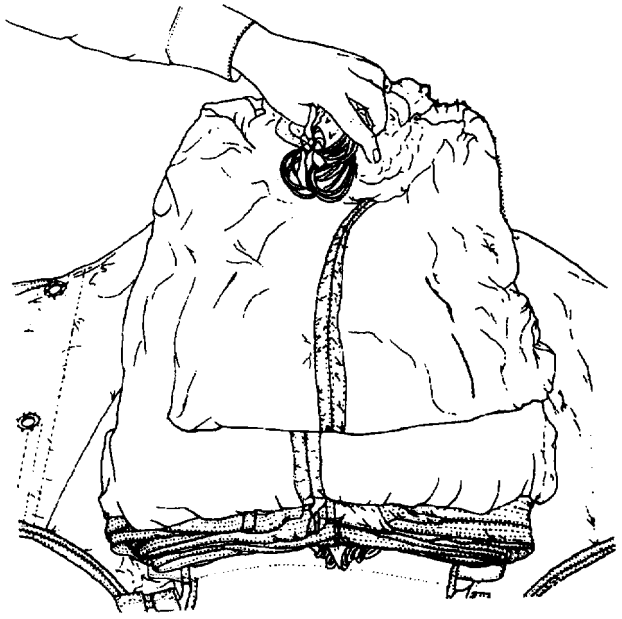
h. To make third and fourth folds, helper shall use long bar in same manner as with first and second folds. Fourth fold is extended to align with skirt hem (Figure 40).



6.2-5297B

Figure 40. Make Third and Fourth Folds

i. Continue accordion folding remainder of canopy onto container, keeping 1 1/2 ±1/2-in. overlap on sides of container. As apex of canopy is drawn close to container, pilot parachute shall be placed back onto packing table (Figure 41).



6.2-5279C

Figure 41. Continue Accordion Folding

j. When not enough canopy remains to continue folding, canopy shall be folded under 9 ±2-in. from apex (Figure 42).

Figure 42. 9-in. Fold Under From Apex 6.2-5297D

k. Folded under portion of canopy shall be positioned on top of canopy to form upper most fold (Figure 43).

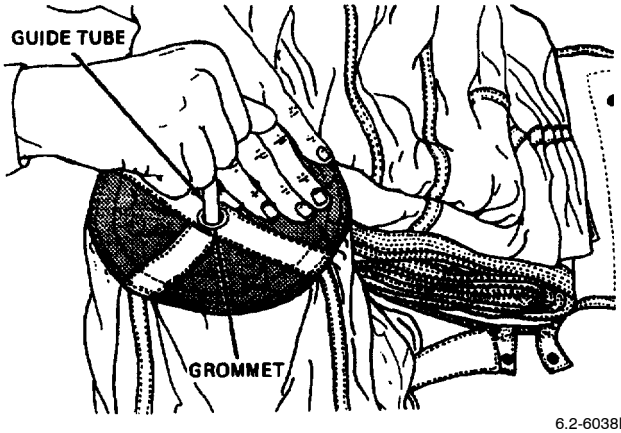
6.2-6038A

Figure 43. Positioned Folded Under Canopy to Form Upper Fold

l. Adjust canopy, as required, to obtain neat and square folds.

m. Inspect pilot parachute connector strap for entanglements, rotate container 90-degrees counterclockwise.

n. Position pilot parachute vertically on packing table and insert guide tube into grommet in crown of pilot parachute. Extend guide tube to bottom of pilot parachute and position over locking cone on spring baseplate (Figure 44).



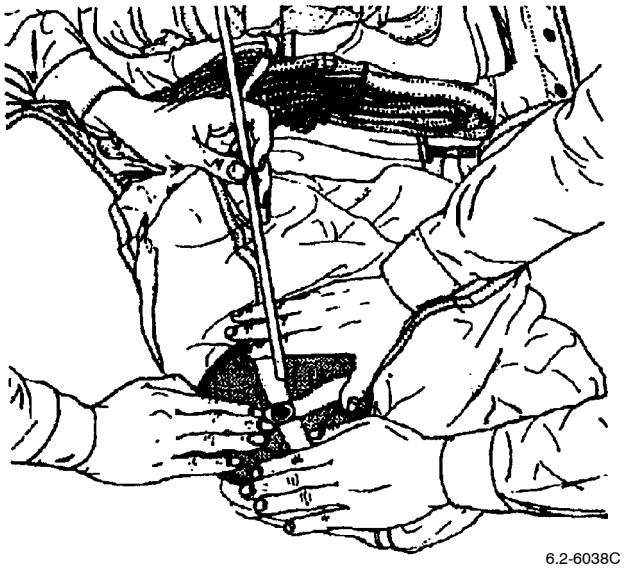
6.2-6038B

Figure 44. Position Pilot Parachute

CAUTION

Ensure pilot parachute cloth is not twisted around or entangled in compressed pilot parachute spring.

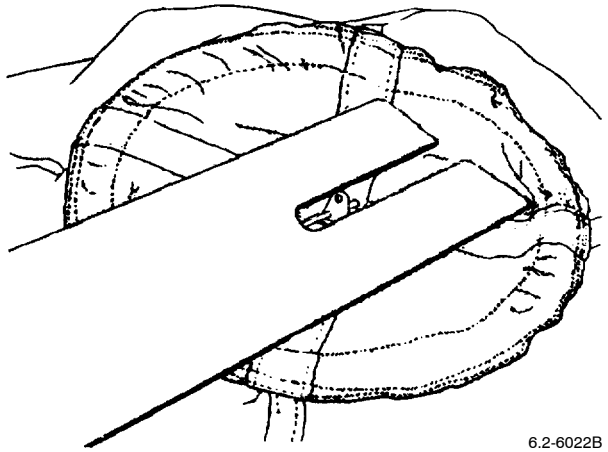
o. Compress pilot parachute spring and remove guide tube from locking cone. Locking cone shall protrude thru grommet (Figure 45).



6.2-6038C

Figure 45. Compress Pilot Parachute Spring

p. Insert temporary locking pin plate into bottom hole of locking cone to keep pilot parachute compressed (Figure 46).

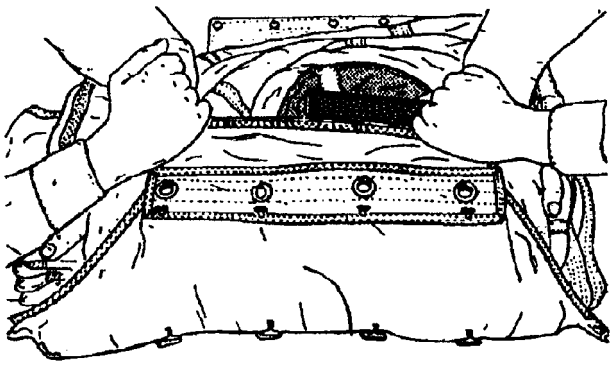


6.2-6022B

Figure 46. Insert Temporary Locking Pin Plate

20. CLOSING OF CONTAINER.

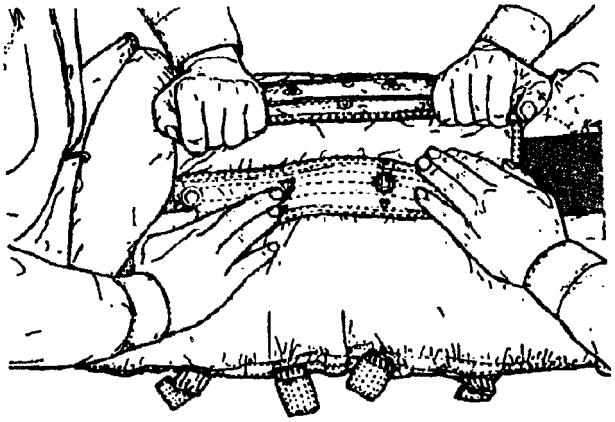
a. Packer and helper shall pull side flap with locking cone over canopy and pilot parachute and align second grommet from bottom container edge over locking cone in pilot parachute. Roll pilot parachute cloth under outer edge of crown (Figure 47).



6.2-5300A

Figure 47. Pull Side Flaps Over Locking Cone

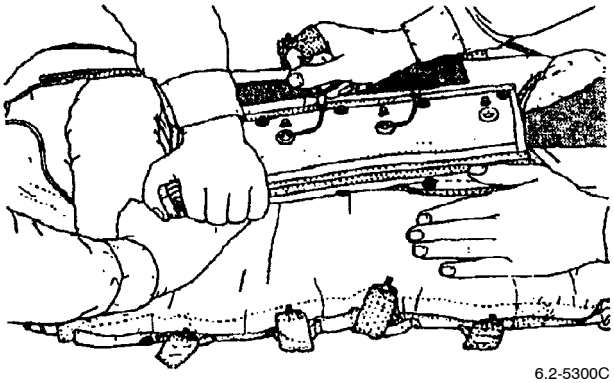
b. Packer and helper shall pull side flap with grommets over canopy while holding side flap with locking cone in place. Keep canopy movement to a minimum (Figure 48).



6.2-5300B

Figure 48. Pull Side Flap with Grommets Over Canopy

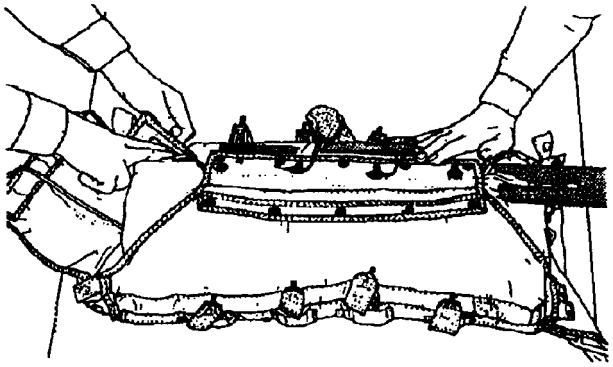
c. Place grommets over locking cones and insert two temporary locking pins towards top end flap (Figure 49).



6.2-5300C

Figure 49. Place Grommets Over Locking Cones

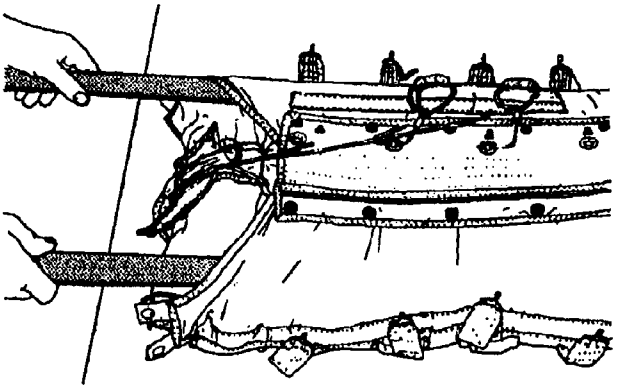
d. Remove temporary locking pin plate from pilot parachute locking cone and adjust canopy at both ends of container (Figure 50).



6.2-5300D

Figure 50. Remove Temporary Locking Pin Plate

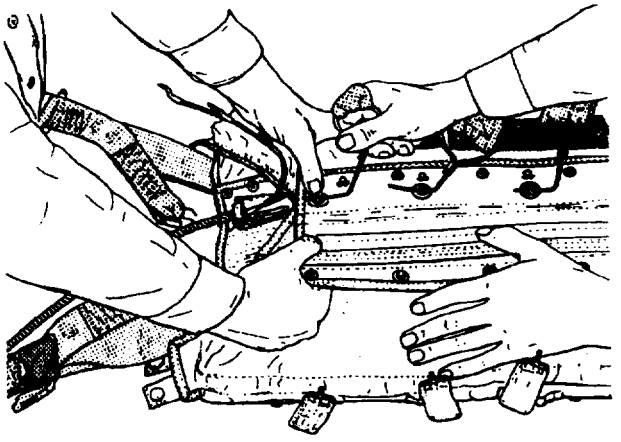
e. Packer shall tuck top end flap under side flaps using two long bars inserted in pockets (Figure 51).



6.2-5300E

Figure 51. Tuck Top End Flap Under

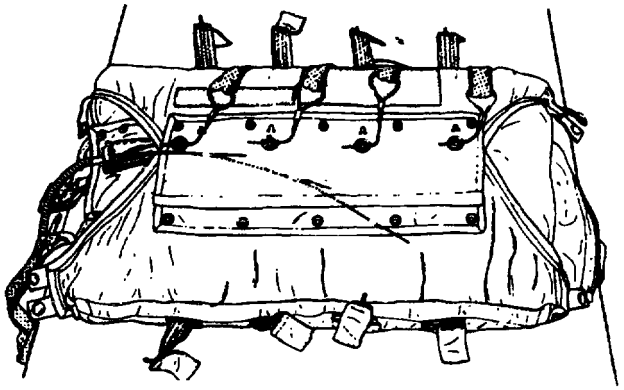
f. Packer shall place side flap grommets over top end flap locking cone as helper inserts temporary locking pin toward top end flap (Figure 52).



6.2-6039

Figure 52. Place Side Flap Grommets Over Top End Flap

g. Place side flap grommets over bottom end flap locking cone. Insert temporary locking pin toward top end flap (Figure 53).



6.2-6040A

Figure 53. Place Side Flap Grommets Over Bottom End Flap

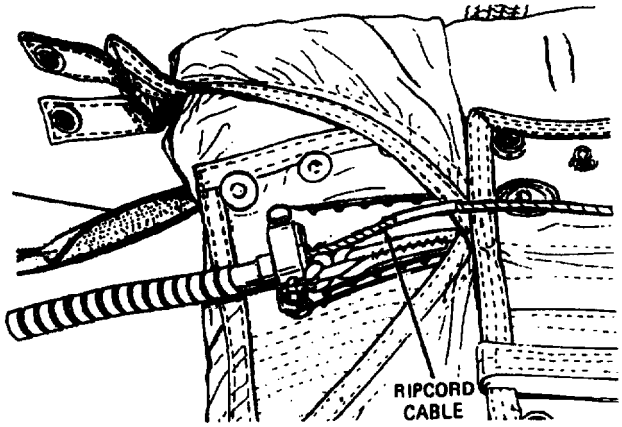
h. Push riser protector flaps firmly into container.

i. Remove wrinkles in corners of container using packing fid.

WARNING

Use of ripcord pins as alignment aids during installation may cause bending of pins and result in excessive pull forces.

j. Helper shall remove temporary locking pin from locking cone nearest ripcord housing and packer shall insert top ripcord pin (Figure 54). (QA)



6.2-6040B

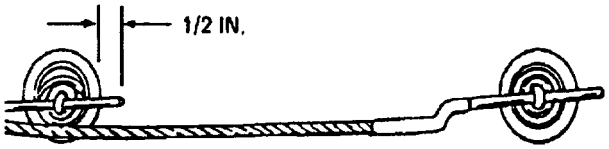
Figure 54. Remove Temporary Locking Pin

k. Working from packer's end to helper's end remove temporary locking pins and at same time insert ripcord pins.

WARNING

Ripcord pins must be centered in locking cones.

l. Ensure ripcord pins are centered in locking cones so that shoulder of ripcord pin is not jammed against hole in locking cone, but extends more than 1/2-in beyond cone (Figure 55).

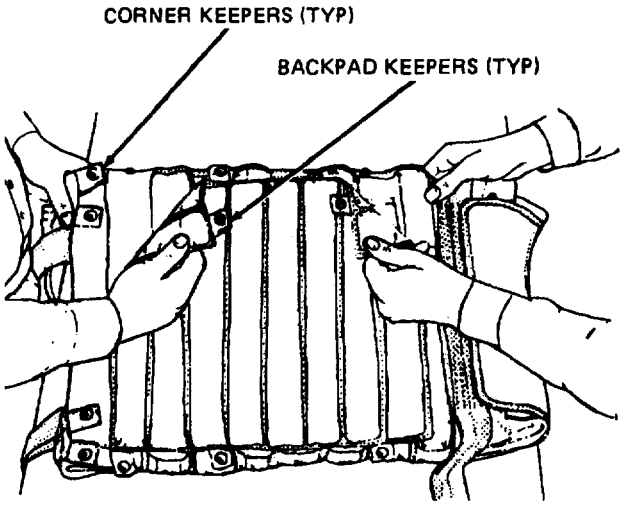


6.2-6040C

Figure 55. Ensure Ripcord Pins are Centered

m. Attach spring opening assemblies to container eyes.

n. Turn container over so lapbelt harness faces up and secure eight corner keepers to fasteners on container; then secure six backpad keepers to container fasteners (Figure 56).



6.2-6040D

Figure 56. Turn Container Over

o. Turn container over so ripcord pins face up.

21. SURVIVAL KIT ATTACHMENT.

22. ATTACHMENT OF STANDARD SOFT PACK (SSP) AND VENTILATED SEAT PAN.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Ensure that ventilated seat pan and SSP have been inspected and secured together.

b. Place ventilated seat pan and SSP on table with soft pack facing down.

c. Place parachute container upside down on table with bottom of parachute container facing rear of seat pan and soft pack. Engage slide fastener (Figure 57).

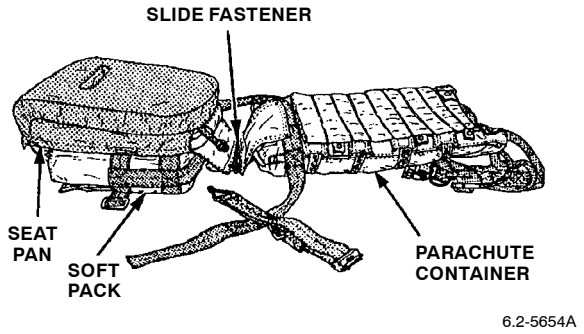


Figure 57. Place Parachute Container Upside Down

d. Rotate parachute container over on top of seat pan and SSP.

e. Reeve both pararaft retainer straps thru slots in sides of seat pan (Figure 58).

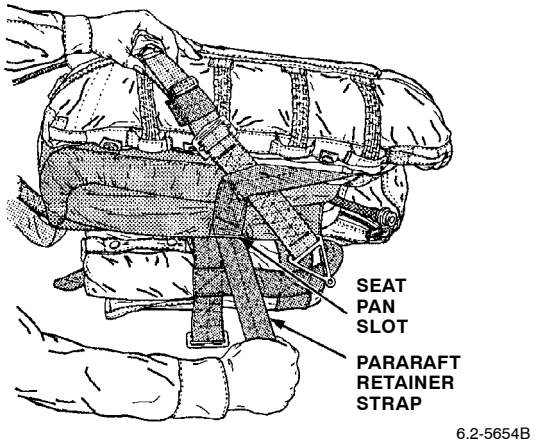


Figure 58. Reeve Both Straps thru Slots

f. Reeve pararaft retainer straps thru adapters on sides of SSP. Pull strap tight to remove slack, and reeve retainer straps back thru adapters. Leave 1 to 1 1/2-in. of strap above adapter. Tack both edges of each strap to strap beneath with two turns of size 6 thread, single and waxed; tie off (Figure 59).

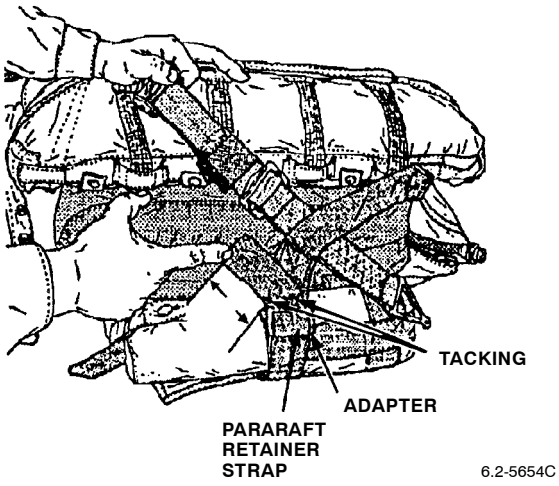


Figure 59. Reeve Retainer Straps thru Adapters

23. RIPCORD PIN PULL CHECK.

a. Insert ripcord pinlock on bottom ripcord pin.

b. Install ripcord grip in retainer and attach spring scale to ripcord grip with a nylon cord.

c. Apply a straight steady pull and remove ripcord grip from retainer. The force required to remove the grip from the retainer clip is 15 $\pm$5 lbs. (QA)

d. Reset scale. Apply a straight, steady force to the ripcord grip until initial movement of bottom ripcord pin is observed. Maximum allowable force is 27 lbs. (QA)

WARNING

Ripcord pinlock must be removed.

e. Remove ripcord pinlock. (QA)

f. If necessary, reposition ripcord pins so they are centered in locking cones with shoulder of each pin extending more than 1/2-in. beyond cone.

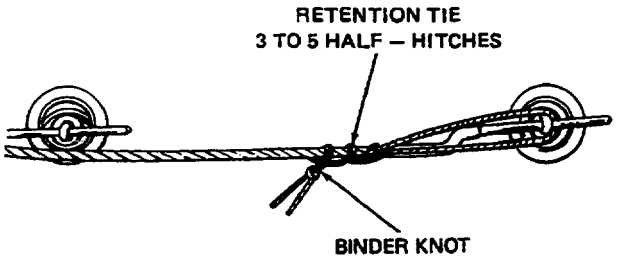
24. RETENTION TIE RIPCORD PIN AND TACKING RIPCORD HOUSING CLIP.

a. Tie last ripcord locking pin and tack ripcord housing clamp as follows:

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

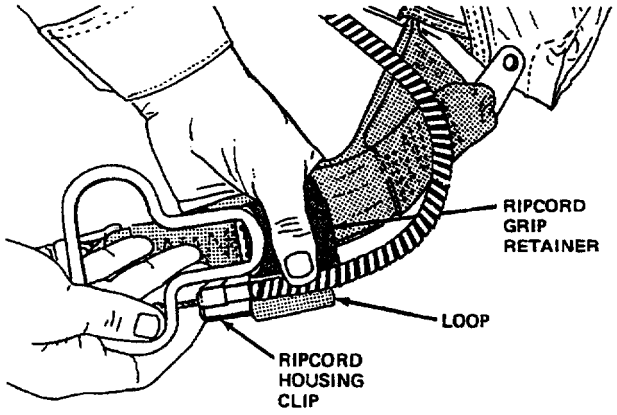
(1) Loop a 12-in. length size E thread, single and waxed, under bottom ripcord pin. Secure by bringing thread ends together and forming 3 to 5 half-hitches above ripcord pin ferrule. Top off with a binder knot. Trim excess thread 1/2-in. from knot (Figure 60).



6.2-6044A

Figure 60. Securing of Thread

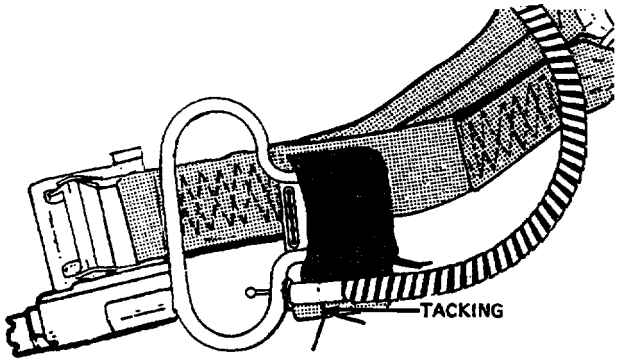
(2) Insert ripcord housing clip into webbing loop attached to riser (Figure 61).



6.2-6044B

Figure 61. Insert Ripcord Housing Clip

(3) Tack thru loop and thru hole in housing clip with one turn size E thread, single and waxed; tie off. Insert ripcord grip into retainer (Figure 62). (QA)



6.2-6044C

Figure 62. Tack thru Loop and thru Hole

(4) Snap ripcord pin protector flap and base plate flap closed.

25. FINAL CHECKOUT.

a. Account for all packing tools.

b. Examine packed parachute for general condition.

c. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA).

d. QA inspector shall examine completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

e. QA inspector shall sign Parachute Record (OPNAV 4790/101).

f. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPN DIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

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INTERMEDIATE AND DEPOT MAINTENANCE

REPAIR PROCEDURES

NB-7 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 566AS100-11 and 566AS100-14

List of Effective Work Package Pages

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Organizational Repair Procedures, NB-7 Personnel Parachute Assembly . . . . . WP 012 01
Parachute Loft Requirements/Administration . . . . . WP 003 00
Support Equipment . . . . . WP 005 00

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Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This work package (WP) contains instructions for maintenance, repair, replacement, and fabrication of various parachute parts or subassemblies to ensure that proper items of equipment remain in a ready-for-issue (RFI) status. Selected repairs shall be documented on the Parachute Record. For common repairs refer to WP 004 00.

2. PILOT PARACHUTE AND CONNECTOR STRAP REPAIRS.

a. Repair of the pilot parachute and/or connector strap is limited to the following:

(1) Cleaning of contaminated areas.

(2) Replacement of loose or broken tacking.

b. Replace pilot parachute and/or connector strap for any of the following:

(1) Service/total life has expired per WP 012 02.

(2) Seam separation and loose or broken stitching (yarn separation is acceptable) that may affect the safe operation of the parachute assembly.

(3) Holes or tears over 1-in. in diameter or length and more than five holes or tears per pilot parachute.

(4) Pilot parachute spring is broken or distorted.

(5) Pilot parachute locking cone or grommet is loose or damaged.

(6) Connector strap finished length is incorrect.

3. REPLACEMENT OF PILOT PARACHUTE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Inspect replacement pilot parachute as follows:

(1) Fabric surfaces, and seams for cuts, tears, burns, fraying, and loose or broken stitching.

(2) Vane material for cuts, tears, burns, fraying, and deterioration.

(3) Seam area at crown for seam separation.

(4) Spring assembly for distortion.

(5) Loose or broken tackings (4 places) at bottom of coil spring.

b. Remove tacking at lark's head knot and then remove pilot parachute.

c. Pass large loop of connector strap thru loop in pilot parachute. Form a lark's head knot by passing entire pilot parachute thru loop on connector strap and pull tight (Figure 1).

d. Tack lark's head knot with two turns of size 6 thread, single and waxed; tie off (Figure 1). (QA)

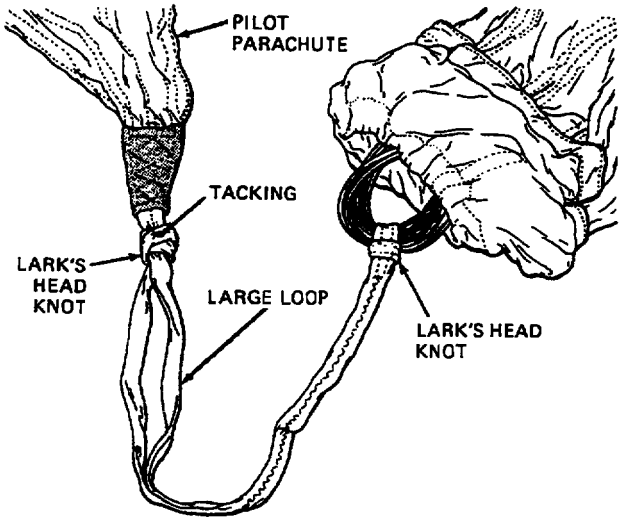


Figure 1. Pilot Parachute and Connector Strap Removal and Replacement

e. Mark date placed in service on pilot parachute. Make proper entries on Parachute Record (OPNAV 4790/101).

4. REPLACEMENT OF PILOT PARACHUTE CONNECTOR STRAP.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Inspect replacement connector strap for cuts, fraying, and loose or broken stitching.

b. Measure length of unattached connector strap. Proper length is 23 1/2 ± 1/2-in.

c. Grasp a suspension line at canopy apex and then count and hold 14 consecutive lines.

d. Pass small loop end of connector strap around apex lines. Form a lark's head knot by passing large loop end of connector strap thru small loop end and pulling tight (Figure 1).

e. Pass large loop end of connector strap thru loop in pilot parachute. Form a lark's head knot by passing entire pilot parachute thru large loop of connector strap and pull tight (Figure 1).

f. Tack lark's head knot at pilot parachute with two turns of size 6 thread, single and waxed; tie off (Figure 1). (QA)

g. Mark date placed in service on connector strap. Mark proper entries on Parachute Record (OPNAV 4790/101).

5. REPLACEMENT OF PILOT PARACHUTE CONNECTOR STRAP LOOSE OR BROKEN TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove broken tacking or completely remove loose tacking.

b. Pull lark's head knot tight.

c. Tack lark's head knot at pilot parachute with two turns of size 6 thread, single and waxed; tie off. (QA)

6. REPLACEMENT OF PILOT PARACHUTE LOOSE OR BROKEN TACKING (PLATE ASSEMBLY).

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove broken tacking, or completely remove loose tacking.

NOTE

The plate assembly is attached at the base of the coil spring.

b. Locate the four holes in the plate assembly within the pilot parachute fabric.

c. Tack thru holes with two turns of size 6 thread, doubled and waxed; tie off.

7. CANOPY ASSEMBLY REPAIRS.

a. For canopy service life, refer to WP 012 02.

8. REPLACEMENT OF CANOPY ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Temporary Locking Pin
—	Torque Screwdriver

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

For Double "L" Connector Link, refer to Paragraph 28 for disassembly, assembly, and inspection instructions.

a. Remove pilot parachute and connector strap from vent lines. Retain for reinstallation.

b. Remove four-line release rigging from connector links and then remove lanyard from flutes.

c. Remove connector link yoke and plate assemblies.

d. Remove connector links from riser loops and remove connector straps. Reinstall yoke and plate assemblies.

e. Dispose of canopy per current supply directives.

f. Lay out replacement canopy and stretch it to its full length on the packing table.

g. Attach tension strap hook to canopy vent lines.

h. Locate gore 28 (nameplate gore) and place uppermost in center of packing table.

i. At skirt hem, separate suspension lines into two equal groups with lines 1 thru 14 on packer's side and 15 thru 28 on helper's side. Grasping each group of lines, walk from skirt hem to connector links removing any dips and twists between two groups (Figure 2).

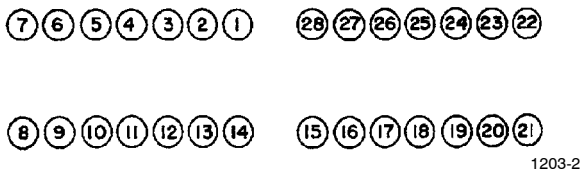


Figure 2. Arrangement and Orientation of Suspension Lines on Connector Links

j. Place connector link holding lines 1 thru 7 on top of connector link holding lines 8 thru 14. Place connector link holding lines 22 thru 28 on top of connector link holding lines 15 thru 21. Insert tension hooks into connector links and insert hooks into packing table (Figure 2).

k. Pull suspension lines taut and adjust apex.

l. Check suspension line continuity on left side of gore 28. Packer shall grasp line 1 at skirt hem and raise to a sufficient height to ensure line is free of dips and twists. Continue this procedure with lines 2 thru 14 (Figure 2). Helper shall be positioned at connector links to check lines selected by packer.

m. Check suspension line continuity on right side of gore 28. Packer shall grasp line 28 at skirt hem and raise to a sufficient height to ensure line is free of dips and twists. Continue this procedure with lines 27 thru 15 (Figure 2). Helper shall be positioned at connector links to check lines selected by the packer.

n. Inspect four-line release anchor loops for proper attachment to lines 3 and 26. Measure 30 ± 1/2-in. above upper connector link bar. Anchor loops must be attached with 2-in. of zigzag stitching.

o. Inspect canopy assembly per WP 012 02.

p. Record any damage on canopy damage chart per WP 003 00. (QA)

q. Reattach pilot parachute and connector strap per Paragraph 5.

r. Lay out riser assembly and connector straps on packing table at connector links. Riser fasteners shall face up.

s. Remove connector links from tension hooks. Remove tension hooks from packing table.

t. Remove connector link yoke and plate assemblies from bottom connector links.

u. Insert bottom connector links thru loop in each end of connector strap and then thru loops in bottom risers.

v. Reattach yoke and plate assemblies to bottom connector links ensuring knurled portions of plate face up and screwheads face outboard.

w. Remove connector link yoke and plate assemblies from top connector links.

x. While maintaining continuity, slide suspension lines onto a temporary locking pin or rod.

y. Insert connector links thru loop in each end of connector strap and then thru loop in top risers.

CAUTION

Ensure that clove-hitch and half-hitch at ends of suspension lines do not separate during handling

z. Reinstall suspension lines onto connector links.

aa. Reattach yoke and plate assemblies to top connector links ensuring knurled portion of plate faces up and screwheads face outboard.

ab. Insert tension hooks into connector links and then apply tension to canopy.

ac. Perform suspension line continuity check as in step l and m.

ad. Tighten screws on top and bottom connecter links to a torque value of 20 to 25 in-lbs. (QA)

ae. Apply torque seal to each connector link screwhead.

af. Mark date placed in service on canopy assembly. Make proper entries on Parachute Record (OPNAV 4790/101).

ag. Rig four-line release lanyards refer to WP 004 00.

9. RISER ASSEMBLY REPAIRS.

a. Repair of the riser assembly is limited to the following:

(1) Cleaning of contaminated areas.

(2) Repair of stitching if three of less stitches are loose or broken.

(3) Replacement of four-line release flutes.

(4) Replacement of ripcord grip retainer.

(5) Replacement of retainer strap assemblies

b. Replace riser assembly for any of the following:

(1) Service/total life has expired per WP 012 02.

(2) Cuts, tears, or holes in harness webbing.

(3) Loose or broken stitching in excess of three stitches.

(4) Twists, fading, wear, fusing, fraying, burns, contamination, or abrasion.

10. INSTALLATION OF PARACHUTE HARNESS SENSING RELEASE UNITS.

a. Install per WP 024 01 or install canopy release.

11. REPLACEMENT OF CANOPY RELEASE FITTING.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Remove setscrew on underside of fitting and slide retention pin out (Figure 3). Remove retention pin and pin guide tube.

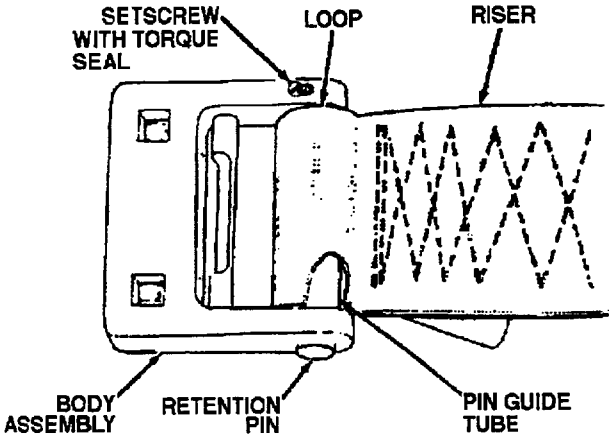


Figure 3. Canopy Release Fitting Installation

b. Insert pin guide tube into loop on riser.

c. Insert riser loop into release body. Ensure that release body is properly positioned for mating with release adapter. Insert retention pin thru pin guide tube.

d. Insert setscrew in hole located on underside of release body (Figure 3) and tighten.

e. Apply torque seal to screwhead using red lacquer.

12. REPLACEMENT OF RISER ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Remove ripcord assembly from riser.

b. Remove canopy releases from risers per WP 012 01.

c. Remove four-line release tackings from flutes and carefully remove release lanyards from flutes. Insert temporary locking pin into last four-line release daisy chain.

d. Remove connector link yoke and plate assemblies.

e. Slide riser loops off connector link bar.

f. Reinstall yoke and plate assemblies.

g. Ensuringsuspensionlinecontinuityismaintained(Figure 2), insert connector links onto tension hooks.

h. Inspect replacement risers per WP 012 02.

i. Lay out replacement risers on packing table with fasteners facing up, and riser with ripcord grip retainer on packer's side.

j. Remove connector link yoke and plate assemblies from bottom connector links.

k. Insert bottom connector links into bottom riser loops.

l. Reinstall yoke and plate assemblies to bottom connector links ensuring knurled portions of plate face up and screwheads face outboard.

m. Remove connector link yoke and plate assemblies from top connector links.

n. Insert top connector links into top riser loops.

o. Reinstall yoke and plate assemblies to top connector links ensuring knurled portions of plate face up and screwheads face outboard.

p. Perform suspension line continuity check (Figure 2).

q. Tighten screws on top and bottom connector links to a torque value of 20 to 25 in-lbs. (QA)

r. Apply torque seal to each connector link screwhead.

s. Using a bodkin of equal tool, insert and pull release lanyard pull loops thru proper lanyard flute. Pull loops should extend completely thru flute with top of loops butted up against lower edge of flute.

t. Remove temporary locking pins from last four-line release daisy chains.

u. Tack release lanyard to flute with one turn of size FF thread, single and waxed. Tacking shall pass thru outer cover of flute, thru the release lanyard, thru and around last daisy chain loop, and then back thru flute; tie off.

v. With lanyard pull loop fully extended, tack riser together. Tack at center of riser and 1/2-in. above bottom of lanyard pull loop with one turn of size FF thread, single and waxed; tie off. (QA)

w. Reinstall canopy release fittings per WP 012 01.

x. Mark date placed in service on identification and service life label.

13. RIPCORD ASSEMBLY REPAIRS.

14. REPLACEMENT OF RIPCORD GRIP RETAINER.

Support Equipment Required

Part Number	Nomenclature
DPP-50	Scale, Spring

Materials Required

Specification or Part Number	Nomenclature
60A116C10-1	Retainer, Ripcord Grip
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove retainer cover stitching and expose ripcord grip retainer.

b. Remove ripcord grip retainer and stitching from riser.

c. Position replacement retainer is same location as removed retainer and handstitch to riser with size 6 thread, doubled and waxed; tie off.

d. Machine stitch retainer cover back to riser with size E thread.

e. Perform ripcord grip pull test as follows:

(1) Fully seat ripcord grip in ripcord retainer.

(2) Set scale to zero. Attach spring scale to ripcord grip using nylon cord.

(3) Using a straight steady pull, remove grip from retainer. The pull force required to remove grip from retainer shall be 15 ±5 lbs. (QA)

f. If pull force is not within limits, use a pliers to adjust clip. Ensure plier jaws are covered with protective material. After adjustment, repeat ripcord grip pull test.

15. REPLACEMENT OF HOUSING RELEASE CLAMP SPACER.

a. To manufacture the spacer, cut the end off of a scrap ripcord housing (Figure 4).

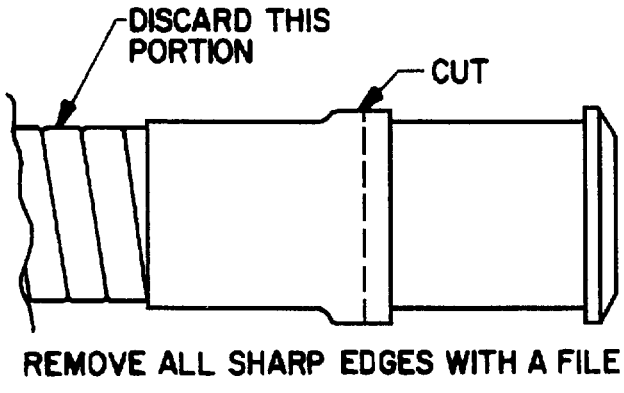


Figure 4. Spacer for Housing Release Clamp

b. A spacer may be fabricated to dimensions of power cable end fitting or it may be available from supply.

16. REPLACEMENT OF RIPCORD ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove ripcord assembly and tacking from webbing loop.

b. Inspect replacement ripcord assembly per WP 012 02.

c. Insert ripcord housing clip into webbing loop attached to riser (Figure 5).

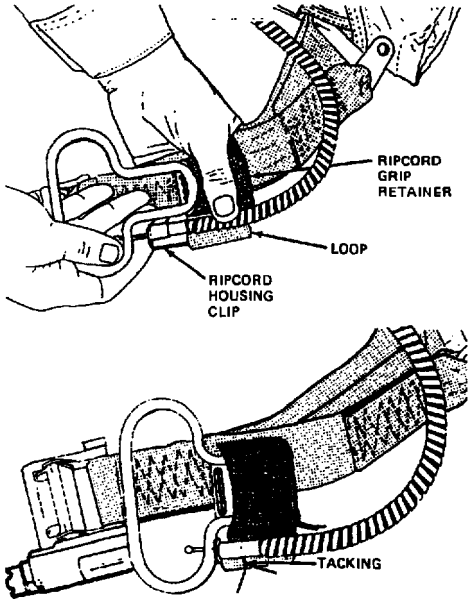


Figure 5. Ripcord Assembly Replacement

d. Insert ripcord grip into retainer.

e. Tack thru loop and thru hole in housing clip with one turn of size E thread, single and waxed; tie off (Figure 5). (QA)

17. CONTAINER ASSEMBLY REPAIRS.

a. Repair of the container assembly is limited to the following:

(1) Cleaning of contaminated areas.

(2) Replacement of grommets, locking cones, snap fasteners, and eyes.

(3) Repair of loose or broken stitching, holes, tears, and seam separations.

b. Replace container for any of the following:

(1) Service/total life has expired per WP 012 02.

(2) Broken or distorted container stiffeners.

(3) Deterioration, fading, abrasion, or excessive contamination.

18. REPLACEMENT OF CLAMP BASE ASSEMBLY AND/OR LOCKING CONE ON CONTAINER TOP FLAP.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
60A113C16-1	Base Assembly, Clamp
	-or-
60A113C24-1	Cone, 0.410 Grip

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Cut and remove stitching retaining base assembly and locking cone from top flap. Remove base assembly and locking cone.

b. If base assembly is to be replaced, remove clamp and screws and retain for reinstallation. If locking cone is to be replaced, leave clamp with ripcord housing/power cable housing attached to base assembly.

c. Using an adequate length of size 6 thread, doubled and waxed, to complete repair, tie an overhand knot 3 to 4-in. from end of thread for tie off when stitching is complete.

d. Position replacement base assembly/locking cone in exact location of damaged or missing base assembly/locking cone. Ensure that ripcord locking pin hole is aligned in same direction as that removed.

e. Start handstitching from inside of container at widest end of base assembly, using a running stitch thru each hole in the base assembly and applicable holes in locking cone. Stitch to last hole in sequence; then stitch back around base assembly to starting hole. Tie off. Trim ends 1/2-in.

f. If base assembly was replaced, reinstall clamp, ripcord housing, and spacer.

19. REPLACEMENT OF SLIDE FASTENER ON PARARAFT FLAP ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
814AS807-1	Slide Fastener

a. Carefully remove stitching holding damaged slide fastener to pararaft flap assembly.

b. Place replacement slide fastener on pararaft flap assembly in same position as one removed.

c. Starting with bottom end of slide fastener, align slide fastener tape flush with edge of flap assembly and sew with 3 rows of stitching about 1/8-in. apart.

d. At top stop end of slide fastener remove any excess tape and sear.

20. REPLACEMENT OF CLAMP RELEASE LANYARD.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size A, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove clamp release lanyard and tackings from container.

b. Inspect replacement clamp release lanyard for loose or broken stitching, cuts, and contamination.

c. Mark lanyard 36-in. from end of pin.

d. Temporarily insert lanyard pin into base plate stud hole.

e. Rotate top container end flap onto packing table. Route release lanyard around left side of end flap. Tack release lanyard to end flap at point A allowing 1/8-in. slack in lanyard between locking pin and tacking. Tacking passes around lanyard not thru it. Use one turn of size A thread, single and waxed; tie off (Figure 6).

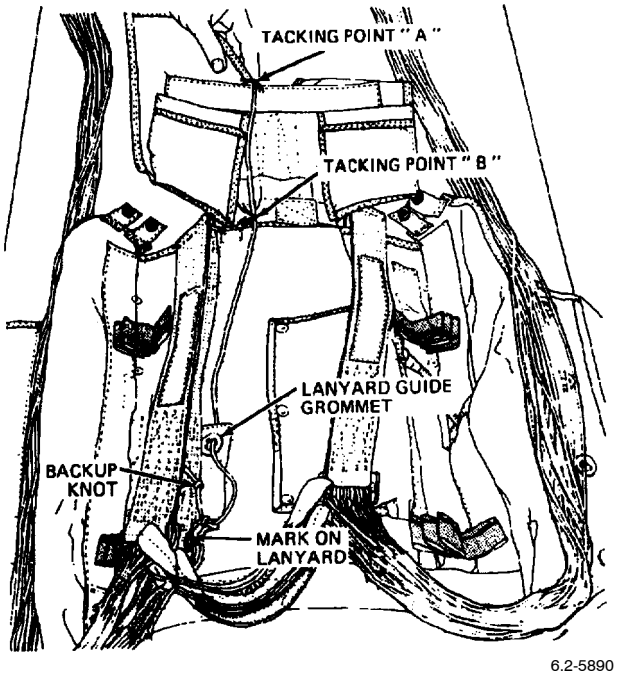


Figure 6. Replacement of Clamp Release Lanyard

f. Route release lanyard along inside of container end flap. Tack lanyard to upper end of container 1-in. from left riser slot at point B allowing 1/8-in. slack between points A and B. Use one turn of size A thread, single and waxed; tie off (Figure 6).

21. REPLACEMENT OF CONTAINER.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 3, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
PIA-C-5040	Cord, Nylon, Type III

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove tackings and survival kit if installed.

b. Remove back pad and retain for reinstallation.

c. Remove lapbelt fittings and spring opening assemblies.

d. Remove spacer and manual ripcord housing from base plate.

e. Remove releasable clamp lanyard.

f. Dispose of container per supply directives. Retain serviceable hardware for future use.

g. Inspect replacement container per WP 012 02.

h. Measure length of spring opening assemblies. Proper length is 10 3/8 ± 1/4-in. measured with no tension from end of one hook to end of other hook. Crimp hooks to eyes on container centerline.

i. Reattach back pad.

j. Mark date placed in service on identification and service life label. (QA)

k. Mark container label per WP 004 00.

22. REPLACEMENT OF LAPBELT ASSEMBLY.

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. Mark existing lapbelt location. Cautiously remove existing stitches which secure the lapbelt assembly to the container assembly.

b. Remove lapbelt release assembly hardware and retain. Discard removed lapbelt assembly.

c. Position replacement lapbelt assembly in same location as that removed. Hand tack in place to hold position while machine stitching (optional), stitch in place with size 6 thread, using a five point cross stitch pattern, 4-in. long, two places.

d. Install removed lapbelt release hardware on replaced lapbelt assembly.

23. CROSS-CONNECTOR STRAPS.

24. GENERAL.

a. Repair of cross-connector straps is limited to cleaning of contaminated areas. Replace cross-connector straps if any other damage exists that may affect the safe operation of the parachute assembly.

25. REPLACEMENT OF CROSS-CONNECTOR STRAPS.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

For Double "L" Connector Link, refer to Paragraph 28 for disassembly, assembly, and inspection instructions.

a. Remove connector link yoke and plate assemblies.

b. Remove connector links from riser loops and then remove connector straps.

c. Inspect replacement cross-connector straps for contamination, cuts, fraying, burns, loose or broken stitching, and proper length (16 ± 1/4-in.).

d. Insert connector links thru loop in each end of connector strap and then thru loop in riser.

e. Reattach yoke and plate assemblies to connector links ensuring knurled portion of plate faces up and screwheads face outboard.

f. Tighten screws on connector links to a torque value of 20 to 25 in-lbs. Apply torque seal to each torqued connector link screwhead. (QA)

g. Mark date placed in service on identification and service life labels.

26. ATTACHMENT OF CANOPY ASSEMBLY TO RISERS AND CONNECTOR STRAPS.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

For Double "L" Connector Link, refer to Paragraph 28 for disassembly, assembly, and inspection instructions.

a. Lay out riser assembly and connector straps on packing table at connector links. Riser fasteners shall face up with ripcord grip on packer's side (Figure 7).

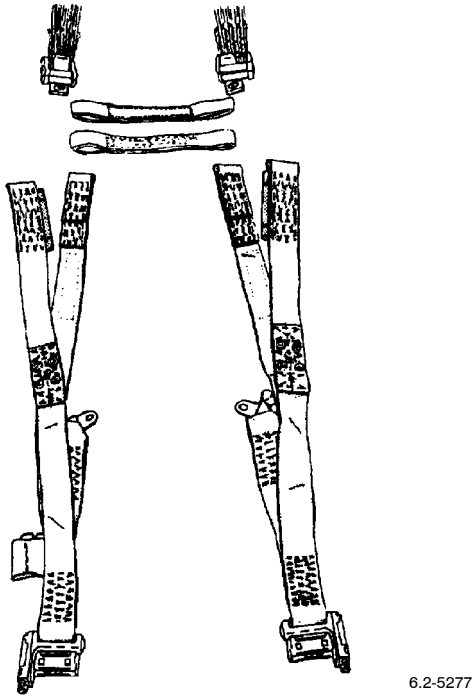


Figure 7. Layout of Risers and Connector Straps

b. Remove connector links from tension hooks and then remove tension hooks from packing table.

c. Remove connector link yoke and plate assembles from bottom connector links.

d. Insert bottom connector links thru loop in each end of connector strap and then thru loops in bottom risers.

e. Reattach yoke and plate assemblies to bottom connector links, ensuring knurled portions of plate face up and screwheads face outboard.

f. Remove connector link yoke and plate assemblies from top connector links.

g. Slide suspension lines onto temporary locking pin or rod.

h. Insert connector links thru loop in each end of connector strap and then thru loop in top risers.

WARNING

Ensure that suspension line continuity is maintained at all times. Also ensure that the clove-hitch and half-hitch at the ends of the suspension lines have not separated during handling.

i. Reinstall suspension lines 3 thru 7 and 26 thru 22 onto connector links.

j. Reattach yoke and plate assemblies to top connector links ensuring knurled portion of plate face up and screw-heads face outboard.

k. Check suspension line continuity (Figure 2). (QA)

l. Tighten screws on top and bottom connector links to a torque value of 20 to 25 in-lbs. Apply torque seal to each connector link screwhead. (QA)

27. BACK PAD REPAIR.

a. Repair of the back pad is limited to the following:

(1) Cleaning contaminated areas.

(2) Replacement of snap fasteners.

(3) Repair of holes, tears, and loose or broken stitching.

b. Replace back pad for any holes, tears, or other damage deemed beyond repair.

28. REPLACEMENT OF MS22021-1 CONNECTOR LINK (SPEED LINK) WITH MS22002-1 (DOUBLE "L") CONNECTOR LINK.

NOTE

New canopies received from supply may have the Double 'L" Connector Links installed.

Instructions for attachment of Firing Lanyards, PDVL's, Four-Line Release Systems, etc., will remain the same and will be contained in the application parachute manual.

Materials Required

Specification or Nomenclature	Part Number
MS22002-1	Connector Link (Double "L")
F-900 Torque Seal (Color Optional)	Sealing Compound
—	Torque Screwdriver
MIL-S-43243 (See WP 002 00)	Separator, Link or Equivalent

a. Remove yoke and plate assembly from parachute connector link, P/N MS22021-1.

b. Slide suspension lines from connector link onto a temporary locking pin or rod.

c. Remove cross-connector strap.

d. Slide riser loop off connector link bar and dispose of connector link, P/N MS22021-1.

e. Remove screws from the double "L" connector link, P/N MS22002-1 and separate the two halves of the link.

f. It may be necessary to use a separator device to separate the two halves of the connector link if a separator device is not available, loosen both screws of the connector link by four turns. Place a long bar between the connector link bars to hold the link in place. Using a rawhide or rubber mallet, tap one screw head and then the other screw head several times until the connector link bars separate.

g. Install suspension lines on the new connector link bar. The short leg of the "L" connector is to be positioned to the inside (Figure 8).

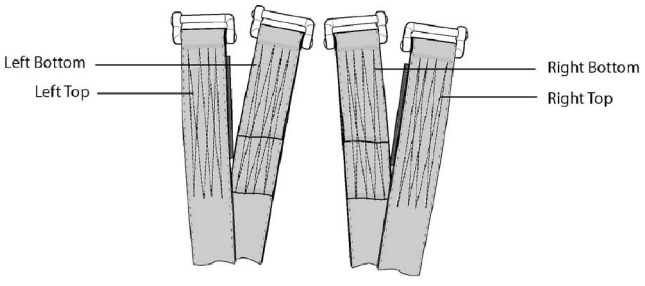


Figure 8. Double "L" Connector Link Layout

h. Install cross-connector strap.

i. Slide riser loop onto opposite connector link bar.

j. Mate both halves of the connector link together.

k. Install screws (2 each).

NOTE

Screws must make a minimum of 6 full turns prior to applying torque.

l. Check suspension line continuity. (QA)

m. Tighten screws to a torque value of 15 in-lbs. (QA)

WARNING

Care must be taken when tightening screws as screwdriver may slip and cause minor injury.

NOTE

It may be necessary to check the torque value on each screw more than once due to the interference fit design feature of the connector link.

n. Apply torque seal to both screw heads and allow to dry before proceeding with remainder of parachute packing.

o. Repeat steps a through l on each riser group.

p. Re-identify the parachute canopy by using an indelible black pen to cross out the existing part number and marking the new superceding part number per Illustrated Parts Breakdown (IPB) WP 012 04.

ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

NB-7 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 566AS100-11 and 566AS100-14

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1	11	2 thru 5	9	6	11		

Reference Material

Intermediate and Depot Maintenance, Packing Procedures, NB-7 Personnel Parachute Assembly ..... WP 012 02

Alphabetical Index

Title	Page
Introduction	1
Service/Total Life	1
Usable on Codes	1

List of Figures

Title	Page
NB-7 Personnel Parachute Assembly	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the NB-7 Personnel Parachute Assembly (Figure 1).

2. USABLE ON CODES.

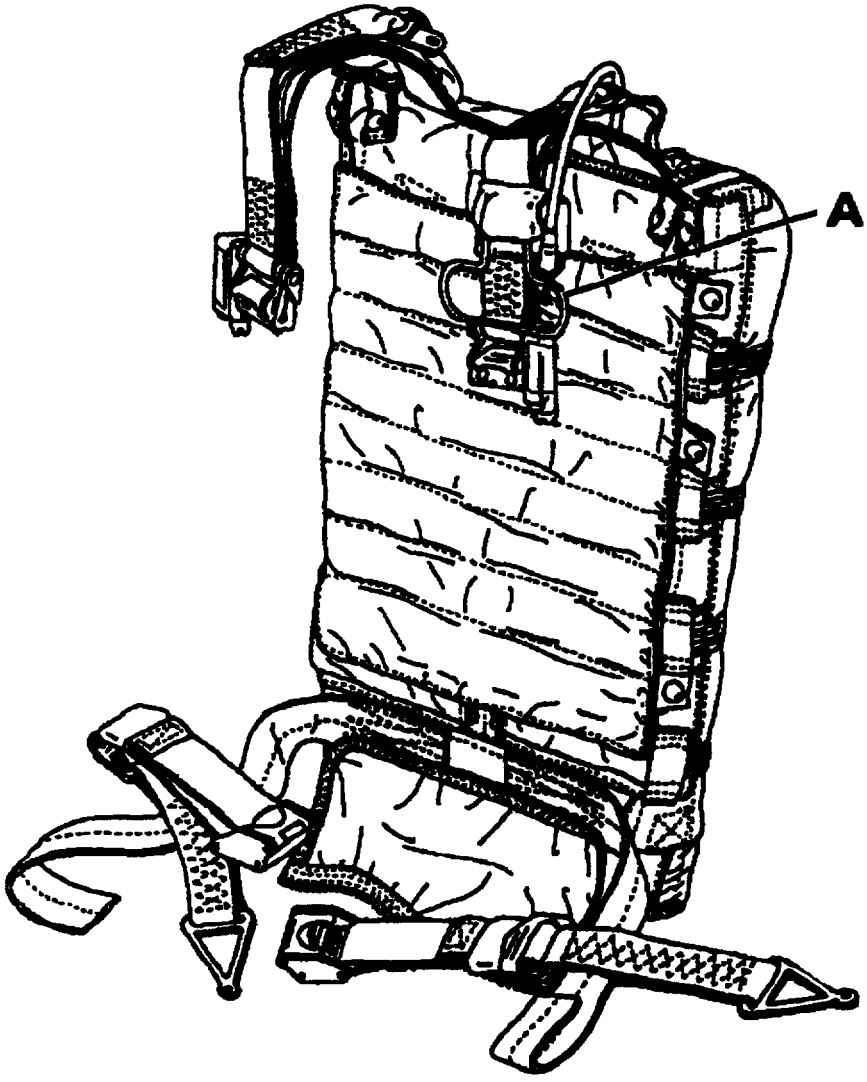
a. The usable on codes in this WP refer to the aircraft applications for the NB-7 Personnel Parachute Assembly.

b. The following usable on codes apply to this WP:

A - E-2

3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in WP 012 02.



6.2-6045A

Figure 1. NB-7 Personnel Parachute Assembly (Sheet 1 of 5)

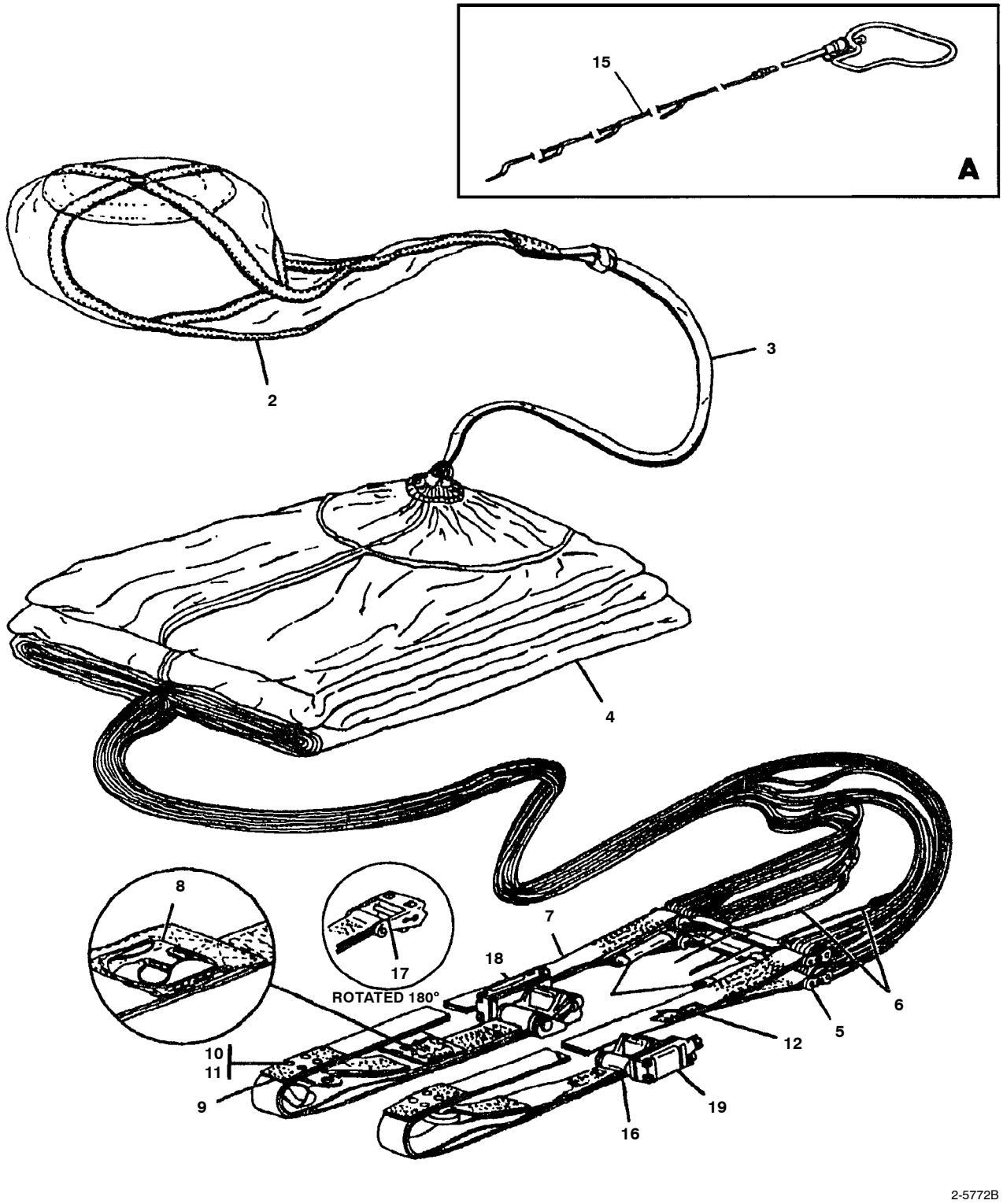
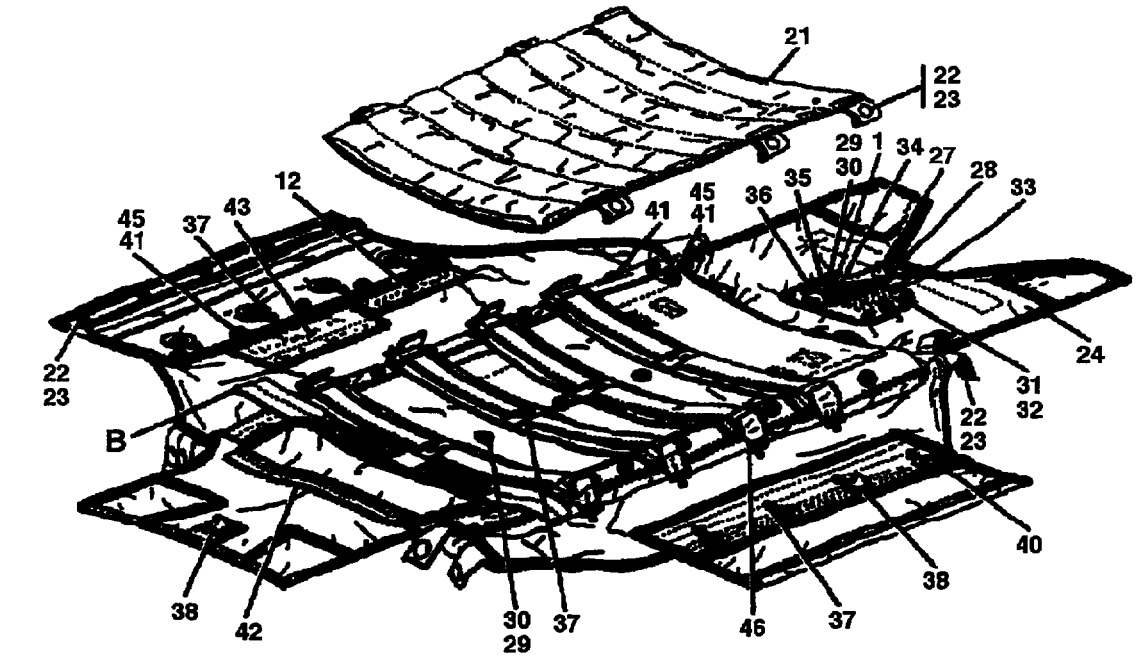


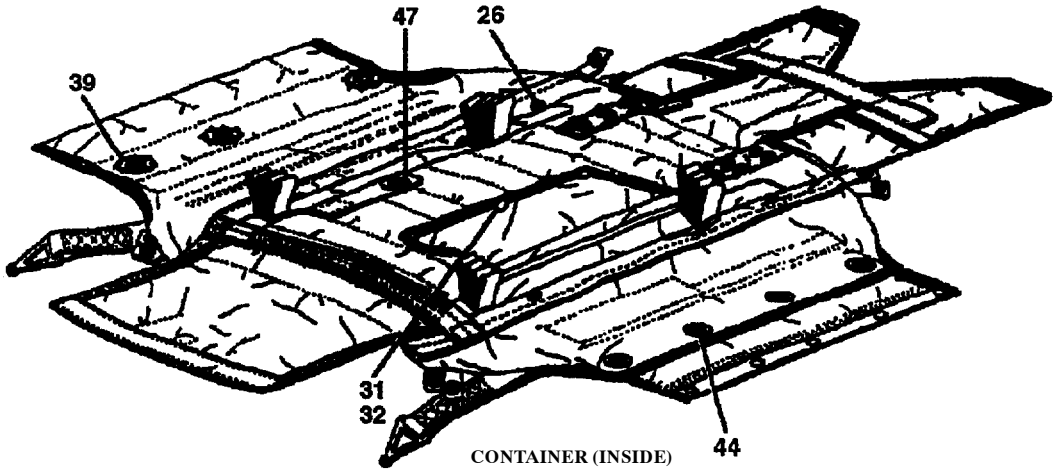
Figure 1. NB-7 Personnel Parachute Assembly (Sheet 2 of 5)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	566AS100-11	PARACHUTE ASSEMBLY, COMPLETE, NB-7	1	A	AGOGG
	566AS100-14	PARACHUTE ASSEMBLY, COMPLETE, NB-7 .... /SEE NOTE 1/	1	A	AGOGG
1	711-07094	. SPACER/52497/NOTE 2/	1		PAGZZ
2	60A125E16-1	. PARACHUTE ASSEMBLY, PILOT	1		PCGZZ
3	666AS100-1	. STRAP, PILOT PARACHUTE CONNECTOR	1		PCGZZ
4	60A113E5-18	. CANOPY ASSEMBLY	1	*	PCGGG
	60A113E5-20	. CANOPY ASSEMBLY (WITH DOUBLE "L" .... CONNECTOR LINK INSTALLED)	1	*	PCGGG
5	MS22021-1	. . LINK, REMOVABLE CONNECTOR	4	*	PAGZZ
	MS22002-1	. . CONNECTOR LINK (DOUBLE "L")	4	*	PAGZZ
6	666AS101-2	. . LANYARD, FOUR LINE RELEASE	2		MGGZZ
7	60A116E7-16	. RISER ASSEMBLY	1		PCGGG
8	60A116C10-1	. . RETAINER, RIPCORD GRIP	1		PAGZZ
9	60A116C8-2	. . STRAP ASSEMBLY	2		MGGGG
10	MS27980-8N	. . . FASTENER, EYELET	4		PAGZZ
11	MS27980-6N	. . . FASTENER, SOCKET	4		PAGZZ
12	676AS100-1	. . LABEL /NOTE 3/	4		XBGZZ
13	666AS102-5	. . FLUTE, FOUR-LINE RELEASE ..... LANYARD	2		MGGZZ
14	677AS100-2	. STRAP, CONNECTOR	2		PCGGG
15	60A116C5-5	. RIPCORD ASSEMBLY, PARACHUTE	1	*	PAGZZ
	60A116C5-3	. RIPCORD ASSEMBLY, PARACHUTE, ... (USE UNTIL EXHAUSTED)	1	*	PAGZZ
16	990055-1	. RELEASE ASSEMBLY, CANOPY /99449/	2	*	PAOGG
	015-10307-5	. RELEASE ASSEMBLY, CANOPY /99449/ ..... (USE UNTIL EXHAUSTED)	2	*	PAOGG
17	122-10935-3	. . SETSCREW /99449/	1		PAOZZ
18	852AS117-3	. SENSING RELEASE UNIT, PARACHUTE ..... HARNESS MXU-746/P LEFT SIDE	1		AGGGG
19	852AS117-4	. SENSING RELEASE UNIT, PARACHUTE ..... HARNESS MXU-747/P RIGHT SIDE	1		AGGGG
20	1979AS826-1	. RELEASE ASSEMBLY, LAPBELT /30003/	2	*	PAOZZ
	015-11365-1	. RELEASE ASSEMBLY, LAPBELT /99449/	2	*	PAOZZ
	990060-1	. RELEASE ASSEMBLY, LAPBELT /99449/	2	*	PAOZZ
21	60A113D6-1	. PAD ASSEMBLY, BACK	1		PAOGG
22	MS27983-1	. . FASTENER, BUTTON	12		PAGZZ
23	MS27983-2N	. . FASTENER, SOCKET	12		PAGZZ
24	60A116E2-44	. CONTAINER ASSEMBLY	1		PCGGG
25	60A116C12-6	. . LAPBELT ASSEMBLY	1		PCGZZ
26	MS27980-10B	. . FASTENER, EYELET	6		PAGZZ
27	60A113C24-1	. . CONE, 0.410 GRIP	1		PAGZZ
28	60A113D16-1	. . BASE ASSEMBLY, CLAMP	1		PAGZZ
29	MS27981-5B	. . FASTENER, EYELET	6		PAGZZ
30	MS27981-4B	. . FASTENER, STUD	6		PAGZZ
31	MS27981-1B	. . FASTENER, BUTTON	6		PAGZZ

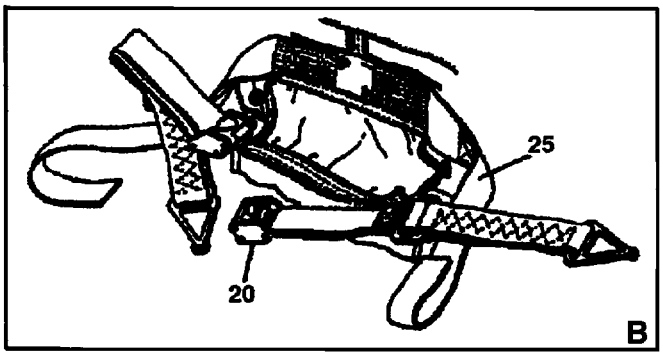
Figure 1. NB-7 Personnel Parachute Assembly (Sheet 3 of 5)



CONTAINER (OUTSIDE) AND BACKPAD



CONTAINER (INSIDE)



6.2-5773

Figure 1. NB-7 Personnel Parachute Assembly (Sheet 4 of 5)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
32	MS27981-3B	. . FASTENER, SOCKET	6		PAGZZ
33	60A116D26-2	. . LANYARD	1		PCGZZ
34	60A116C25-1	. . STUD	1		PAGZZ
35	60A116C27-1	. . CLAMP, DOUBLE	1		PAGZZ
36	60A116C28-1	. . SCREW	1		PAGZZ
37	60A113C28-1	. . EYE	16		PAGZZ
38	60A113C31-1	. . CONE, 0.338 GRIP	2		PAGZZ
39	60A113C25-1	. . WASHER, GROMMET	3		PAGZZ
40	MS22048GC1	. . GROMMET	3		PAGZZ
41	MS27983-3	. . FASTENER, STUD	19		PAGZZ
42	814AS807-1	. . FASTENER, SLIDE	1		PAGZZ
43	585AS100-1	. . LABEL, PARACHUTE ASSEMBLY /NOTE 3/	1		XBGZZ
44	MS22048C2	. . GROMMET & WASHER, PARACHUTE PACK	4		PAGZZ
45	MS27980-8B	. . FASTENER, EYELET	13		PAGZZ
46	60A113D11-3	. . SPRING ASSEMBLY, CONTAINER OPENING	4	*	PAOZZ
	MS70105-7	. . SPRING ASSEMBLY, CONTAINER OPENING	4	*	PAOZZ
47	MS20230B4	. . GROMMET AND WASHER	1		PAGZZ

NOTES: 1. After incorporation of Parachute Harness Sensing Release Unit.

2. Alternate local manufacture.

3. Available from Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106

Figure 1. NB-7 Personnel Parachute Assembly (Sheet 5 of 5)

ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

NB-8 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 569AS100-5, 569AS100-6, 569AS100-7 and 569AS100-8

List of Effective Work Package Pages

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Reference Material

Organizational, Intermediate, and Depot Maintenance, Illustrated Parts Breakdown, NB-8 Personnel Parachute Assembly ..... WP 013 04
Intermediate and Depot Maintenance, Repair Procedures, NB-8 Personnel Parachute Assembly ..... WP 013 03
Seat Survival Kits (Oxygen Hoses and Non-SKU Series Seat Kits) ..... NAVAIR 13-1-6.3-1

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Record of Applicable Technical Directives

None

1. DESCRIPTION.

2. GENERAL. The NB-8 Personnel Parachute Assembly is a back-type parachute, consisting of a 28-ft. diameter, flat, multicolored, (white, olive green, international orange and sand shade) nylon canopy with 28 gores. Each alternate gore has been modified with water deflation pockets. Canopy is packed in a container and secured to the aircrew by a harness assembly (Figure 1).

3. CONFIGURATIONS. Four different configurations of the NB-8 assembly may be used in service. The difference is in the size of harness, NB-8 R (regular) or NB-8 O (oversize) and the addition or absence of an Automatic Parachute Ripcord Release. Refer to Illustrated Parts Breakdown (WP 013 04) for exact configuration requirements. When circumstances dictate, an aircrew may be required to wear cold weather gear which may restrict use of existing length of chest adjusting strap due to excessive bulk. To preclude this condition a chest strap extender is authorized for use. For fabrication of the chest strap extender refer to (WP 013 03). Four configurations of the NB-8 assembly may also be used with a seat cushion and standard soft pack (SSP) or with the SP-1A seat pan assembly and SSP depending on aircraft application. The SSP is one of several types of packaged LR-1 life raft assemblies (NAVAIR 13-1-6.3-1).

4. SUBASSEMBLY CONFIGURATIONS. Subassemblies listed below and shown in (Figure 2) make up the various configurations of the NB-8 assembly. Refer to (WP 013 04) for detailed information on subassemblies.

Pilot Parachute Assembly

Pilot Parachute Connector Strap

Canopy Assembly

Harness Assembly

Back Pad

Lanyard Assembly

Ripcord Assembly

Automatic Ripcord Release Assembly

Container Assembly

5. PRINCIPLES OF OPERATION.

6. MANUAL OPERATION. After emergency bailout, the following operations take place:

a. Manually pulling the ripcord handle removes the ripcord pins (overriding the ripcord release if installed) from the container locking cones, permitting grommets and locking cones to separate.

b. The container spring opening assemblies pull the side flaps apart allowing the pilot parachute to spring from the container and inflate.

c. The aircrew falling away from the inflated pilot parachute causes the canopy to be extracted from the container followed by the suspension lines. The canopy begins to inflate during this operation.

d. The connector link tacking breaks as load is applied. The risers are then pulled from the container, the canopy inflates. This permits the aircrew to descend suspended in the harness.

e. By manually actuating the four-line release system the aircrew may reduce oscillation and maneuver parachute to a less hazardous landing site.

f. Upon landing, the aircrew releases the canopy by actuation of the harness quick fit ejector snaps.

7. AUTOMATIC OPERATION ABOVE PRE-SET ACTIVATION ALTITUDE. After emergency bailout the following functions take place, assuming the aircrew does not manually deploy the parachute.

a. The ripcord release arming pin is withdrawn as aircrew exits the aircraft. The release aneroid mechanism locks the firing pin/hammer preventing the release from firing.

b. As the aircrew falls, increasing air pressure causes the release aneroid to contact.

c. Upon passing through the pre-set altitude, the aneroid contracts and removes the sear from the firing hammer lock.

d. The release firing pin/hammer strikes the cartridge.

e. The release cartridge fires after a preset time delay of 2 seconds.

f. The release piston is forced forward in the barrel, pulling the power cable which is attached to top ripcord pin.

g. The ripcord pins are pulled by action of the release power cable, permitting container gromments and locking cones to seperate.

h. The container spring opening assemblies pull the side flaps apart, allowing the pilot parachute to spring from container and inflate with air.

i. The aircrew falling away from the pilot parachute causes the canopy to be extracted from the container followed by the suspension lines. The canopy begins to inflate with air during this operation.

j. The connector link tacking breaks as load is applied. The lift webs are then pulled from the container, the canopy inflates. This permits the aircrew to descend suspended in the harness.

k. By manually actuating the four-line release system, the aircrew may reduce oscillation and maneuver to a less hazardous landing site.

l. Upon landing, the aircrew releases harness by actuation of the harness quick fit ejector snaps.

8. AUTOMATIC OPERATION BELOW PRE-SET ACTIVATION ALTITUDE. After emergency bailout the following functions take place, assuming the aircrew does not manually deploy the parachute.

a. The ripcord release arming pin is withdrawn as the aircrew exits the aircraft, automatically releasing the firing pin/hammer.

b. The firing pin/hammer strikes the cartridge.

c. The release cartridge fires after a preset time delay of 2 seconds.

d. The release piston is forced forward in the barrel, pulling the power cable which is attached to the top ripcord pin.

e. The ripcord pins are pulled by the action of the release power cable, permitting the container gromments and locking cones to seperate.

f. The container spring opening assemblies pull the side flaps apart, allowing the pilot parachute to spring from the container and inflate with air.

g. The aircrew falling away from the pilot parachute causes the canopy to be extracted from the container, followed by the suspension lines. The canopy begins to inflate with air during this operation.

h. he connector link tacking breaks as load is applied. The lift webs are then pulled from container, the canopy inflates. This permits the aircrew to descend suspended in the harness.

i. By manually actuating the four-line release system, the aircrew may reduce oscillation and maneuver to a less hazardous landing site.

j. Upon landing, the aircrew releases harness by actuation of the harness quick fit ejector snaps.

9. REPACK SCHEDULE.

a. Scheduled repack cycle is 1460 days for the P-3, C-130, and C-2 aircraft.

b. Scheduled repack cycle is 840 days for the T-34 aircraft.

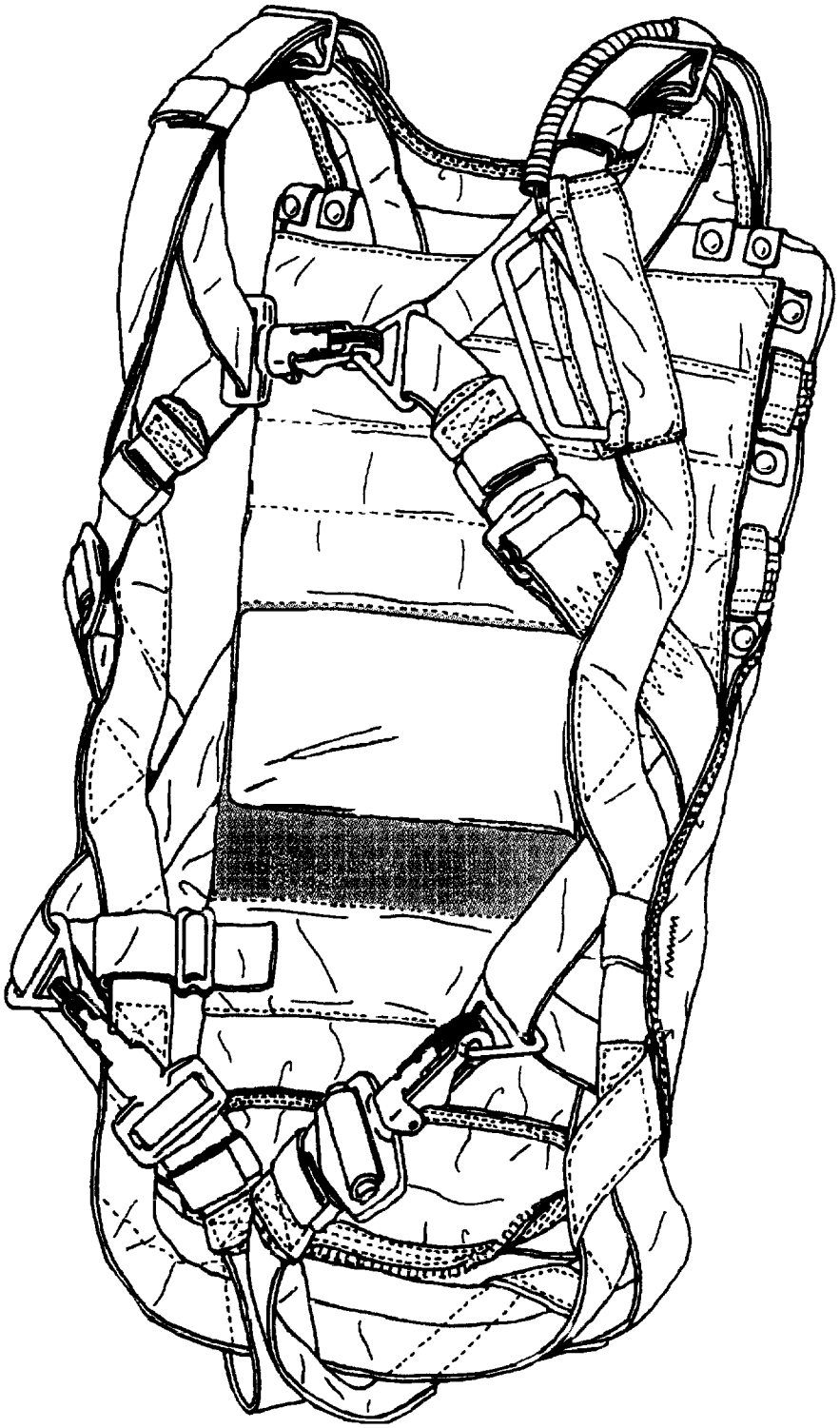

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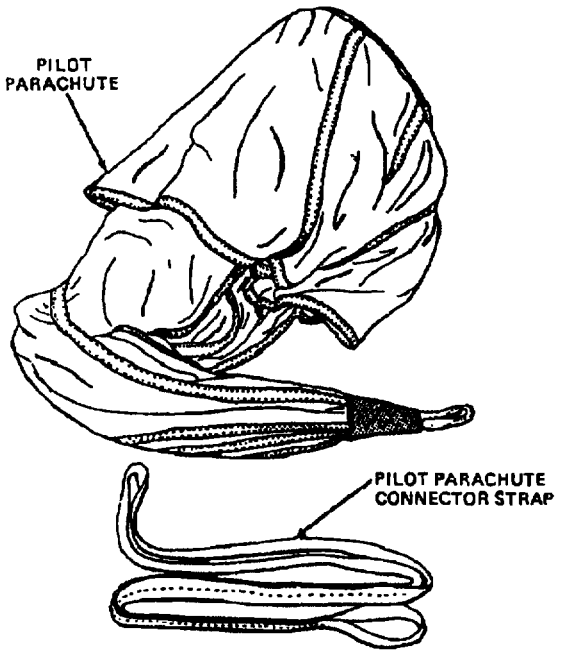
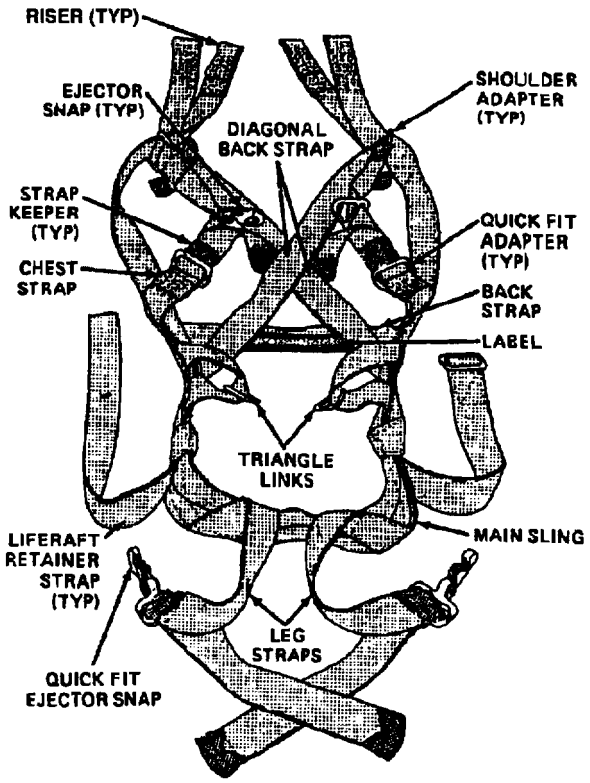
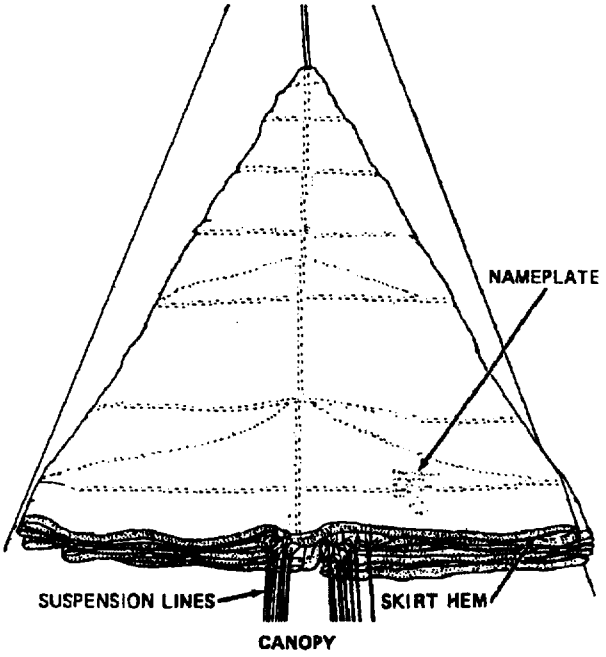
Figure 1. Personnel Parachute Assembly, NB-8



Pilot Parachute and Connector Strap Assemblies



Harness Assembly



Canopy

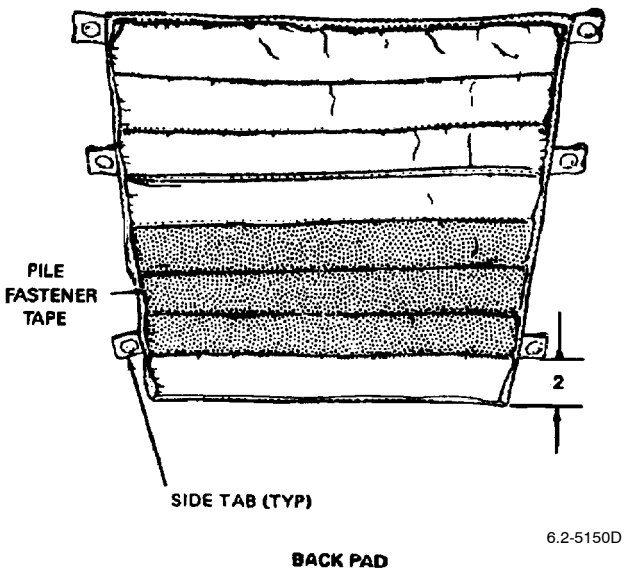
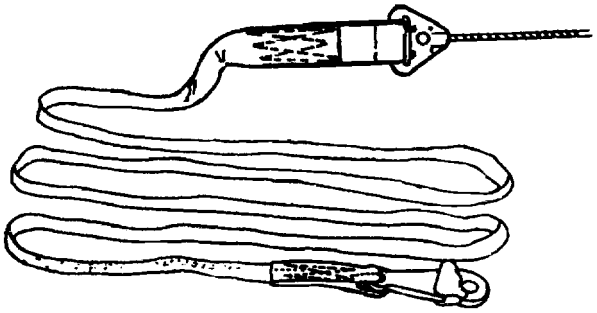


Figure 2. Subassemblies, NB-8 (Sheet 1 of 4)



LANYARD ASSEMBLY

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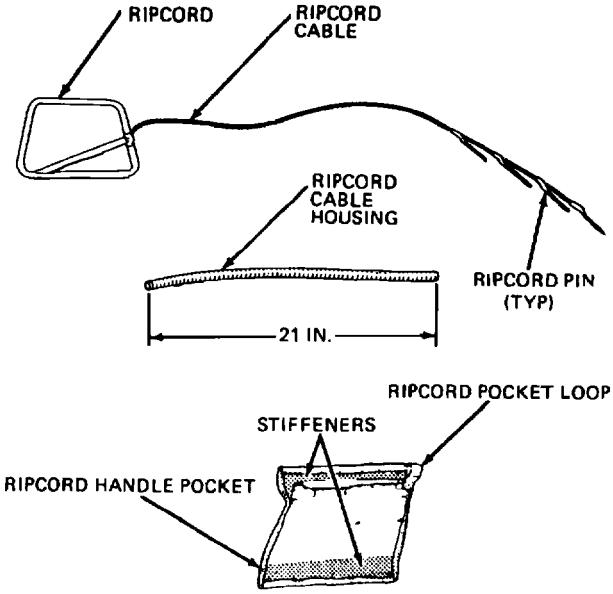
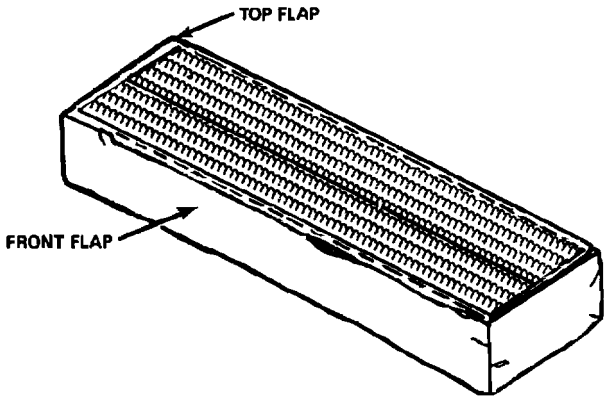


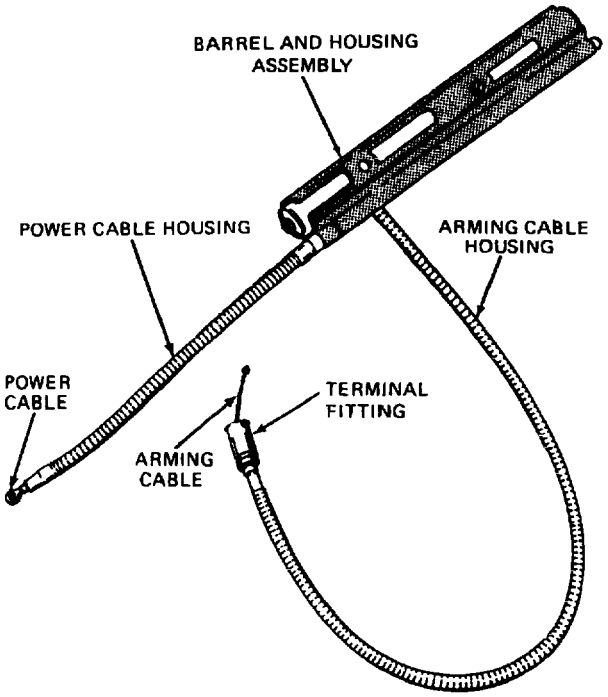
RIPCORD ASSEMBLY

6.2-5151C



LUMBAR PAD

6.2-5151B



AUTOMATIC PARACHUTE RIPCORD RELEASE

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Figure 2. Subassemblies, NB-8 (Sheet 2 of 4)

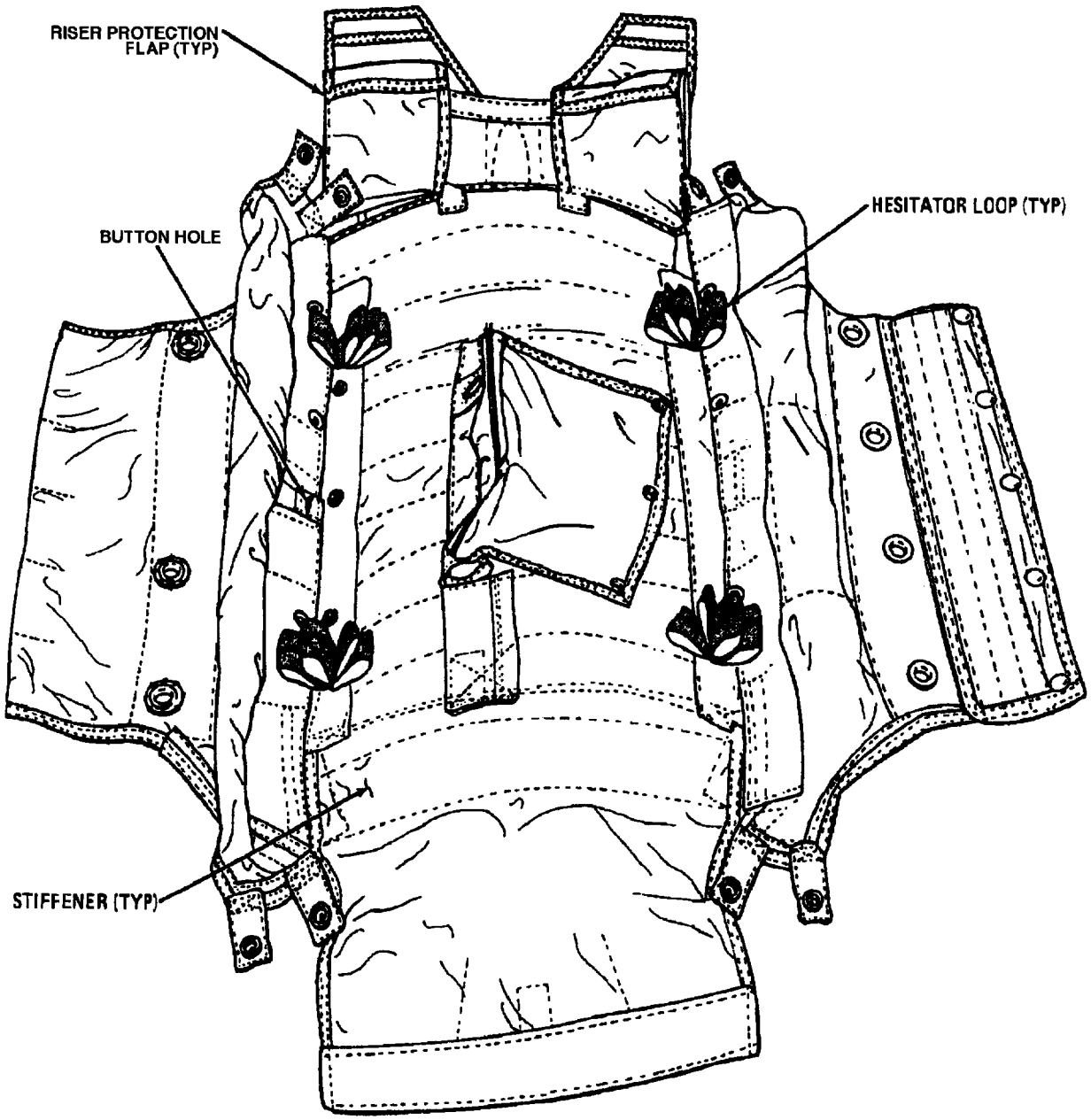

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Figure 2. Subassemblies, NB-8 (Sheet 3 of 4)

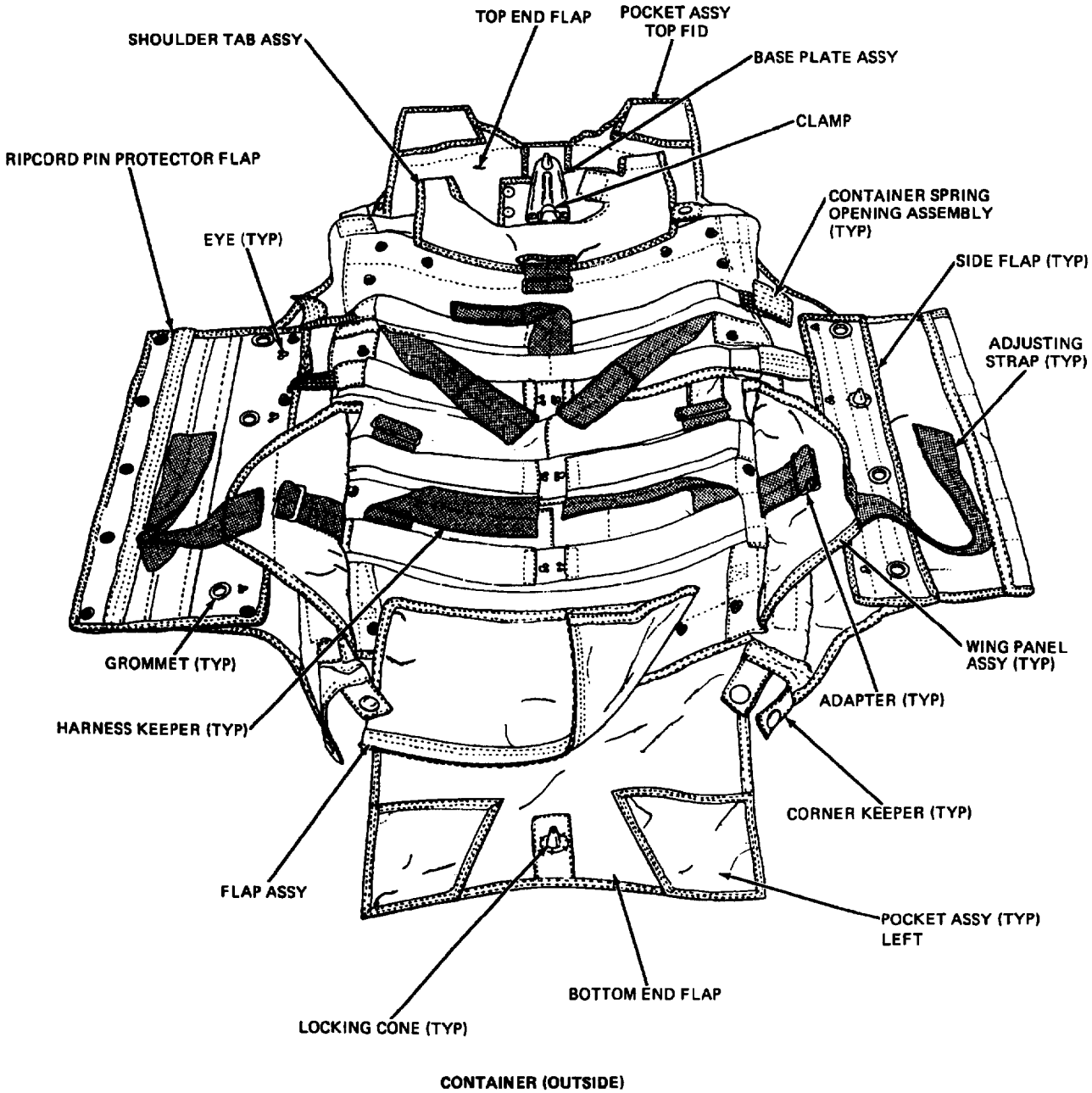

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Figure 2. Subassemblies, NB-8 (Sheet 4 of 4)

ORGANIZATIONAL MAINTENANCE

REPAIR PROCEDURES

NB-8 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 569AS100-5, 569AS100-6, 569AS100-7, and 569AS100-8

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Reference Material

Intermediate and Depot Maintenance, Common Repairs . . . . . WP 004 00
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdown, Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00

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Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains instructions for organizational level repair to ensure that the parachute remains in Ready-For-Issue (RFI) status.

b. Refer to WP 004 00 for common repairs.

c. When performing repairs detailed in this WP, follow these guidelines:

(1) Review applicable instructions prior to starting repair.

(2) Ensure all necessary support equipment and materials required are available.

(3) When required, remove enough material from it's source for immediate use only. Ensure the material identification ticket remains with the source material at all times. Material that cannot be identified will not be used.

(4) To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

(5) A Quality Assurance (QA) inspector shall examine the finished work.

2. HARNESS ASSEMBLY.

3. REPLACEMENT OF FOUR-LINE RELEASE LANYARD PULL LOOP TACKINGS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Fully extend pull loop and position between risers (Figure 1).

b. Tack at center of riser and 1/2-in. above bottom of lanyard pull loop with one turn of size FF thread, single and waxed; tie off (Figure 1). (QA)

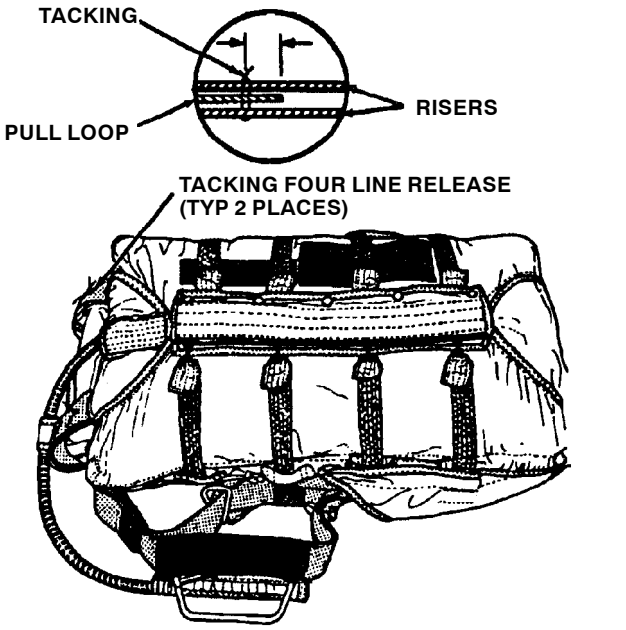


Figure 1. Replacement of Four-Line Release Lanyard Pull Loop Tackings

4. REPLACEMENT OF RAFT RETAINING STRAP TACKINGS WHEN NO SURVIVAL KIT IS INSTALLED.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Tack raft retaining strap at adapter by passing one turn of size 6 thread, single and waxed, thru strap, around center bar of adapter and thru retaining straps; tie off (Figure 2). (QA)

b. Tack end of raft retaining strap by folding strap end 2-in. under and tack to strap beneath with one turn of size 6 thread, single and waxed; tie off (Figure 2). (QA)

c. Tack center of raft retaining straps by passing one turn of size 6 thread, single and waxed, thru straps and main sling; tie off (Figure 2). (QA)

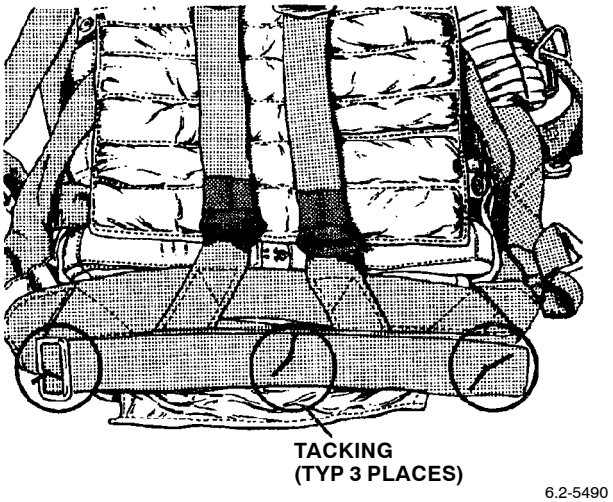


Figure 2. Replacement of Raft Retaining Strap Tackings When No Survival Kit is Installed

5. CONTAINER ASSEMBLY.

6. REPLACEMENT OF HARNESS KEEPER ADAPTER TACKINGS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. If necessary, remove backpad.

b. Tack end strap at adapters with one turn of size 6 thread, single and waxed. Pass tacking thru straps and around center bar of adapter; tie off (Figure 3). (QA)

c. If removed, reattach backpad. (QA)

7. REPLACEMENT OF TIES SECURING SHOULDER TABS TO HARNESS.

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type III

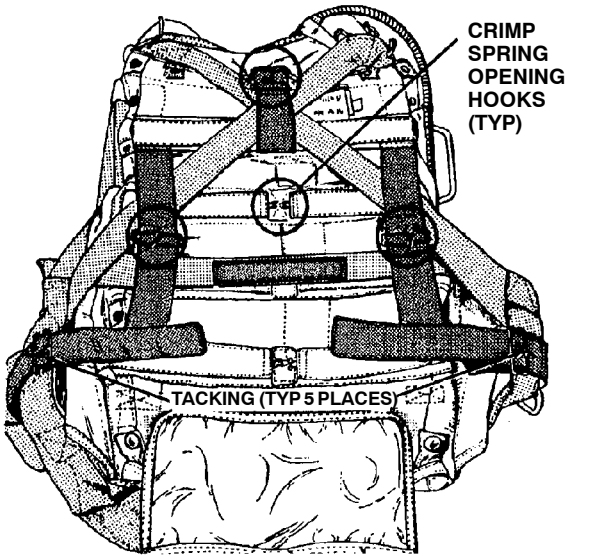


Figure 3. Replacement of Harness Keeper Adapter Tackings

a. Cut a 10-in. length of Type III nylon cord.

b. Remove and discard inner core and sear ends of casing

c. Pass nylon casing thru shoulder tab loop (Figure 4).

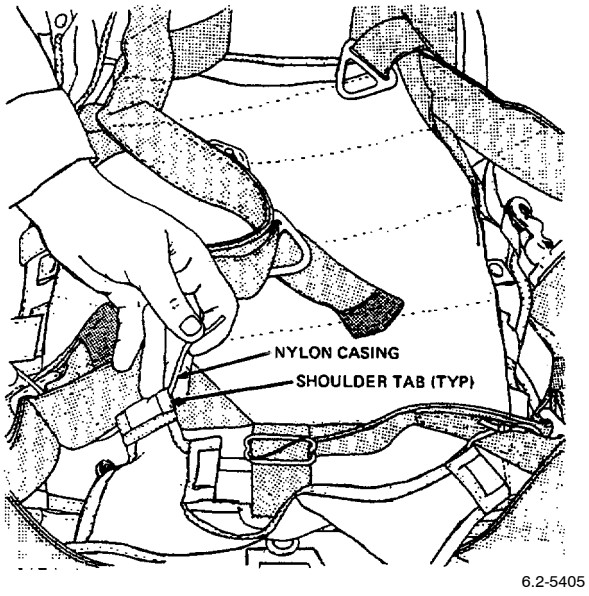


Figure 4. Replacement of Ties Securing Shoulder Tabs to Harness

d. Pass one end of nylon casing thru harness adapter webbing loop. Tie ends of casing together with a square knot. (QA)

8. REPLACEMENT OF SPRING OPENING ASSEMBLY.

a. Measure length of replacement spring opening assembly (60AD113D11-3). Required length from end of one hook to end of other hook with no tension is 10 3/8-in. ± 1/4-in.

b. Draw a pull cord thru spring opening channel.

c. Attach one end of pull cord to hook on spring opening assembly and then draw thru channel.

d. Attach spring opening assembly hooks to container eyes with hook facing container. (QA)

e. Crimp hook attached to eye on center line of container (Figure 3).

9. SURVIVAL KIT.

10. REPLACEMENT OF RAFT RETAINER STRAP AND OUTER CONTAINER VERTICAL AND HORIZONTAL STRAP TACKINGS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Raft Retainer Strap.

(1) Remove combination carrying case and equipment container from outer container.

(2) Tack adapter by passing one turn of size 6 thread, single and waxed thru strap and around center bar of adapter; tie off (Figure 5). (QA)

(3) Fold excess strap under and tack strap to outer container with one turn of size 6 thread, single and waxed; tie off (Figure 5). (QA)

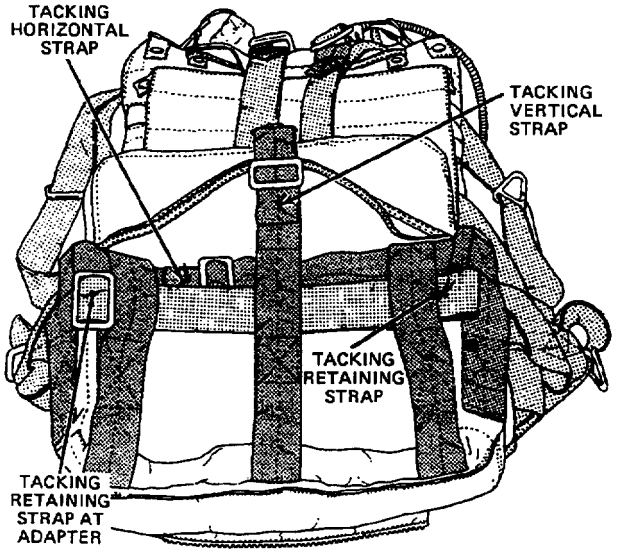


Figure 5. Replacement of Raft Retaining Strap

(4) Reinstall combination carrying case and equipment container into outer container.

b. Outer Container Vertical and Horizontal Strap Tackings.

(1) Remove combination carrying case and equipment container from outer container.

(2) Fold horizontal and/or vertical strap under tucking end under adapter. Tack folded under strap to strap beneath with one turn of size 6 thread, doubled and waxed; tie off (Figure 5). (QA)

(3) Reinstall combination carrying case and equipment container into outer container.

11. REPLACEMENT OF SEAT CUSHION/SEAT PAN TACKINGS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

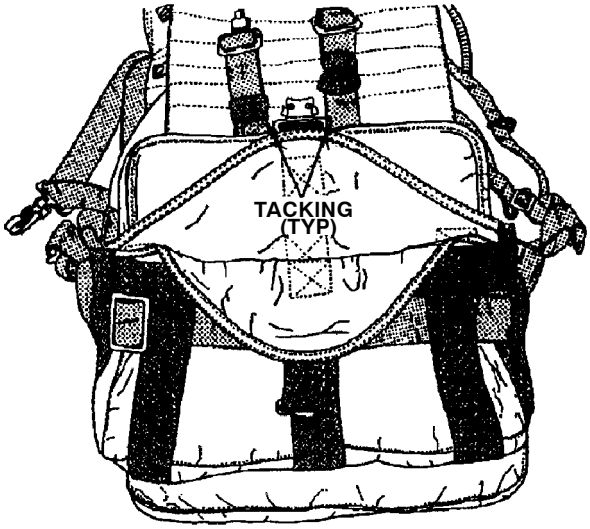
Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Main Panel Tackings.

(1) Remove combination carrying case and equipment container.

(2) Tack main panel to seat cushion/seat pan at mark on either side of quick disconnect shackle with one turn of size 6 thread, doubled and waxed; tie off (Figure 6). (QA)

(3) Reinstall combination carrying case and equipment container.



6.2-5493

Figure 6. Replacement of Outer Container Seat Cushions/Seat Pan Main Panel Tackings

b. Four Corner Tackings.

(1) Remove combination carrying case and equipment container.

(2) Tack each corner of outer container to seat cushion/seat pan with one turn of size 6 thread, doubled and waxed; tie off (Figure 7). (QA)

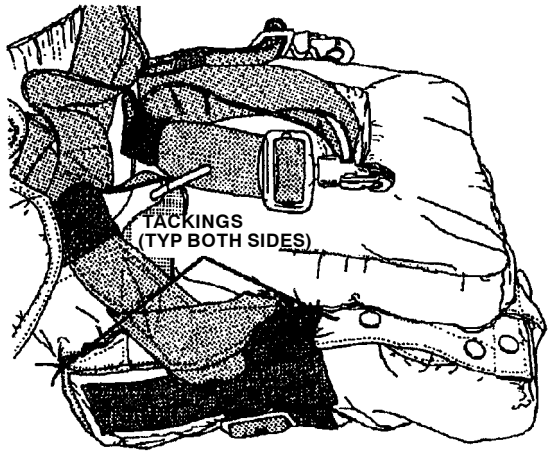


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Figure 7. Replacement of Outer Container to Seat Cushion/Seat Pan Four Corner Tackings

(3) Reinstall combination carrying case and equipment container.

12. REPLACEMENT OF STANDARD SOFT PACK (SSP).

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove combination carrying case and equipment container from SSP outer container.

b. Remove all tackings and unreeve harness retaining straps and leg straps. Remove SSP and seat cushion.

c. Attach SSP and seat cushion to harness.

d. If necessary, remove tackings from harness raft retaining strap and unreeve strap.

e. Position packed assembly on packing table with backpad facing up. Slide seat cushion between harness main sling and backpad with slot turned toward top of parachute container (Figure 8).

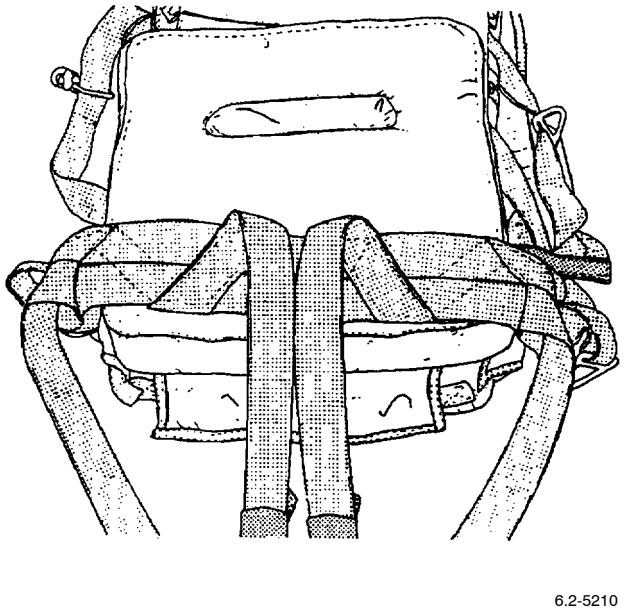

Figure 8. Positioning Packed Assembly

f. If installed, remove and discard the six Type III nylon cord ties from SSP outer container

g. Turn SSP outer container over so that horizontal strap adapter faces up.

h. Position combination carrying case and equipment container on packing table with shoulder straps facing up. Insert combination carrying case and equipment container into SSP outer container. Carrying case and equipment container strap handle must be positioned at open end of outer container (Figure 9).

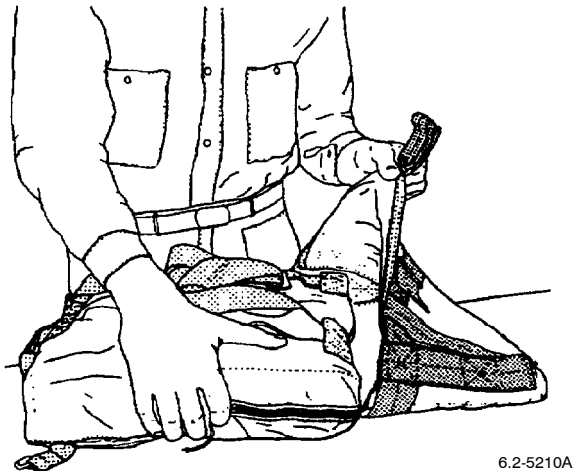

Figure 9. Postioning Combination Carrying Case

i. Pull outer container main panels over combination carrying case and equipment container. Secure vertical strap quick-disconnect shackle outside of strap handle. Reeve horizontal and vertical straps snugly thru adapters.

j. Mark ends of vertical and horizontal straps at edge of each adapter (Figure 10).

Figure 10. Marking Vertical and Horizontal Straps

k. Disconnect vertical strap quick-disconnect shackle and remove combination carrying case and equipment container from outer container.

l. Adjust horizontal and vertical strap adapters to markings made in step j, above. Fold both straps under and tuck ends under each adapter. Tack folded under strap to strap beneath with one turn of size 6 thread, doubled and waxed; tie off (Figure 11).

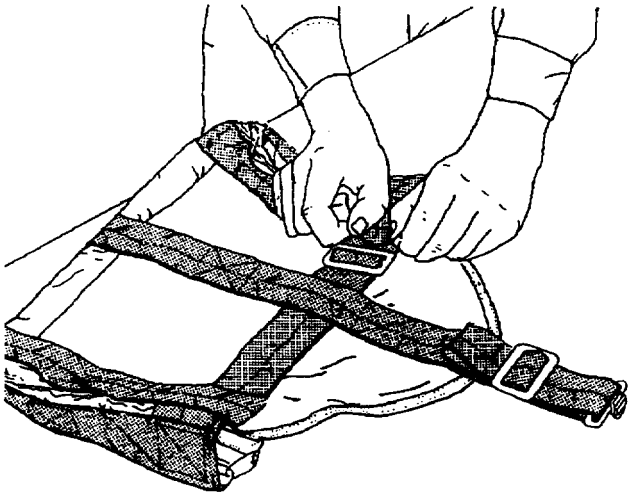

Figure 11. Adjust Horizontal and Vertical Strap

m. Insert combination carrying case and equipment container into outer container and fasten vertical strap quick-disconnect shackle.

n. Place SSP on packing table next to parachute container and pass leg straps thru keepers on SSP (Figure 12).

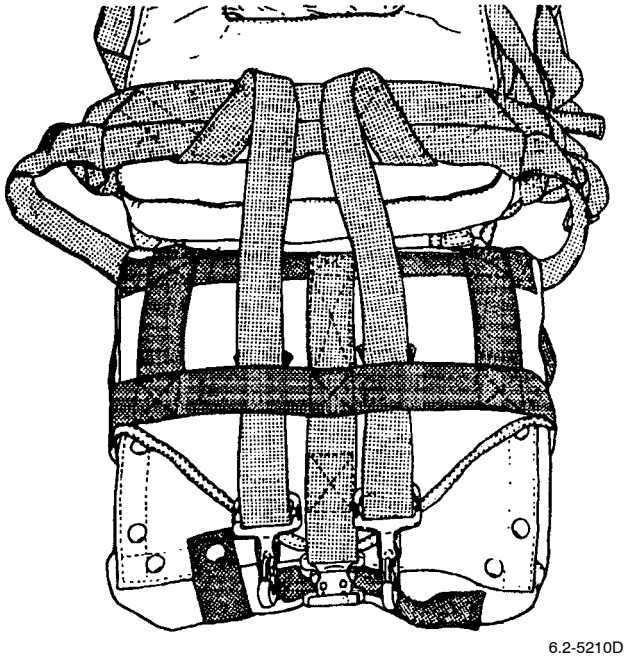

Figure 12. Pass Leg Straps Thru Keepers

o. Rotate SSP onto seat cushion and pass harness leg straps thru slot in seat cushion (Figure 13).

Figure 13. Rotate SSP onto Seat Cushion

p. Reeve raft retaining straps thru keepers on sides and top of SSP. Remove combination carrying case and equipment container from SSP outer container. Tack around center bar of raft retaining strap adapter with one turn size 6 thread, single and waxed; tie off. Tack center and end of retaining strap to SSP outer container with one turn of size 6 thread, single and waxed; tie off (Figure 14).

Figure 14. Reeve Raft Retaining Straps Thru Keepers

q. Insert combination carrying case and equipment container into SSP outer container.

r. Center-seat cushion slightly behind SSP quick-disconnect shackle. Mark SSP outer container main panel edges and seat cushion on each side of vertical strap for future tacking (Figure 15).

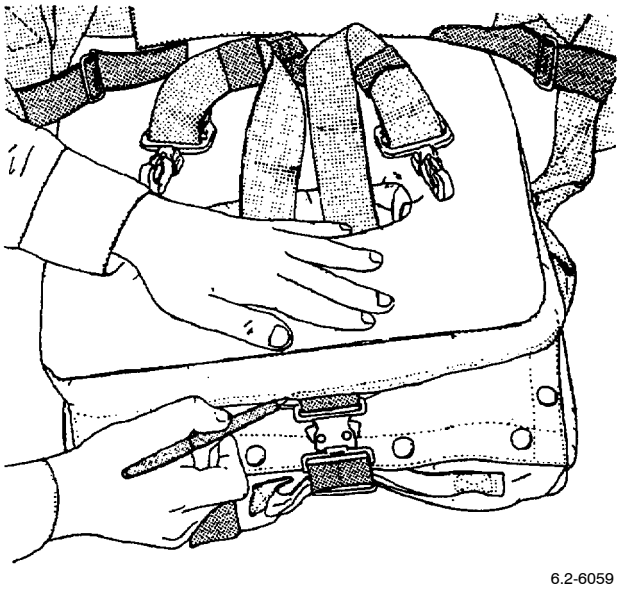

Figure 15. Center Seat Cushion Behind SSP

s. Remove combination carrying case and equipment container from SSP outer container.

t. Tack main panel edges to seat cushion at locations marked in step s one turn of size 6 thread, doubled and waxed; tie off. Note that when seat cushion is tacked, it will hang over back of SSP outer container (Figure 16).

Figure 16. Tack Main Panel Edges

u. Tack four corners of SSP outer container to seat cushion using one turn of size 6 thread, doubled and waxed; tie off. If necessary, compress seat cushion slightly to stitch rear corner tackings. Insert combination carrying case and equipment container. Ensure that quick-disconnect shackle is fastened (Figure 17). (QA)

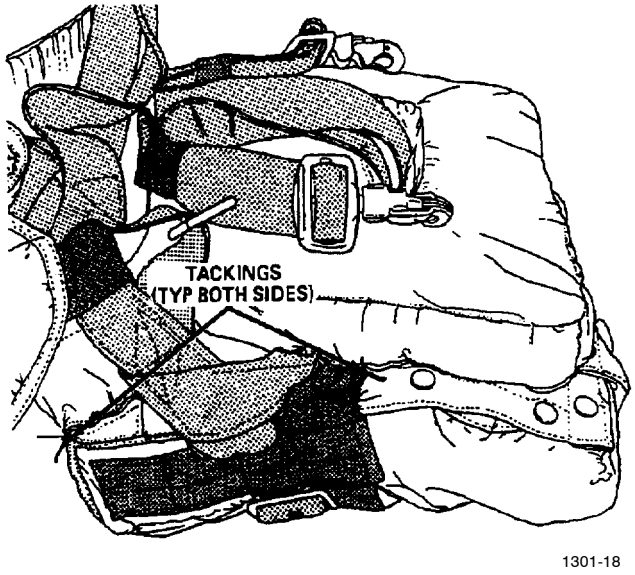

Figure 17. Tack Four Corners

13. REPLACEMENT OF SEAT CUSHION.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove tackings securing seat cushion to SSP outer container; remove seat cushion.

b. Position packed assembly on packing table with backpad facing up. Slide seat cushion between harness main sling and backpad with slot turned toward top of parachute container.

c. Rotate SSP onto seat cushion and pass harness leg straps thru slot in seat cushion (Figure 18).

Figure 18. Rotate Standard Soft Pack

d. Center-seat cushion slightly behind SSP quick-disconnect shackle. Mark SSP outer container main panel edges and seat cushion on each side of vertical strap for future tacking (Figure 19).

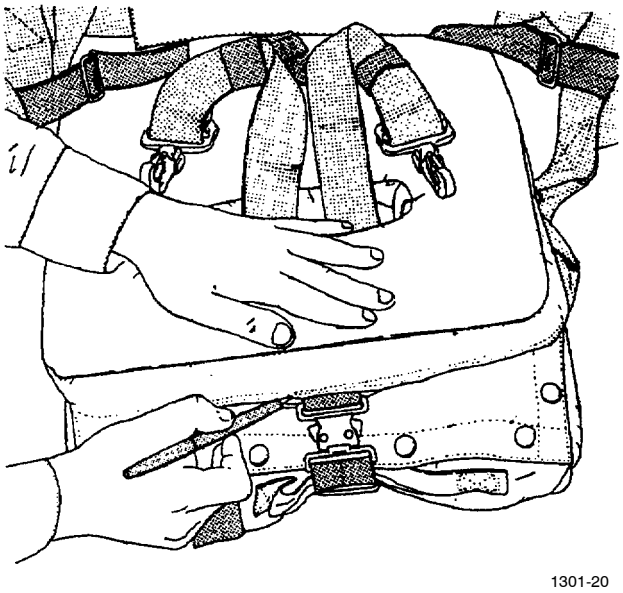

Figure 19. Center-Seat Cushion

e. Remove combination carrying case and equipment container from SSP outer container.

f. Tack main panel edges to seat cushion at locations marked in step d, with one turn of size 6 thread, doubled and waxed; tie off. Note that when seat cushion is tacked, it will hang over back of SSP outer container (Figure 20).

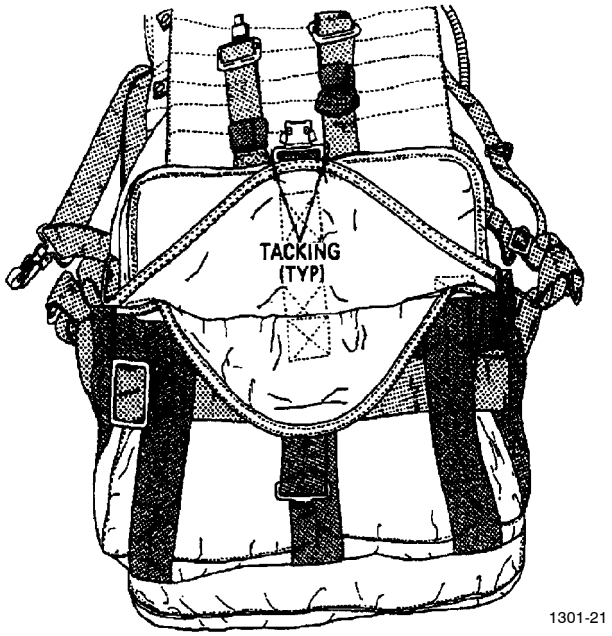

Figure 20. Tack Main Panel Edges

g. Tack four corners of SSP outer container to seat cushion using one turn of size 6 thread, doubled and waxed; tie off. If necessary, compress seat cushion slightly to stitch rear corner tackings. Insert combination carrying case and equipment container. Ensure that quick-disconnect shackle is fastened (Figure 21). (QA)

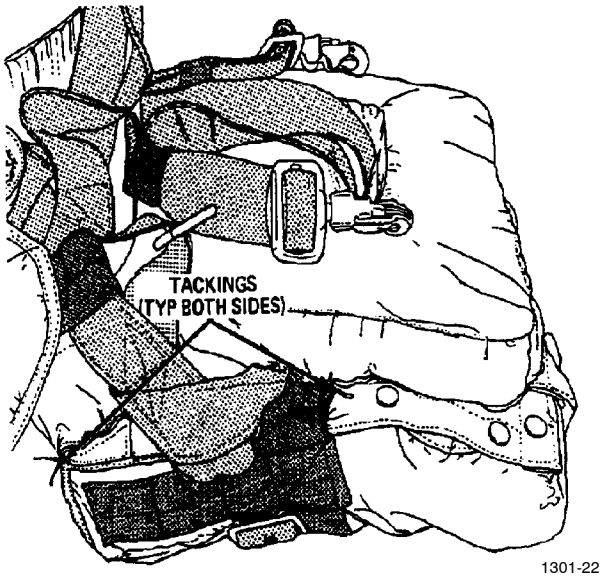

Figure 21. Tack Container to Cushion

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INTERMEDIATE AND DEPOT MAINTENANCE

PACKING PROCEDURES

NB-8 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 569AS100-5, 569AS100-6, 569AS100-7 and 569AS100-8

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1	11	4	11	9 thru 10	11	31	11
2 thru 3	9	5 thru 8	9	11 thru 30	9		

Reference Material

Cartridge Actuated Devices (CADS) and Propellant Actuated Devices (CADS) (IETM) . . . . . NAVAIR 11-100-1.1
Intermediate and Depot Maintenance, Common Repairs . . . . . WP 004 00
Organizational, Intermediate and Depot Maintenance, Illustrated Parts Breakdown,
NB-8 Personnel Parachute Assembly . . . . . WP 013 04
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration . . . . . WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment . . . . . WP 005 00

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Record of Applicable Technical Directives

None

1. GENERAL.

a. Packing instructions are provided with the assumption that they will be carried out under ideal conditions in a parachute loft (WP 003 00). When a parachute must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

b. In no case shall packing of a parachute be interrupted after packing operation has been started. If the packing operation is interrupted due to unforeseen circumstances, the parachute shall be completely repacked per instructions contained in this Work Package (WP).

c. Quality Assurance (QA) points have been included in the packing procedures. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Witnessing of QA steps may be delayed by QA if their satisfactory completion is verified in later steps.

d. During packing procedures, packer shall be positioned on left side of packing table, and helper on right side when viewed from harness/riser end of table.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
711-07076	Altitude Chamber
Refer to WP 005 00	Fid
Refer to WP 005 00	Guide Tube
Refer to WP 005 00	Long Bar (2)
Refer to WP 005 00	Packing Hook
Refer to WP 005 00	Ripcord Pin Lock
DPP-50	Scale, Spring
Refer to WP 005 00	Shot Bag (4)
11-1-3512	Small Line Separator
Refer to WP 005 00	Temporary Locking Pin (4)
Refer to WP 005 00	Temporary Locking Pin Plate

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type I or IA
711-07077	Test Slug (3)
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon, Size A, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
V-T-295	Thread, Nylon, Size 3, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. Ensure that all support equipment and materials required are available prior to starting.

b. Inspect packing tools for nicks, burrs, or sharp edges which may cause damage to the parachute assembly.

c. Count and record number of packing tools.

d. Clean packing table.

3. LAYOUT OF RIGGED PARACHUTE ASSEMBLY.

a. Completely open parachute container and detach spring opening assemblies and corner keepers.

b. Remove canopy from container and then remove tacking securing connector links to container.

c. Stretch canopy and suspension lines full length on packing table.

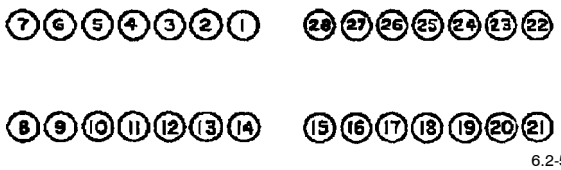
d. Locate gore 28 (nameplate gore) and place uppermost in center of packing table.

e. Attach tension strap hook to canopy vent lines.

f. Separate suspension lines into two equal groups with lines 1 thru 14 on packer's side and 15 thru 28 on helper's side. Grasping each group of lines, walk from skirt hem to connector links removing any twists between the two groups.

g. Position container on packing table with inside facing up and ripcord pocket on packer's side of table.

h. Place connector link holding lines 1 thru 7 on top of connector link holding lines 8 thru 14. Place connector link holding lines 22 thru 28 on top of connector link holding lines 15 thru 21. Insert tension hooks into connector links and insert hooks into packing table (Figure 1).



6.2-5332

Figure 1. Arrangement and Orientation of Suspension Lines on Connector Links

i. Tension canopy using tension strap.

j. Pull canopy vent collar below upper lateral band. Ensure that upper lateral band is even (Figure 2).

k. Pull vent collar back to original position.

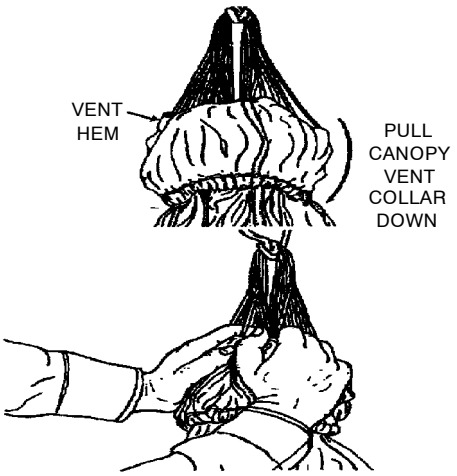


Figure 2. Adjustment of Vent Hem

4. AUTOMATIC PARACHUTE RIPCORD RELEASE REMOVAL/DISARMING/DISASSEMBLY (IF INSTALLED).

WARNING

Do not pull arming cable from armed release assembly, as this will cause it to fire.

a. Open release assembly pocket in the parachute container and remove release assembly enough distance to allow disassembly.

b. Remove cover locking screw and washer (Figure 3).

NOTE

Cover and power cable assembly and receiver and barrel assembly are serialized, matched set. Do not mix assemblies.

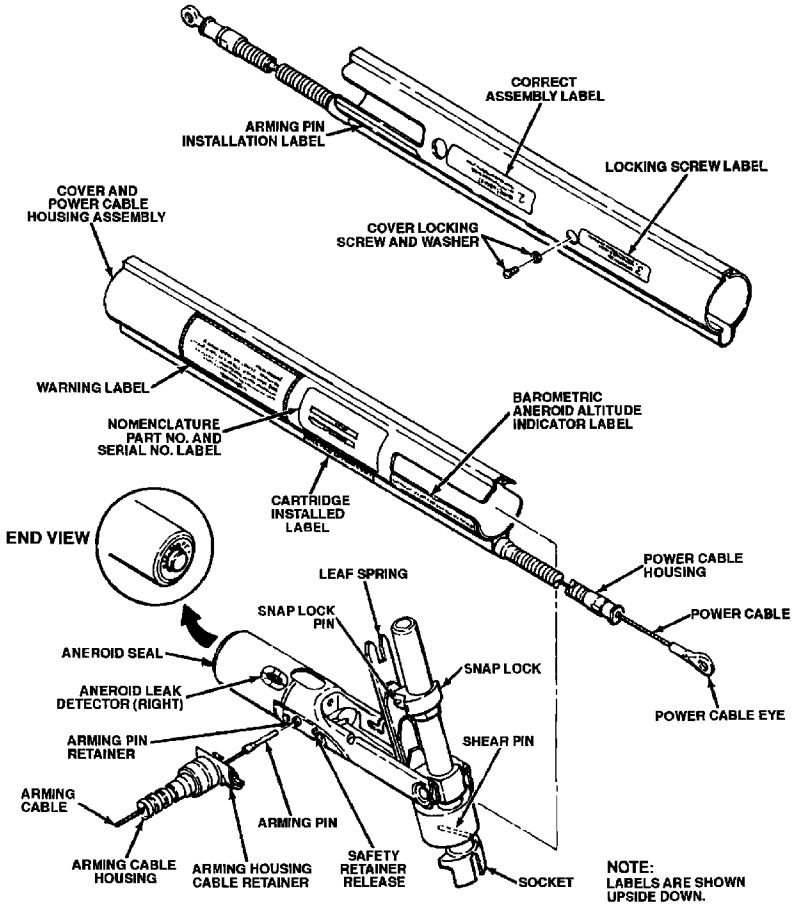


Figure 3. Automatic Parachute Ripcord Release, Model 7000

c. Slide cover off receiver and barrel assembly.

d. Disengage barrel by pushing down on snap-lock; slide back and release (Figure 4).

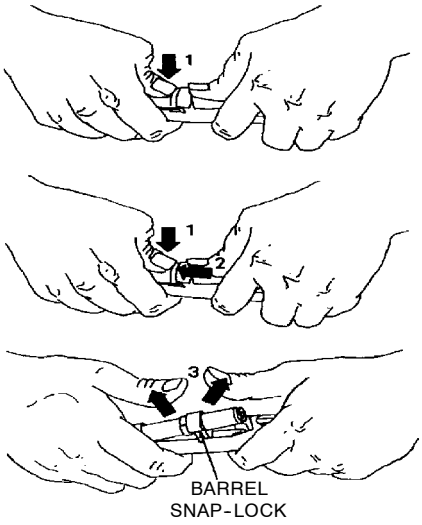


Figure 4. Disarming Ripcord Release

e. Remove cartridge from barrel immediately after barrel is disengaged. Store cartridge per NAVAIR 11-100-1.1. (QA)

f. Remove arming cable housing from receiver and barrel by depressing retainer release (Figure 4). Remove arming cable housing from receiver, leaving arming cable pin installed.

g. Ensure that arming cable pin is positively retained by arming pin retainer (Figure 3).

h. Remove arming cable pin from receiver by grasping arming pin and pulling.

i. Remove arming cable and clip from arming cable housing.

j. Remove lanyard assembly from lanyard stowage channel.

5. INSPECTION (SPECIAL).

a. Maximum scheduled repack cycle is 1460 days for the P-3, C-130, and C-2 aircraft.

b. Maximum scheduled repack cycle is 840 days for the T-34 aircraft.

6. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Parachute Harness Sensing Release Unit Cartridge) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be re-based if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Components without a service/total life shall be removed from service if the components do not pass inspection, as determined by Quality Assurance Representative (QAR) or Collateral Duty Inspector (CDI).

g. Check date placed-in-service and date of manufacture on each parachute part for service/total life as follows:

Nomenclature	Service Life (Yr)	Total Life (Yr)
Canopy Assembly	None	15
Cartridge M284	Refer to NAVAIR 11-100-1.1	
Harness Assembly	None	15
Lanyard Assembly	2	7
Pilot Parachute		15
Pilot Parachute Connector Strap		15

(1) Markings for completeness, legibility, and agreement with information on Parachute Record (OPNAV 4790/101).

(2) Compare configuration of parachute assembly to that shown in WP 013 04 Illustrated Parts Breakdown.

7. AUTOMATIC PARACHUTE RIPCORD RELEASE.

NOTE

Do not mismatch cover and power cable housing assembly and barrel and receiver assembly.

a. Serial numbers on the cover and power cable housing and receiver and barrel assembly for matched numbers. (QA)

b. Receiver and barrel assembly for nicks, cracks, gouges, distortion, corrosion, or other damage which could cause malfunction in-service.

c. Decals and labels for legibility and security of attachment.

d. Cover and power cable housing for nicks, gouges, distortion, corrosion, and security of power cable housing.

e. Power cable for freedom of movement and secure attachment of swaged ball and power cable eye (Figure 5).

f. Arming cable clip retainer and retainer pin for distortion, corrosion, and other damage.

g. Arming cable housing for bends, retention of end furrel, retention of housing retainer.

h. Aneroid for evidence of expansion and correct indication.

i. Ensure proper retention of arming pin retainer by inserting arming pin in retainer while barrel is unlocked. Press pin into place firmly until locked into pin groove. Pin should now be held securely.

j. Manually pull arming cable pin from retainer, ensuring that pin was properly secured. (QA)

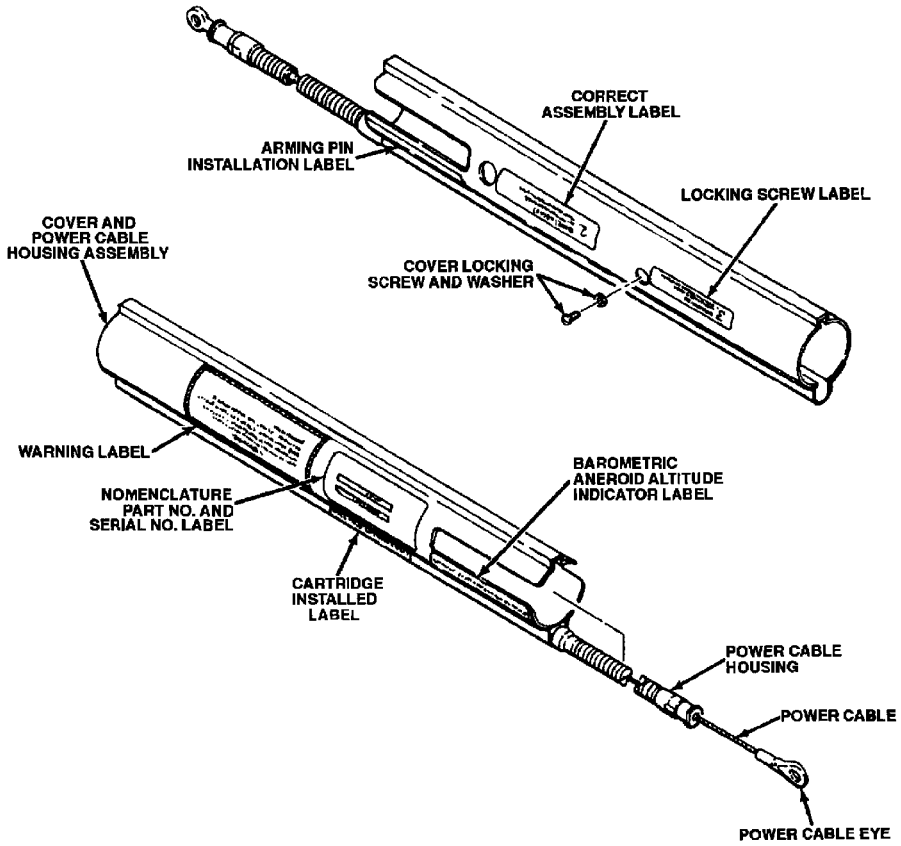


Figure 5. Attachment of Swaged Ball and Power Cable Eye

k. Sealing compound on aneroid; seal must be intact. Cracks due to normal aging of seal material are acceptable (Figure 6).

WARNING

Do not twist socket, as this will break shear pin.

l. Socket for visible damage and retention of socket and piston by shear pin.

m. Snap-lock pin for security and damage.

n. Teflon seal (inside of barrel) for placement.

o. Firing pin for flattening, gouges, and other damage.

p. Leaf springs on receiver and barrel assembly for damage; leaf spring retaining screw for condition and presence of torque seal (Figure 7).

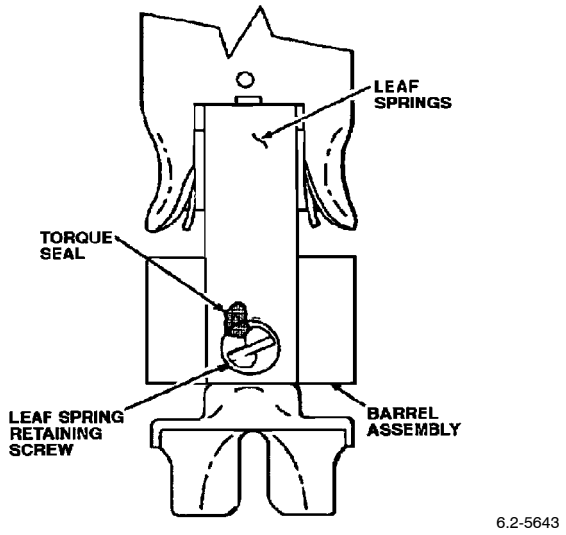


Figure 7. Presence of Torque Seal

8. RIPCORD RELEASE FIRING ALTITUDE CHECK.

a. Install test chamber substitute arming pin in ripcord release.

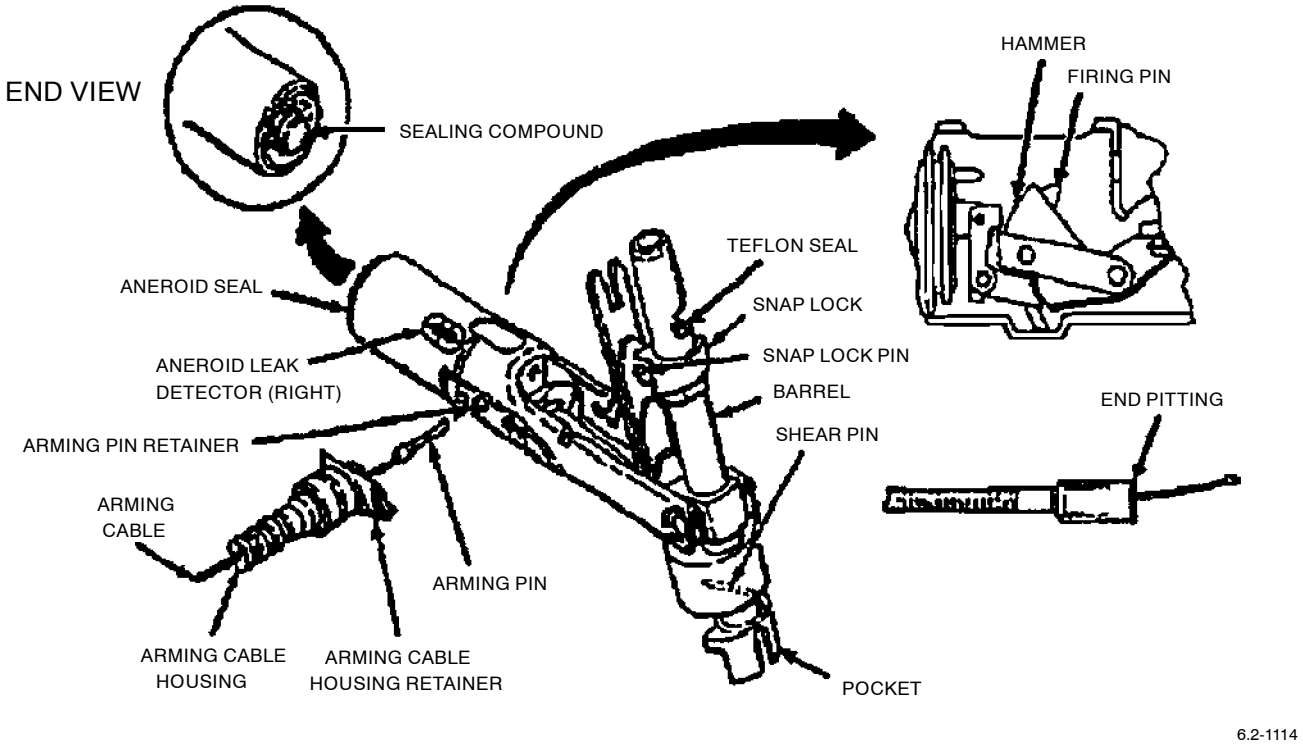


Figure 6. Sealing Compound Check

CAUTION

Do not release firing mechanism without test slug installed, as this will distort the firewall.

b. Install test slug.

CAUTION

At no time will a tool or other device be used to open or close the ripcord release.

c. Press barrel down into position in receiver, ensure snap-lock pins lock barrel in position.

d. Perform firing altitude check:

NOTE

Determine whether actuator being tested is pre-set for 10,000 ft. or 14,000 ft. The ripcord release firing check must simulate ± 1,000 ft. of pre-set altitude.

(1) Install barrel and receiver in test chamber. (QA)

(2) Set altimeter to 29.92 in. Hg. (QA)

(3) Evacuate chamber to a minimum of 25,000 ft. pressure altitude. (QA)

(4) Decrease altitude at a rate of 175 to 200 ft./sec. (QA)

(5) Actuate arm toggle to withdraw arming pin at approximately 20,000 ft. pressure altitude. (QA)

(6) Verify altitude at which ripcord release firing pin strikes test slug. (QA)

(7) Remove test slug from barrel; check primer for indent; indent must be present and centered. (QA)

CAUTION

Test slug must be removed from barrel after each use.

(8) Repeat firing altitude check two additional times; using a new test slug each time; the ripcord release must pass all three firing altitude checks. (QA)

(9) Discard test slugs. (QA)

(10) Remove ripcord release from altitude chamber. (QA)

9. RIPCORD RELEASE END FITTING REMOVAL TEST.

NOTE

The arming cable and housing shall be removed from the automatic parachute ripcord release assembly.

a. Helper shall hold arming cable housing stready on packing table.

b. Attach gage to the swaged ball using Type I or IA nylon cord.

c. Using a straight steady pull, observe amount of pull required to remove end fitting from arming cable housing. Allowable force is 17 lbs. ± 3 lbs. (QA)

10. SUSPENSION LINE CONTINUITY CHECK.

a. Packer shall grasp line 1 on left side of gore 28 and raise suspension line to a height sufficient to ensure that suspension line continuity is maintained (Figure 1) and is free of dips and twists from skirt hem to connector link, and continue procedure with suspension lines 2 through 14. (QA)

b. Use the same procedure as in subparagraph a above on right side of gore 28, except packer shall start with suspension line 28 and work through suspension line 15. (QA)

11. CANOPY ASSEMBLY.

a. Canopy skirt hem, fabric surface, diagonal seams, radical seams, vent hem, water deflation pockets, for cuts, holes, ruptures, contamination, deterioration, and loose or broken stitching.

b. Suspension lines and canopy apex lines for fraying, ruptures, protruding inner core lines, burns, contamination, and presence of twists.

c. Attachment of suspension line at skirt hem for security and condition of V-tabs.

d. Attachment of four-line release lanyards to anchor loops on suspension lines 3 and 26.

e. Activate four-line release and retack per WP 004 00. (QA)

f. Connector links for corrosion, distortion, nicks, burrs, sharp edges, and cracks.

NOTE

For Double "L" Connector Link, refer to WP 013 03 for disassembly, assembly, and inspection instructions.

g. Connector links for defective yoke and plate assemblies. Maximum of 1/32-in. play allowable in plate.

h. Torque seal unbroken with yoke and plate assemblies installed with knurled portion facing up and screwheads facing outboard (Figure 8). (QA)

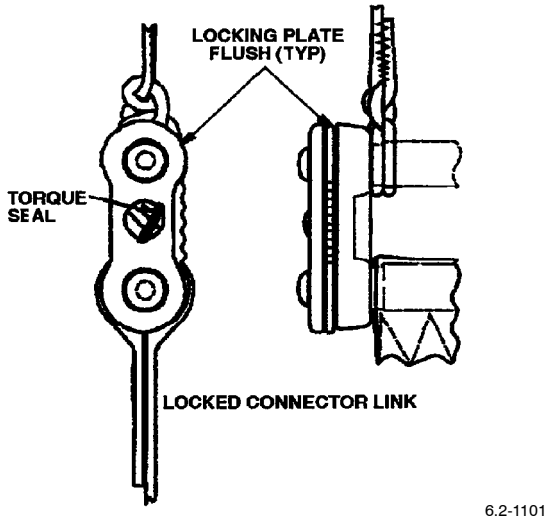


Figure 8. Torque Seal Unbroken

12. PILOT PARACHUTE CONNECTOR STRAP.

a. Fabric surfaces, and seams for cuts, tears, burns, fraying, and loose or broken stitching.

b. Vane material for cuts, tears, burns, fraying, and deterioration.

c. Seam area at crown for seam separation.

d. Spring assembly for distoration.

e. Loose or broken tackings (4 places) at bottom of coil spring.

f. Connector strap for cuts, fraying, burns, loose or broken stitching.

g. Connector strap for proper attachment at apex lines and pilot parachute loop.

h. Connector strap for loose or broken tacking of Lark's head knot at pilot parachute loop.

13. HARNESS AND RISERS.

a. Webbing for contamination, rust at points of contact with metal parts, cuts, twists, fading, wear, fraying, burns, abrasions, and loose or broken stitching.

b. Elastic keepers for condition (6 each) and proper location. Refer to WP 013 04, Figure 1.

c. Triangle links for damage, corrosion, and security of attachment.

d. Ejector snaps and adapters for damage, corrosion, security of attachment, and ease of operation.

14. CONTAINER AND BACKPAD.

a. Grommets, cones, snap fasteners for security of attachment, cracks, corrosion, nicks, and gouges.

b. Slide fasteners for condition and proper operation.

c. Fabric areas for seam separations, loose or broken stitching, cuts, tears, contamination, and deterioration.

d. Hardware for corrosion, bends, dents, nicks, sharp edges, and security of attachment.

e. Spring opening assemblies for broken springs, contamination, corrosion, cuts, fraying, bent or broken hooks, elasticity, and loose or broken stitching. Proper length is 9 1/4 $\pm$ 1/4-in. measured with no tension from end of one hook to end of other hook.

f. Spring opening eyes (8) for security of attachment.

g. Ripcord release pocket slide fastener for proper operation.

h. Backpad for contamination, cuts, tears, burns, loose or broken stitching, missing or defective keepers and snap fasteners.

i. Proper attachment of back pad to container.

15. RIPCORD AND RIPCORD POCKET.

a. Ripcord cable for corrosion, bends, fraying, broken strands, and security of swaged terminal ball.

b. Locking pins for bends, dents, cracks, security of attachment to cable, and corrosion.

c. Grip for bends, dents, cracks, and corrosion.

d. Housing for corrosion, bends, dents, loose swaged end ferrules, breaks, and cracks.

e. Pocket fabric areas and elastic for contamination, cuts, tears, burns, fraying, loose or broken stitching.

f. Pocket for loose or broken tackings.

16. PACKING.

17. AUTOMATIC PARACHUTE RIPCORD RELEASE ASSEMBLY AND ARMING (IF INSTALLED).

NOTE

Right side of release assembly contains the aneroid leak detector.

WARNING

Ripcord release with proper altitude setting, time delay cartridge, arming cable housing, and lanyard assembly must be used.

a. Ensure ripcord release has proper altitude setting, arming cable housing, and lanyard assembly. (QA)

b. Ensure arming cable housing is routed through hole in left side of release pocket and button hole in left side of container.

c. Insert arming cable into cable housing.

d. Attach clip retainer to cable housing.

e. With receiver and barrel assembly in the open position, install arming pin release assembly by inserting and locking (arming pin is fully seated when an audible click is heard) the arming pin into the arming pin retainer, ensuring the arming cable housing exits out the left side of container (Figure 9). (QA)

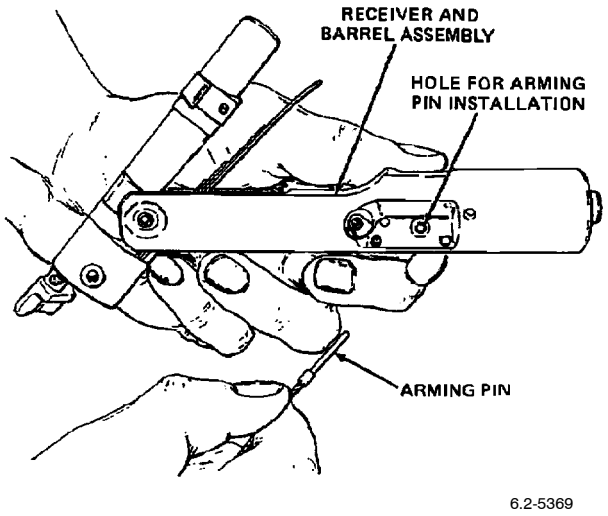


Figure 9. Installation of Arming Pin

WARNING

To ensure proper penetration of cartridge primer; firing pin/hammer assembly must be completely retracted. If edge where curved surface meets flat surface of hammer assembly is not aligned directly above arming pin, release assembly is not properly armed.

f. Ensure that firing pin/hammer assembly is completely retracted. The firing pin/hammer is completely retracted if top edge of hammer is aligned above arming pin (Figure 10). (QA)

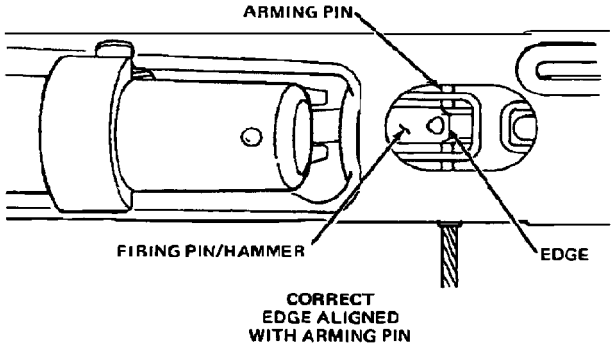


Figure 10. Verification of Firing Pin/Hammer Retraction

g. Connect arming cable housing retainer to receiver and barrel assembly. Ensure that safety retainer secures housing to receiver (Figure 11).

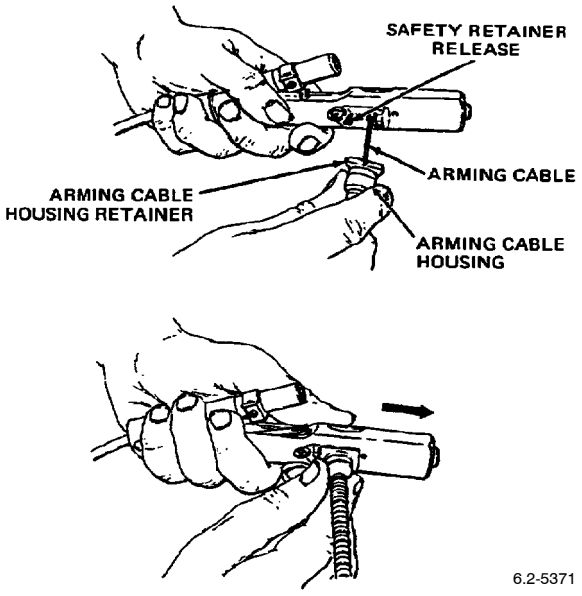


Figure 11. Attachment of Arming Cable Housing

WARNING

Complete arming and installation is mandatory from this point as a safety measure.

h. Enter nomenclature, part number, lot number DODIC, date of manufacture, can open date, and expiration date on Parachute Record (OPNAV 4970/101). (QA)

WARNING

Before installing delay cartridge in the automatic parachute release, be sure that the arming pin has been inserted thru both the hammer and lock.

i. Insert proper cartridge per WP 013 04. (QA)

WARNING

If arming pin is improperly installed, cartridge will fire while locking barrel.

j. While pressing barrel down, look thru inspection hole in receiver and ensure that hammer assembly does not swing toward firewall. If hammer swings, arming pin is improperly installed. Do not attempt to assemble release assembly further, as this could discharge cartridge. Disassemble improperly armed release assembly and rearm.

k. Press barrel down into position in receiver. As barrel reaches proper position, exert forward pressure on snap-lock, causing snap-lock pins to lock barrel in position. Ensure that snap-lock is aligned with alignment arrow (Figure 12).

l. Position cover and power cable housing assembly with power cable facing container.

m. Position receiver and barrel assembly so that locking screw hole aligns with locking screw hole in cover and power cable housing assembly (Figure 12).

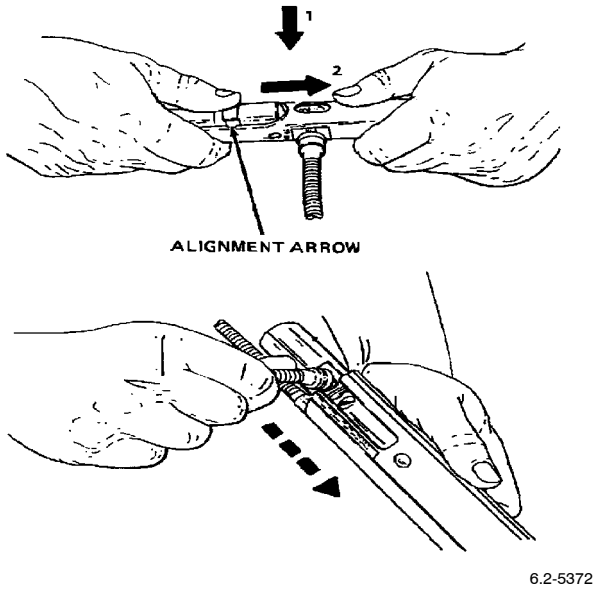


Figure 12. Installation of Arming Pin

n. Hold release assembly as shown in Figure 12 and slide receiver and barrel assembly into cover and power cable assembly until holes for screw are aligned.

o. Install cover locking screw and lockwasher. Apply torque seal to locking screw.

WARNING

After the automatic parachute release has been assembled with the delay cartridge, the firing pin/hammer is in a cocked position. Movement of the arming cable from the parachute release in excess of 0.5-in. will cause actuation of the device.

18. AUTOMATIC PARACHUTE RIPCORD RELEASE ARMED CHECKOUT AND INSTALLATION (IF INSTALLED).

a. Ensure arming pin protrudes (about 1/32-in.) from arming pin retainer (Figure 13).

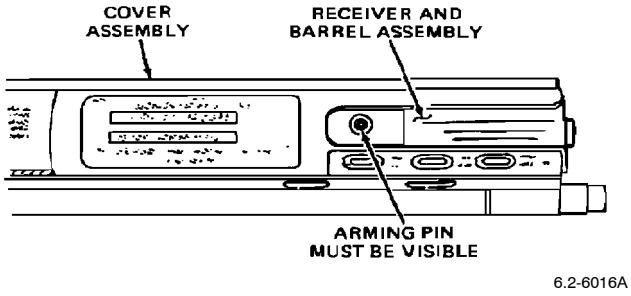


Figure 13. Ensure Arming Pin Protrudes

b. Ensure roll pin is visible and centered ± 1/8-in. in viewing hole (Figure 14).

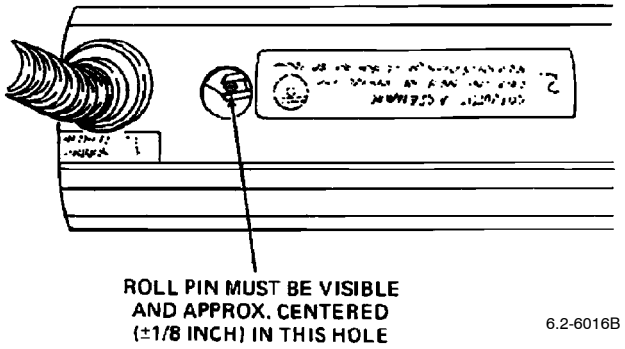


Figure 14. Ensure Roll Pin is Visible

c. Ensure cover locking screw is installed, and torque seal is applied (Figure 15).

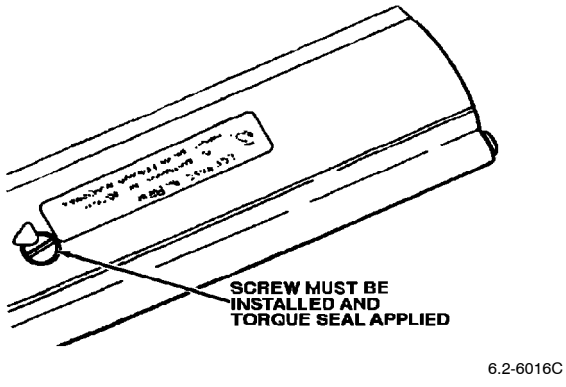


Figure 15. Ensure Cover Locking Screw is Installed

d. Ensure aneroid indicator is in proper position in relation to local elevation (Figure 16).

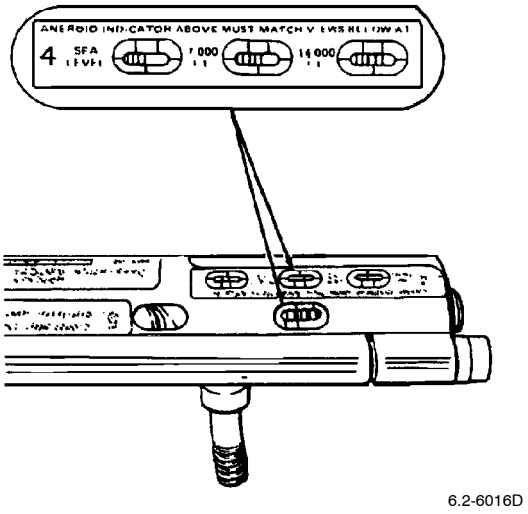


Figure 16. Ensure Aneroid Indicator is in Proper Position

e. Ensure cartridge is installed. Look thru port and verify cartridge rim is visible (Figure 17). (QA)

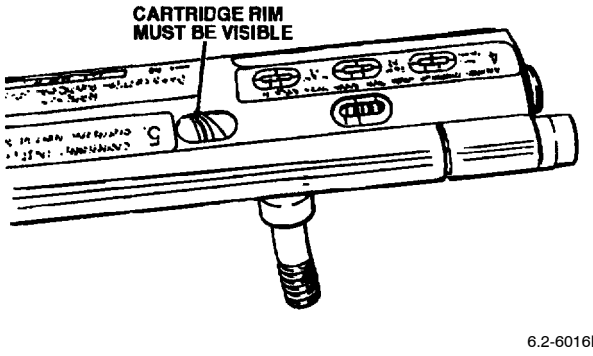


Figure 17. Ensure Cartridge is Installed

f. Completely insert ripcord release into pocket and close slide fastener and flap.

19. WHIPPING AND FOLDING OF CANOPY.

a. The packer and helper shall lift the suspension line on each side of nameplate gore up and out. The skirt hem between lines shall be taut so that the canopy apex can be seen on inside. While holding suspension lines up, each man shall whip the gore hanging from line outwards to prepare canopy for folding (Figure 18).

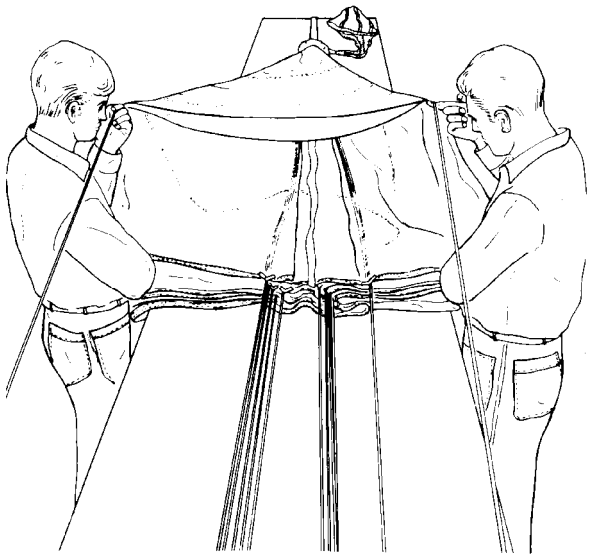


Figure 18. Lift Suspension Line on Each Side of Nameplate

b. Draw next suspension line upwards to suspension line in hand, using a rapid, circular motion (Figure 19).

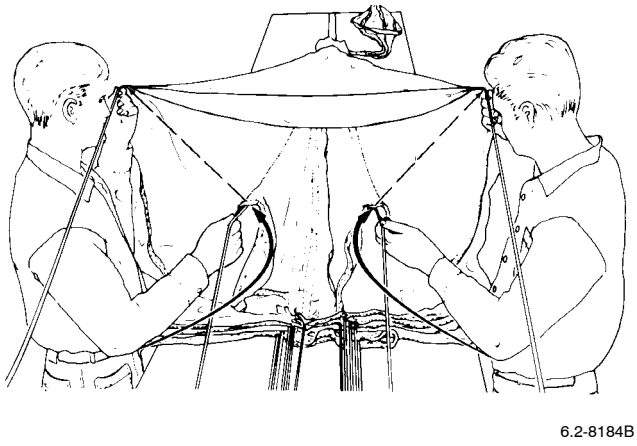


Figure 19. Draw Next Suspension Line Upwards

c. Continue whipping operation for all gores. Ensure radial seams are not overlapped by gore material. Move whipped gores rapidly back and forth across packing table (Figure 20).

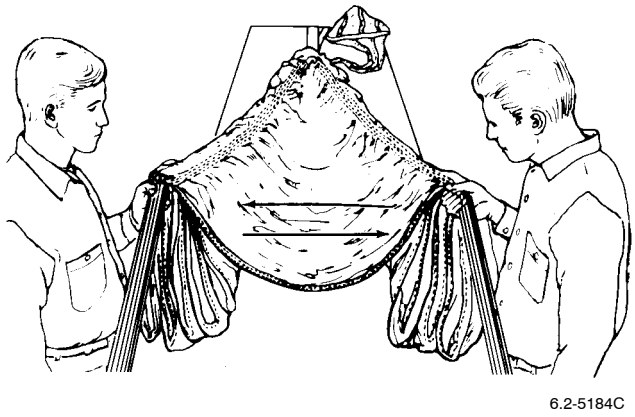


Figure 20. Continue Whipping Operation

d. The two groups of suspension lines shall be stretched to the edges of the packing table with folded gores hanging over sides. Packer and helper shall grasp all folds at the outer edges on skirt hem and hold suspension line groups at edges of packing table. Packer and helper shall simultaneously move folds up and down rapidly in a whipping motion.

e. Packer shall flap top gore up and down at skirt hem center as helper holds bottom gore at skirt hem center (Figure 21).

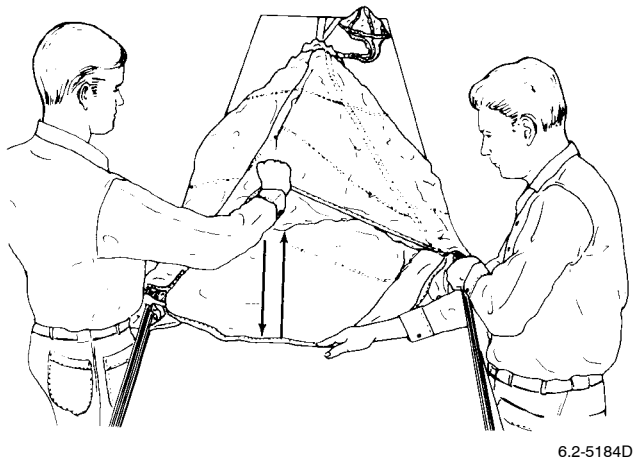


Figure 21. Packer Shall Flap Top Gore

f. On signal, packer and helper shall draw their respective gores, at skirt hem centers, towards table edge while at same time bringing suspension line groups to center of packing table (Figure 22).

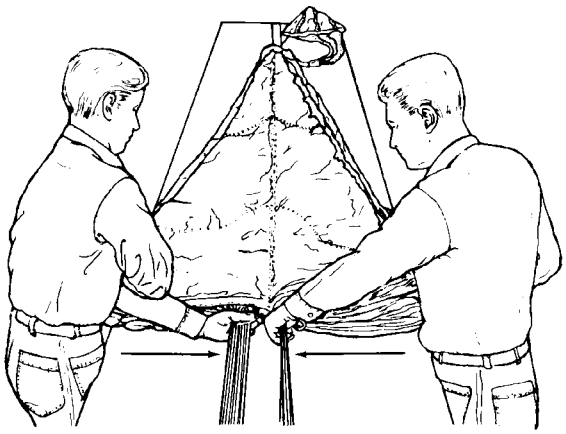


Figure 22. Draw Respective Gores to Center

g. Insert suspension line groups into their respective slots in small line separator and place shot bag on lines. Packer shall place second shot bag across skirt hem on left side of suspension lines.

h. Helper shall rotate all gores as a group, except bottom gore, from helper's side of packing table (Figure 23).

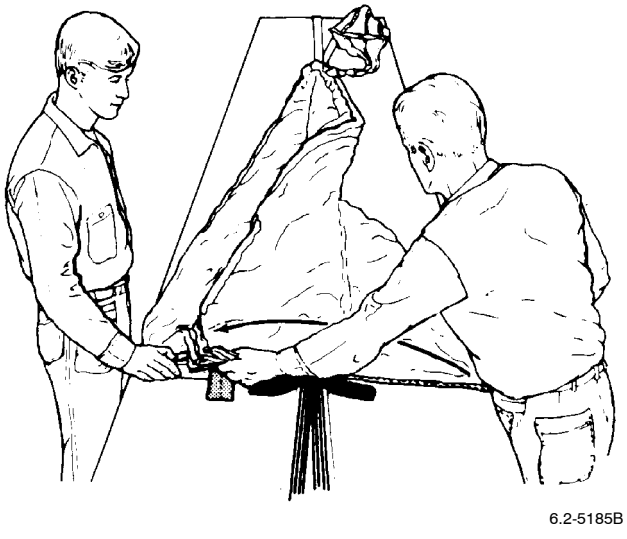


Figure 23. Helper Rotate All Gores to Packer's Side

i. Helper shall straighten and smooth bottom gore on helper's side of packing table throughout its length to apex (Figure 24).

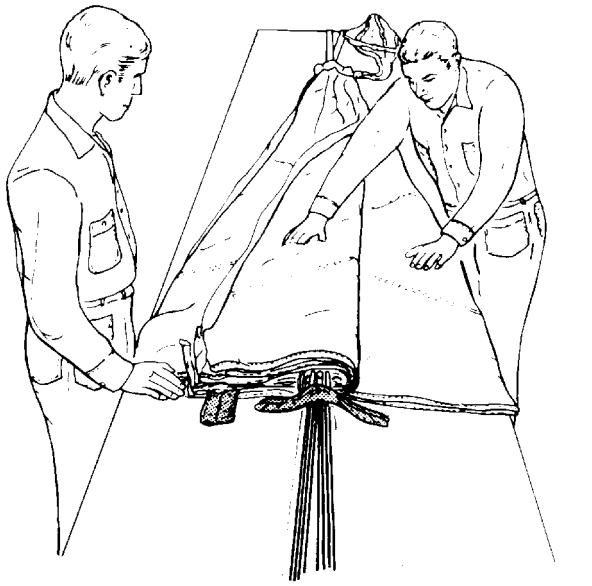


Figure 24. Helper Shall Straighten and Smooth Gores

j. Packer shall return folded gores above shot bag to helper's side of packing table. Helper shall straighten and smooth each gore and place the shot bag on skirt hem (Figure 25).

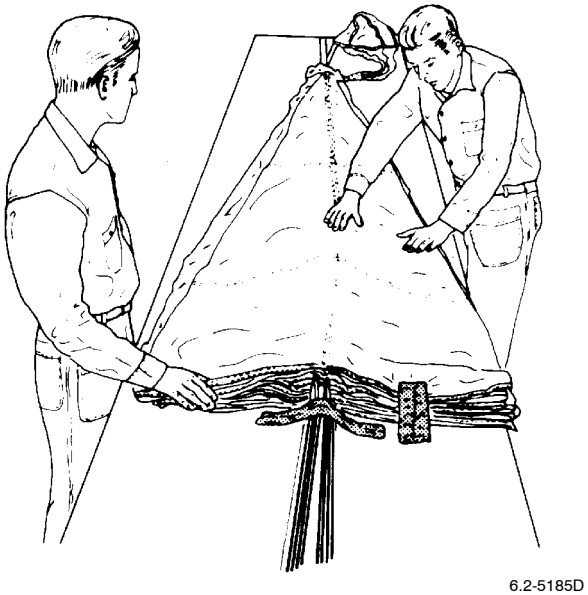


Figure 25. Packer Return Folded Gores Above Shot Bag

k. Packer shall rotate all gores as a group, except bottom gore, from packer's side to helper's side of packing table (Figure 26).

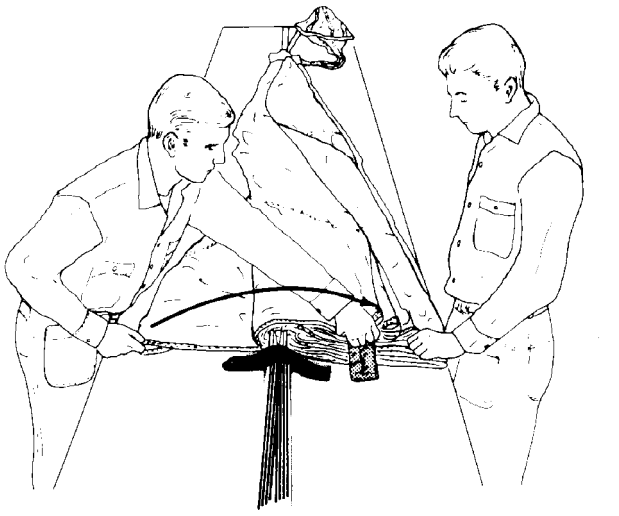


Figure 26. Packer Shall Rotate All Gores

l. Packer shall straighten and smooth bottom gore on packer's side of packing table throughout its length to apex (Figure 27).

Figure 27. Packer Shall Straighten and Smooth Gores

m. Helper shall return folded gores above shot bag to packer's side of packing table. Packer shall straighten and smooth each gore. Remove shot bag from canopy (Figure 28).

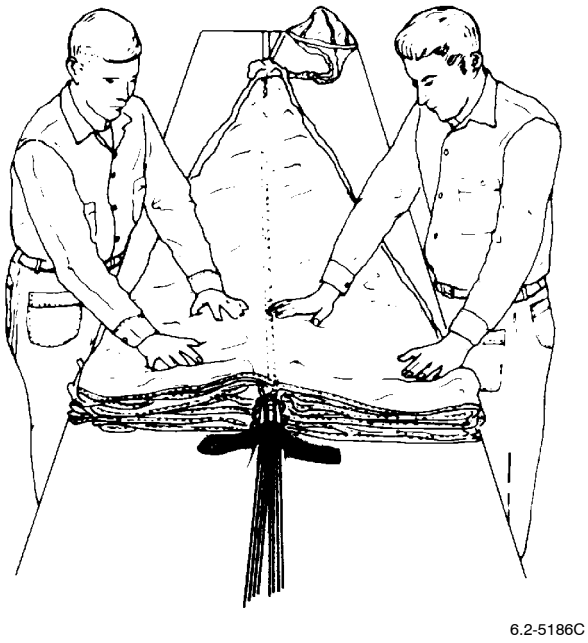


Figure 28. Helper Shall Return Gores Above Shot Bag

n. Packer and helper shall grasp skirt hem at midsection of gores and rotate towards suspension lines (Figure 29).

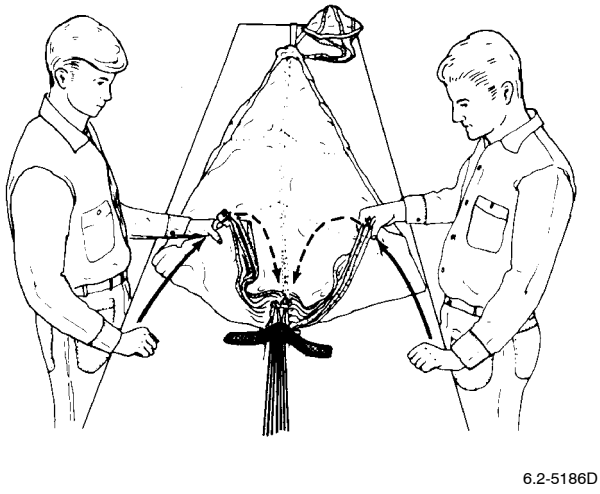


Figure 29. Grasp Skirt Hem and Rotate Towards Suspension Lines

o. Packer and helper shall grasp the bottommost gore fold and extend outwards, aligning the edge of the skirt hem and suspension line "V" tab reinforcements. The remaining 13 gores shall be aligned in a similar manner. Ensure that all "V" tab reinforcements face same direction and that 14 gores have been counted on each side (Figure 30).

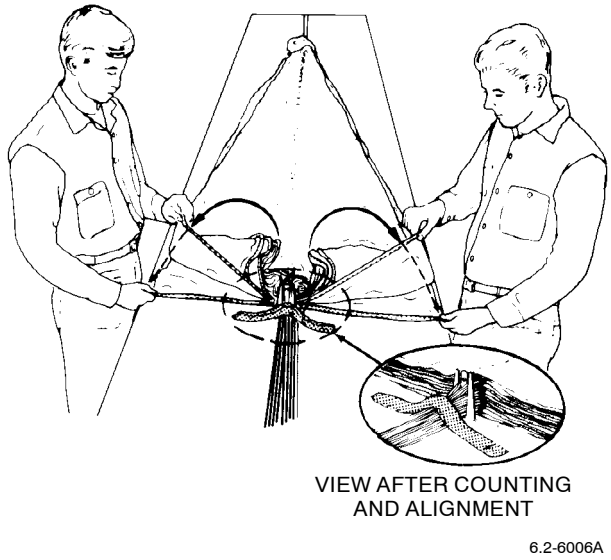


Figure 30. Grasp Gore Folds and Extend Outwards

p. Canopy shall be folded by packer placing his hand on helper's side of skirt hem at center. Helper shall rotate gores to center of canopy (Figure 31).

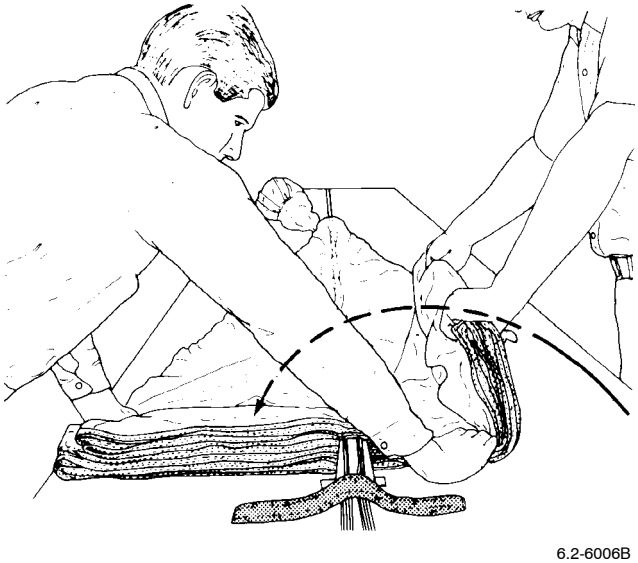


Figure 31. Helper Rotate Gores to Center of Canopy

q. Helper shall place his hand on packer's side of skirt hem at center. Packer shall rotate gores to center of canopy. The two groups of folded gores shall butt together. Note that canopy cannot be folded throughout entire length but breaks about two-thirds the distance to apex (Figure 32).

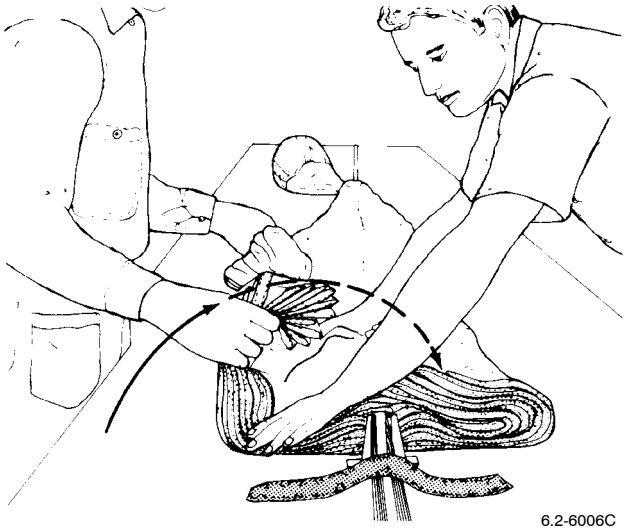


Figure 32. Packer Rotate Gores to Center of Canopy

r. Place one shot bag slightly behind skirt hem and another on middle of canopy, place pilot parachute on top of canopy. Remove small line separator (Figure 33).

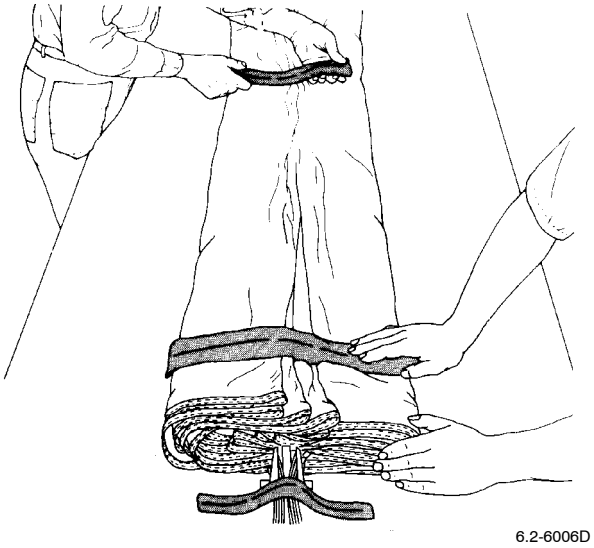


Figure 33. Placement of Shot Bags

s. Release tension from canopy and remove tension strap.

20. STOWAGE OF SUSPENSION LINES WITHOUT AUTOMATIC PARACHUTE RIPCORD RELEASE.

NOTE

Tie off all tackings with a surgeon's knot followed by a square knot and a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove connector links from tension hooks and remove tension hooks from packing table.

b. Place connector links on centerline of container above second metal stiffener from top edge. Tack connector links to cloth on top of second metal stiffener with one turn of size 3 thread, single and waxed, or one turn of size FF thread, doubled and waxed; tie off (Figure 34).

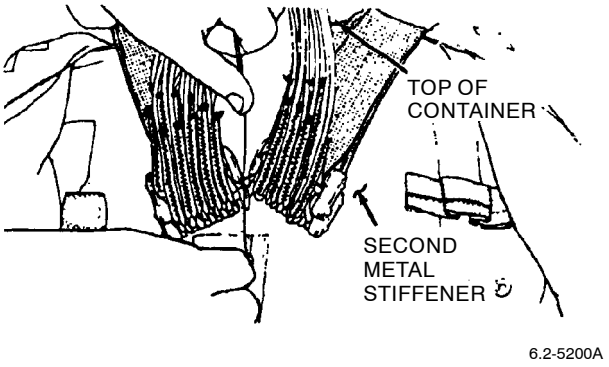


Figure 34. Tacking of Connector Links

c. Packer shall grasp both groups of suspension lines in his left hand 21 ± 3-in. from connector links to make first bight. Adjustment in this measurement may be necessary to obtain the required 21 ± 3-in. between the last stow and canopy skirt hem specified in step l. Ensure there are equal amounts of suspension line in both groups, from connector links to hand. Canopy shall be drawn along packing table only in enough lengths to permit each bight to be formed (Figure 35).

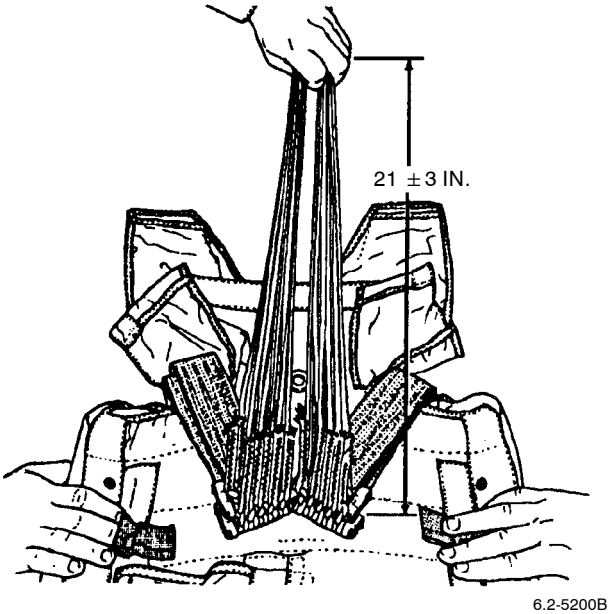


Figure 35. Grasp Suspension Lines in Left Hand

d. Packer shall form first bight in suspension lines over hesitator loop farthest from canopy and closest to helper. Draw bight 3/8-in. past hesitator loop edge (measured from loop edge to end of hook). Helper shall assist packer during stowing operation by holding pack steady and by holding completed bight while next bight is being formed (Figure 36).

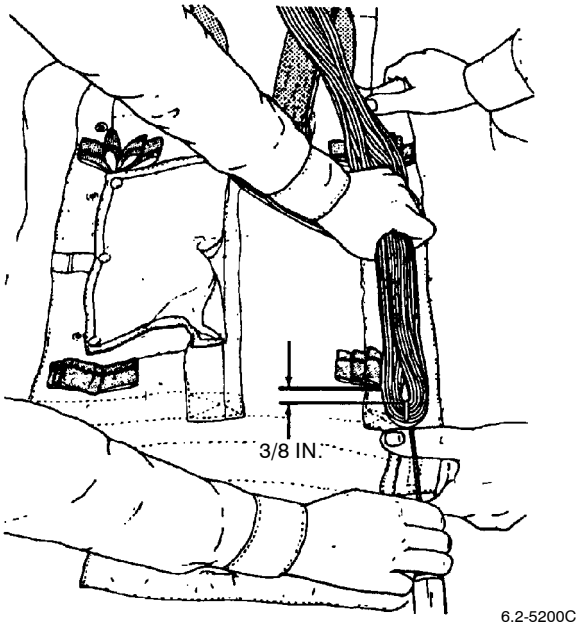


Figure 36. Packer Shall Form First Bight

e. Keeping light tension on suspension line bight with packing hook, reposition and deposit bight in front of hesitator loop. Carefully withdraw packing hook (Figure 37).

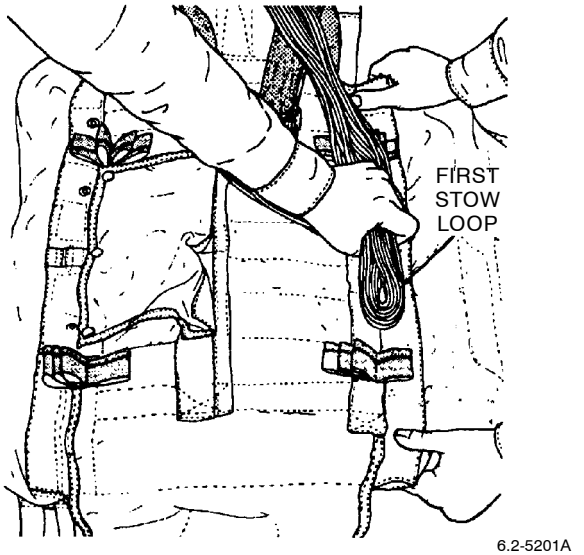


Figure 37. Keeping Light Tension on First Bight

f. Packer shall engage hook in suspension lines and draw bight thru hesitator loop (Figure 38).

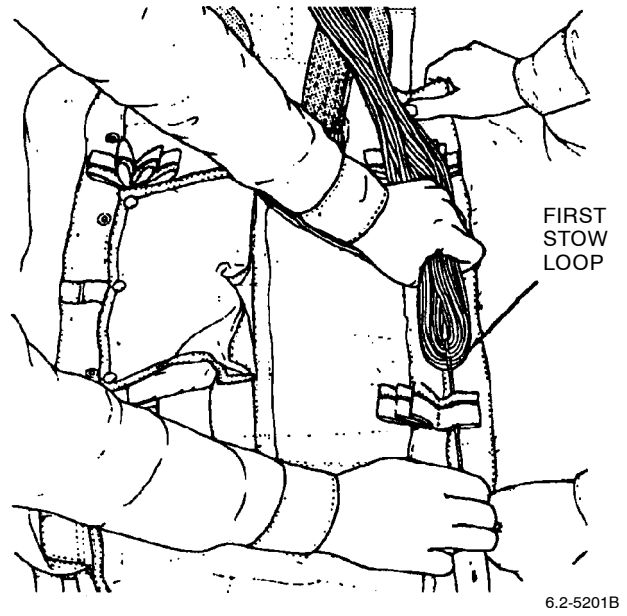


Figure 38. Packer Shall Engage Hook

g. After stowing bight, there shall be 3/8-in. clearance between packing hook and hesitator loop (Figure 39).

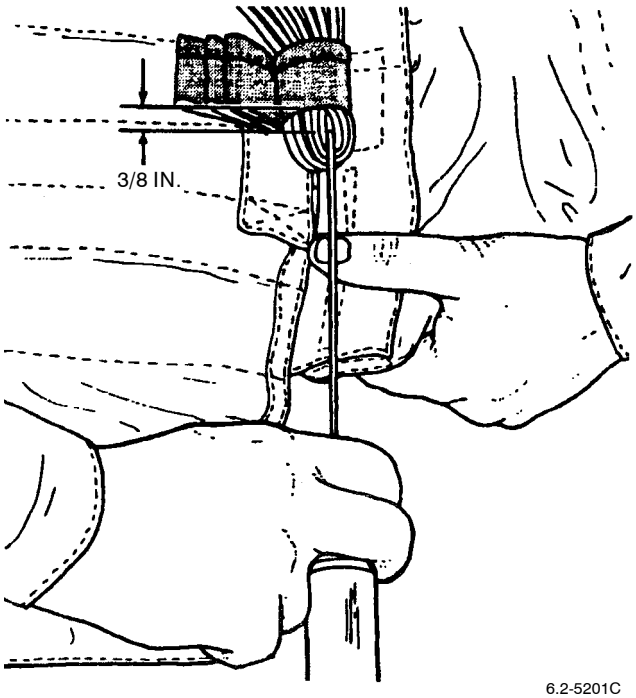


Figure 39. 3/8-in. Stowing Bight

h. Packer shall draw suspension lines and folded canopy toward container to form another bight. Second bight shall be drawn thru hesitator loop opposite first one. Maintain 3/8-in. clearance between packing hook and hesitator loop (Figure 40).

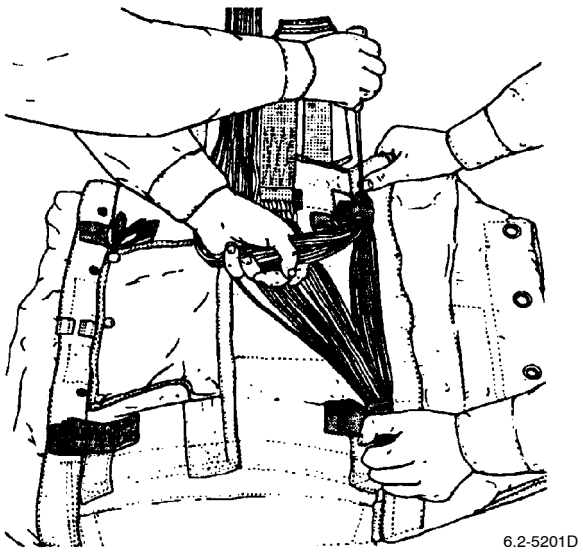


Figure 40. Form the Second Bight

i. Third bight is formed in same manner as in preceding steps. Bight is pulled thru hesitator loop next to first stow. Stow bight 4 thru 8 in same manner.

j. Cross suspension lines over automatic release pocket to opposite side of container and stow bight 9 (Figure 41).

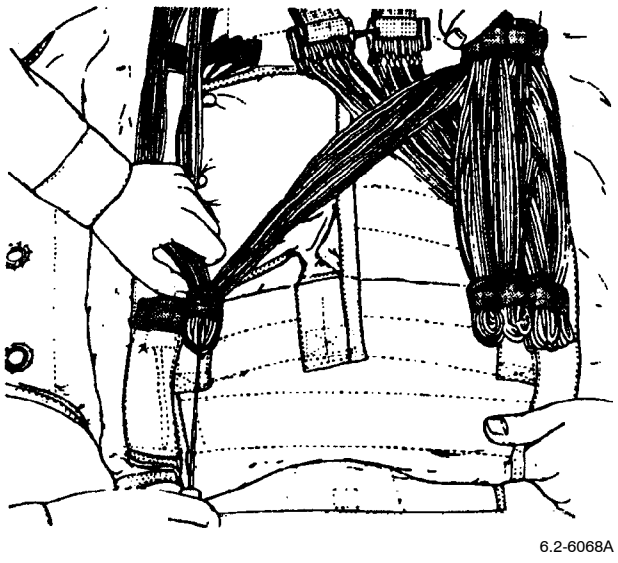


Figure 41. Cross Suspension Lines Over Automatic Release Pocket

k. Continue stowing suspension line bights in hesitator loops 10 thru 15, maintaining 3/8-in. clearance between packing hook and hesitator loops. Hesitator loops 15 and 16 may or may not be used as required to achieve dimensional callout in step l. As each stow is completed, ensure suspension lines are not rotated or loose and there are no suspension lines left out of hesitator loops, straighten all hesitator loops using temporary locking pin (Figure 42).

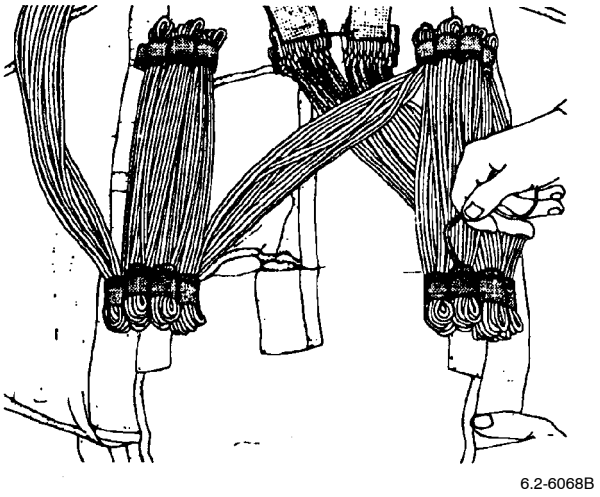


Figure 42. Continue to Stow Remaining Bights

l. When suspensions are in all hesitator loops, there shall be 21 ±3-in. between last stow and canopy skirt hem. Remove shot bags from canopy (Figure 43). (QA)

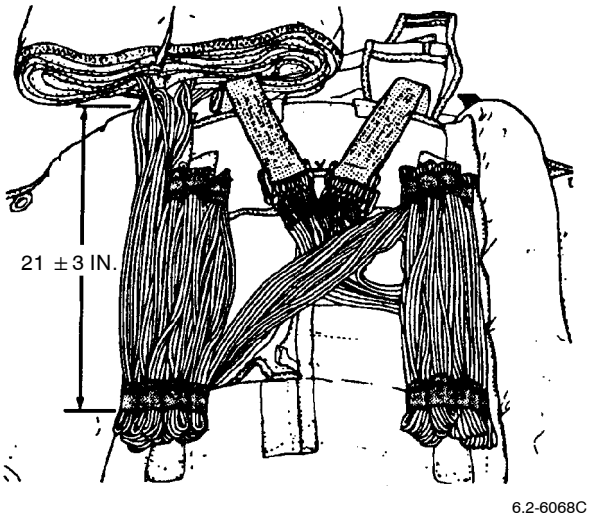


Figure 43. 21 ±3-in. Between Last Stow and Canopy Skirt

m. Place riser protector flaps on top of risers (Figure 44).

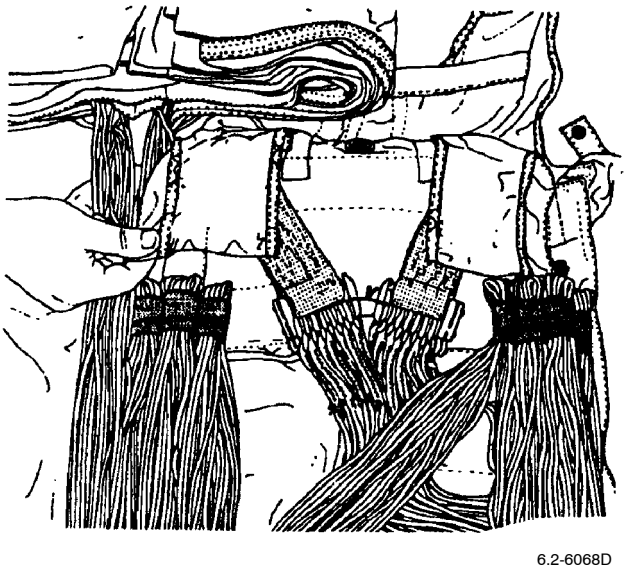


Figure 44. Placement of Protector Flaps

21. STOWAGE OF SUSPENSION LINES WITH AUTOMATIC PARACHUTE RIPCORD RELEASE INSTALLED.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove connector links from tension hooks and remove tension hooks from packing table.

b. Place connector links off center on packer and helper's side, on top of second metal stiffener from top edge. Connector links should be off center just enough to prevent left connector links from hitting against ripcord release aneroid. Tack each connector links to cloth above second metal stiffener using one turn size 3 thread, single and waxed, or one turn size FF thread, doubled and waxed; tie off (Figure 45).

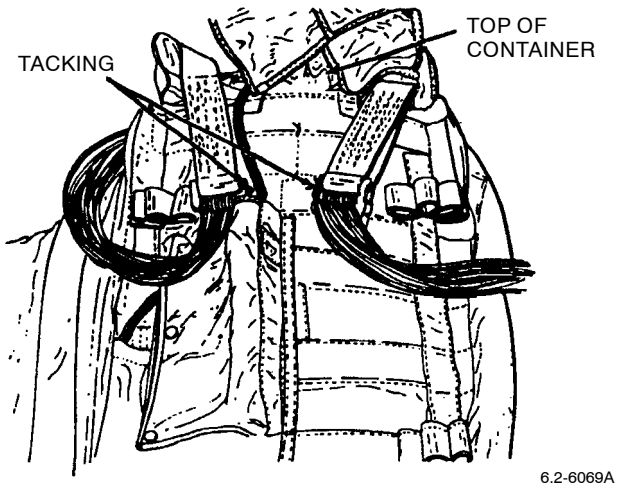


Figure 45. Place of Connector Links

c. Packer shall grasp both groups of suspension lines in his left hand 21 ± 3-in. from connector links to make first bight. Adjustment in this measurement may be necessary to obtain required inches between last stow and canopy skirt hem specified in step l. Ensure there are equal amounts of suspension line in both groups, from connector links to hand. Canopy shall be drawn along packing table only enough to permit each bight to be formed (Figure 46).

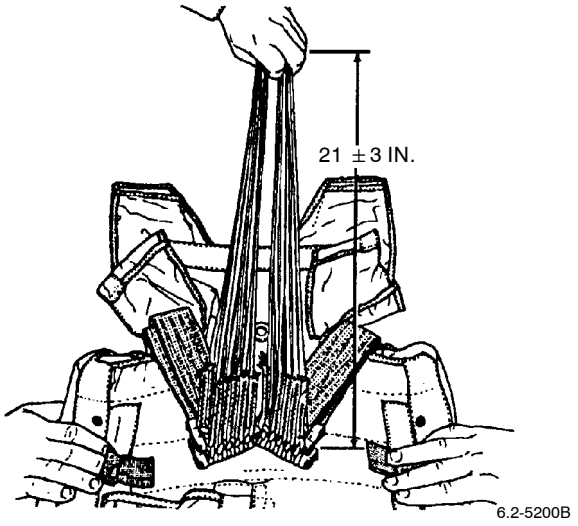


Figure 46. Grasp Suspension Lines in Left Hand

d. Packer shall form first bight in suspension lines over hesitator loop farthest from canopy and closest to helper. Draw bight 3/8-in. past hesitator loop edge (measured from loop edge to end of hook). Helper shall assist packer during stowing operation by holding pack steady and by holding completed bight while next bight is being formed (Figure 47).

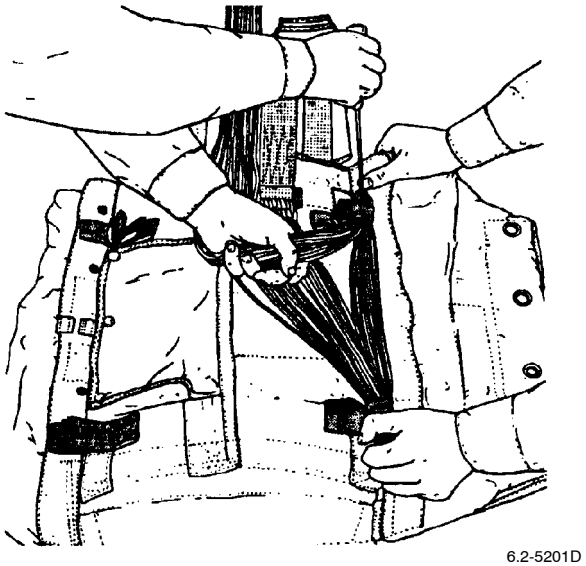


Figure 47. Packer Shall Form First Bight

e. Keeping light tension on suspension line bight with packing hook, reposition and deposit bight in front of hesitator loop. Carefully withdraw packing hook (Figure 48).

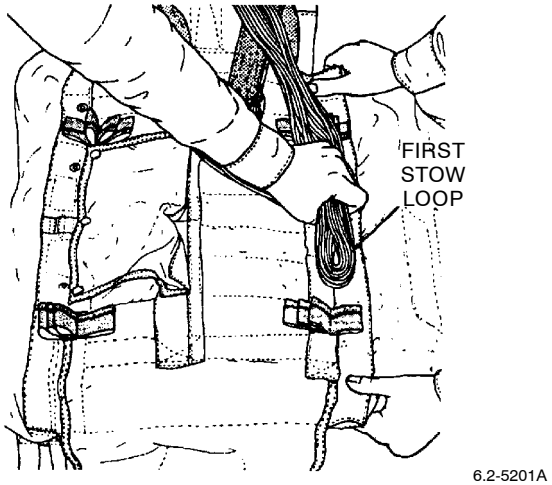


Figure 48. Keeping Light Tension on First Bight

f. Packer shall engage hook in suspension lines and draw bight thru hesitator loop (Figure 49).

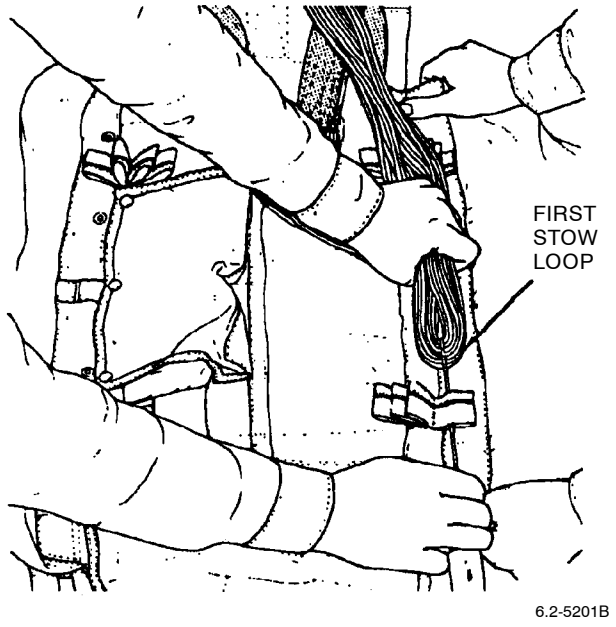


Figure 49. Packer Shall Engage Hook

g. After stowing bight, there shall be 3/8-in. clearance between packing hook and hesitator loop (Figure 50).

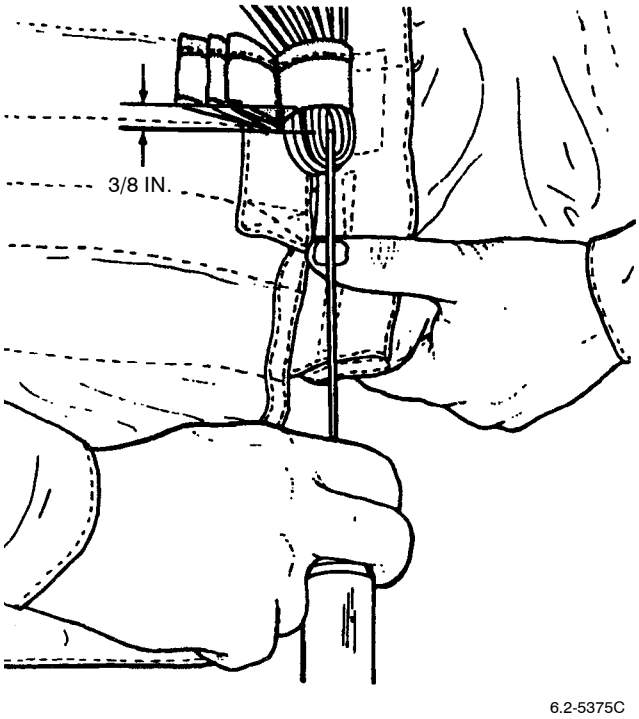


Figure 50. 3/8-in. Stowing Bight

h. Packer shall draw suspension lines and folded canopy toward cantainer to form another bight. Second bight shall be drawn thru hesitator loop opposite first one. Maintain 3/8-in. clearance between packing hook and hesitator loop (Figure 51).

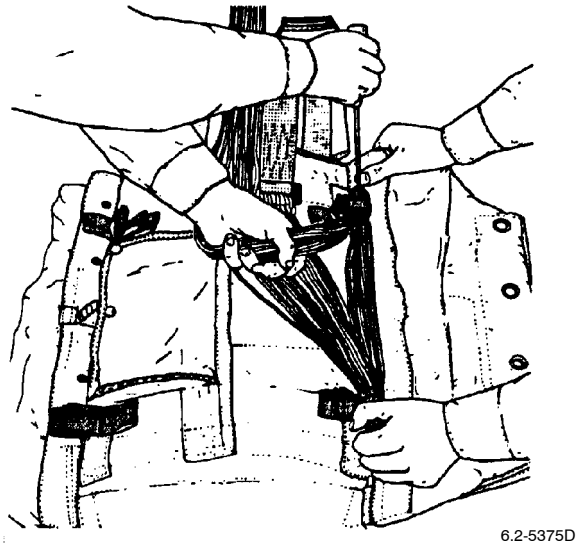


Figure 51. Form Second Bight

i. Third bight is formed in the same manner as in the preceding steps. Bight is pulled thru hesitator loop next to first stow. Stow bights 4 thru 8 in same manner.

j. Cross suspension lines over automatic release pocket to opposite side of container and stow bight 9 (Figure 52).

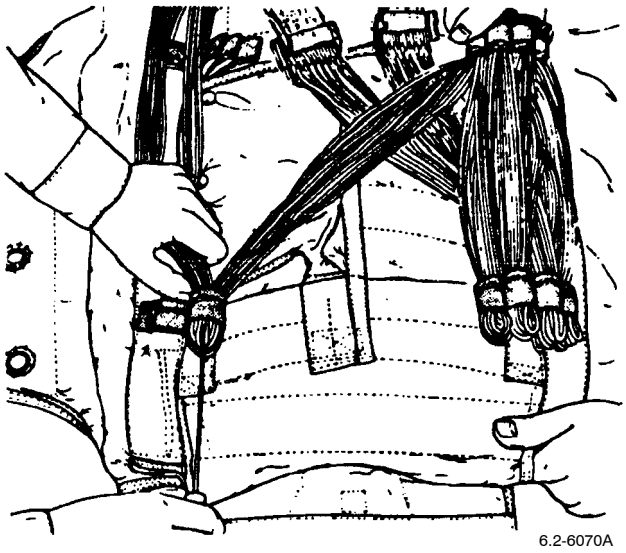


Figure 52. Cross Suspension Lines Over Automatic Release Pocket

k. Continue stowing suspension line bights in hesitator loops 10 thru 15, maintaining 3/8-in. clearance between packing hook and hesitator loop. Hesitator loops 15 and 16 may or may not be used as required to achieve dimensional callout in steps h and l. As each stow is completed, ensure suspension lines are not rotated or loose and there are no suspension lines left out of hesitator loops. Straighten all hesitator loops using temporary locking pin (Figure 53).

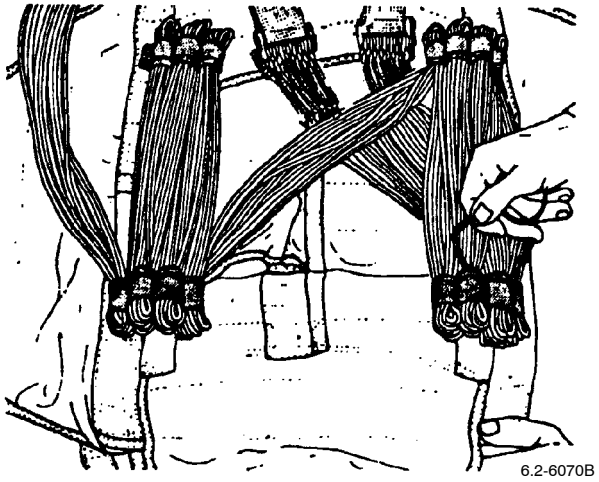


Figure 53. Continue To Stow Remaining Bights

l. When suspension lines are in all hesitator loops, there shall be 21 ±3-in. between last stow and canopy skirt hem. Remove shot bags from canopy (Figure 54). (QA)

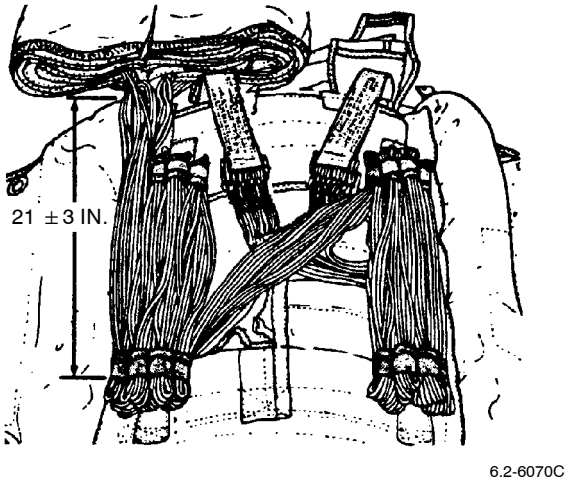


Figure 54. 21 ± 3-in. Between Last Stow and Canopy Skirt

m. Place lift web protection flaps on top of lift webs (Figure 55).

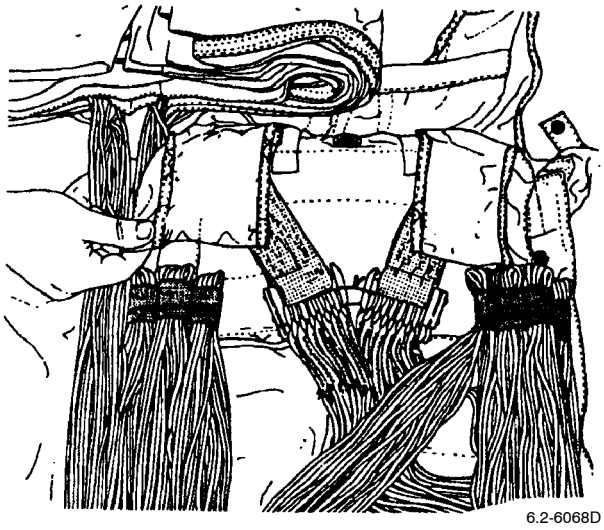


Figure 55. Placement of Protection Flaps

22. STOWAGE OF CANOPY IN CONTAINER.

a. Seven folds shall be made when stowing canopy. Use the following illustration as a guide while stowing canopy (Figure 56).

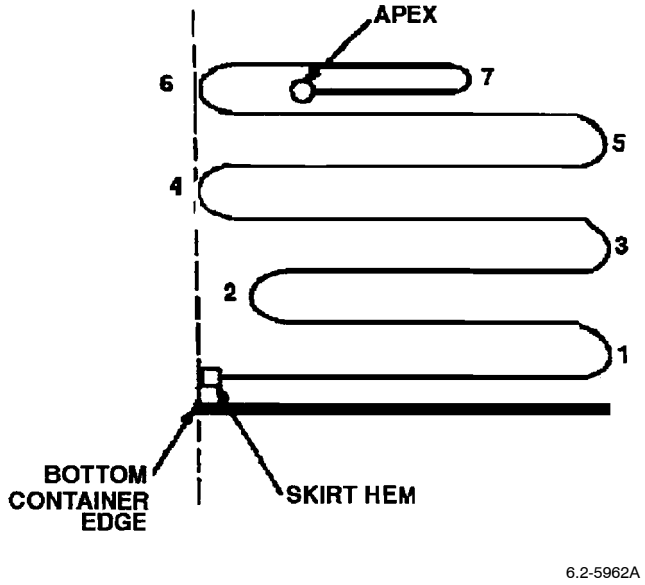


Figure 56. Making of Seven Folds

b. Helper shall place long bar over suspension lines at center of container. Packer shall grasp canopy skirt hem on each side of suspension lines and draw canopy across container (Figure 57).

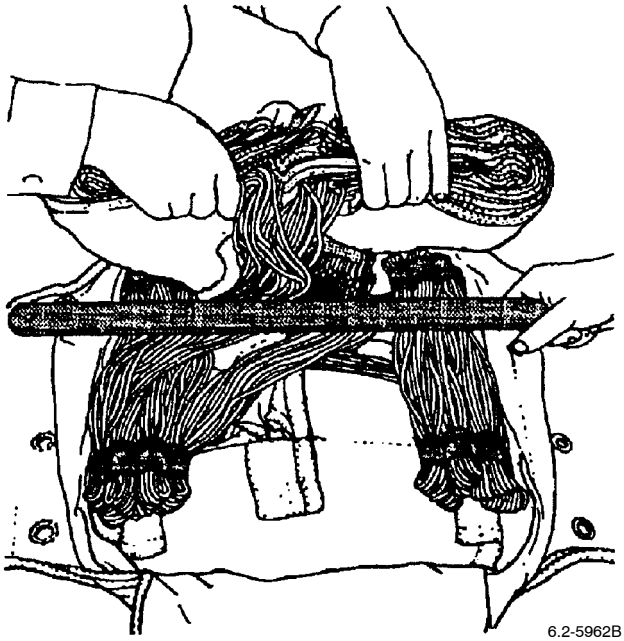


Figure 57. Placement of Long Bar

c. Skirt hem shall be aligned with bottom container edge. Allow folded canopy to spread about 2-in. over sides of container (Figure 58).

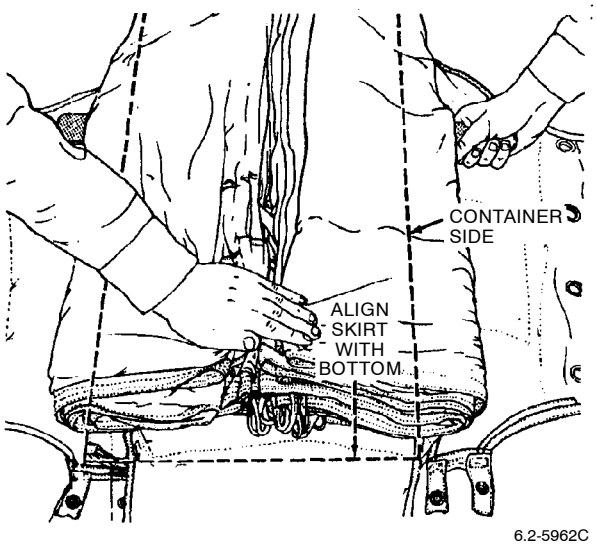


Figure 58. Alignment of Skirt Hem

d. To make first and second folds, helper shall remove bar from between canopy and container and place it on top of canopy, parallel with top container edge. Packer shall grasp canopy about one container length from long bar and draw it across container (Figure 59).

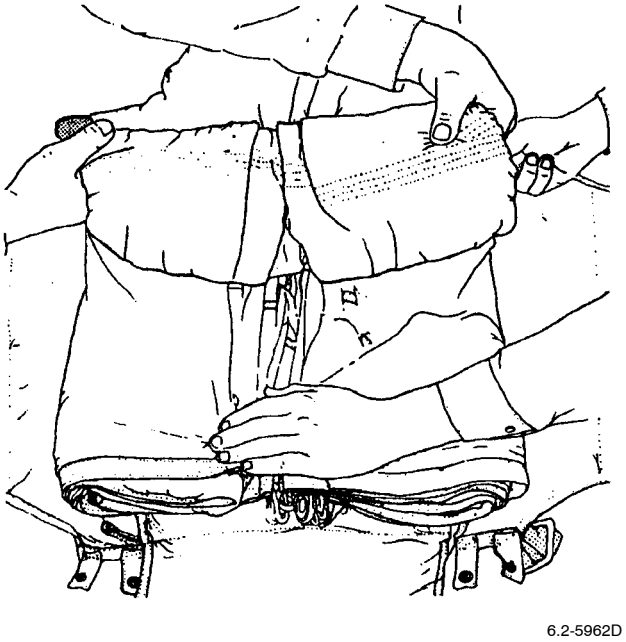


Figure 59. Making of First and Second Folds

e. Second fold shall be positioned slightly behind skirt hem. Sides of canopy shall spread about 2-in. over sides of container (Figure 60).

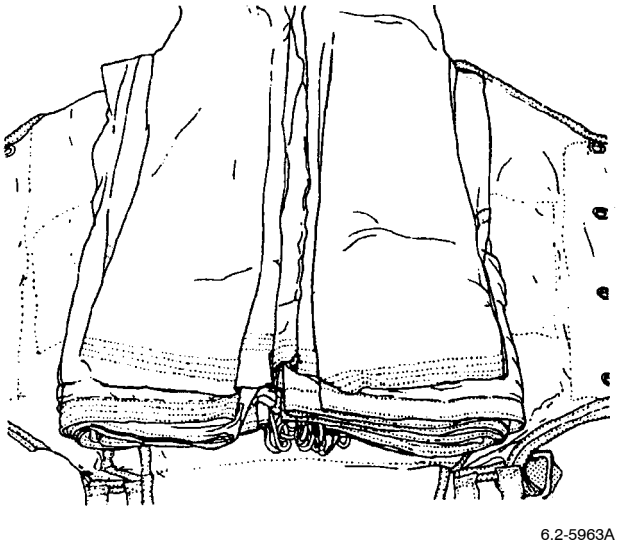


Figure 60. Positioning of Second Fold

f. To make third and fourth folds, helper shall use long bar in same manner as with first and second folds. Fourth fold is extended to align with skirt hem (Figure 61).

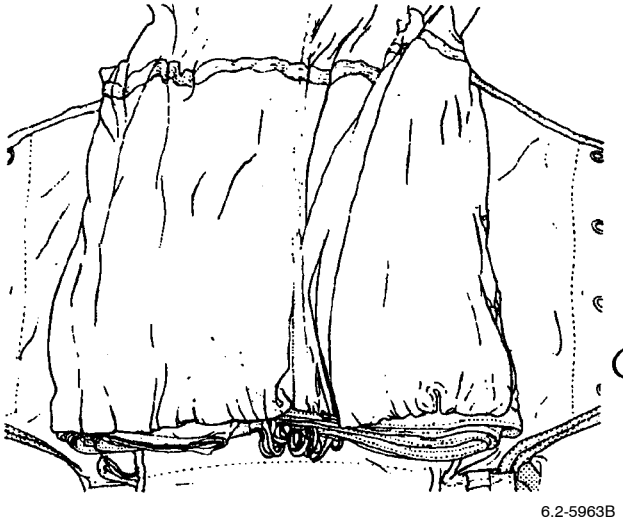


Figure 61. Making of Third and Fourth Folds

g. Continue accordion folding rest of canopy into container, keeping about 2-in. canopy spread over sides of container. As apex of canopy is drawn close to container, pilot parachute shall be placed back onto packing table.

h. Position pilot parachute vertically on packing table and insert guide tube into grommet in crown of pilot parachute. Extend guide tube to bottom of pilot parachute and position over locking cone on spring base plate (Figure 62).

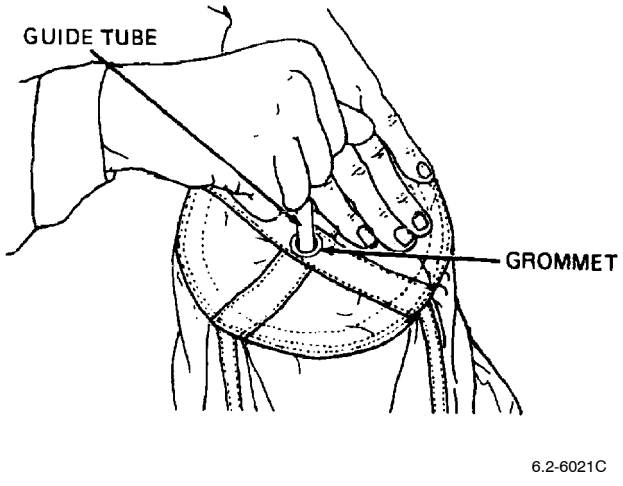


Figure 62. Position Pilot Parachute Vertically

i. Compress pilot parachute spring and remove guide tube from locking cone. Locking cone shall protrude thru grommet. Insert temporary locking pin in top of locking cone (Figure 63).

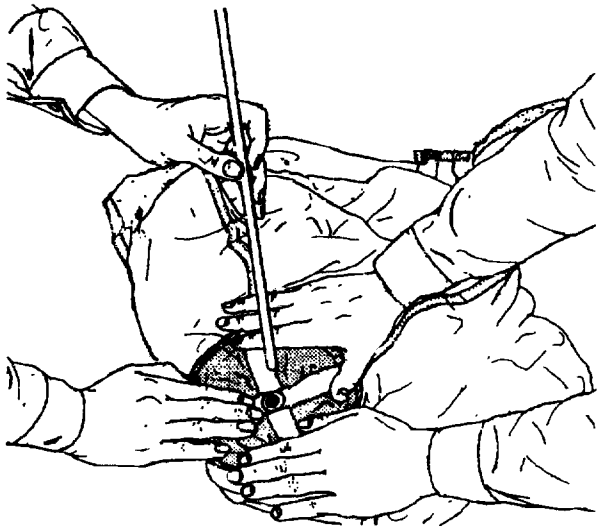


Figure 63. Compressing of Pilot Parachute Spring

WARNING

Ensure that pilot parachute cloth is not twisted around or entangled in compressed pilot parachute spring.

j. Remove any pilot parachute cloth twisted around or entangled in compressed spring.

k. Insert temporary locking pin plate into bottom hole of locking cone and then remove temporary locking pin from top hole of locking cone (Figure 64).

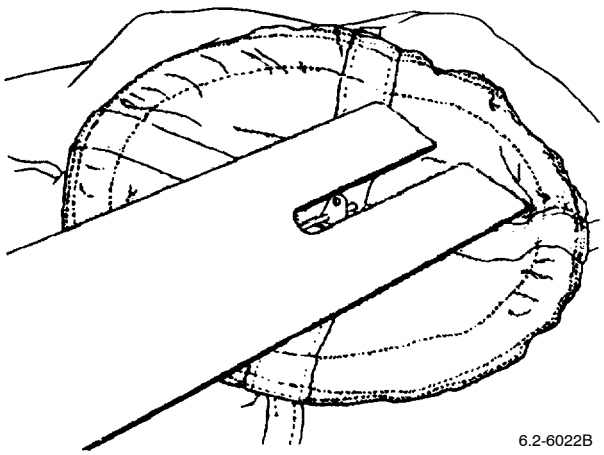


Figure 64. Inserting Temporary Locking Pin Plate

l. When not enough canopy remains to continue folding operation, canopy shall be folded under 9-in. from apex (Figure 65).

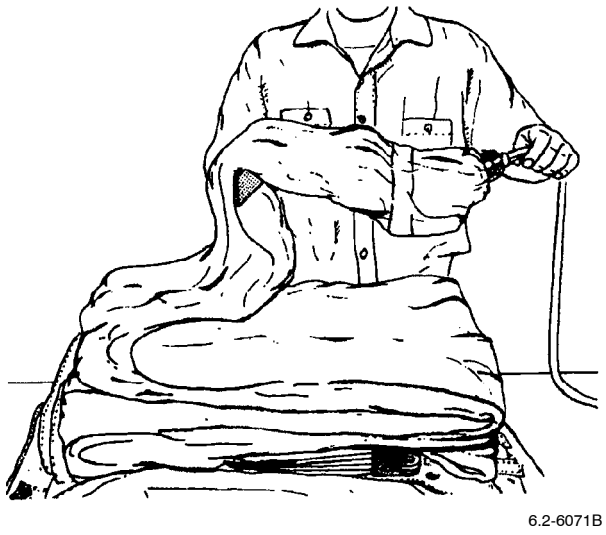


Figure 65. 9-in Fold Under From Apex

m. Folded under portion of canopy shall be positioned on top of canopy to form uppermost fold. Adjust canopy so folds are neat and square (Figure 66).

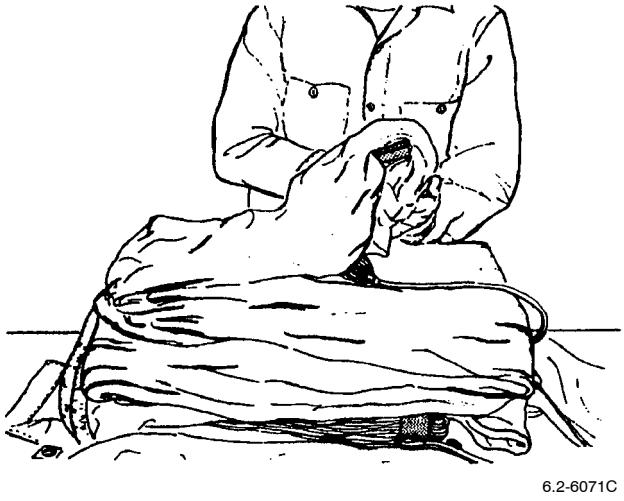


Figure 66. Folded Under Positioning

n. Inspect pilot parachute connector strap and remove entanglements.

o. Rotate container 90-degrees counterclockwise.

p. Place pilot parachute on top of canopy with pin plate positioned on helper's side of table. Align pilot parachute locking cone with second side flap grommet from bottom end of container. Roll pilot parachute cloth under outer edge of crown (Figure 67).

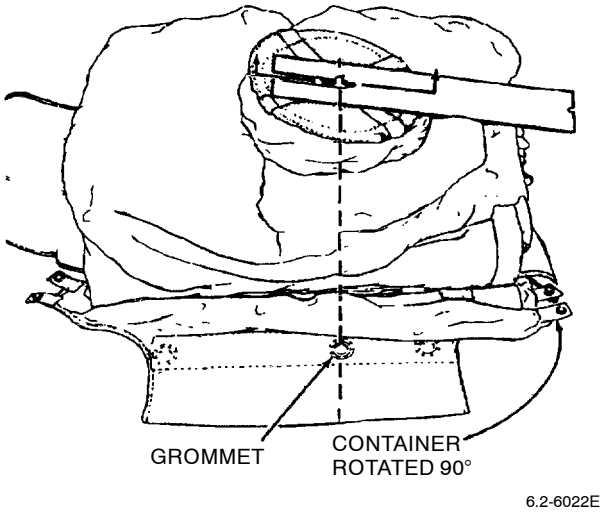


Figure 67. Placement of Pilot Parachute

23. CLOSING CONTAINER WITHOUT AUTOMATIC PARACHUTE RIPCORD RELEASE INSTALLED.

a. Packer and helper shall hold canopy and compressed pilot parachute in place and pull container side flap with locking cone over canopy. Place second grommet from container bottom over locking cone in pilot parachute (Figure 68).

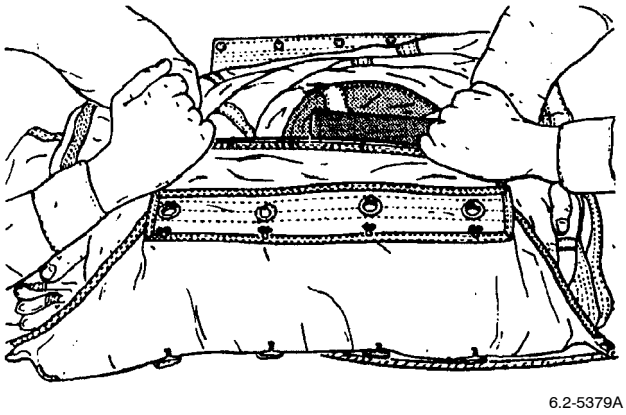


Figure 68. Holding Canopy and Compressed Pilot Parachute in Place

b. Packer and helper shall pull container side flap with grommets over canopy while holding side flap with locking cone in place. Keep canopy and pilot parachute movement to a minimum (Figure 69).

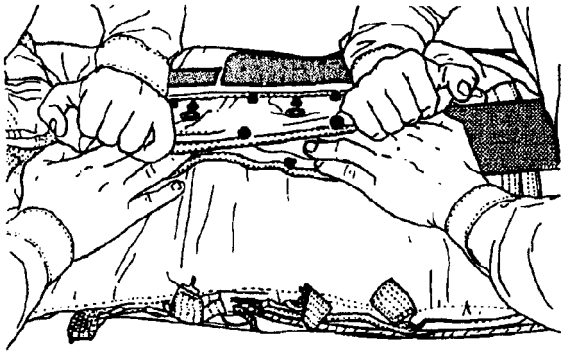


Figure 69. Pulling Over of Container Flap with Grommets

c. Place grommets over locking cones and insert temporary locking pins toward top end flap (Figure 70).

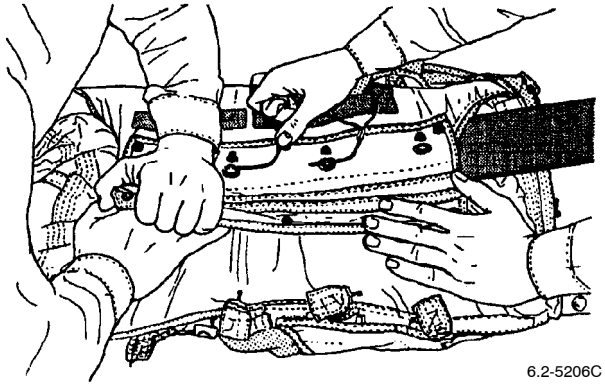


Figure 70. Place Grommets Over Locking Cones

d. Remove temporary locking pin plate from bottom hole in pilot parachute locking cone and straighten canopy folds at both ends of container (Figure 71).

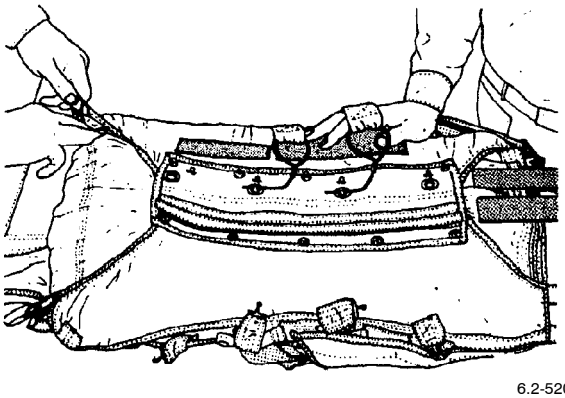


Figure 71. Removal of Temporary Locking Pin Plate

e. Packer shall tuck top container end flap under side flaps using two long bars inserted in pockets (Figure 72).

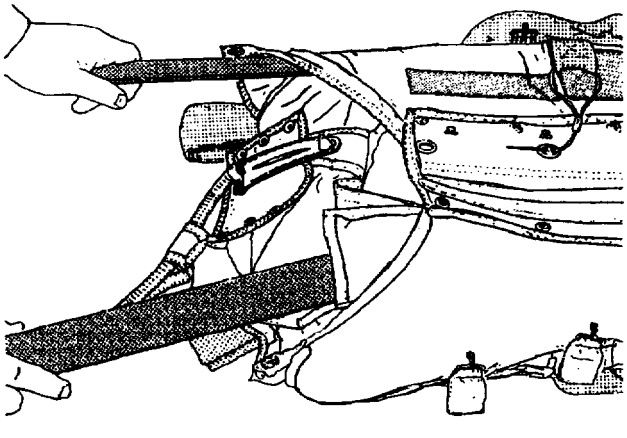


Figure 72. Tuck Top Container End Flap Under

f. Place side flap grommets over top end flap locking cone. Insert temporary locking pin toward top end flap (Figure 73).

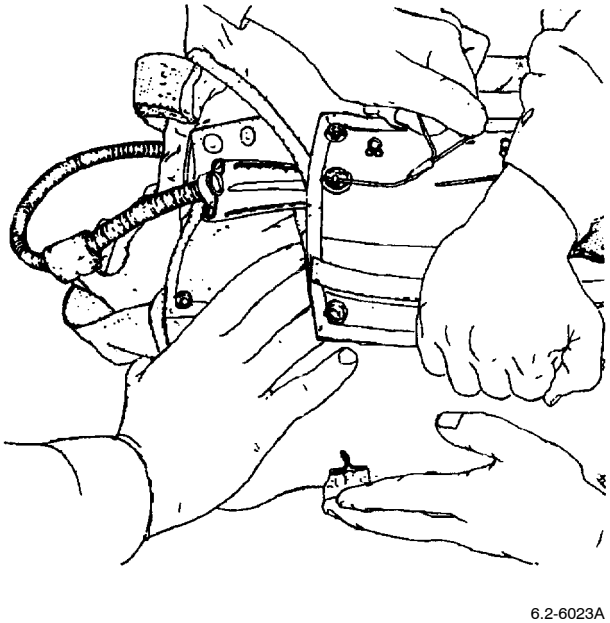


Figure 73. Place Side Flap Grommets Over Top End Flap

g. Place side flap grommets over bottom end flap locking cone. Insert temporary locking pin toward top end flap (Figure 74).

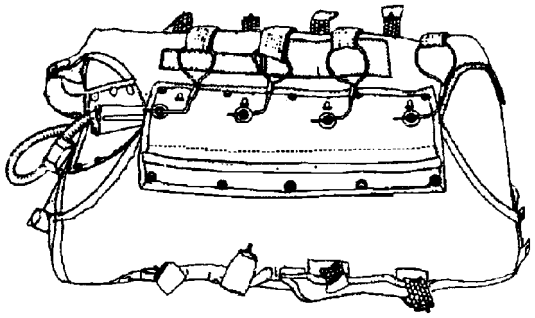


Figure 74. Place Side Flap Grommets Over Bottom End Flap

h. Push cover flaps into container using packing fid inserted into pockets. Remove wrinkles and smooth corners of container using packing fid (Figure 75).

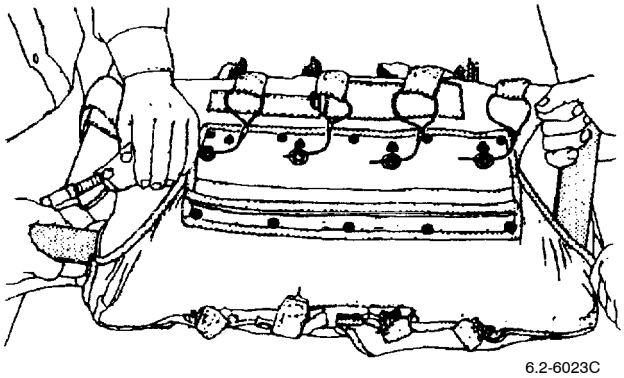


Figure 75. Push Cover Flaps Into Container

i. Insert ripcord cable into ripcord housing (Figure 76).

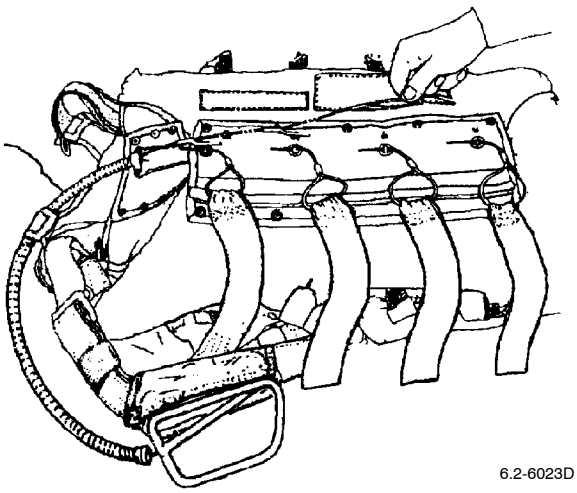


Figure 76. Insert Ripcord Cable

WARNING

Use of ripcord pins as an alignment aid during installation may cause bending of pins and result in excessive pull forces.

j. Helper shall hold side flap grommets over locking cone nearest packer. Helper then removes temporary locking pin, as packer, at same time, inserts top ripcord pin (Figure 77).

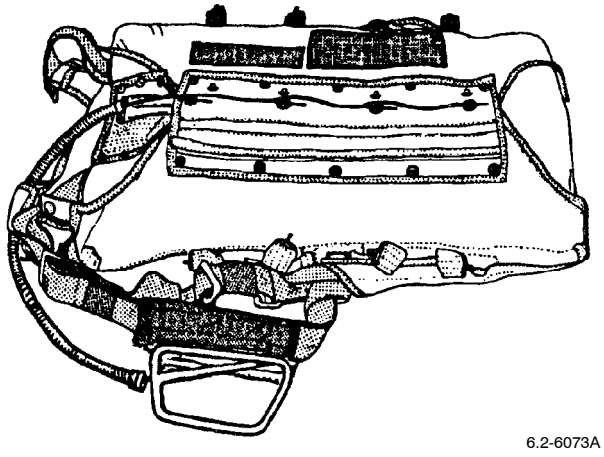


Figure 77. Insert Remaining Ripcord Pins

k. Working from packer's end to helper's end, remove temporary locking pins and at same time insert ripcord pins (Figure 78).

WARNING

Ripcord pins must be centered in locking cones.

l. Ensure ripcord pins are centered in locking cones so that shoulder of ripcord pin is not jammed against locking cone, but extends more than 1/2-in. beyond base of cone (Figure 78).

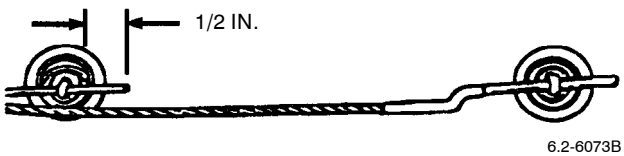


Figure 78. Center Ripcord Pins

m. Attach container spring opening assemblies to container eyes (Figure 79).

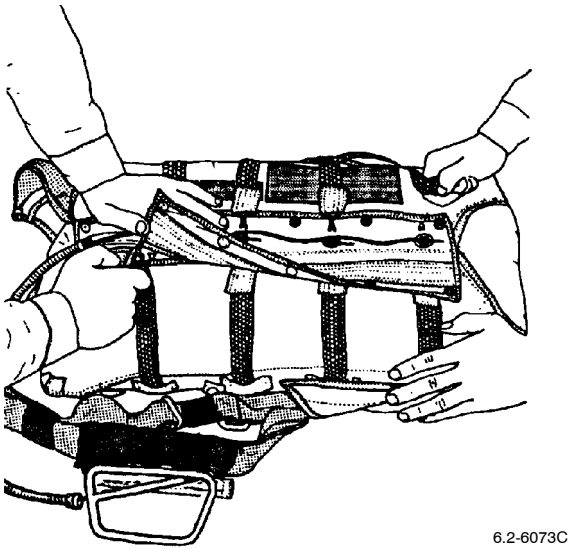


Figure 79. Attach Spring Opening Assemblies

24. CLOSING CONTAINER WITH AUTOMATIC PARACHUTE RIPCORD RELEASE INSTALLED.

a. Packer and helper shall hold canopy and compressed pilot parachute in place and pull container side flap with locking cone over canopy. Place second grommet from container bottom over locking cone in pilot parachute (Figure 80).

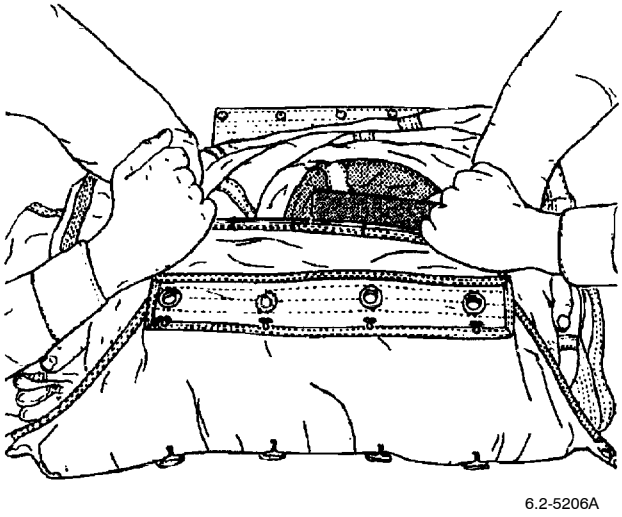


Figure 80. Holding Canopy and Compressed Pilot Parachute in Place

b. Packer and helper shall pull container side flap with grommets over canopy while holding side flap with locking cone in place. Keep canopy and pilot parachute movement to a minimum (Figure 81).

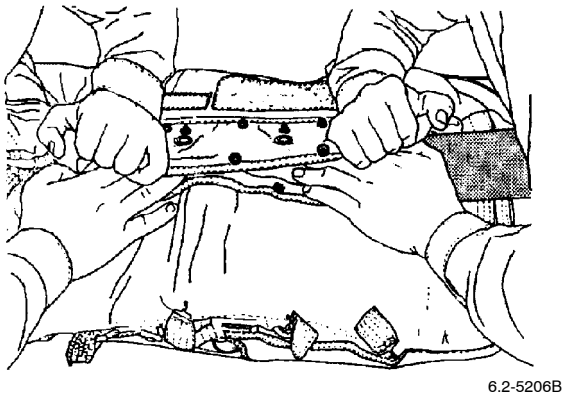


Figure 81. Pulling Over of Container Flap with Grommets

c. Place grommets over locking cones and insert temporary locking pins toward top end flap (Figure 82).

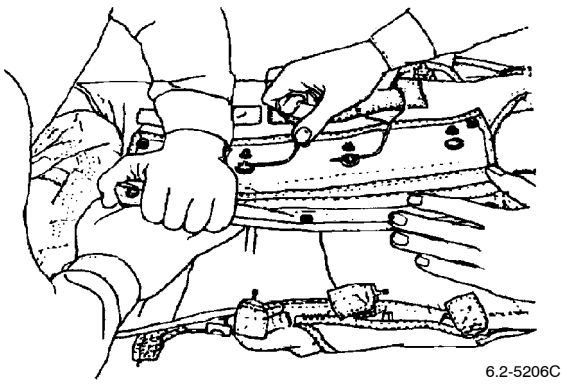


Figure 82. Place Grommets Over Locking Cones

d. Remove temporary locking pin plate from bottom hole in pilot parachute locking cone and straighten canopy folds at both ends of container (Figure 83).

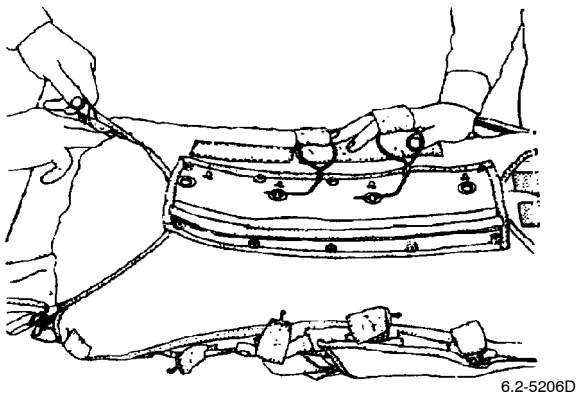


Figure 83. Removal of Temporary Locking Pin Plate

e. Packer shall tuck top container end flap under side flaps using two long bars inserted in pockets (Figure 84).

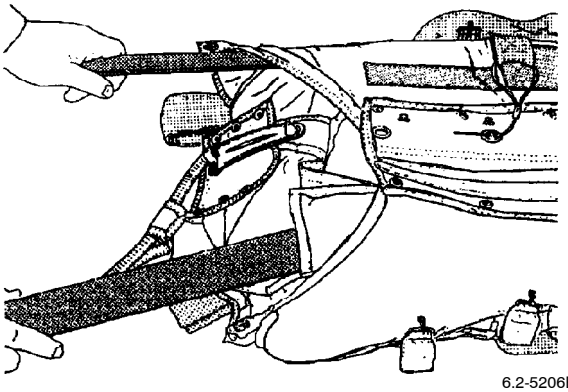


Figure 84. Tuck Top Container End Flap Under

f. Place side flap grommets over top end flap locking cone. Insert temporary locking pin toward top end flap (Figure 85).

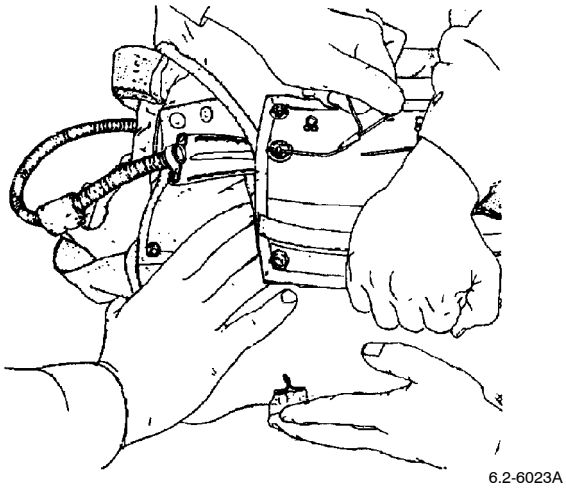


Figure 85. Place Side Flap Grommets Over Top End Flap

g. Place side flap grommets over bottom end flap locking cone. Insert temporary locking pin toward top end flap (Figure 86).

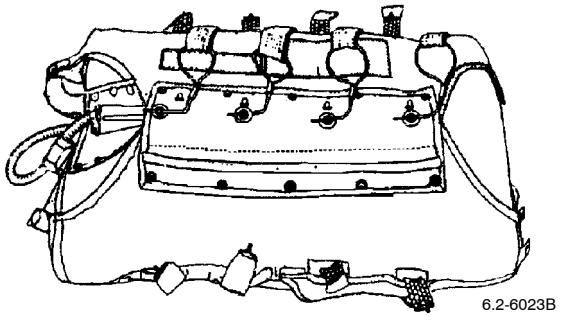


Figure 86. Place Side Flap Grommets Over Bottom End Flap

h. Push cover flaps into container using packing fid inserted into pockets. Remove wrinkles and smooth corners of container using packing fid (Figure 87).

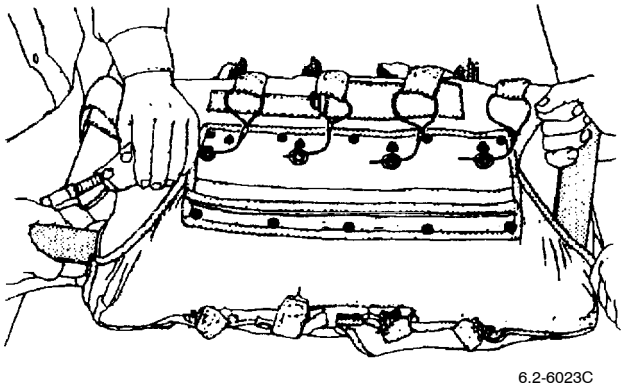


Figure 87. Push Cover Flaps Into Container

i. Insert ripcord cable into ripcord housing (Figure 88).

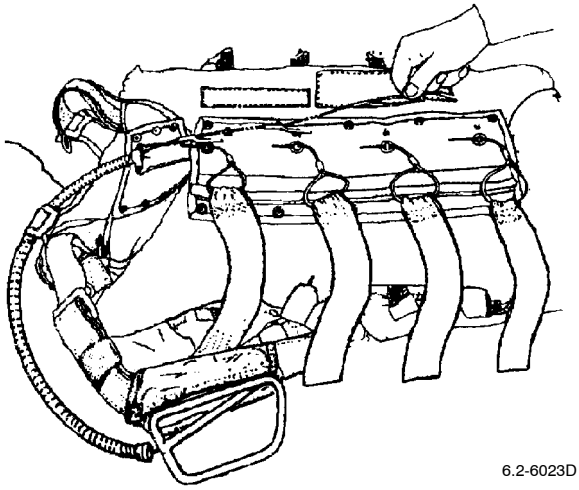


Figure 88. Insert Ripcord Cable

WARNING

Use of ripcord pins as an alignment aid during installation may cause bending of pins and result in excessive pull forces.

j. Pass top ripcord pin thru beveled side of eye in end of automatic parachute ripcord release power cable. Packer and helper shall hold side flap grommets over locking cone nearest base plate as helper removes temporary locking pin. Packer, at same time, inserts top ripcord pin (Figure 89).

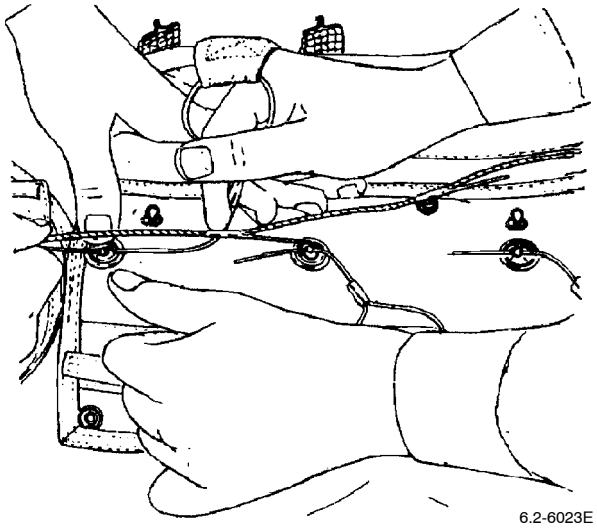


Figure 89. Remove Temporary Locking Pin and Insert Top Ripcord Pin

k. Working from packer's end to helper's end, remove temporary locking pins and at same time insert ripcord pins (Figure 90).

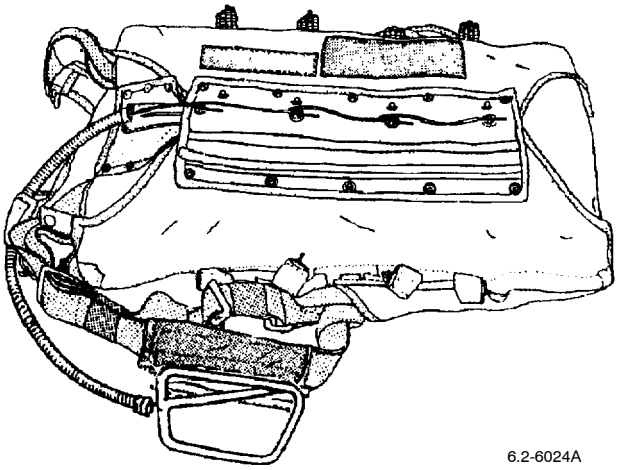


Figure 90. Insert Remaining Ripcord Pins

WARNING

Ripcord pins must be centered in locking cones.

l. Ensure ripcord pins are centered in locking cones so that shoulder of ripcord pin is not jammed against locking cone, but extends more than 1/2-in. beyond base of cone (Figure 91).

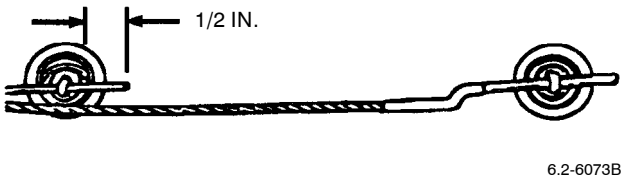


Figure 91. Center Ripcord Pins

m. Attach container spring opening assemblies to container eyes (Figure 92).

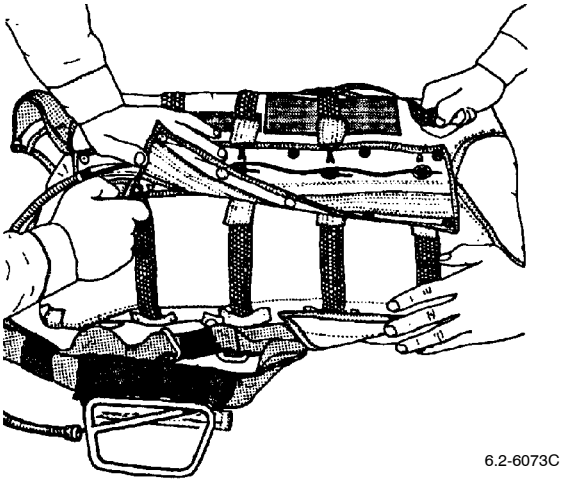


Figure 92. Attach Spring Opening Assemblies

25. AUTOMATIC PARACHUTE RIPCORD RELEASE LANYARD STOWAGE (IF INSTALLED).

a. Attach spring opening assemblies on left side of container. Route second spring opening assembly from bottom thru uppermost channel on stowage pocket. Route bottom spring opening assembly thru lower channel on stowage pocket (Figure 93).

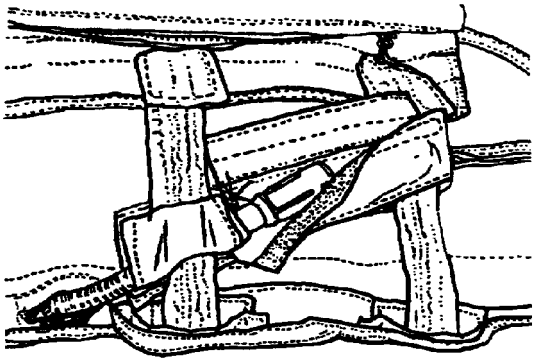


Figure 93. Attach Spring Opening Assemblies

b. Tack base of stowage pocket to bottom spring opening assembly about 3-in. from hook with three turn of size 6 thread, doubled and waxed; tie off (Figure 94).

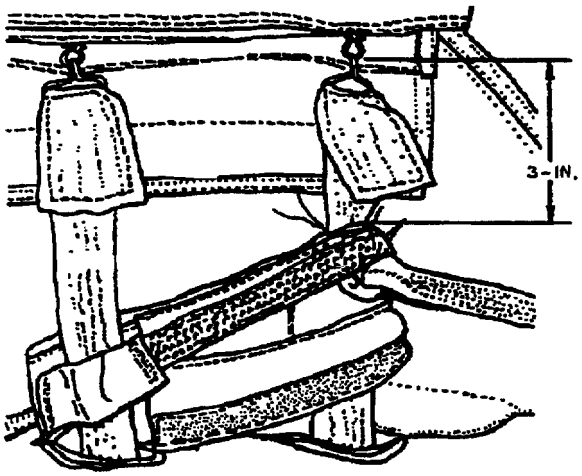


Figure 94. Tack Base of Stowage Pocket

c. Tack lanyard assembly plate to upper flap of stowage pocket with one turn of size E thread, single and waxed; tie off (Figure 95).

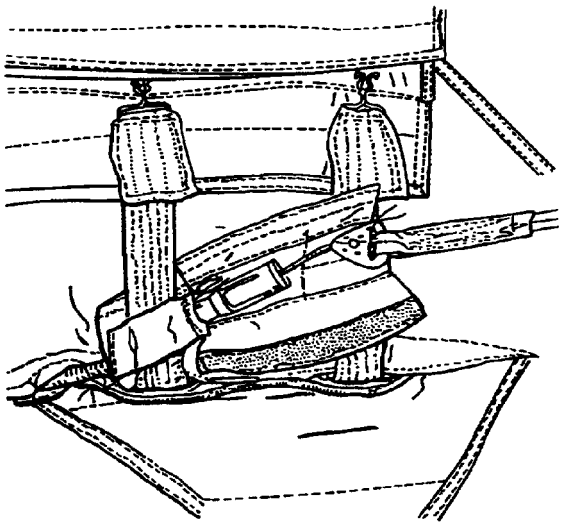


Figure 95. Tack Lanyard Assembly

d. Fake lanyard assembly in stowage pocket and close by securing pile tape on bottom flap with hook pile on top flap (Figure 96).

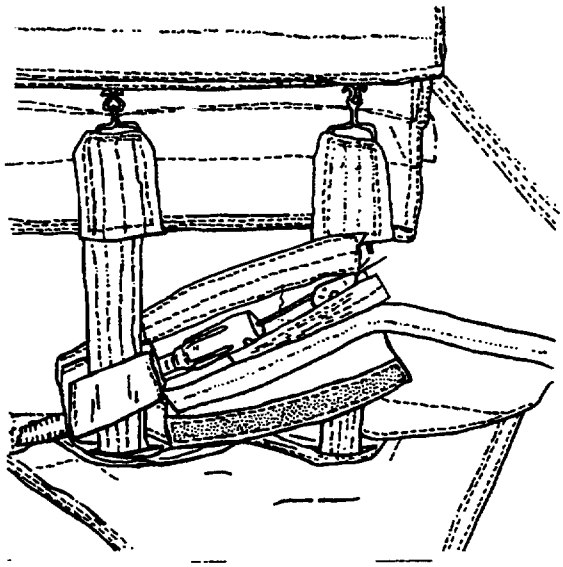


Figure 96. Fake Lanyard Assembly

e. Stow ripcord release lanyard assembly in container by first laying it out on packing table and removing all twists. Form a bight in lanyard 36-in. from eye of snaphook.

f. Using a draw cord stow first bight into flute closest to stowage pocket. Draw bight from bottom to top of container, and adjust so 18 ±2-in. of lanyard remain between bottom of flute and eye of snaphook (Figure 97).

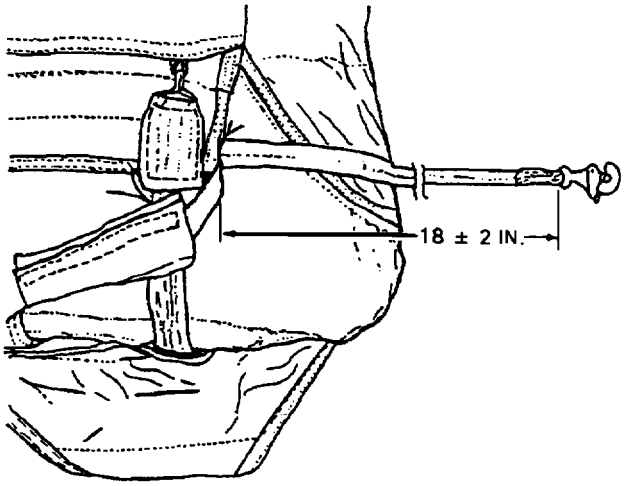


Figure 97. Using a Draw Cord Form First Bight

g. Tack lanyard to bottom of flute with one turn of size E thread, single and waxed; tie off.

26. RIPCORD PIN PULL CHECK.

a. Insert ripcord pin lock on bottom ripcord pin (Figure 98).

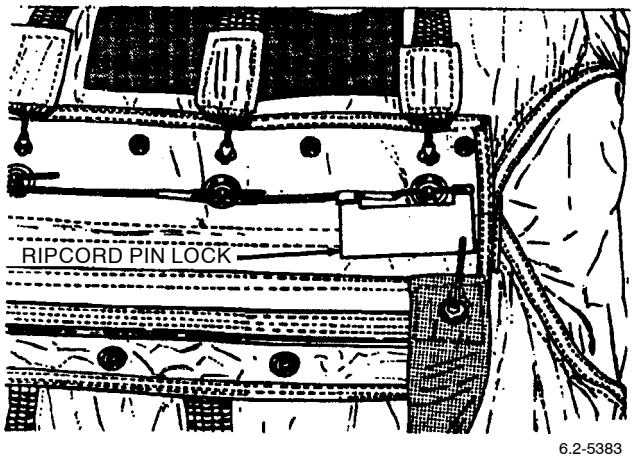


Figure 98. Ripcord Pin Pull Check

b. Attach spring scale to ripcord handle with a nylon cord.

c. Using the scale, apply a straight steady force to ripcord handle until initial movement of ripcord pins is observed. Maximum allowable force is 27 lbs. (QA)

d. If force exceeds 27 lbs., pummel the pack and recheck. If force exceeds 27 lbs. again, repack the parachute. (QA)

WARNING

Ripcord pin lock must be removed.

e. Remove ripcord pin lock. (QA)

f. If necessary, reposition ripcord pins so they are centered in locking cones with shoulder of each pin extending more than 1/2-in. beyond base of cone.

g. Snap ripcord pin protector flap and base plate cover closed.

h. Turn container over so that back pad faces up. Fasten two corner keepers at each corner of container to container bottom. Insert ripcord handle into pocket.

27. INSTALLATION OF STANDARD SOFT PACK (SSP).

a. Insert combination carrying case and equipment container into SSP outer container. Ensure strap handle is positioned at open end of container.

28. FINAL CHECKOUT.

a. Account for all packing tools.

b. Examine packed parachute for general condition.

c. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA)

d. QA inspector shall examine completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

e. QA inspector shall sign Parachute Record (OPNAV 4790/101).

f. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

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INTERMEDIATE AND DEPOT MAINTENANCE

REPAIR PROCEDURES

NB-8 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 569AS100-5, 569AS100-6, 569AS100-7 and 569AS100-8

List of Effective Work Package Pages

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1 thru 25	9						

Reference Material

Common Repairs ..... WP 004 00
Intermediate and Depot Maintenance, Packing Procedures, NB-8 Personnel Parachute Assembly ..... WP 013 02
Parachute Loft Requirements/Administration ..... WP 003 00
Support Equipment ..... WP 005 00

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Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This work package (WP) contains instructions for the maintenance, repair, replacement, and fabrication of various parachute parts or subassemblies to ensure that proper items of equipment remain in a ready-for-issue (RFI) status. Selected repairs shall be documented on the Parachute Record. For common repairs refer to WP 004 00.

2. PILOT PARACHUTE AND CONNECTOR STRAP REPAIRS.

a. Repair of pilot parachute and/or connector strap is limited to following:

(1) Cleaning of contaminated areas.

(2) Replacement of loose or broken tacking.

b. Replace pilot parachute and/or connector strap for any of following:

(1) Service/total life has expired per WP 013 02.

(2) Seam separations and loose or broken stitching (yarn separation is acceptable) that may affect safe operation of the parachute.

(3) Pilot parachute spring is broken or distorted.

(4) Pilot parachute locking cone or grommet is loose or damaged.

(5) Connector strap finished length is incorrect.

3. REPLACEMENT OF PILOT PARACHUTE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Inspect replacement pilot parachute per WP 013 02.

b. Remove tacking at Lark's head knot and then remove pilot parachute.

c. Pass large loop of connector strap thru loop in pilot parachute. Form a Lark's head knot by passing entire pilot parachute thru loop of connector strap and pull tight (Figure 1).

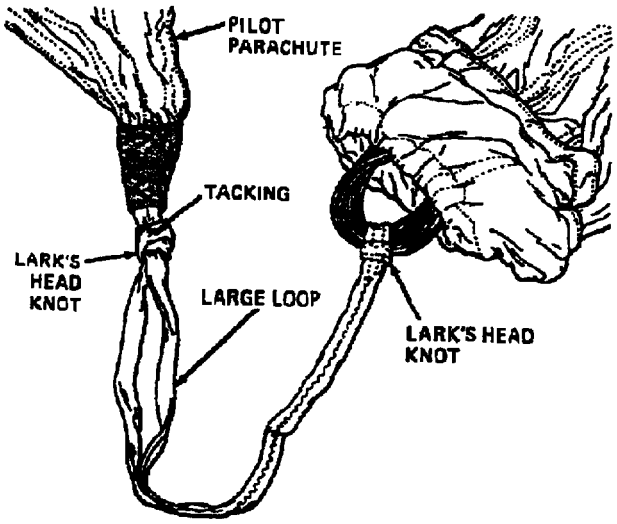

Figure 1. Pilot Parachute and Connector Strap Replacement

d. Tack Lark's head knot with two turns of size 6 thread, single and waxed; tie off (Figure 1). (QA)

e. Mark date placed in service on pilot parachute. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

4. REPLACEMENT OF PILOT PARACHUTE CONNECTOR STRAP.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove tacking at lark's head knot and then remove pilot parachute connector strap.

b. Inspect replacement connector strap for cuts, fraying and loose or broken stitching.

c. Measure length of connector strap. Proper unattached length is 23 1/2 ± 1/2-in.

d. Count 14 apex lines in sequence. Pass small loop of connector strap around the 14 apex lines. Form a Lark's head knot by passing connector strap thru large loop of connector strap and pulling tight (Figure 1).

e. Pass large loop end of connector strap thru loop in pilot parachute. Form a lark's head knot by passing entire pilot parachute thru large loop of connector strap (Figure 1).

f. Tack Lark's head knot at pilot parachute with two turns of size 6 thread, single and waxed; tie off (Figure 1).

g. Mark date placed in service on connector strap. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

5. REPLACEMENT OF PILOT PARACHUTE CONNECTOR STRAP LOOSE OR BROKEN TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove broken tacking or completely remove loose tacking.

b. Pull Lark's head knot tight.

c. Tack Lark's head knot at pilot parachute with two turns of size 6 thread, single and waxed; tie off. (QA)

6. REPLACEMENT OF PILOT PARACHUTE LOOSE OR BROKEN TACKING (PLATE ASSEMBLY).

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove broken tacking or completely remove loose tacking.

NOTE

Plate is attached at base of coil spring.

b. Locate the four holes in the plate within pilot parachute fabric.

c. Tack thru holes with two turns of size 6 thread, doubled and waxed; tie off. (QA)

7. CANOPY ASSEMBLY REPAIRS.

8. REPLACEMENT OF CANOPY ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Temporary Locking Pin
—	Screwdriver, Torque

Materials Required Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

For Double "L" Connector Link, refer to Paragraph 30 for disassembly, assembly, and inspection instructions.

a. Remove pilot parachute and connector strap from vent lines. Retain for reinstallation.

b. Remove four-line release rigging from connector links and then remove lanyard from flutes.

c. Remove connector link yoke and plate assembly.

d. Remove connector links from riser loops and then reinstall yoke and plate assembly.

e. Dispose of canopy per supply directives.

f. Lay out replacement canopy assembly and stretch it to its full length on clean packing table.

g. Attach tension strap hook to canopy vent lines.

h. Locate gore 28 (nameplate gore) and place it uppermost in center of packing table.

i. At skirt hem, separate suspension lines into two equal groups with lines 1 thru 14 on packer's side and 15 thru 28 on helper's side. Grasping each group of lines, walk from skirt hem to connector links removing any dips and twists between two groups (Figure 2).

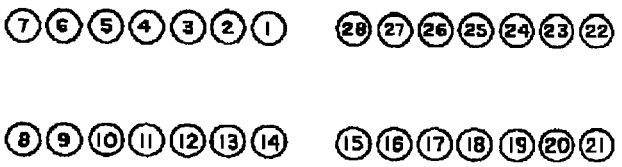

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Figure 2. Arrangement and Orientation of Suspension Lines on Connector Links

j. Place connector link holding lines 1 thru 7 on top of connector link holding lines 8 thru 14. Place connector link holding lines 22 thru 28 on top of connector link holding lines 15 thru 21. Insert tension hooks into connector links and insert hooks into packing table (Figure 2).

k. Pull suspension lines taut and adjust vent hem.

l. Check suspension line continuity on right side of gore 28. Packer shall grasp line 1 at skirt hem and raise to a sufficient height to ensure line is free of dips and twists. Continue this procedure with lines 2 thru 14 (Figure 2). Helper shall be positioned at connector links to check lines selected by packer (Figure 2).

m. Check suspension line continuity on left side of gore 28. Packer shall grasp line 28 at skirt hem and raise to a sufficient height to ensure line is free of dips and twists. Continue this procedure with lines 27 thru 15 (Figure 2). Helper shall be positioned at connector links to check lines selected by the packer (Figure 2).

n. Inspect four-line release anchor loops for proper attachment to lines 3 and 26. Measure 30 ± 1/2-in. above upper connector link bar. Anchor loops must be attached with 2-in. of zigzag stitching.

o. Continue to inspect canopy per WP 013 02.

p. Reattach pilot parachute and connector strap Paragraphs 3 and 4.

q. Place harness and container on packing table with risers facing each other and positioned at connector links. Container will face up and harness will face down on table.

NOTE

If positioned properly, four-line release flutes are on top risers and aircrew, is wearing harness, would be positioned head toward canopy and facing packing table.

r. Remove connector links from tension hooks. Remove tension hooks from packing table.

s. Remove connector link yoke and plate assemblies from bottom connector links.

t. Insert connector links into bottom riser loops.

u. Reattach yoke and plate assemblies to bottom connector links ensuring knurled portions of plate faces up and screwheads face outboard.

v. Remove connector link yoke and plate assembly from top connector links.

w. While maintaining suspension line continuity, slide suspension lines onto a temporary locking pin or rod.

x. Insert connector links into top riser loops.

WARNING

Ensure that suspension line continuity is maintained at all times. Also ensure that clove-hitch and half-hitch at ends of suspension lines have not separated during handling.

y. Reinstall suspension lines 3 thru 7 and 26 thru 22 onto connector links.

z. Reattach yoke and plate assemblies to top connector links ensuring knurled portion of plate faces up and screwheads face outboard.

aa. Insert tension hooks into connector links and then tension canopy.

ab. Perform suspension line continuity check as in steps m and n above.

ac. Tighten screws on top and bottom connector links to a torque value of 20 to 25 in-lbs. (QA)

ad. Apply torque seal to each connector link screwhead.

ae. Rig four-line release lanyards per WP 004 00.

af. Mark date placed in service on canopy. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

9. HARNESS ASSEMBLY REPAIRS.

a. Repair of harness is limited to the following:

(1) Cleaning of contaminated areas.

(2) Repair of stitching if less than three stitches are loose or broken.

(3) Removal and replacement of four-line release flutes.

(4) Replacement of harness hardware, if replacement does not require the removal of harness stitching.

(5) Replacement of elastic strap keepers.

b. Replace harness for any of the following:

(1) Cuts, tears, or holes in harness webbing.

(2) Loose or broken stitching in excess of three stitches.

(3) Twists, fading, excessive wear, fusing, fraying, burns, contamination or abrasion.

(4) If damaged hardware must be replaced by removal of harness stitching.

(5) Service/total life has expired per WP 013 02.

10. FABRICATION OF CHEST STRAP EXTENDER.

Materials Required

Specification or Part Number	Nomenclature
MS22020-1	Link, Parachute, Triangle
MS22017	Snap, Parachute, Ejector
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
PIA-W-4088	Webbing, Nylon, Type XXVII, Class I, IA or 2

a. Inspect ejector snap and triangle link for proper function, corrosion, sharp edges, and damage. (QA)

b. Cut a 7 1/2-in. length of nylon webbing; sear ends.

c. Reeve nylon webbing around bar of snap and bar of link as shown in (Figure 3).

d. Using size 6 thread, stitch strap with a four-point crosstitch pattern (Figure 3).

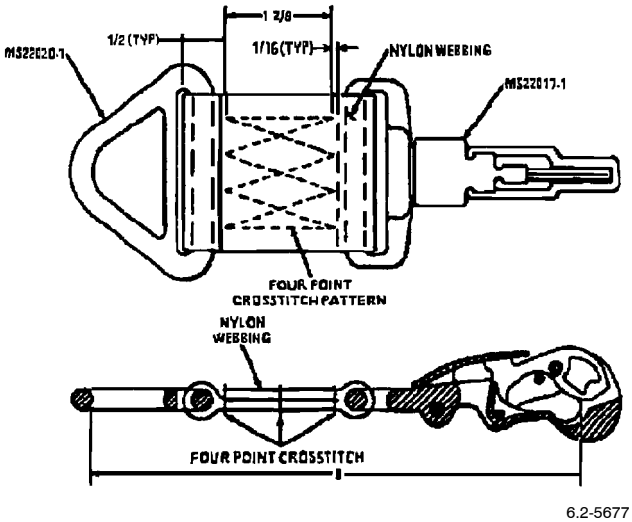

Figure 3. Fabrication of Chest Strap Extender

11. REPLACEMENT OF LABEL (676AS100-1).

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove backpad.

b. Carefully remove old label.

c. Cut tackings on harness keeper straps and unreeve straps.

d. Rotate harness off container.

e. Mark required information on replacement label.

f. Machine stitch replacement label to harness in center of horizontal backstrap with label positioned to face wearer.

g. Reattach harness to container per Paragraph 13.

12. ATTACHMENT OF RIPCORD HOUSING TO CONTAINER WITHOUT RIPCORD RELEASE INSTALLED.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Reeve ripcord housing thru shoulder tab on container (Figure 4).

b. Clamp end of housing to base plate, using single housing clamp (60A113C29-1). Tighten clamp screws and apply torque seal to screw heads.

c. Route opposite end of ripcord housing along the inside of the harness assembly, to ripcord pocket loop. Ensure that housing does not pass thru or around harness assembly (Figure 5).

d. Insert ripcord housing end thru loop of ripcord handle pocket. Tack housing to pocket loop, using four turns of size 6 thread, doubled and waxed; tie off.

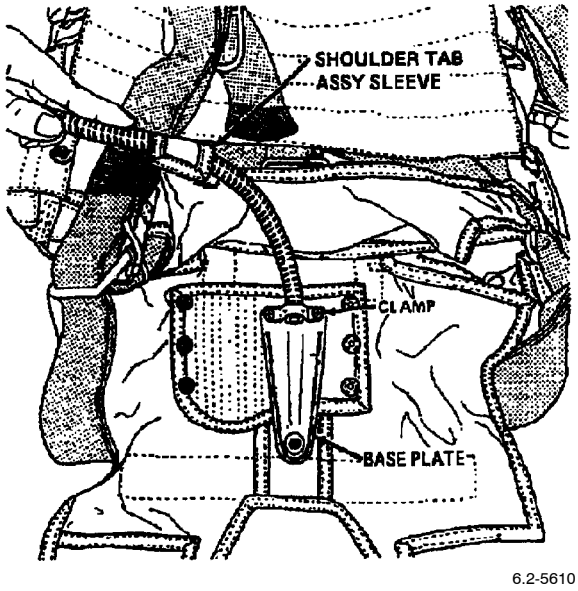

Figure 4. Attachment of Ripcord Housing to Container Without Ripcord Release Installed

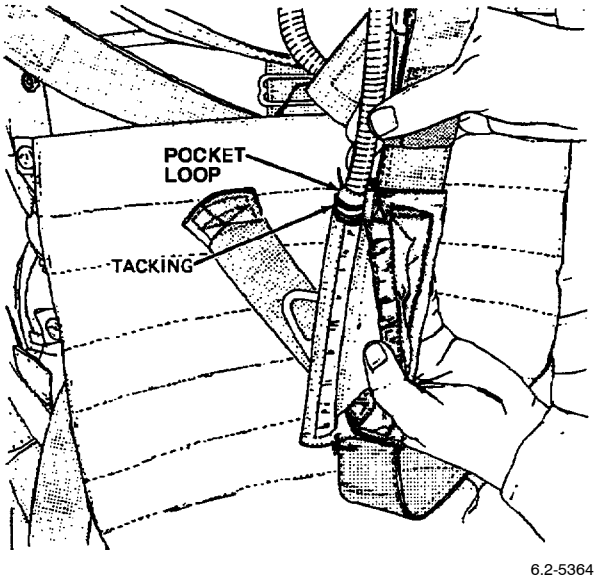

Figure 5. Replacement of Ripcord Pocket Tackings

13. REPLACEMENT OF HARNESS ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Bodkin
Refer to WP 005 00	Temporary Locking Pin (2)

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type III
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. If attached, remove survival kit and tackings.

b. Remove backpad.

c. Remove ties securing shoulder tabs to harness web loops.

d. Remove tackings on harness keeper straps.

e. Remove all harness keeper straps from adapters and then remove harness from container.

f. Remove four-line release tackings from flutes and carefully remove release lanyards from flutes. Insert temporary locking pin into last four-line release daisy chain.

g. Remove connector link yoke and plate assemblies.

h. Slide harness riser loop off connector link bar.

i. Reinstall yoke and plate assemblies.

j. Ensuring continuity is maintained insert connector links onto tension hooks (Figure 2).

k. Remove ripcord from ripcord pocket and housing.

l. Remove tackings securing ripcord pocket to harness and remove pocket.

m. Inspect replacement harness per per WP 013 02.

n. Mark date placed in service on harness. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

o. Place harness assembly on packing table with exposed ends of corresponding risers facing each other and positioned at connector links. An aircrew wearing the harness would be positioned head toward canopy and facing packing table (Figure 6).

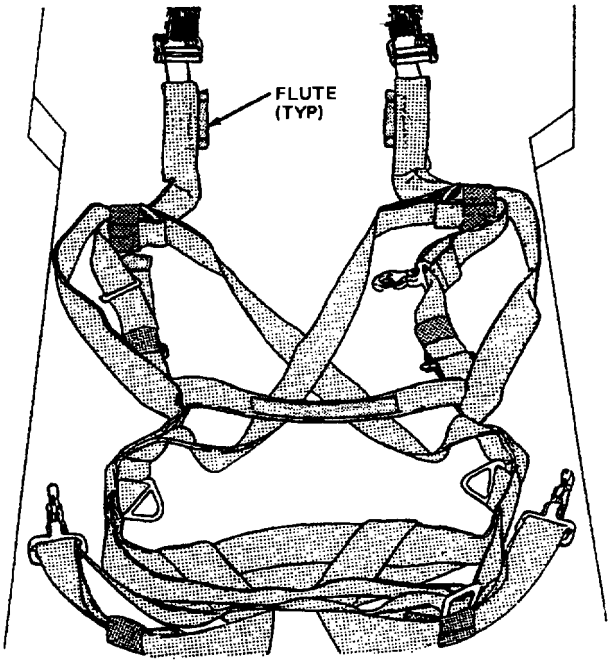

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Figure 6. Position of Harness on Packing Table for Attachment of Connector Links

p. Remove connector link yoke and plate assemblies from bottom connector links.

q. Insert bottom connector links into bottom riser loops.

r. Reinstall yoke and plate assemblies to bottom connector links ensuring knurled portions of plate face up and screwheads face outboard.

s. Remove connector link yoke and plate assemblies from top connector links.

t. Insert top connector links into top riser loops.

u. Reinstall yoke and plate assemblies to top connector links ensuring knurled portions of plate face up and screwheads face outboard.

v. Check suspension line continuity (Figure 2).

w. Tighten screws on top and bottom connector links to a torque value of 20 to 25 in-lbs. (QA)

x. Apply torque seal to each connector link screwhead.

y. Using a bodkin or equal tool, insert and pull release lanyard pull loops thru proper lanyard flute. Pull loops should extend completely thru flute with top of loops butted up against lower edge of flute.

z. Remove temporary locking pins from last four line release daisy chains.

aa. Tack release lanyard to flute with one turn of size FF thread, single and waxed. Tacking shall pass thru outer cover of flute, thru the release lanyard, thru and around last daisy chain loop and then back thru flute; tie off.

ab. With lanyard pull loop fully extended, tack risers together. Tack at center of riser and 1/2-in. above bottom of lanyard pull loop with one turn of size FF thread, single and waxed; tie off.

ac. Attach harness to container as follows:

ad. Position container on top of harness risers with inside of container facing risers and top edge of container positioned at harness shoulder adapters (Figure 7).

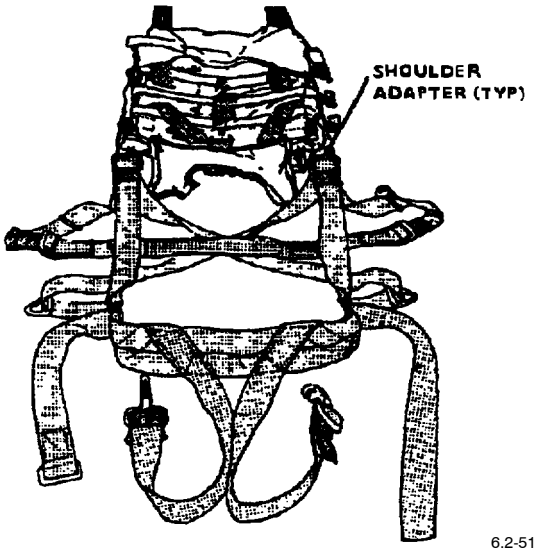


Figure 7. Position Container on Top of Harness Risers

ae. Rotate harness assembly at shoulder adapters and place on top of container (Figure 8).

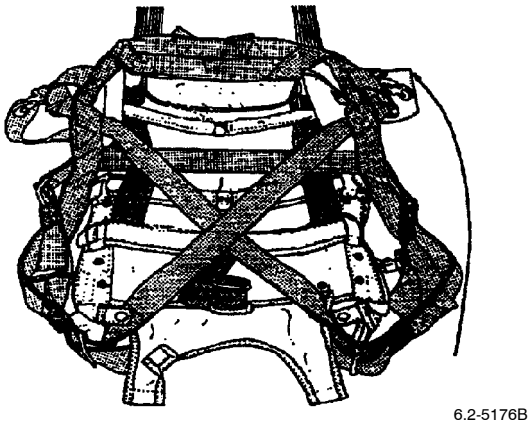


Figure 8. Rotate Harness Assembly

af. Position diagonal back straps under upper center harness keeper straps on container and reeve straps together (Figure 9).

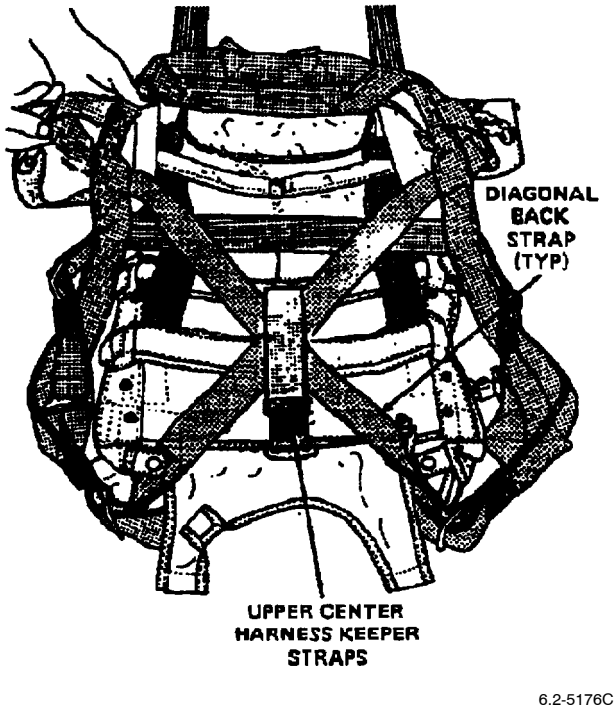


Figure 9. Position Diagonal Back Straps

ag. Position both diagonal back straps and horizontal back strap under two keeper straps located on each side of container and reeve upper and lower keeper straps together (Figure 10).

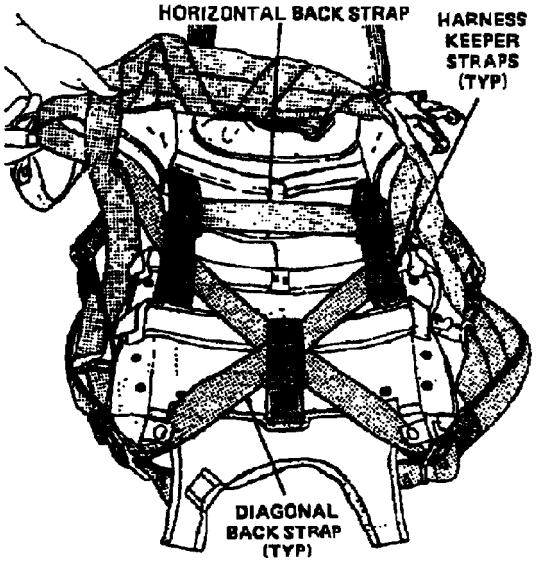


Figure 10. Position Both Diagonal Back Straps

ah. Pass keeper strap located on each wing panel thru opening formed by each upper leg strap extension and around harness webbing; then reeve keeper straps together (Figure 11).

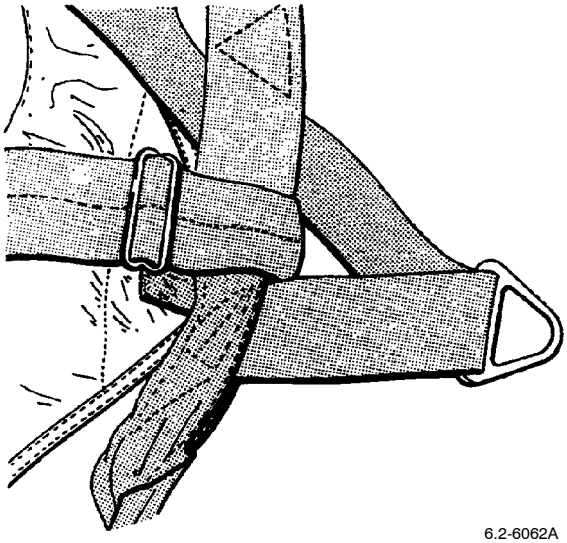


Figure 11. Pass Keeper Strap thru Opening

ai. Tack each strap at adapter with one turn of size 6 thread, single and waxed. Pass tacking thru straps and around center bar of adapter; tie off (Figure 12).

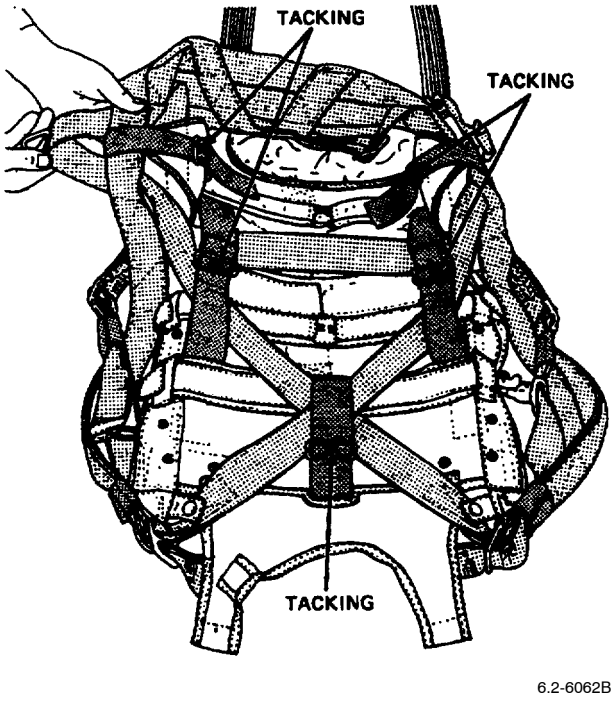


Figure 12. Tack Each Strap at Adapter

aj. Attach back pad to container, securing six back pad side tabs (Figure 13).

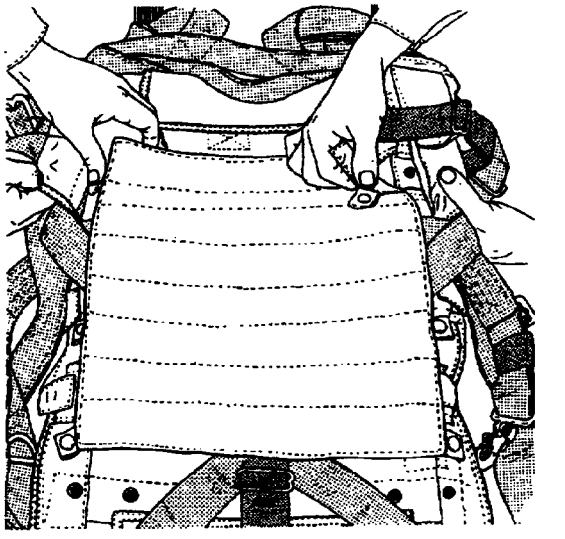


Figure 13. Attach Back Pad

ak. Cut two 10-in. lengths of Type III nylon cord. Remove and discard inner core and sear ends of casing.

al. Tie shoulder tabs to web loops securing center bar of each shoulder adapter using 10-in. nylon cord casing. Tie ends with a square knot (Figure 14).

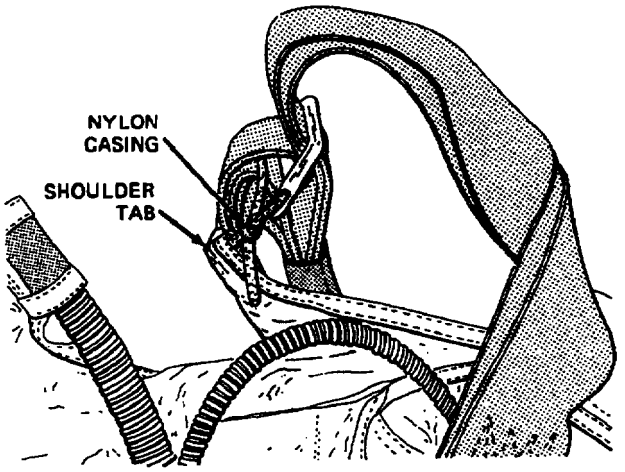


Figure 14. Tie Shoulder Tabs to Web Loops

NOTE

If seat cushion or seat pan and SSP are to be attached, follow steps am thru ao.

am. Reeve raft retaining strap completely thru strap adapter, positioning adapter against main sling of harness. Fold strap end 2-in. under and tack to strap beneath with one turn of size 6 thread, single and waxed; tie off (Figure 15).

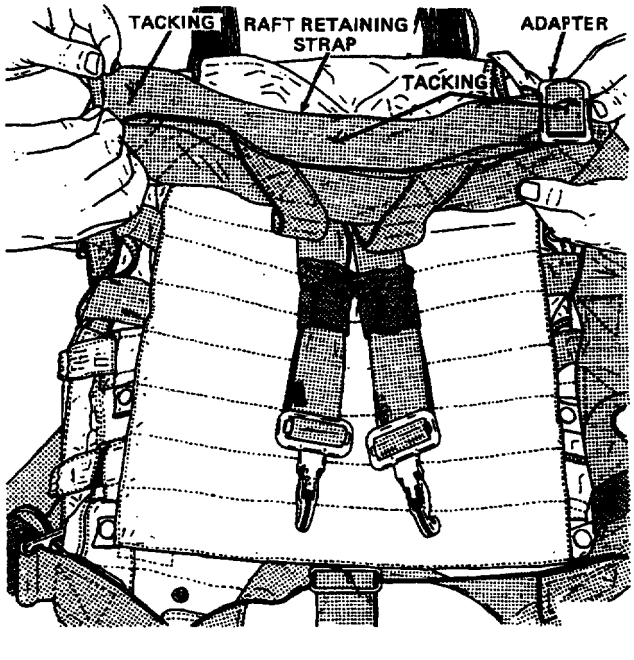


Figure 15. Reeve Raft Retaining Strap Completely Thru Strap Adapter

an. Tack raft retaining strap at adapter by passing one turn of size 6 thread, single and waxed, around each side of adapter center bar and thru retaining straps tie off (Figure 15).

ao. Tack both raft retaining straps together at center, thru main sling, with one turn of size 6 thread, single and waxed; tie off (Figure 15).

ap. Attach ripcord pocket to harness per WP 004 00.

aq. Attach ripcord housing per WP 004 00.

ar. If installed, attach survival kit by reeving leg straps thru keepers on SSP and then up thru slot in seat cushion or seat pan, as applicable.

as. Mark date placed in service on identification and service life label. (QA)

14. CONTAINER ASSEMBLY REPAIRS.

15. REPLACEMENT OF CLAMP BASE ASSEMBLY AND/OR LOCKING CONE ON CONTAINER TOP FLAP.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
60A113C16-1	Base Assembly, Clamp
	or-
60A113C24-1	Cone, 0.410 Grip

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Cut and remove stitching retaining base assembly and locking cone from top flap. Remove base assembly and locking cone.

b. If base assembly is to be replaced, remove clamp and screws and retain for reinstallation. If locking cone is to be replaced, leave clamp with ripcord housing/power cable housing attached to base assembly.

c. Using a sufficient length of size 6 thread, doubled and waxed, to complete repair, tie a binder knot 3 to 4-in. from end of thread for tie off when stitching is complete.

d. Position replacement base assembly/locking cone in exact location of damaged or missing base assembly/locking cone. Ensure that ripcord locking pin hole is aligned in same direction as that removed.

e. Start handstitching from inside of container at widest end of base assembly, using a running stitch thru each hole in the base assembly and applicable holes in locking cone. Stitch to last hole in sequence; then stitch back around base assembly to starting hole. Tie off; Trim ends 1/2-in.

f. If base was replaced, reinstall clamp and ripcord housing/power cable housing.

16. REPLACEMENT OF SLIDE FASTENER ON PARARAFT FLAP ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
814AS807-1	Slide Fastener

a. Carefully remove stitching holding damaged slide fastener to pararaft flap assembly.

b. Place replacement slide fastener on pararaft flap assembly in same position as one removed.

c. Starting with bottom end of slide fastener, align slide fastener tape flush with edge of flap assembly and sew with 3 rows of stitching about 1/8-in. apart.

d. At top stop end of slide fastener remove any excess tape and sear.

17. REPLACEMENT OF CONTAINER.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
PIA-C-5040	Nylon, Cord, Type III

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove tackings and survival kit if installed.

b. If survival kit is not attached, remove raft retaining strap tackings

c. Remove backpad.

d. Remove ties securing shoulder tabs to harness web loops.

e. Remove tacking on harness keeper straps.

f. Remove all harness keeper straps from adapters and then remove harness from container.

g. Remove ripcord housing.

h. Inspect replacement container per WP 013 02.

i. Attach container to harness per Paragraph 13.

j. Mark date placed in service on container. Mark data on parachute assembly label from old container. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

k. Reeve free end of ripcord housing thru shoulder tab sleeve.

l. Clamp ripcord housing to base plate using single housing clamp.

m. Attach ripcord housing.

n. If installed, attach survival kit by reeving leg straps thru keepers on SSP and then up thru slot in seat cushion or seat pan.

18. REPLACEMENT OF STANDARD SOFT PACK (SSP) AND SEAT CUSHION.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

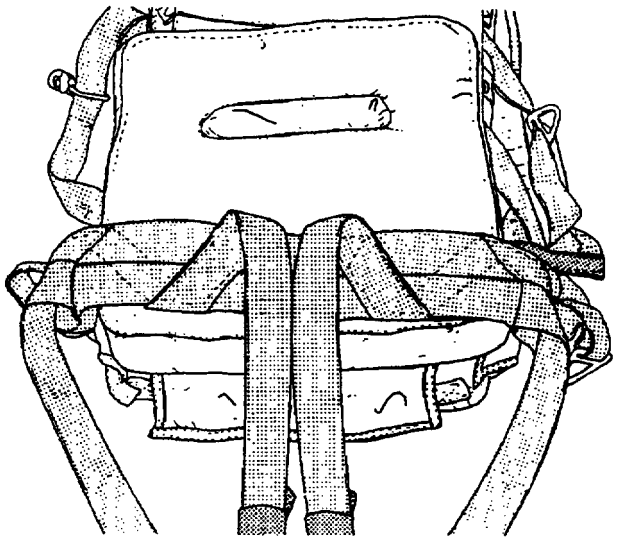
a. Remove combination carrying case and equipment container from SSP outer container.

b. Remove all tackings and unreeve harness retaining straps and leg straps. Remove SSP and seat cushion.

c. Attach SSP and seat cushion to harness.

d. If necessary remove tackings from harness raft retaining strap and unreeve strap.

e. Position packed assembly on packing table with back pad facing up. Slide seat cushion between harness main sling and back pad with slot turned toward top of parachute container (Figure 16).



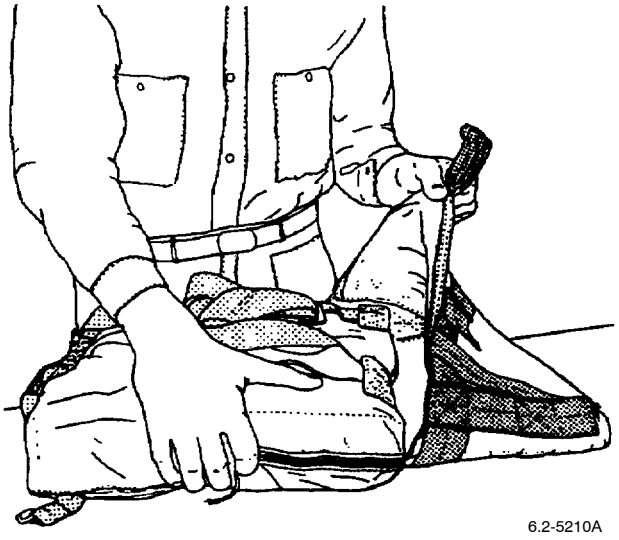
6.2-5210

Figure 16. Positioning Packed Assembly

f. If installed, remove and discard the six Type III nylon cord ties from SSP outer container.

g. Turn SSP outer container over so that horizontal strap adapter faces up.

h. Position combination carrying case and equipment container on packing table with shoulder straps facing up. Insert combination carrying case and equipment container into SSP outer container. Carrying case and equipment container strap handle must be positioned at open end of outer container (Figure 17).



6.2-5210A

Figure 17. Positioning Combination Carrying Case

i. Pull outer container main panels over combination carrying case and equipment container. Secure vertical strap quick-disconnect shackle outside of strap handle. Reeve horizontal and vertical straps snugly thru adapters.

j. Mark ends of vertical and horizontal straps at edge of each adapter (Figure 18).

6.2-5210B

Figure 18. Marking Vertical and Horizontal Straps

k. Disconnect vertical strap quick-disconnect shackle and remove combination carrying case and equipment container from outer container.

l. Adjust horizontal and vertical strap adapters to markings made in step j. Fold both straps under and tuck ends under each adapter. Tack folded under strap to strap beneath with one turn of size 6 thread, doubled and waxed; tie off (Figure 19).

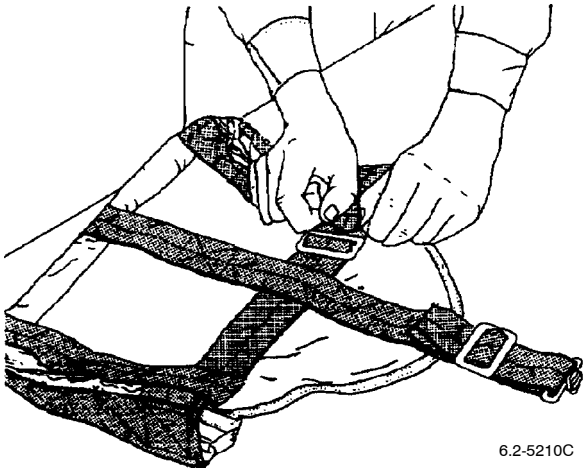


Figure 19. Adjust Horizontal and Vertical Strap

m. Insert combination carrying case and equipment container into outer container and fasten vertical strap quick-disconnect shackle.

n. Place SSP on packing table next to parachute container and pass leg straps thru keepers on SSP (Figure 20).

Figure 20. Pass Leg Straps Thru Keepers

o. Rotate SSP onto seat cushion and pass harness leg straps thru slot in seat cushion (Figure 21).

Figure 21. Rotate SSP onto Seat Cushion

p. Reeve raft retaining straps thru keepers on sides and top of SSP. Remove combination carrying case and equipment container from SSP outer container. Tack around center bar of raft retaining strap adapter with one turn size 6 thread, single and waxed; tie off. Tack center and end of retaining strap to SSP outer container with one turn of size 6 thread, single and waxed; tie off (Figure 22).

Figure 22. Reeve Raft Retaining Straps Thru Keepers

q. Insert combination carrying case and equipment container into SSP outer container.

r. Center-seat cushion slightly behind SSP quick-disconnect shackle. Mark SSP outer container main panel edges and seat cushion on each side of vertical strap for future tacking (Figure 23).

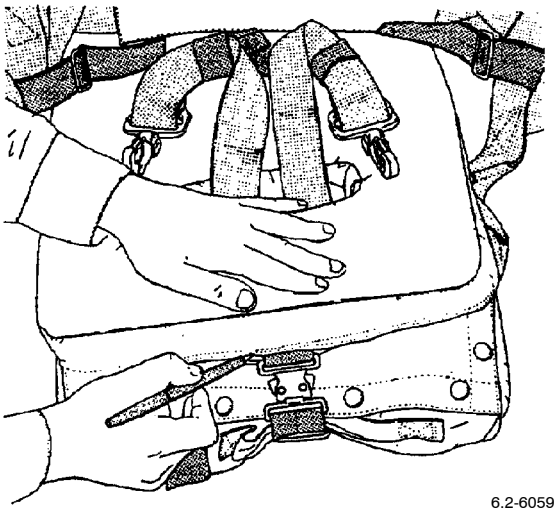


Figure 23. Center Seat Cushion Behind SSP

s. Remove combination carrying case and equipment container from SSP outer container.

t. Tack main panel edges to seat cushion at locations marked in step s, with one turn of size 6 thread, doubled and waxed; tie off. Note that when seat cushion is tacked, it will hang over back of SSP outer container (Figure 24).

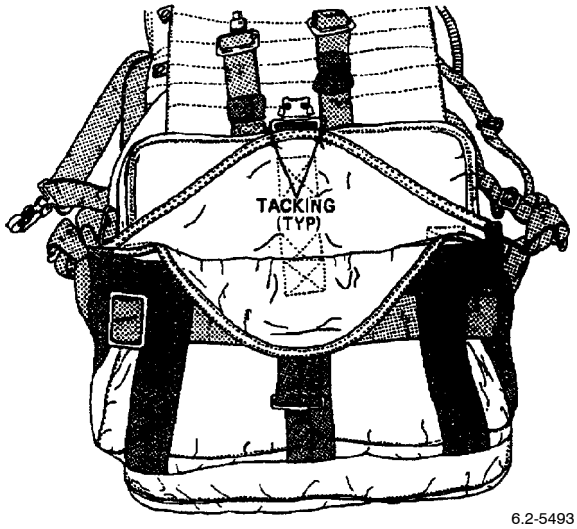


Figure 24. Tack Main Panel Edges

u. Tack four corners of SSP outer container to seat cushion using one turn of size 6 thread, doubled and waxed; tie off. If necessary, compress seat cushion slightly to stitch rear corner tackings. Insert combination carrying case and equipment container. Ensure that quick-disconnect shackle is fastened (Figure 25). (QA)

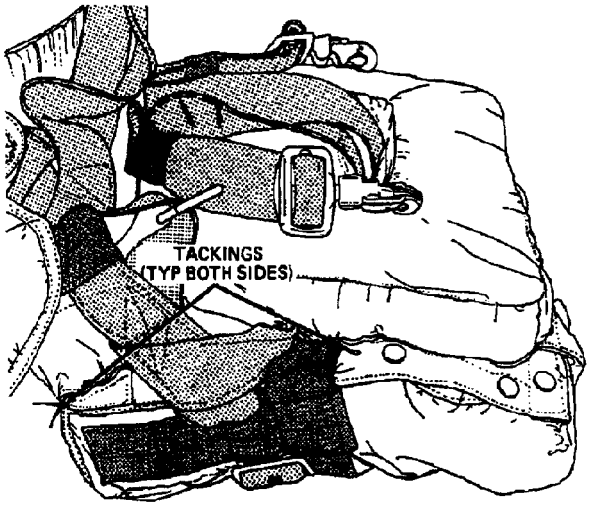


Figure 25. Tack Four Corners

19. REPLACEMENT OF SP1A SEAT PAN AND SSP (IF REQUIRED).

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. If necessary remove tackings from harness raft retaining strap and unreeve strap.

b. Position packed assembly on packing table with backpad facing up. Slide seat cushion between harness main sling and back pad with slot turned toward top of parachute container (Figure 26).

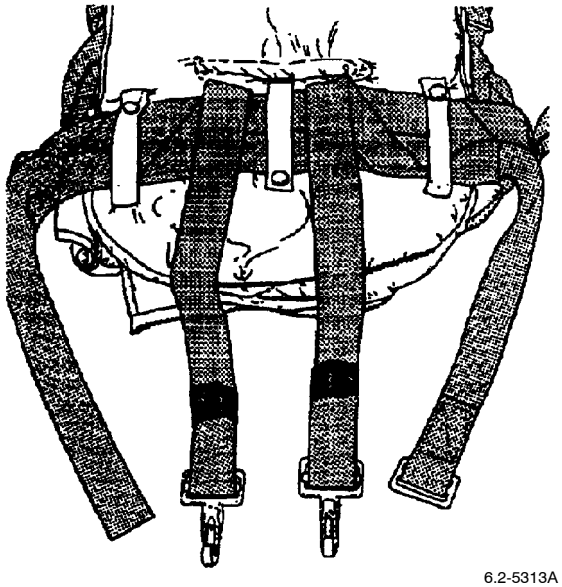


Figure 26. Position Packed Assembly

c. If installed, remove and discard the six Type III nylon cord ties from SSP outer container

d. Turn SSP outer container over so that the horizontal strap adapter faces up.

e. Position combination carrying case and equipment container on packing table with shoulder straps facing up. Insert combination carrying case and equipment container into SSP outer container. Carrying case and equipment container strap handle must be positioned at open end of outer container (Figure 27).

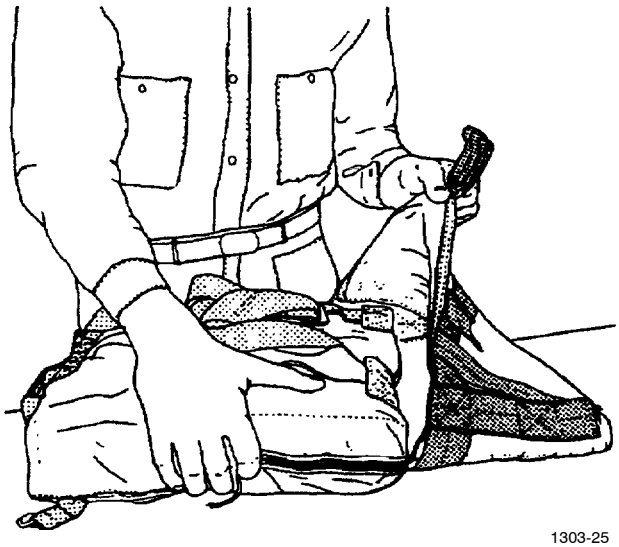


Figure 27. Positioning Combination Carrying Case

f. Pull outer container main panels over combination carrying case and equipment container. Secure vertical strap quick-disconnect shackle outside of strap handle. Reeve horizontal and vertical straps snugly thru adapters.

g. Mark ends of vertical and horizontal straps at edge of each adapter (Figure 28).

Figure 28. Marking Vertical and Horizontal Straps

h. Disconnect vertical strap quick-disconnect shackle and remove combination carrying case and equipment container from outer container.

i. Adjust horizontal and vertical strap adapters to markings made in step g. Fold both straps under and tuck ends under each adapter. Tack folded under strap to strap beneath with one turn of size 6 thread, doubled and waxed; tie off (Figure 29).

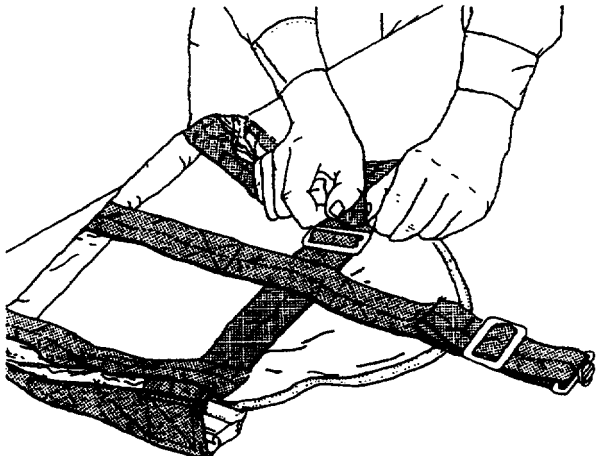


Figure 29. Adjust Horizontal and Vertical Strap

j. Insert combination carrying case and equipment container into outer container and fasten vertical strap quick-disconnect shackle.

k. Place SSP on packing table next to parachute container and pass leg straps thru keepers on SSP (Figure 30).

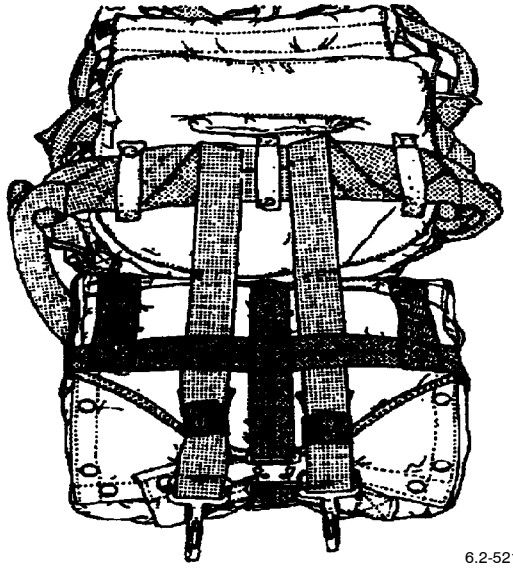


Figure 30. Place SSP on Table

l. Rotate SSP onto seat cushion and pass leg straps thru slot in seat pan (Figure 31).

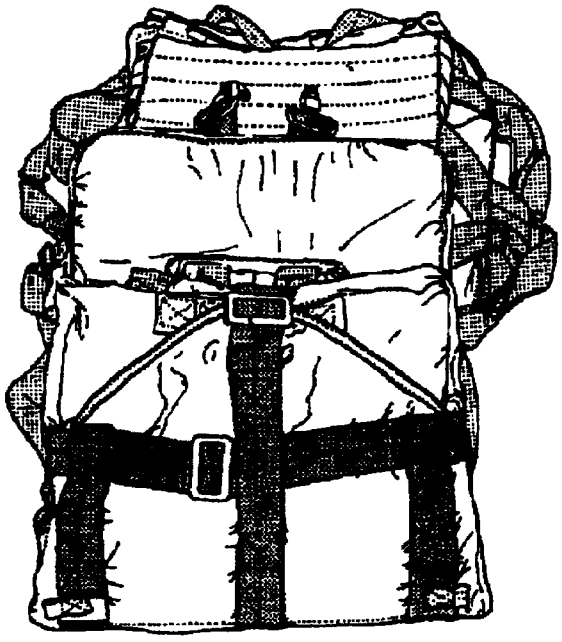


Figure 31. Rotate SSP

m. Reeve raft retaining straps thru keepers on sides and top of SSP. Remove combination carrying case and equipment container from SSP outer container. Tack around center bar of raft retaining strap adapter with one turn of size 6 thread, single and waxed; tie off. Tack center and end retaining strap to SSP outer container with one turn of size 6 thread, single and waxed; tie off (Figure 32).

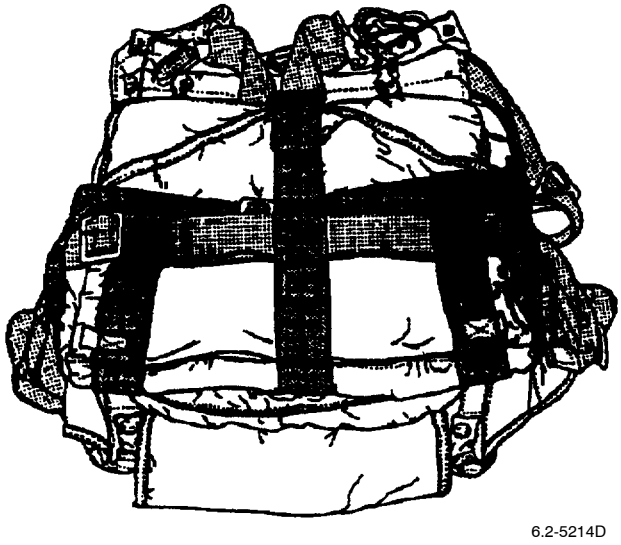


Figure 32. Reeve Raft Retaining Straps

n. Insert combination carrying case and equipment container into SSP outer container.

o. Center-seat pan slightly behind SSP quick-disconnect shackle. Mark SSP outer container main panel edges and seat pan on each side of vertical strap for future tacking (Figure 33).

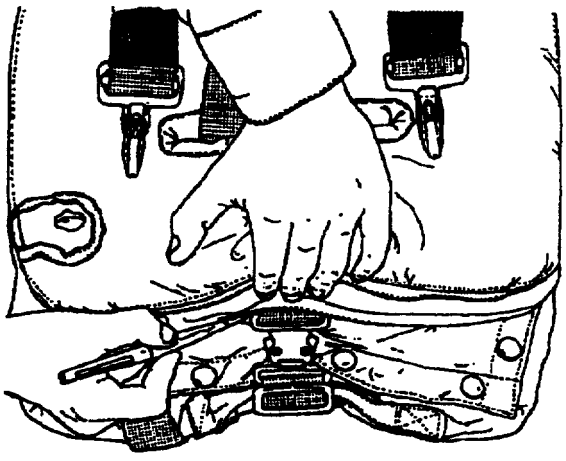


Figure 33. Center-Seat Pan

p. Remove combination carrying case and equipment container from SSP outer container.

q. Tack main panel edges to seat cushion at locations marked in step o, with one turn of size 6 thread, doubled and waxed; tie off. Note that when seat cushion is tacked, it will hang over back of SSP outer container (Figure 34).

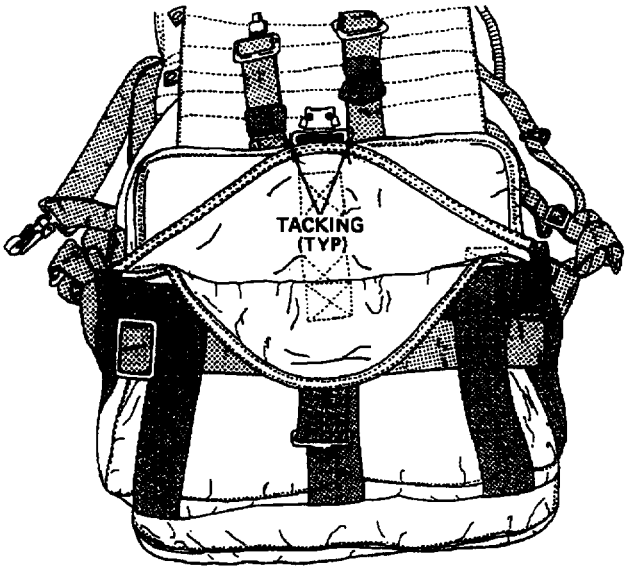


Figure 34. Tack Main Panel Edges

r. Tack four corners of SSP outer container to seat pan one turn of size 6 thread, doubled and waxed; tie off. If necessary, compress seat cushion slightly to stitch rear corner tackings. Insert combination carrying case and equipment container. Ensure that quick-disconnect shackle is fastened (Figure 35). (QA)

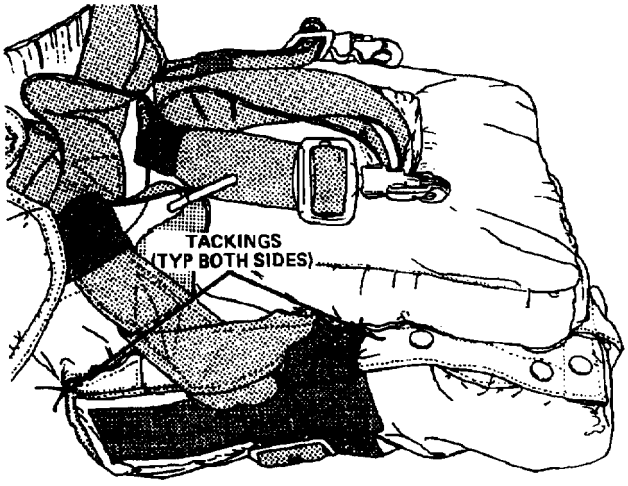


Figure 35. Tack Container to Cushion

20. BACKPAD REPAIRS.

a. Repair of backpad is limited to following:

(1) Cleaning contaminated areas per WP 004 00.

(2) Replacement of snap fasteners per WP 004 00.

(3) Repair of holes, tears, and loose or broken stitching per WP 004 00.

b. Replace backpad for any holes, tears, or other damage deemed beyond repair.

21. AUTOMATIC PARACHUTE RIPCORD RELEASE.

22. REPAIR OF ARMING CABLE END FITTING.

Support Equipment Required

Part Number	Nomenclature
DPP-50	Scale, Spring
---	Pliers, Common

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon Type I or IA

a. Adjust retaining clips by placing pliers around retaining clips and applying uniform pressure. Ensure that retaining clips are not distorted.

b. Retest arming cable removal per WP 013 02.

c. Using a straight steady pull, observe amount of pull required to remove end fitting from arming cable housing. Allowable force is 17 ± 3 lbs.

23. REPLACEMENT OF AUTOMATIC PARACHUTE RIPCORD RELEASE.

WARNING

The ripcord release shall be thoroughly inspected and in operational condition before being installed.

a. Remove dual housing clamp securing ripcord housing and power cable housing (Figure 36).

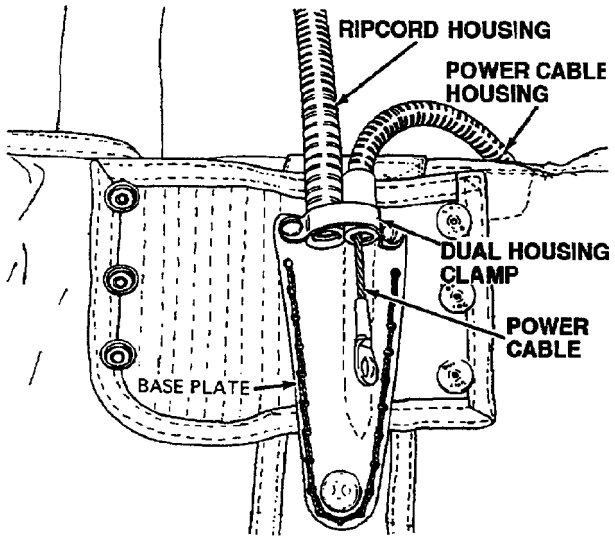


Figure 36. Attachment of Ripcord Release Power Cable and Manual Ripcord Housing to Base Plate

b. Remove ripcord release from container.

c. Inspect replacement ripcord release per WP 013 02.

d. Insert ripcord release arming cable housing thru housing buttonhole in left side of release pocket and then thru buttonhole on left side of container. There should be no slack in housing between buttonhole and release pocket (Figure 37).

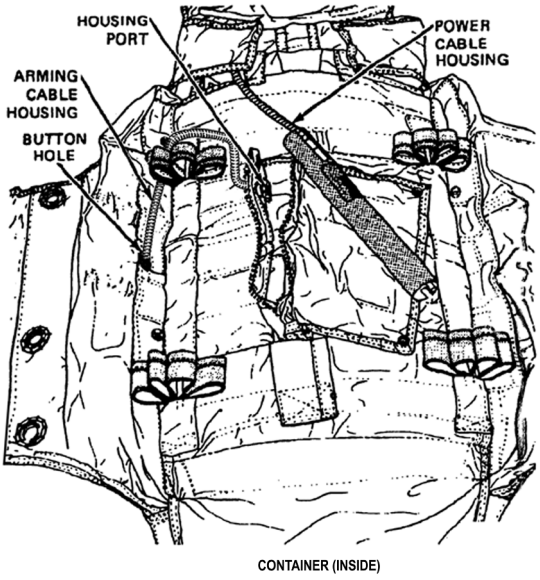


Figure 37. Attachment of Ripcord Release Arming and Power Cable Housing to Container

e. Position power cable housing so it exits container thru left riser slot on top end flap.

f. Clamp one end of manual ripcord housing and free end of power cable to base plate using double clamp. Power cable housing shall be on left side of base plate. One flat side of power cable housing shall face ripcord housing and other flat side shall face base plate (Figure 36).

24. REPLACEMENT OF RIPCORD RELEASE ARMING CABLE HOUSING TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove tacking securing housing to container.

WARNING

Ensure that canopy does not become pierced when tacking housing to container.

b. Tack arming cable housing to inside of container at a point 5-in. from buttonhole with three turns of size 6 thread, diubled and waxed; tie off (Figures 38 and 50).

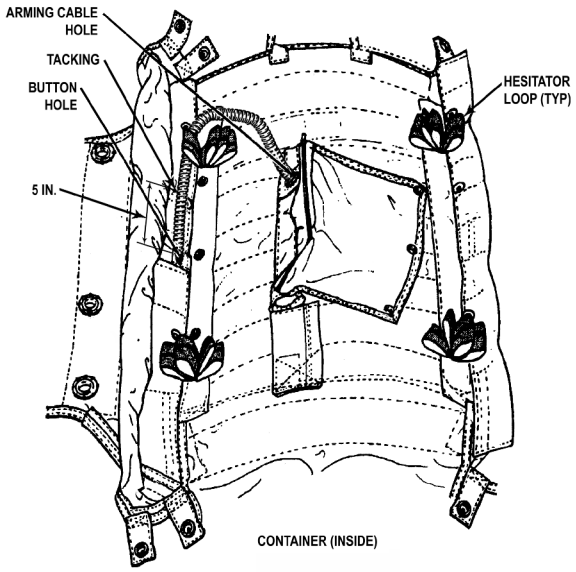


Figure 38. Tacking of Arming Cable Housing to Inside of Container

25. FABRICATION OF LANYARD ASSEMBLY P/N 812AS100-1D.

Support Equipment Required

Part Number	Nomenclature
DPP-50	Scale, Spring

Materials Required

Specification or Part Number	Nomenclature
711-07026	Cable, Arming
MIL-C-7219	Cloth, Nylon, Type III, Class 3
MS27756	Hook, Snap
78AS100-4	Plate (2)
MS20470DD2-3	Rivet, Solid (4)
V-T-295	Thread, Nylon, Size A, Type I or II, Class A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MIL-W-5625	Webbing, Textile Nylon Tubular, 1/2-in. Width (1000 lb Breaking Strength)

a. Clamp one end of webbing to a suitable table and extend about 8 ft. Tie a bowline knot to which a spring scale is attached. Apply 5 lbs. of tension for 15 to 20 sec: mark at four places as indicated in Figure 39.

WARNING

Do not allow hot drippings or ends of nylon webbing to come in contact with skin or clothing.

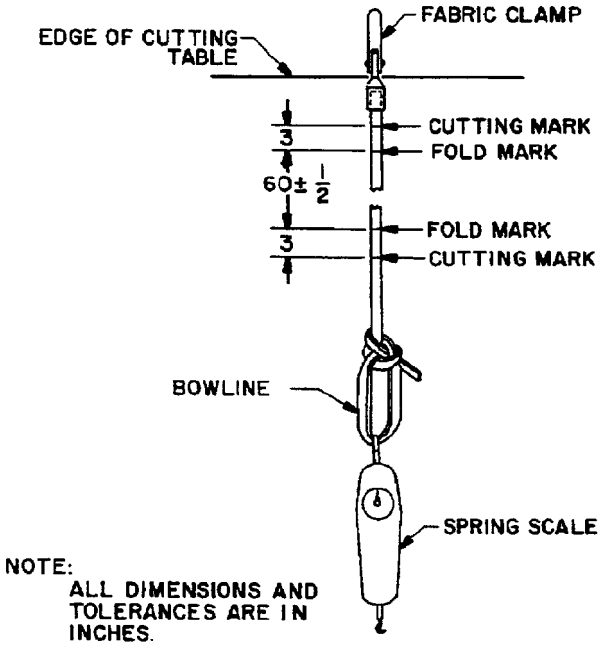


Figure 39. Measuring and Cutting Lanyard Webbing

b. Cut and sear tubular nylon webbing using a hot wire or a hot knife. Avoid forming sharp edges while hot knifing and searing.

c. Cut two lengths of nylon cloth, 1 1/2 by 6-in. to be used as chafing cover for lanyard.

d. Using size E thread, machine stitch a 1 1/2 by 6-in. length of nylon cloth (chafing cover) to tubular nylon webbing (lanyard) at both ends (Figure 40).

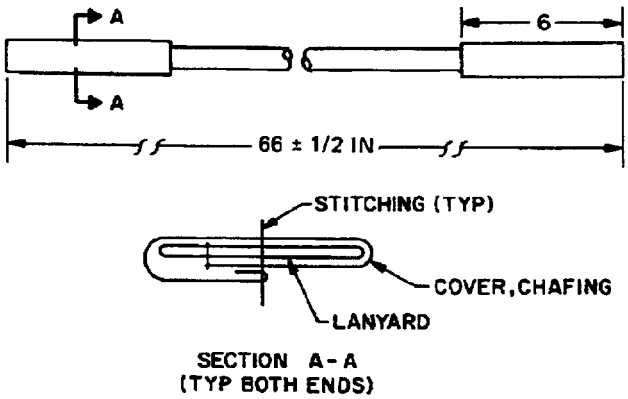


Figure 40. Machine Stitch

e. Thread chafing cover and lanyard thru end fitting (P/N 782AS100-1), temporarily tack in place with size A thread, and then machine stitch using a 3 point cross stitch pattern (Figure 41).

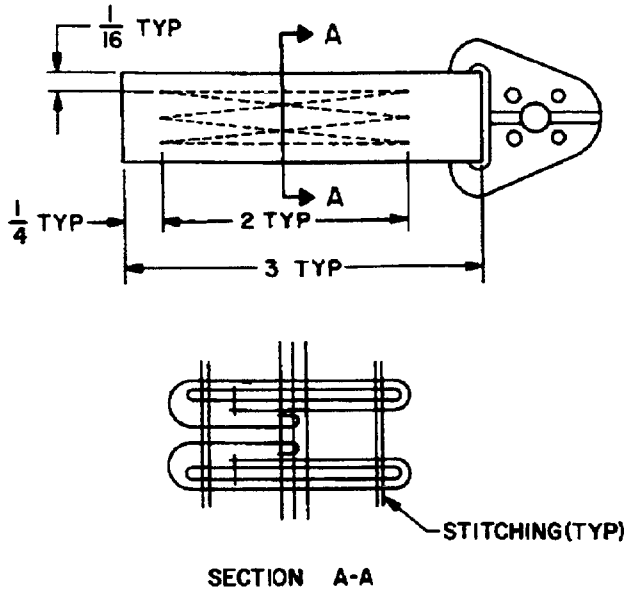


Figure 41. Thread Chafing Cover and Lanyard

f. Thread opposite end of lanyard thru eye in snap hook. Temporarily tack in place with size A thread, and then machine stitch using a 3 point cross stitch pattern (Figure 42).

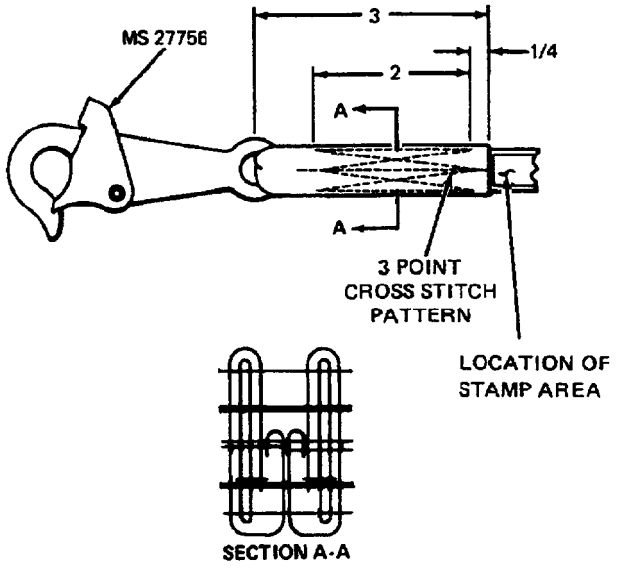


Figure 42. Thread Opposite End of Lanyard

g. Rubber stamp in 1/4-in. characters along long axis of lanyard the following information:

Part Number 812AS100-1D
Date of Manufacture_____
Date Placed in Service

h. Install arming cable into plates; rivet together in four places (Figure 43).

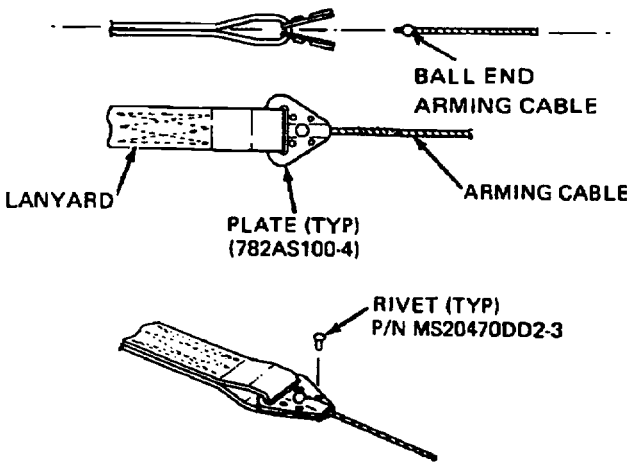


Figure 43. Install Arming Cable

26. FABRICATION OF LANYARD STOWAGE POCKET.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MIL-F-21840	Fastener Tape, Hook, 1/2-in. Wide, 5-in. Long
MIL-F-21840	Fastener Tape, Pile, 1/2-in. Wide, 5-in. Long
PIA-W-4088	Webbing, Nylon, Type VIII, 11-in. Long, Class 1, 1A, or 2
PIA-T-5038	Wenning, Textile, Nylon, 1-in. Wide, 7-in. long, Type IV
PIA-T-5038	Wenning, Textile, Nylon, 1 1/2-in. Wide, 5-in. long, Type IV

a. Measure and mark nylon webbing (Figure 44).

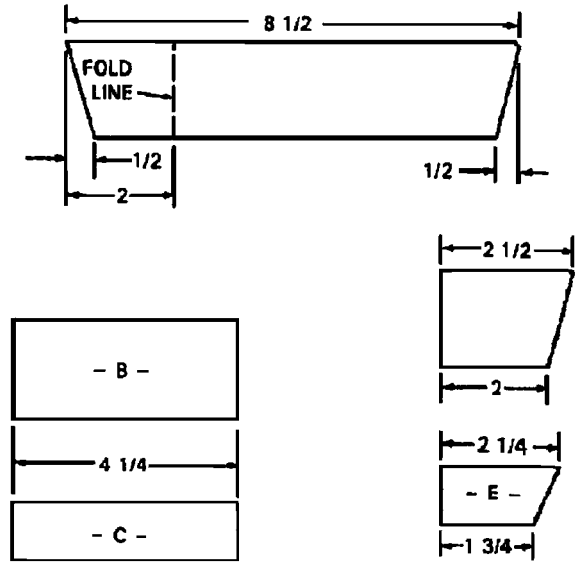


FIgure 44. Measure and Mark

b. Cut a 4 1/4-in. length of 1/2-in. wide hook and pile fastener tape and attach the pile tape to piece B and the hook tape to piece C. Sew with size E thread (Figure 45).

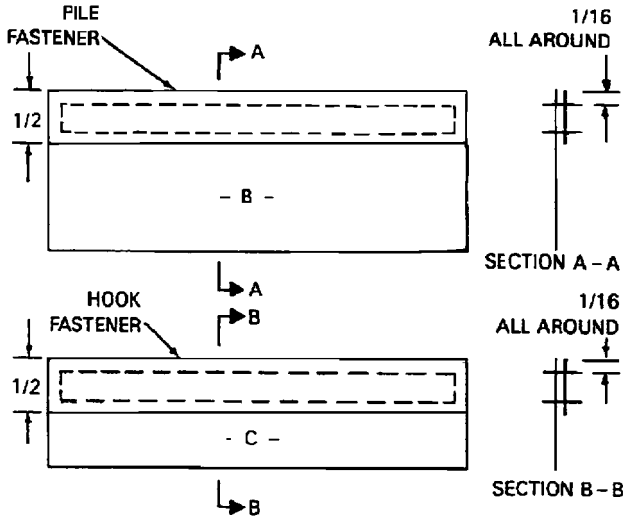


Figure 45. Cut Hook and Pile Tape

c. Position pieces B and C on fold line of piece A with the pile tape of piece B facing up and the hook tape of piece C facing down. Attach these pieces to piece A. Sew with size E thread (Figure 46).

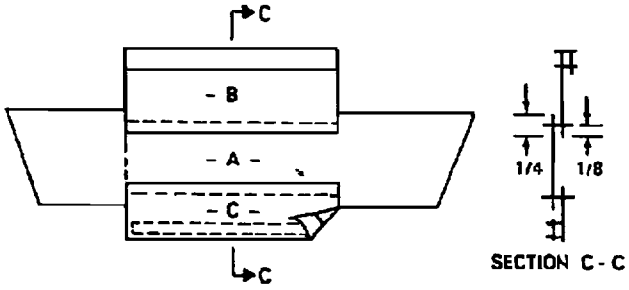


Figure 46. Position Pieces B and C

d. Place piece E on top of piece D and sew with size E thread, to form a channel (Figure 47).

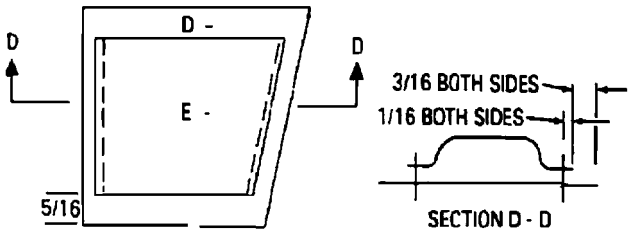


Figure 47. Place Piece E on Top of Piece D

e. Place the newly constructed piece D on top of piece A and stitch 1/8-in. from the edges of piece A with size E thread to form another channel (Figure 48).

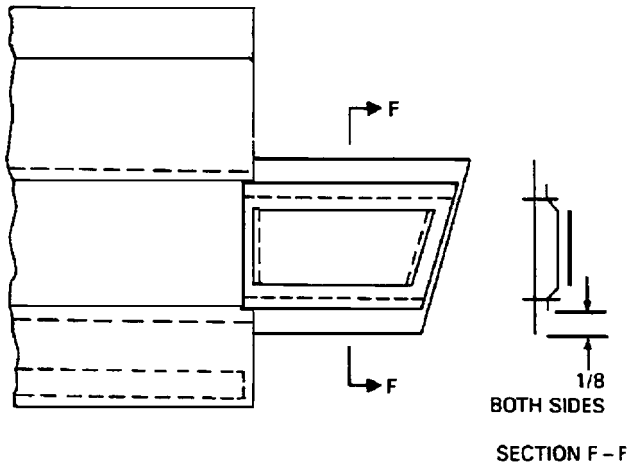


Figure 48. Place Constructed Piece D on Top of Piece A

f. Fold opposite end of piece A under itself at fold line marked earlier and stitch with two rows of size E thread to form another channel (Figure 49).

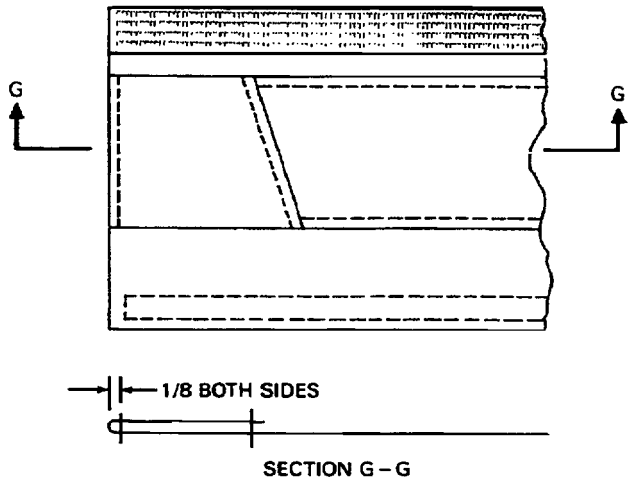


Figure 49. Fold End of Piece A Under Itself

27. INSTALLATION OF LANYARD STOWAGE POCKET.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Route arming cable housing on inside of parachute container by inserting it thru channel under hesitator loops and thru side of buttonhole. Position end of housing so that it extends 4-in. from outside of buttonhole (Figure 50).

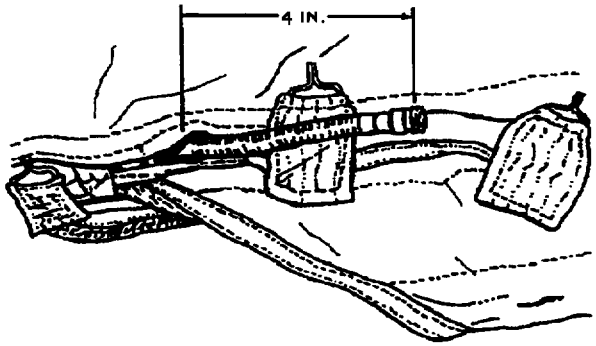


Figure 50. Route Arming Cable Housing

b. Route terminal end of arming cable assembly thru the lowermost channel of the stowage pocket. Tack arming cable housing to stowage pocket where housing exits channel with three turns of size 6 thread, doubled and waxed: tie off (Figure 51).

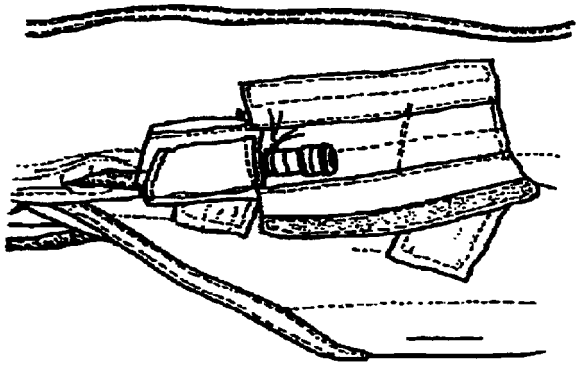


Figure 51. Route Terminal End of Arming Cable Housing

28. STOWAGE OF LANYARD.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Pack parachute assembly per WP 013 02.

b. Attach spring opening assemblies on left side of container. Route the second spring opening assembly from bottom thru uppermost channel on stowage pocket. Route bottom spring opening assembly thru lower channel provided on stowage pocket (Figure 52).

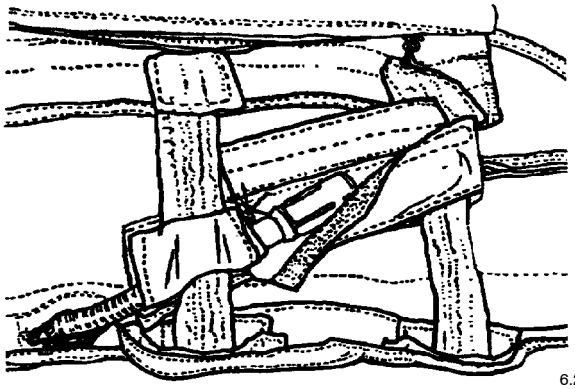


Figure 52. Attach Spring Opening Assemblies

c. Tack base of stowage pocket to bottom spring opening assembly about 3-in. from hook with three turns of size 6 thread, doubled and waxed; tie off (Figure 53).

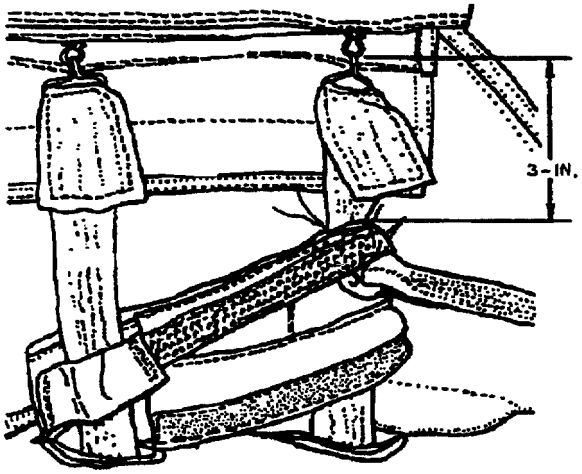


Figure 53. Tack Base of Stowage Pocket

d. Tack lanyard assembly plate to upper flap of stowage pocket with one turn of size E thread, single and waxed; tie off (Figure 54).

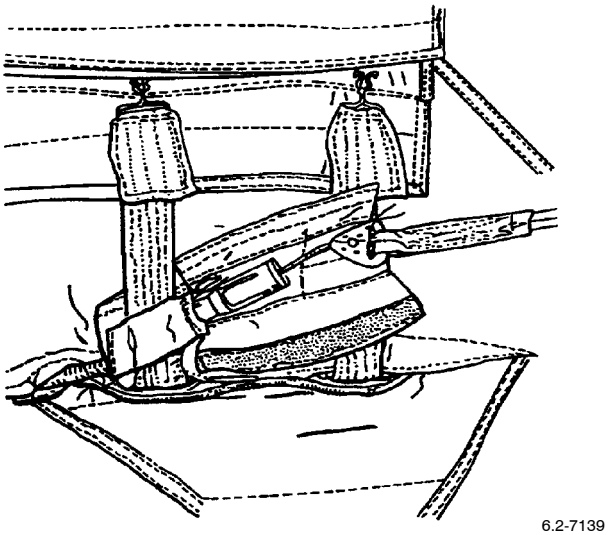


Figure 54. Tack Lanyard Assembly Plate

e. Fake lanyard assembly in stowage pocket and close by securing the pile tape on bottom flap with hook tape on top flap (Figure 55).

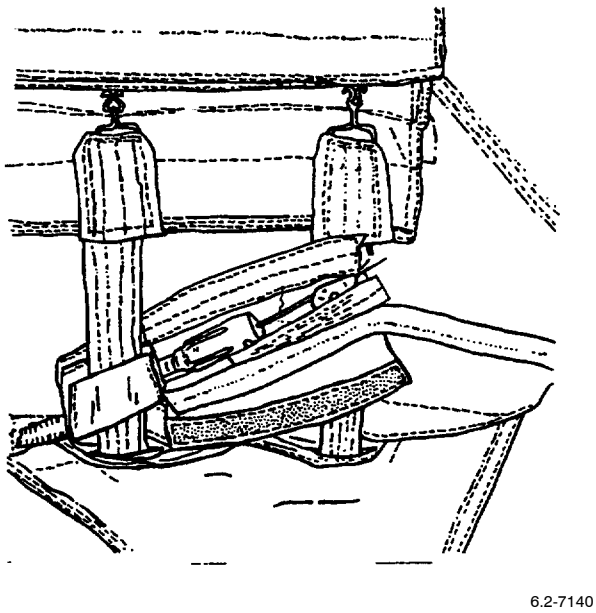


Figure 55. Fake Lanyard Assembly in Stowage Pocket

f. Prepare to stow ripcord release lanyard assembly in container by first laying it out on packing table and removing all twists. Then form a bight in lanyard 36-in. from eye of snaphook.

g. Using a draw cord, stow first bight into flute closest to stowage pocket. Draw a bight from bottom to top of container and adjust it so 18 ± 2-in. of lanyard remain between bottom of flute and eye of snaphook (Figure 56).

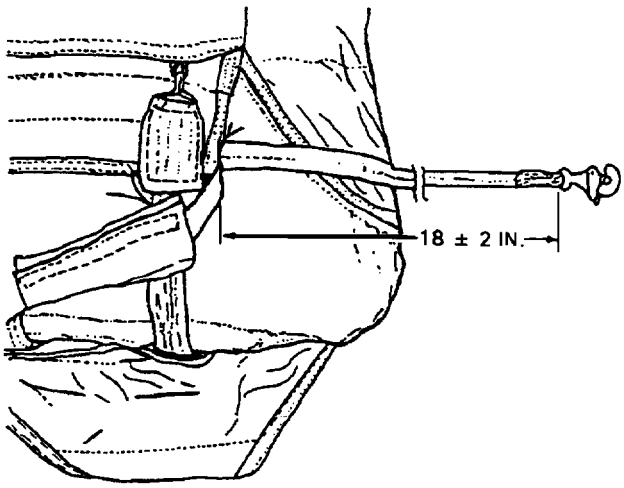


Figure 56. Stow First Bight into Flute

h. Tack lanyard to bottom of flute with one turn of size E thread, single and waxed; tie off.

29. INSTALLATION OF BACKPAD PILE FASTENER TAPE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MIL-F-21840	Fastener Tape Pile, 2-in. wide, Type II, Class 1

a. Mark a horizontal line 2-in. from the bottom of the back pad.

b. Align one of the 14-in. pieces of pile fastener tape with the 2-in. mark and sew together using size E thread. Sew the remaining pieces of pile fastener tape to the back pad above the first piece (Figure 57).

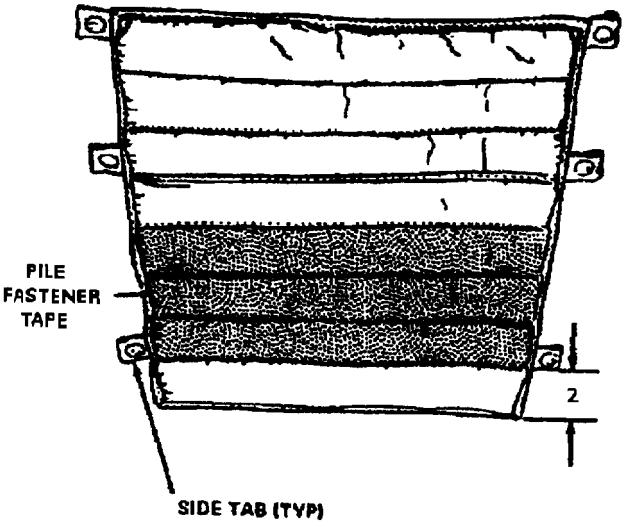


Figure 57. Alignment of Pile Fastener Tape

c. Reidentify backpad as 60A113D6-8.

30. REPLACEMENT OF MS22021-1 CONNECTOR LINK (SPEED LINK) WITH MS22002-1 (DOUBLE "L") CONNECTOR LINK.

NOTE

New canopies received from supply may have the Double 'L" Connector Links installed.

Instructions for attachment of Firing Lanyards, PDVL's, Four-Line Release Systems, etc., will remain the same and will be contained in the application parachute manual.

Materials Required

Specification or Nomenclature	Part Number
MS22002-1	Connector Link (Double "L")
F-900 Torque Seal (Color Optional)	Sealing Compound
—	Torque Screwdriver
MIL-S-43243 (See WP 002 00)	Separator, Link or Equivalent

a. Remove yoke and plate assembly from parachute connector link, P/N MS22021-1.

b. Slide suspension lines from connector link onto a temporary locking pin or rod.

c. Remove cross-connector strap.

d. Slide riser loop off connector link bar and dispose of connector link, P/N MS22021-1.

e. Remove screws from the double "L" connector link, P/N MS22002-1 and separate the two halves of the link.

f. It may be necessary to use a separator device to separate the two halves of the connector link if a separator device is not available, loosen both screws of the connector link by four turns. Place a long bar between the connector link bars to hold the link in place. Using a rawhide or rubber mallet, tap one screw head and then the other screw head several times until the connector link bars separate.

g. Install suspension lines on the new connector link bar. The short leg of the "L" connector is to be positioned to the inside (Figure 58).

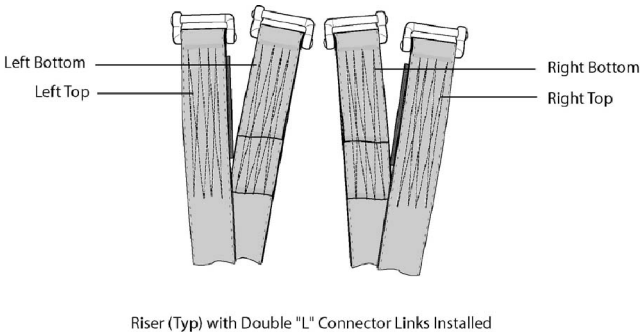


Figure 58. Double "L" Connector Link Layout

h. Install cross-connector strap.

i. Slide riser loop onto opposite connector link bar.

j. Mate both halves of the connector link together.

k. Install screws (2 each).

NOTE

Screws must make a minimum of 6 full turns prior to applying torque.

l. Check suspension line continuity. (QA)

m. Tighten screws to a torque value of 15 in-lbs. (QA)

WARNING

Care must be taken when tightening screws as screwdriver may slip and cause minor injury.

NOTE

It may be necessary to check the torque value on each screw more than once due to the interference fit design feature of the connector link.

n. Apply torque seal to both screw heads and allow to dry before proceeding with remainder of parachute packing.

o. Repeat steps a through l on each riser group.

p. Re-identify the parachute canopy by using an indelible black pen to cross out the existing part number and marking the new superceding part number per Illustrated Parts Breakdown (IPB) WP 013 04.

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ORGANIZATIONAL, INTERMEDIATE AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

NB-8 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 569AS100-5, 569AS100-6, 569AS100-7 and 569AS100-8

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1	11	2 thru 7	9				

Reference Material

Intermediate and Depot Maintenance, Packing Procedures,
NB-8 Personnel Parachute Assembly ..... WP 013 02

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Title	Page
Introduction	1
Service/Total Life	1
Usable On Codes	1

List of Figures

Title	Page
NB-8 Personnel Parachute Assembly	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the NB-8 Personnel Parachute Assembly (Figure 1).

2. USABLE ON CODES.

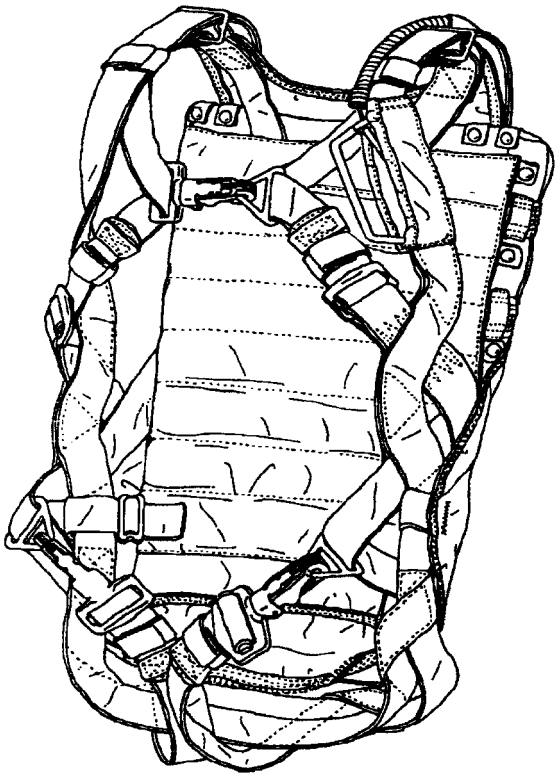
a. The usable on codes in this WP refer to the aircraft applications for the NB-8 Personnel Parachute Assembly.

b. The following usable on codes apply to this WP:

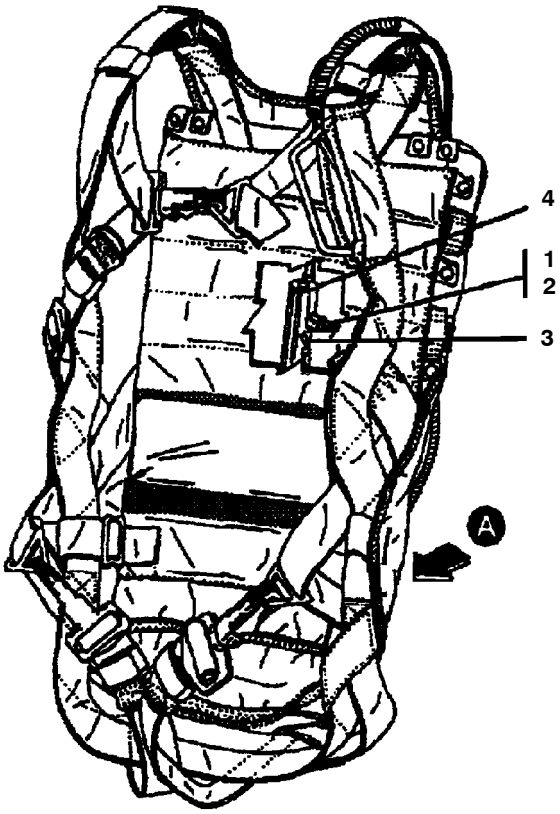
A, B – C-2, C-130, P-3, T-39
C, D – T-34

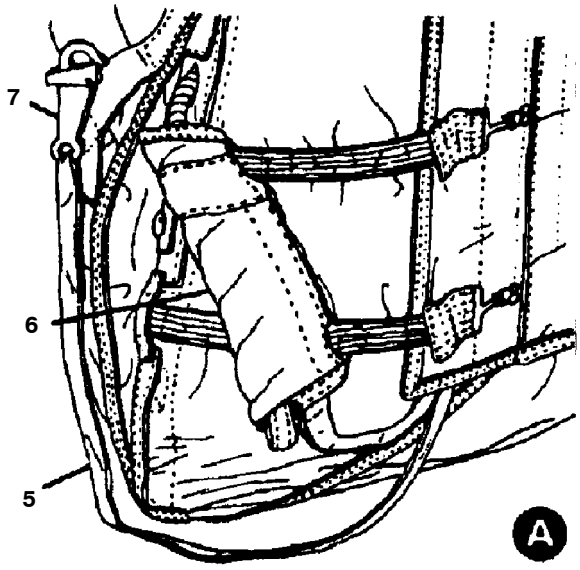
3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in WP 013 02.



-5, -6 ASSEMBLIES





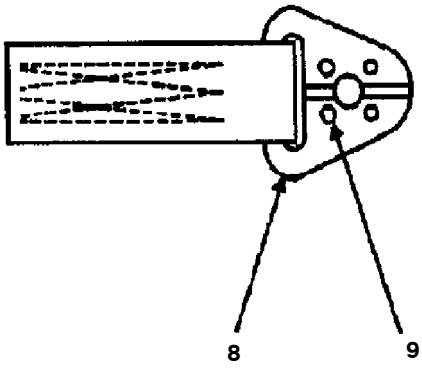


Figure 1. NB-8 Personnel Parachute Assembly (Sheet 1 of 6)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	569AS100-5	PARACHUTE ASSEMBLY, COMPLETE, NB-8	REF	A	AGOGG
	569AS100-6	PARACHUTE ASSEMBLY, COMPLETE, NB-8	REF	B	AGOGG
	569AS100-7	PARACHUTE ASSEMBLY, COMPLETE, NB-8	REF	C	AGOGG
	569AS100-8	PARACHUTE ASSEMBLY, COMPLETE, NB-8	REF	D	AGOGG
1	711-07025	. HOUSING, ARMING CABLE /52497/	1	C,D	PAGZZ
2	711-07026	. CABLE, ARMING /52497/	1	C,D	PAGZZ
3	2519704	. CARTRIDGE, DELAY, MK 5 MOD 2 (M284)	1	C,D	PCGZA
4	711-07022-34	. RELEASE, AUTOMATIC PARACHUTE ..... RIPCORD, MOD 7000 /52497/	1	C,D	PAGDD
	711-07022-30	. RELEASE, AUTOMATIC PARACHUTE ..... RIPCORD, MOD 7000 /52497/ (USE UNTIL EXHAUSTED)	1	C,D	PAGDD
5	813AS100-1	. LANYARD ASSEMBLY	1	C,D	PCGZZ
6	60A113P51-1	. STOWAGE POCKET, ARMING CABLE		C,D	PAGZZ
7	MS27756	. . SNAPHOOK, PARACHUTE LANYARD	1		PAGZZ
8	782AS100-4	. . PLATE	2	C,D	PAGZZ
9	MS20470DP2-3	. . RIVET, SOLID	4	C,D	PAGZZ
10	60A125E16-1	. PARACHUTE ASSEMBLY, PLOT ..... /SEE NOTE 2/	1		PCGGG
11	666AS100-1	. . STRAP, PILOT PARACHUTE CONNECTOR ..	1		PCGZZ
12	60A113E5-18	. CANOPY ASSEMBLY	1	*	PCGGG
	60A113E5-20	. CANOPY ASSEMBLY (WITH DOUBLE "L" .... CONNECTOR LINK INSTALLED)	1	*	PCGGG
13	MS22021-2	. . LINK, REMOVABLE CONNECTOR	4	*	PAGZZ
	MS22002-1	. . CONNECTOR LINK (DOUBLE "L")	4	*	PAGZZ
14	666AS101-2	. . LANYARD, FOUR LINE RELEASE	2		MGGZZ
14A	830AS100-1	. CHEST STRAP EXTENDER ..... (AS REQUIRED)	1		MGGZZ
15	60A113E3-14	. HARNESS ASSEMBLY, REGULAR	1	A,C	MGGZZ
	60A113E4-14	. HARNESS ASSEMBLY, OVERSIZE	1	B,D	PCGGG
16	676AS100-1	. . LABEL	1		MDGZZ
17	MS22017-1	. . SNAP, PARACHUTE HARNESS ..... EJECTOR	1	*	PAGZZ
	68D37721-3	. . SNAP, PARACHUTE HARNESS EJECTOR ...	1		PAGZZ
18	MS22018-1	. . SNAP, PARACHUTE HARNESS ..... QUICK FIT EJECTOR	2		PAGZZ
19	MS22020-1	. . LINK, PARACHUTE HARNESS ..... TRIANGLE	3		PAGZZ
20	60A113E3-2	. . KEEPER STAP SUBASSEMBLY	6		MGGZZ
21	60A113D9-1	. . POCKET ASSEMBLY	1		MCGZZ
22	MS70104-6	. . HOUSING, RIPCORD	1		PAGZZ
23	666AS102-5	. . FLUTE, FOUR LINE RELEASE LANYARD ..	2		MGGZZ
24	60A113D7-1	. RIPCORD ASSEMBLY	1		PAGZZ
25	60A113D6-1	. PAD ASSEMBLY, BACK	1		PAGGG
26	MS27983-1	. . FASTENER, BUTTON	6		PAGZZ
27	MS27983-2	. . FASTENER, SOCKET	1		PAGZZ
27A	60A113D50-1	. LUMBAR PAD	1	C,D	PAOZZ

Figure 1. NB-8 Personnel Parachute Assembly (Sheet 2 of 6)

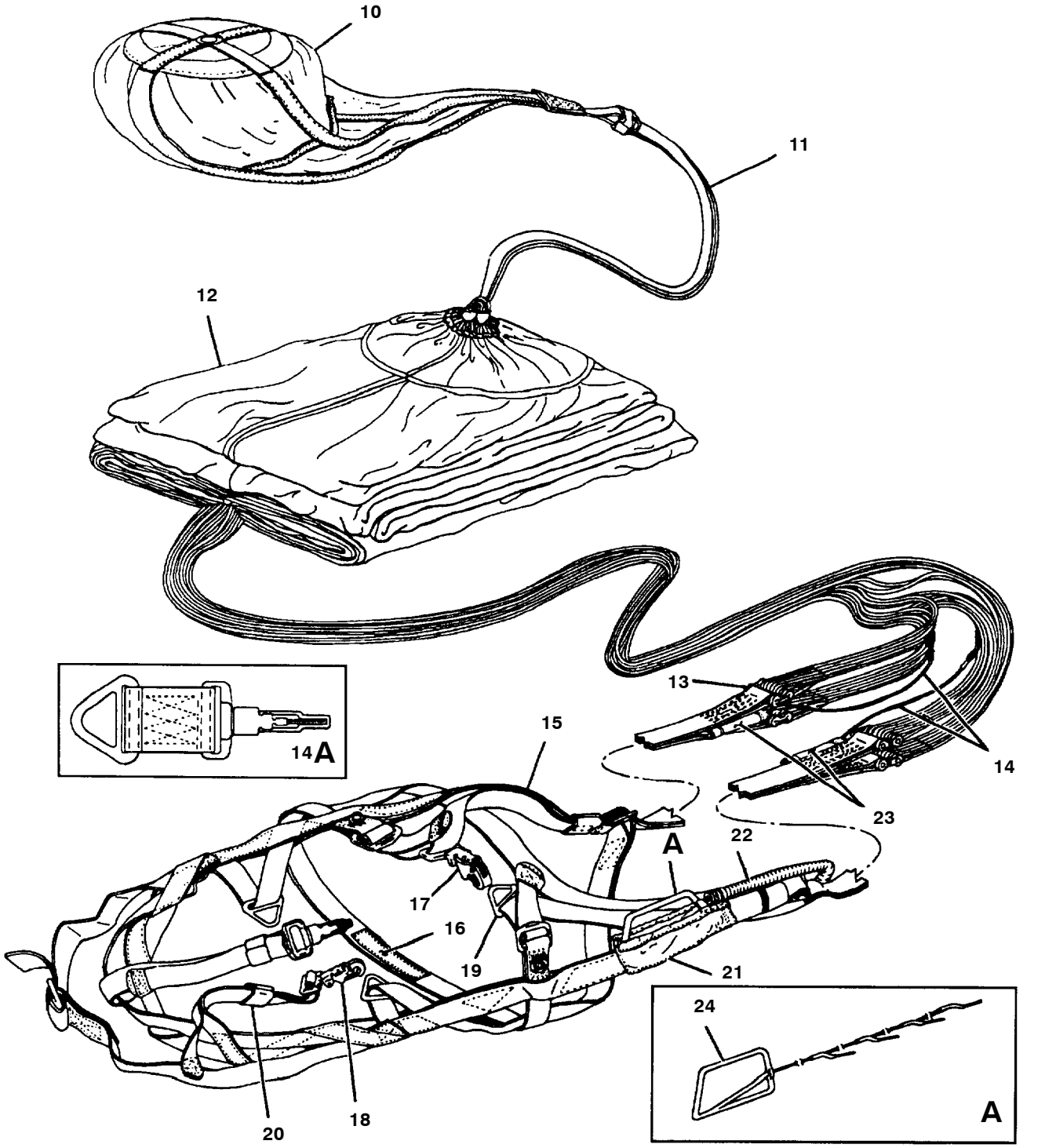


Figure 1. NB-8 Personnel Parachute Assembly (Sheet 3 of 6)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
28	60A113E2-51	. CONTAINER ASSEMBLY	1		PCGGG
29	676AS100-1	. . LABEL	1		MDGZZ
30	MS27980-10B	. . FASTENER, EYELET	6		PAGZZ
31	MS27981-4B	. . FASTENER, STUD	3		PAGZZ
32	MS27981-5B	. . FASTENER, EYELET	3		PAGZZ
33	60A113C24-1	. . CONE, 0.410 GRIP	1		PAGZZ
34	60A113D16-1	. . BASE, ASSEMBLY, CLAMP	1		PAGZZ
35	60A113C15-1	. . COVER ASSEMBLY	1		PAGZZ
36	MS27981-5B	. . . FASTENER, EYELET	3		PAGZZ
37	MS27981-4B	. . . FASTENER, STUD	3		PAGZZ
38	MS27981-1B	. . . FASTENER, BUTTON	3		PAGZZ
39	MS27981-3B	. . . FASTENER, SOCKET	3		PAGZZ
40	60A113C29-1	. . CLAMP, SINGLE CABLE	1	A,B	PAGZZ
40A	565AS102-1	. . CLAMP, DOUBLE /SEE NOTE 1/	1	C,D	PAGZZ
41	MS51957-44	. . SCREW	2		PAGZZ
42	60A113C19-1	. . STRAP ASSEMBLY	8		XAZGG
43	MS27983-1	. . . FASTENER, BUTTON	1		PAGZZ
44	MS27983-2	. . . FASTENER, SOCKET	1		PAGZZ
45	646AS100-1	. . PANEL ASSEMBLY, CONE/GROMMET	1		XAZGG
46	60A113C28-1	. . . EYE	4		PAGZZ
47	60A113C31-1	. . . CONE, 0.338 GRIP	1		PAGZZ
48	60A113C25-1	. . WASHER, GROMMET	3		PAGZZ
49	60A113C28-1	. . EYE	8		PAGZZ
50	MS22048GC1	. . GROMMET	3		PAGZZ
51	MS27983-3	. . FASTENER, STUD	14		PAGZZ
52	MS27980-8B	. . FASTENER, EYELET	8		PAGZZ
53	814AS807-1	. . FASTENER, SLIDE	1		PAGZZ
54	60A113C31-1	. . CONE, 0.338 GRIP	1		PAGZZ
55	585AS100-1	. . LABEL, PARACHUTE ASSEMBLY	1		MDGZZ
56	MS22048C2	. . GROMMET AND WASHER, PARACHUTE PACK	4		PAGZZ
57	60A113D13-1	. . PANEL ASSEMBLY, GROMMET	1		XAZGG
58	MS27983-1	. . . FASTENER, BUTTON	5		PAGZZ
59	MS27983-2	. . . FASTENER, SOCKET	5		PAGZZ
60	MS27980-8B	. . . FASTENER, EYELET	5		PAGZZ
61	MS27983-3	. . . FASTENER, STUD	5		PAGZZ
62	60A113C28-1	. . . EYE	4		PAGZZ
63	60A113D14-1	. . POCKET ASSEMBLY, PARACHUTE ACTUATOR	1		XAZGG
64	MS27981-1B	. . . FASTENER, BUTTON	3		PAGZZ
65	MS27981-3B	. . . FASTENER, SOCKET	3		PAGZZ
66	60A113D11-3	. . SPRING ASSEMBLY, CONTAINER OPENING	8	*	PAOZZ
	MS70105-7	. . SPRING ASSEMBLY, CONTAINER OPENING	8	*	PAOZZ

Figure 1. NB-8 Personnel Parachute Assembly (Sheet 4 of 6)

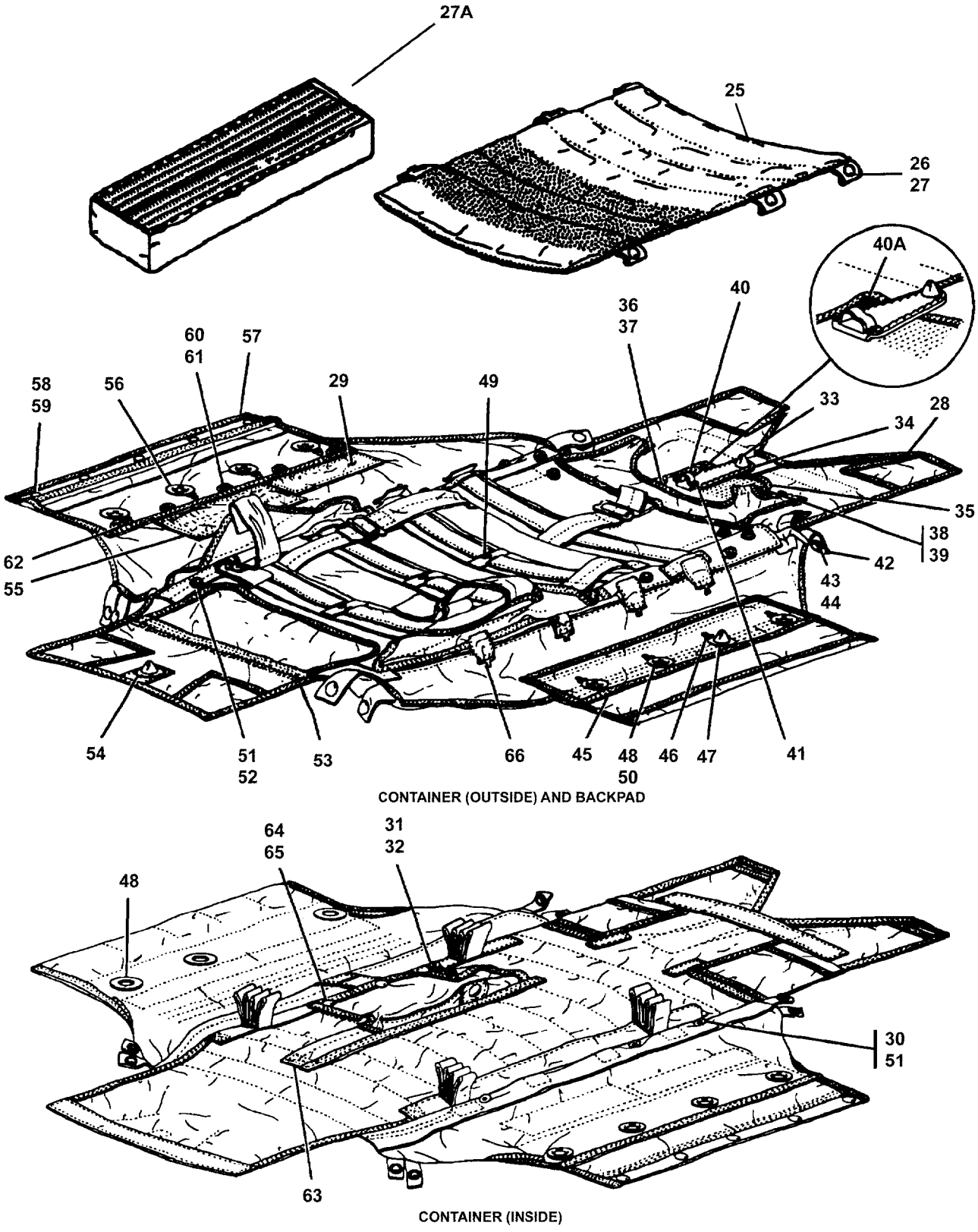


Figure 1. NB-8 Personnel Parachute Assembly (Sheet 5 of 6)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE

NOTES:
1. The double clamp P/N 565AS102-1 is packed with the container assembly and is used only when the automatic pararchute ripcord release is used; otherwise, the single clamp P/N 60A113C29-1 is used.
2. Either the 60A113E8-1 or the 60A125E16-1 pilot chute assembly may be used with the NB-8 parachute assembly, with the 60A125E16-1 being the replacement part for 60A113E8-1 when required.

Figure 1. NB-8 Personnel Parachute Assembly (Sheet 6 of 6)

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ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

NES-8B PERSONNEL PARACHUTE ASSEMBLY

PART NO. 574AS100-4

AND

MK-H7 DROGUE PARACHUTE ASSEMBLY

MBEU38272

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

Organizational, Intermediate and Depot Maintenance, Illustrated Parts Breakdown,
NES-8B Personnel Parachute Assembly ..... WP 014 04
Organizational and Depot Maintenance, Illustrated Parts Breakdown,
MK-H7 Drogue Parachute Assembly ..... WP 015 02

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Automatic Operation Below 14,000-Ft. Altitude	9
Manual Operation	9

Record of Applicable Technical Directives

None

1. DESCRIPTION.

2. GENERAL.

a. The NES-8B Personnel Parachute Assembly and the MK-H7 Drogue Parachute Assembly are part of the MK-H7 Martin-Baker Escape System and are designed for use with a PCU-33/P or PCU-56/P parachute restraint harness (Figures 1 and 2).

b. The NES-8B assembly includes a multicolored (white, olive green, international orange and sand shade), 28 ft. diameter, flat, circular nylon canopy with 28 gores. Water deflation pockets are provided on alternate gores. The canopy is packed in a hardshell horse-shoe type container installed in the ejection seat.

c. The PCU-33/P or PCU-56/P parachute restraint harness incorporates the aircrew's parachute harness and provides attachment points for the lap and shoulder restraint system-s. The harness webbing is channeled thru the torso vest to retain it in position and facilitate donning.

d. When aboard the aircraft and seated, the aircrew connects the canopy release fittings on the parachute riser assembly to the canopy release adapters of the PCU-33/P or PCU-56/P parachute restraint harness.

e. The MK-H7 Drogue Parachute Assembly is used to stabilize and decelerate the seat with a minimum of attitude loss and to position the seat in a altitude for aircrew separation.

f. The Drogue Parachute Assembly consists of two parachutes: a 22-in. diameter controller drogue and a 5 ft. diameter stabilizer drogue parachute, both fabricated of cotton material. Parachutes are interconnected by a connecting line and packed together within the headbox container.

3. CONFIGURATIONS.

a. The only configuration for the NES-8B and MK-H7 parachute assemblies are shown in (Figures 1 and 2). Refer to the Illustrated Parts Break-down WP 014 04 and WP 015 02 for exact configuration requirements.

4. SUBASSEMBLY CONFIGURATIONS.

a. The subassemblies listed below make up the NES-8B parachute assembly and are shown in (Figure 3). Refer to WP 014 04 for detailed information on subassemblies.

Pilot Parachute Assembly

Withdrawal Line Assembly

Canopy Assembly

Line Stowage Board Assembly

Risers, Ripcord and Connector Straps, Ripcord Assembly

Parachute Harness Sensing Release Units

Restraint System Assembly

Pulldown Vent Lines

Container Assembly

5. PRINCIPLES OF OPERATION.

6. AUTOMATIC OPERATION ABOVE 14,000 FT. ALTITUDE.

a. When an aircrew ejects from aircraft above the ejection seat predetermined aircrew/seat separation altitude, the following takes place:

(1) The ejection seat drogue gun fires a piston deploying a 22-in. controller drogue. The controller drogue parachute, in turn, deploys a 5 ft. stabilizer drogue. The duplex drogue parachute system decelerates and stabilizes the seat during descent.

(2) The aircrew continues to free fall restrained in the seat. The stabilizer drogue remains attached to the seat by a scissor shackle. As the preset altitude is reached (14,000 $\pm$ 1000 ft.), and after a 2.25 sec. time delay, a barostat allows the seat time release mechanism to operate which, in turn, opens the scissor shackle. At the same time, the harness restraints, lapbelt, leg restraints, survival kit, and upper block of the personnel services disconnect, and the face curtain is unlocked.

(3) The stabilizer drogue, now free from the seat, pulls the withdrawal line from the parachute container. As the withdrawal line reaches full stretch, the ripcord locking pins are removed from the locking cones, permitting the grommets, locking cones and end tabs to separate. The container spring opening assemblies pull the end and side flaps apart, exposing the canopy and allowing the pilot parachute to deploy.

(4) The stabilizer drogue, still attached to the withdrawal line which is attached to the canopy apex, extracts the canopy followed by the suspension lines. The canopy starts to inflate during this operation. The pulldown vent (PDV) lines, which are shorter than the suspension lines, bear the load of the drogue parachutes and prevent squidding of the canopy. The PDV lines may break during high speed openings.

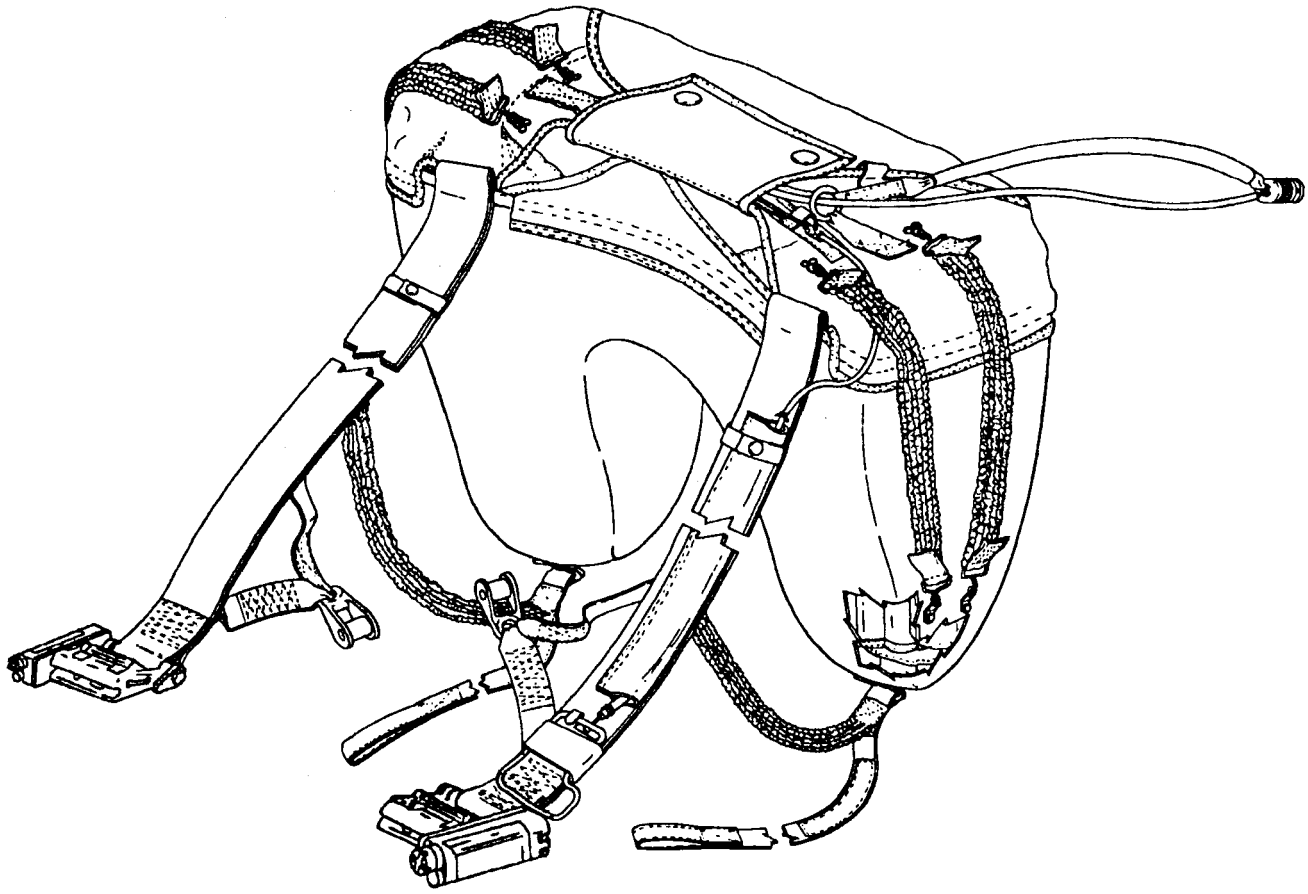

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Figure 1. NES-8B Personnel Parachute Assembly

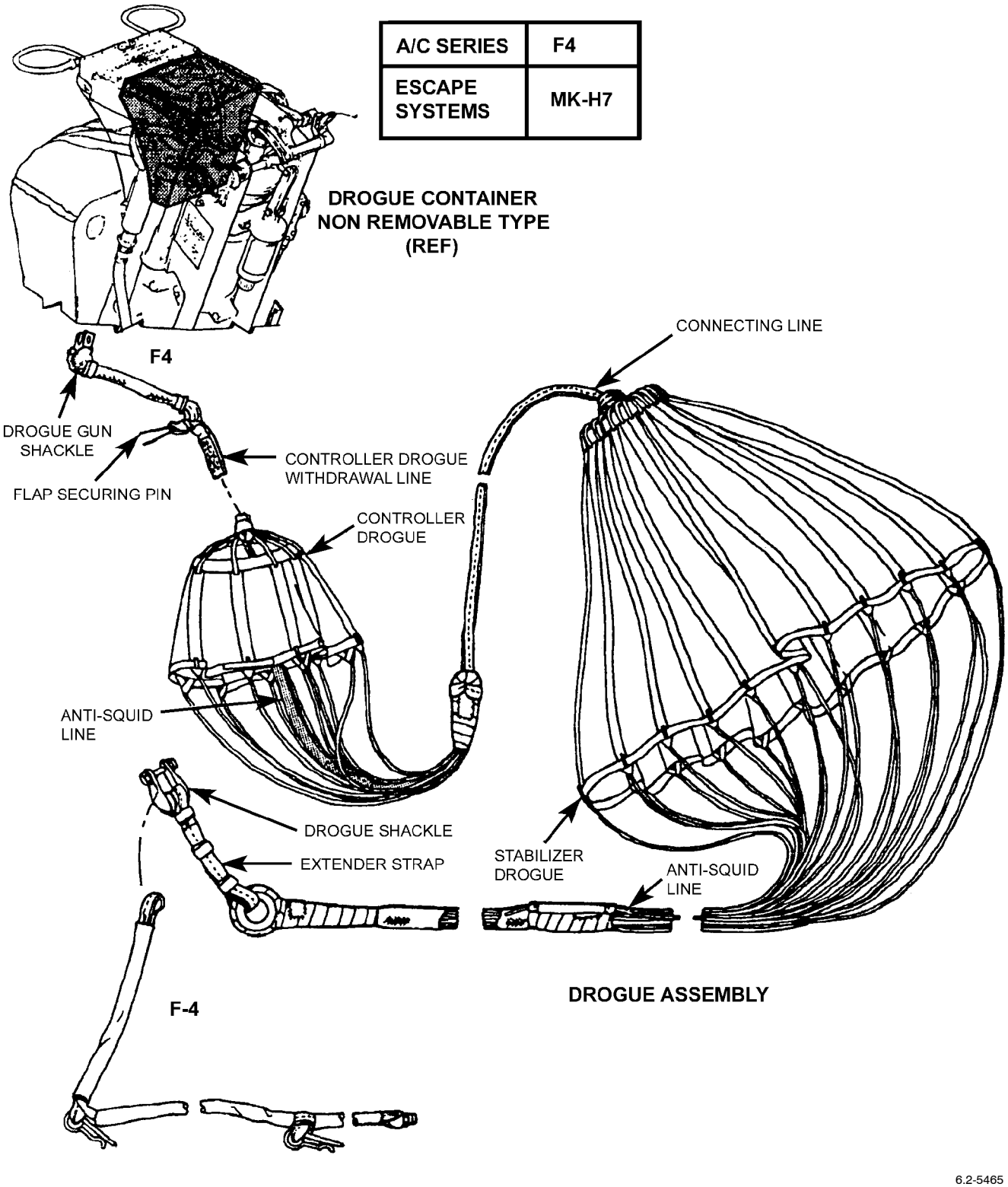
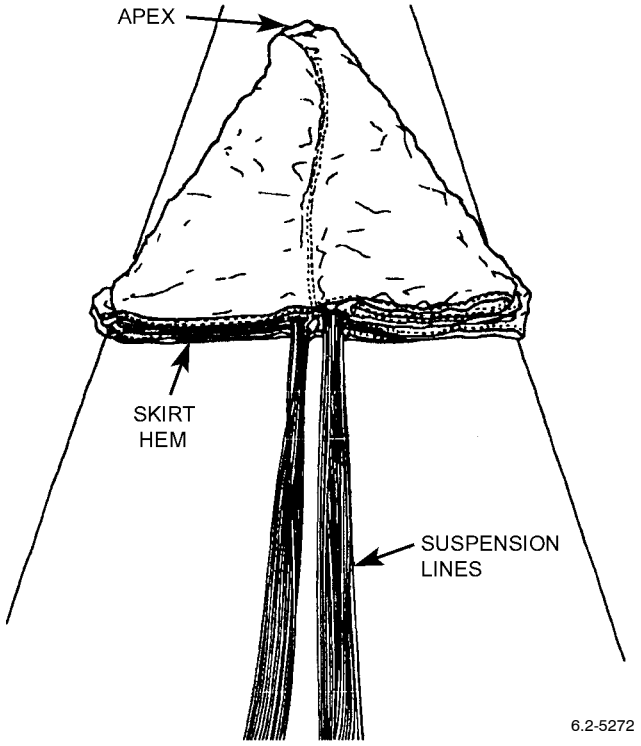
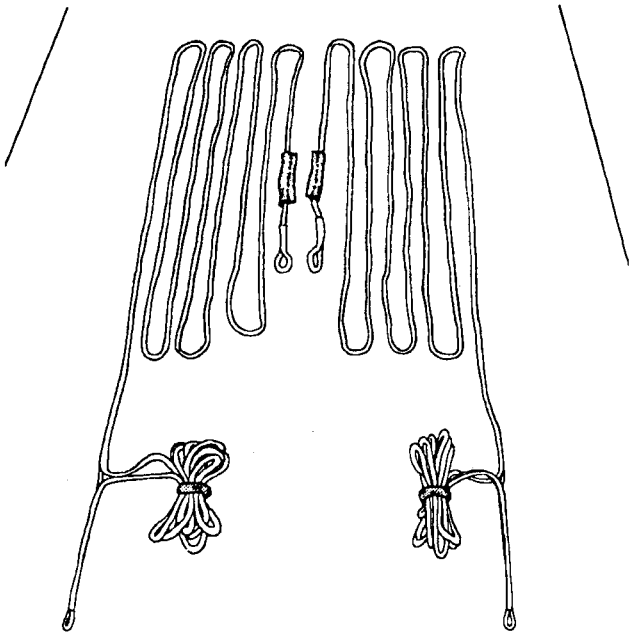


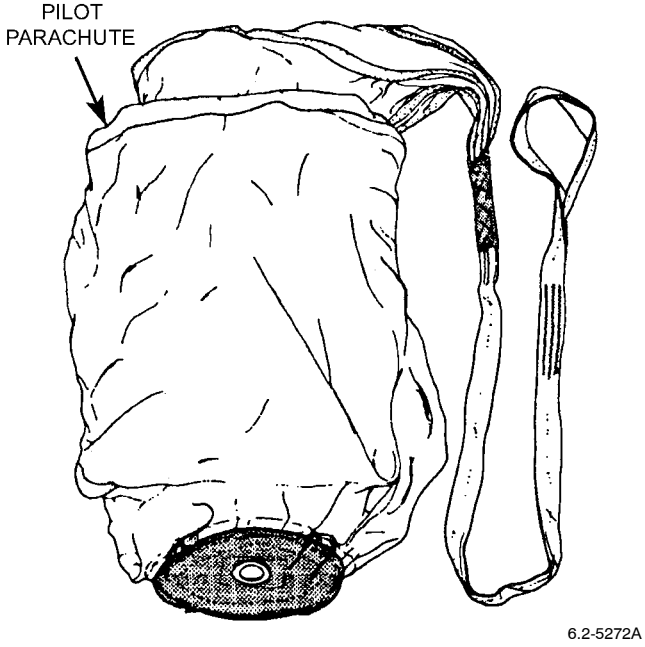
Figure 2. MK-H7 Drogue Parachute Assemblies, Martin-Baker



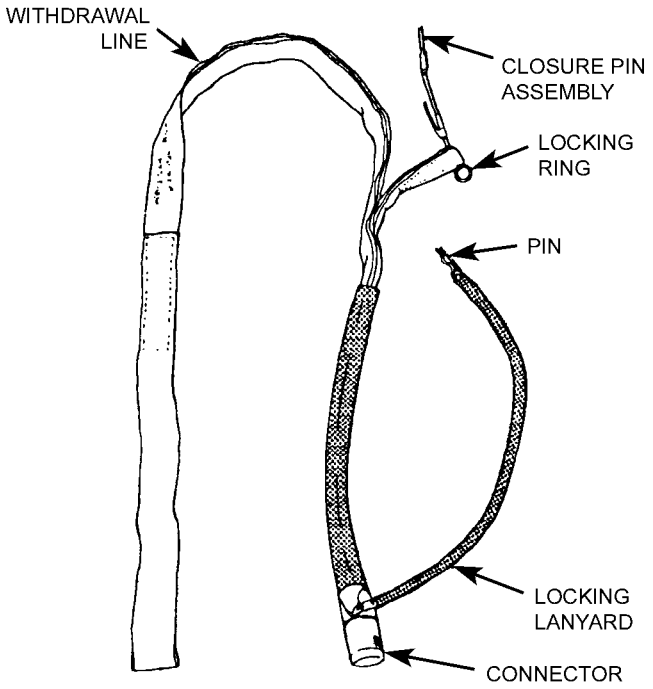
CANOPY ASSEMBLY



PULL DOWN VENT LINES

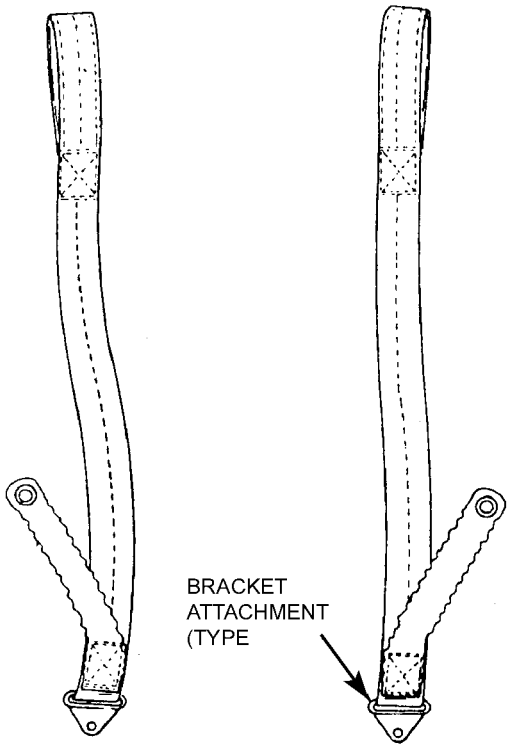


PILOT PARACHUTE ASSEMBLY

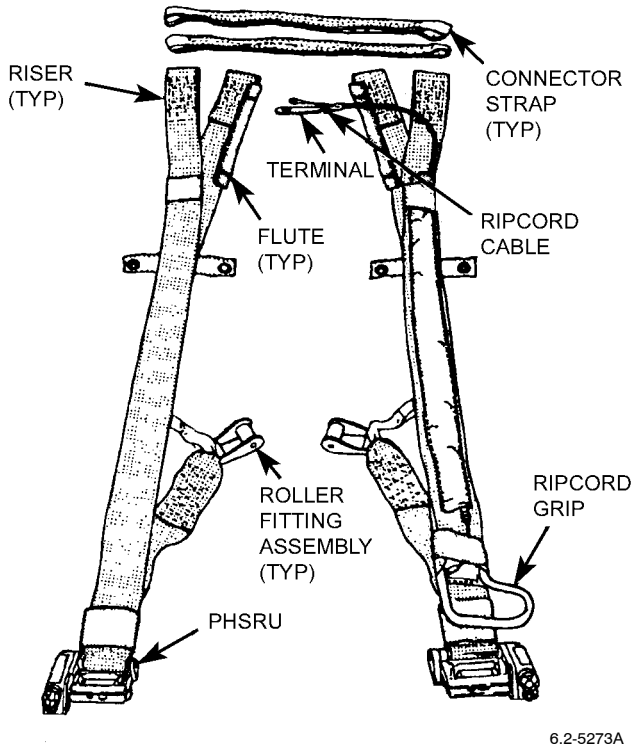


WITHDRAWAL LINE ASSEMBLY

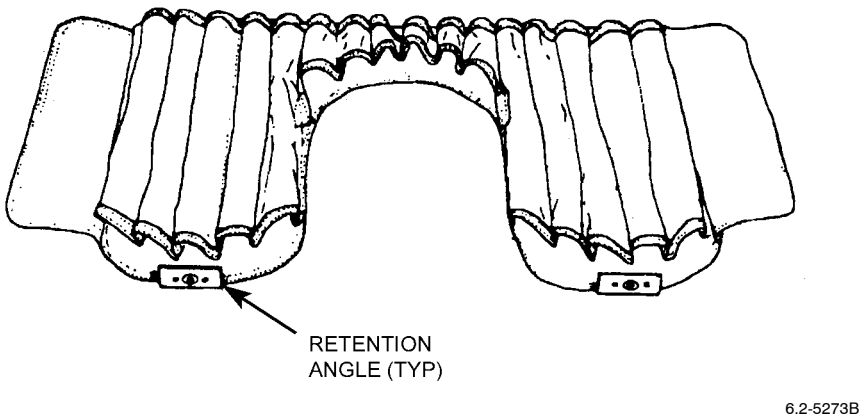
Figure 3. NES-8B Subassemblies (Sheet 1 of 4)



RESTRAINT SYSTEM ASSEMBLY



CONNECTOR STRAPS, RISERS, RIPCORD, PARACHUTE HARNESS SENSING RELEASE UNITS



LINE STOWAGE BOARD ASSEMBLY

Figure 3. NES-8B Subassemblies (Sheet 2 of 4)

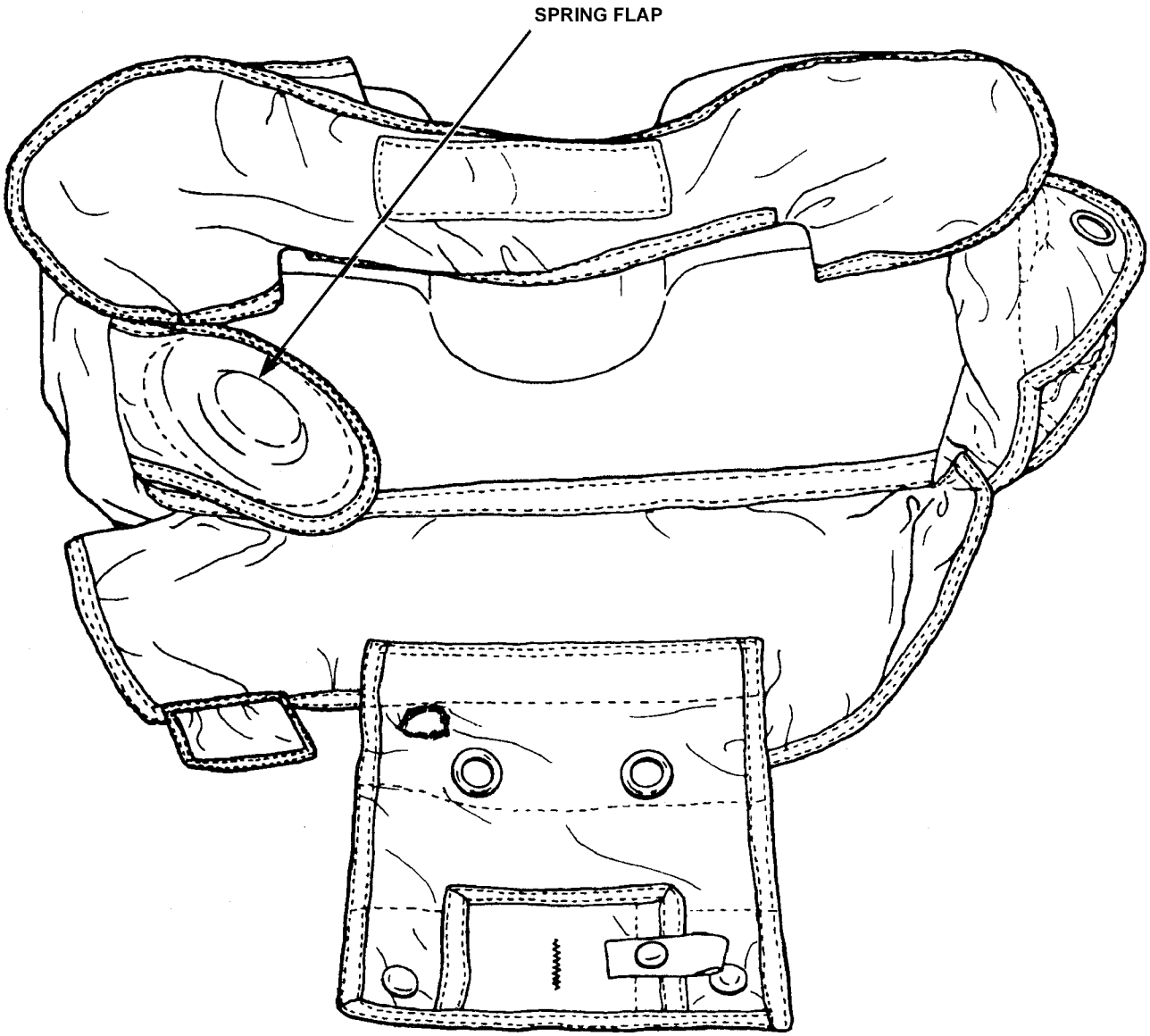


Figure 3. NES-8B Subassemblies (Sheet 3 of 4)

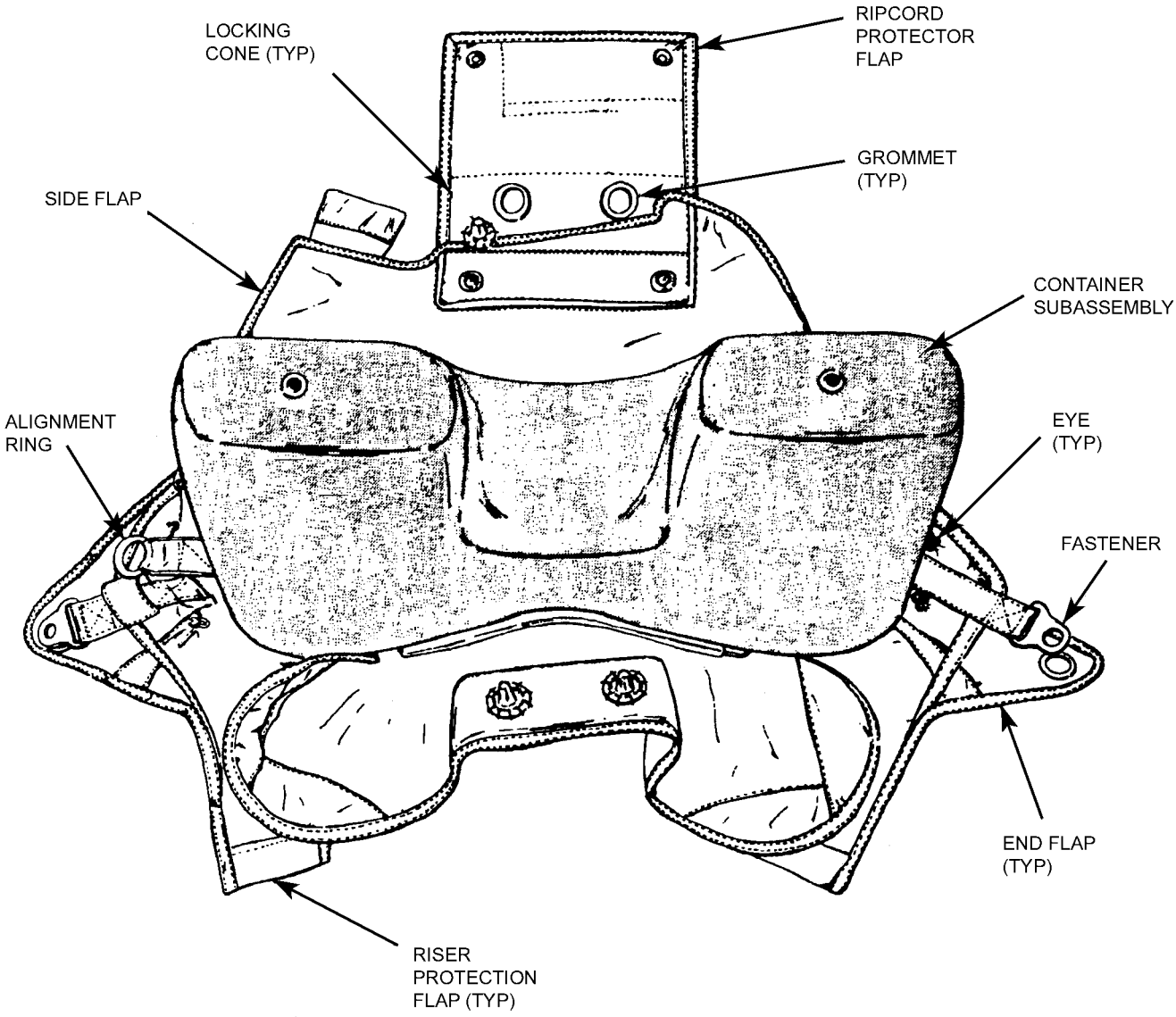


Figure 3. NES-8B Subassemblies (Sheet 4 of 4)

(5) As load is applied, the risers and connector straps separate from their fastener tape connection and are pulled from the container. The connector link ties break and the canopy fully opens, separating the aircrew from the seat.

(6) The aircrew descends suspended from the canopy by the risers and on the PCU-33/P or PCU-56/P parachute restraint harness.

(7) During descent, the aircrew may manually actuate the four-line release system which will reduce oscillation and allow the aircrew to maneuver the parachute to a less hazardous landing site.

(8) Upon landing, the aircrew disengages the parachute assembly from the PCU-33/P or PCU-56/P parachute restraint harness by actuating the canopy release fittings.

(9) The parachute harness sensing release unit (PHSRU) provides an automatic backup method of releasing the risers after the aircrew makes a seawater entry.

7. AUTOMATIC OPERATION BELOW 14,000 FT. ALTITUDE.

a. When an aircrew ejects from aircraft at or the below ejection seat predetermined aircrew/seat separation altitude, the following takes place:

(1) The ejection seat drogue gun fires a piston deploying a 22-in. controller drogue. The controller drogue parachute in turn, deploys a 5 ft. stabilizer drogue. The duplex drogue parachute system decelerates and stabilizes the seat during descent.

(2) After a 2.25 sec. time delay, the seat time release mechanism opens the scissor shackle. At the same time, the harness restraints, lapbelt, leg restraints, survival kit, and upper block of the personnel services disconnect, and the face curtain is unlocked.

(3) The stabilizer drogue, now free from the seat, pulls the withdrawal line from the parachute container. As the withdrawal line reaches full stretch, the ripcord locking pins are removed from the locking cones, permitting the grommets, locking cones and end tabs to separate. The container spring opening assemblies pull the end and side flaps apart, exposing the canopy and allowing the pilot parachute to deploy.

(4) The stabilizer drogue, still attached to the withdrawal line, which is attached to the canopy apex, extracts the canopy followed by the suspension lines. The canopy starts to inflate during this operation. The PDV lines, which are shorter than the suspension lines, bear the load of the drogue parachutes and prevent squidding of the canopy. The PDV lines may break during high speed openings.

(5) As load is applied, the risers and connector straps separate from their fastener tape connection and are pulled from the container. The connector link ties break and the canopy fully opens, separating the aircrew from the seat.

(6) The aircrew descends suspended from the canopy by the risers and on the PCU-33/P or PCU-56/P parachute restraint harness.

(7) During descent, the aircrew may manually actuate the four-line release system which will reduce oscillation and allow the aircrew to maneuver the parachute to a less hazardous landing site.

(8) Upon landing, the aircrew disengages the parachute assembly from the PCU-33/P or PCU-56/P parachute restraint harness by actuating the canopy release fittings.

(9) The parachute harness sensing release unit (PHSRU) provides an automatic backup method of releasing the risers after the aircrew makes a seawater entry.

8. MANUAL OPERATION.

a. If the aircrew should have to manually separate from the seat or if forced to select manual bailout, the following functions take place once clear of the seat/aircraft:

(1) Manually pulling the ripcord grip removes the ripcord pins from the locking cones, permitting the grommets, locking cones, and end tabs to separate. The container spring opening assemblies pull the end and side flaps apart, exposing the canopy and allowing the pilot parachute to deploy.

(2) The aircrew falling away from the inflated pilot parachute causes the canopy to be extracted from the container, followed by the suspension lines. The canopy begins to inflate during this operation.

(3) As load is applied, the risers and connector straps separate from their fastener tape connection and are pulled from the container. The connector link ties break and the canopy fully opens.

(4) The aircrew descends suspended from the canopy by the risers and on the PCU-33/P or PCU-56/P parachute restraint harness.

(5) During descent, the aircrew may manually actuate the four-line release system which will reduce oscillation and allow the aircrew to maneuver the parachute to a less hazardous landing site.

(6) Upon landing, the aircrew disengages the parachute assembly from the PCU-33/P or PCU-56/P parachute restraint harness by actuating the canopy release fittings.

(7) The parachute harness sensing release unit (PHSRU) provides an automatic backup method of releasing the risers after the aircrew makes a seawater entry.

ORGANIZATIONAL MAINTENANCE

REPAIR PROCEDURES

NES-8B PERSONNEL PARACHUTE ASSEMBLY

PART NO. 574AS100-4

List of Effective Work Package Pages

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Reference Material

None

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Ripcord Grip Retainer Cover Replacement	3
Ripcord Grip Retainer Replacement	2
Ripcord Housing Tackings Replacement	4
Riser Restraint Strap Tackings Replacement	4

Record of Applicable Technical Directives

None

1. INTRODUCTION.

2. This work package (WP) contains instructions for organizational level repair to ensure that the parachute assembly remains in ready-for-issue status.

3. When performing the repairs detailed in this WP, follow these guidelines:

a. Review applicable instructions prior to starting repair.

b. Ensure all necessary support equipment and materials required are available.

c. When required remove enough material from it's source for immediate use only. Ensure material identification ticket remains with the source material at all times. Material that cannot be identified will not be used.

d. To ensure conformity all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

e. A quality assurance (QA) inspector shall examine the finished work.

4. RISER ASSEMBLY.

5. FOUR-LINE RELEASE LANYARD PULL LOOP TACKINGS REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot followed by a square knot and a binder knot.

a. Fully extend pull loop and position the loop between risers.

b. Tack at centerline of riser and 1/2-in. above bottom of pull loop with one turn of size FF thread, single and waxed; tie off (Figure 1).

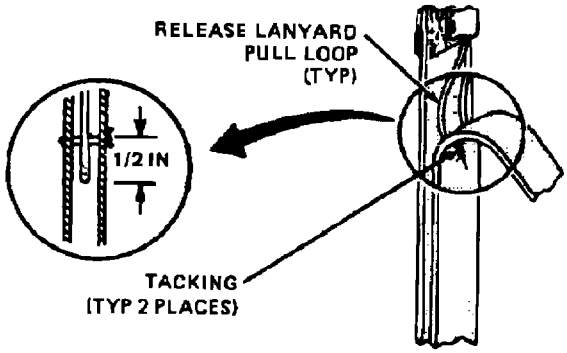

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Figure 1. Replacement of Four-Line Release Lanyard Pull Loop Tackings

6. RIPCORD GRIP RETAINER REPLACEMENT.

Support Equipment

Part Number	Nomenclature
Refer to WP 005 00	Pinlock, Ripcord
DPP-50	Scale

Materials Required

Specification or Part Number	Nomenclature
MIL-C-5040	Cord, Nylon Type I or IA
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot followed by a square knot and a binder knot.

a. Remove stitching securing grip retainer cover to riser assembly and slide cover back.

b. Remove stitching securing ripcord grip retainer to webbing riser.

c. Measure 3 1/4 ± 1/8-in. from end of riser assembly and mark for reference.

d. Place grip retainer on riser assembly with lower edge positioned at 3 1/4-in. reference mark.

e. Handstitch grip retainer to riser assembly using a running stitch with size 6 thread, doubled and waxed. Start handstitch by placing an overhand knot 5-in. from bitter end of thread, starting and ending underside of riser assembly at the same hole location; tie off. Repeat procedure for remaining set of holes (Figure 2). (QA)

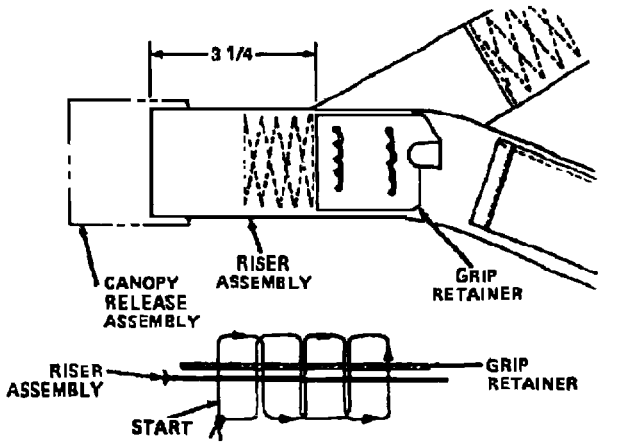

Figure 2. Retainer Replacement Ripcord Grip

f. Ensure grip is fully seated in ripcord retainer.

g. Insert ripcord pinlock on bottom ripcord pin (Figure 3).

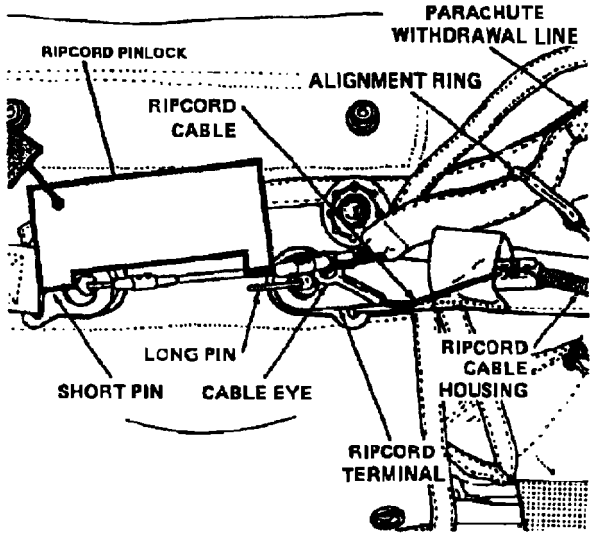

Figure 3. Inserting Ripcord Pinlock

h. Set gage to zero.

i. Attach gage to grip using nylon cord.

j. Apply a straight steady pull, remove grip from retainer. The force required to remove grip from retainer shall be 15 ± 5 lb.

WARNING

Ripcord pinlock must be removed

k. Remove ripcord pinlock. Install ripcord grip in retainer. (QA)

l. Replace cover per Paragraph 7, below.

7. RIPCORD GRIP RETAINER COVER REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
MIL-W-4088	Webbing, Nylon, Type XII, 1 3/4-in. Wide, Class 1, 1A or 2
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot followed by a square knot and a binder knot.

a. Remove defective or loose retainer cover.

b. Cut a 7-in. length of webbing.

c. Sear both ends of the webbing, to prevent fraying.

d. Mark 1 3/4-in. from bitter ends.

NOTE

Do not wrap cover around harness restraint strap.

e. Wrap webbing around riser assembly over lapping the 1 3/4-in. mark (Figure 4).

f. Tack retainer cover to lower riser in four places with size FF thread, doubled and waxed (Figure 4). (QA)

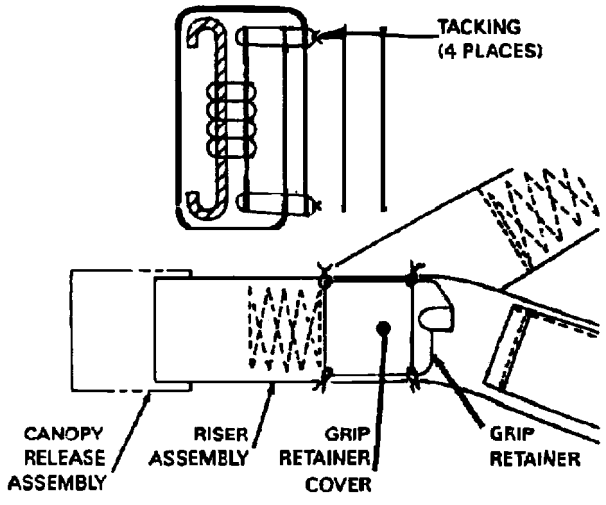

Figure 4. Ripcord Grip Retainer Cover Replacement

8. RISER RESTRAINT STRAP TACKINGS REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot followed by a square knot and a binder knot.

a. Ensure snap fastener on riser restraint strap is secured to snap fastener on riser.

b. Tack thru both riser risers and thru riser restraint strap using two turns size E thread, single and waxed; tie off (Figure 5).

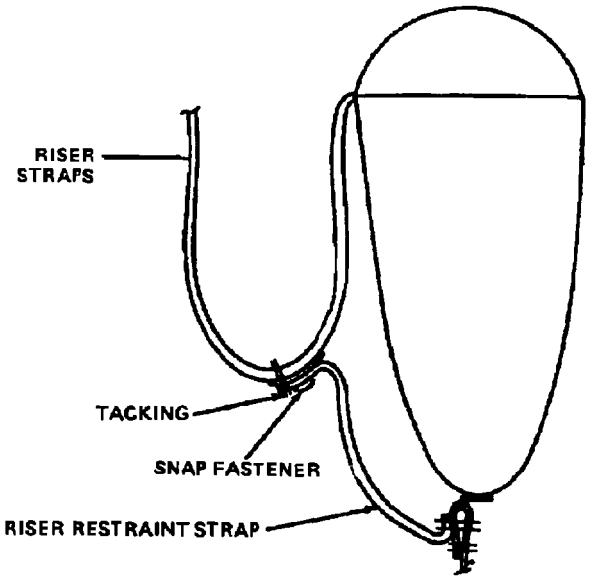

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Figure 5. Replacement of Riser Restraint Strap Tackings

9. RIPCORD HOUSING TACKINGS REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot followed by a square knot and a binder knot.

a. Measure 1/2-in. down from bottom of ripcord grip tunnel. Tack ripcord cable housing to riser with three turns of size 6 thread, doubled and waxed; tie off (Figure 6).

b. Measure 1/2-in. up from top of ripcord tunnel and tack ripcord housing to riser with three turns of size 6 thread, doubled and waxed; tie off (Figure 6).

c. Tack bottom of ripcord tunnel closed with two turns of size 6 thread, doubled and waxed; tie off (Figure 6).

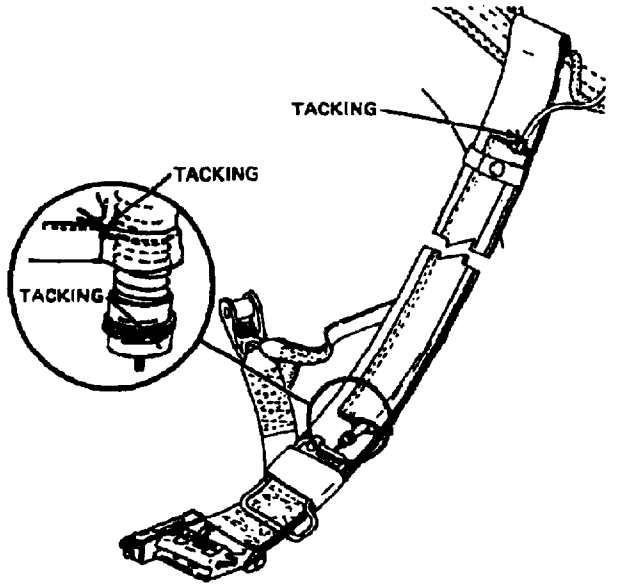

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Figure 6. Replacement of Ripcord Housing and Channel Tackings

10. CONTAINER ASSEMBLY.

11. SPRING OPENING ASSEMBLY REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
60A113D11-7 or MS70105-6	Spring Assembly, Container Opening

a. Measure length of replacement spring opening assembly. Required length is 7 7/8 ± 1/8-in. when measured from end of one hook to end of other hook with no tension applied.

b. Inspect spring opening assembly for broken springs, contamination, corrosion, cuts, fraying, bent or broken hooks, elasticity, and loose or broken stitching.

c. With hook facing down, attach end of spring opening assembly without pull tab to lower eyelet on side of container. Crimp hook to eyelet.

d. Attach opposite end of spring opening assembly to eyelet on end flap and crimp.

12. RIPCORD PIN RETENTION TIE REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Loop a 12-in. length size E thread, single and waxed under short pin (Figure 7). Secure pin by bringing thread ends together and forming three to five half-hitches around ripcord cable directly behind ripcord pin ferrule ending with a binder knot.

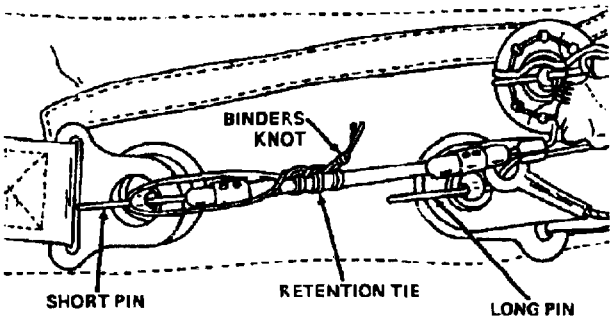

Figure 7. Replacement of Ripcord Pin Retention Tie

b. Trim excess within 1/2 to 3/4-in. from binder knot.

13. SPECIAL PIN RETENTION TIE REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size A, Type I or II, Class A

a. Route withdrawal line sleeve assembly thru alignment ring. Place ring on closure pin line over locking cone and then insert the sleeve assembly special pin. (Figure 8).

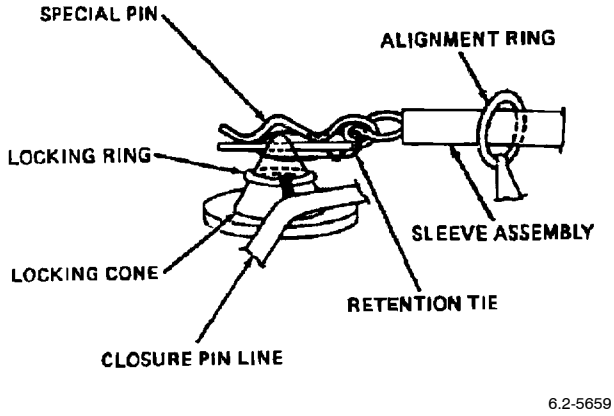

Figure 8. Replacement of Special Pin Retention Tie

b. Safety-tie special pin by passing a length of size A thread, single and unwaxed, under end of pin and thru loop formed at back of pin.

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INTERMEDIATE AND DEPOT MAINTENANCE

PACKING PROCEDURES

NES-8B PERSONNEL PARACHUTE ASSEMBLY

PART NO. 574AS100-4

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Reference Material

Cartridge Actuated Devices (CADS) and Propellant Actuated Devices (PADS) (IETM) . . . . . NAVAIR 11-100-1.1
Intermediate and Depot Maintenance, Repair Procedures, NES-8B Personnel Parachute Assembly . . . . . WP 014 03
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration . . . . . WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment . . . . . WP 005 00

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Record of Applicable Technical Directives

None

1. GENERAL.

a. This Work Package (WP) provides packing instructions for the NES-8B Personnel Parachute Assembly.

b. Packing instructions are provided with the assumption that they will be carried out under ideal conditions in a parachute loft WP 003 00. When a parachute assembly must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

c. In no case shall the packing of a parachute assembly be interrupted after the packing operation has been started. If the packing operation is interrupted due to unforeseen circumstances, the parachute assembly shall be completely repacked per the instructions contained in this WP.

d. Quality Assurance (QA) points have been included in the packing procedures. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Witnessing of QA steps may be delayed by QA if their satisfactory completion is verified in later steps.

e. During packing procedures, packer shall be positioned on left side of packing table, and helper on right side when viewed from harness/riser end of table.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Fid
Refer to WP 005 00	Guide Tube
TMA2	Hex Head Driver 1/16-in Bit
Refer to WP 005 00	Long Bar
FLUKE 77	Multimeter
TQS6	Torque Meter
Refer to WP 005 00	Pinlock, Ripcord
DPP-50	Scale, Spring
Refer to WP 005 00	Shot Bag (4)
11-1-3512	Small Line Separator
Refer to WP 005 00	Temporary Locking Pin (4)

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type I or IA
PIA-C-5040	Cord, Nylon Type IIA or III
MIL-R-1832	Rubberbands, Retaining Type I
MS27039-0810	Screw, Machine (2)
MIL-S-22473	Sealing Compound, Grade H
V-T-295	Thread, Nylon, Size A, Type I or II Class A
V-T-295	Thread, Nylon, Size E, Type I or II Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
AN960PD10	Washer, Flat (2)

a. Ensure that all support equipment and materials required are available prior to starting.

b. Inspect packing tools for nicks, burrs, or sharp edges which may cause damage to the parachute assembly.

c. Count and record number of packing tools.

d. Clean packing table.

3. LAYOUT OF RIGGED PARACHUTE ASSEMBLY.

a. Completely open parachute container and detach spring opening assemblies.

b. Remove two screws securing stowage board to container.

c. Remove canopy and stowage board evenly from inside of container.

d. Disconnect the pull down vent (PDV) lines, pilot parachute, and withdrawal line from apex.

e. Connect one end of a 16 ft. Type IIA or III nylon cord to vent lines and other end to large loops of PDV lines.

f. Remove suspension lines from stowage board.

g. Lay out canopy and suspension lines and stretch full length on a clean packing table.

h. Locate gore 28 (nameplate gore) and place bottom-most in center of packing table.

i. Attach tension strap hook to canopy vent lines.

j. Separate suspension lines into two equal groups with lines 15 thru 28 on packer's side and lines 1 thru 14 on helper's side. Grasping each group of lines, walk from skirt hem to connector links removing any twists between the two groups (Figure 1).

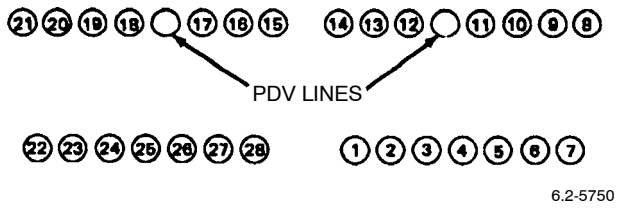


Figure 1. Arrangement and Orientation of Suspension Lines on Connector Links

k. Insert tension hooks into connector links and then into packing table.

l. Apply slight tension to canopy using tension strap.

m. Pull canopy vent collar below vent hem. Ensure that vent hem is even.

n. Straighten vent hem if necessary.

o. Pull vent collar back to original position.

p. Remove rubberbands from PDV lines.

q. Remove connector link ties.

r. Tension canopy.

4. INSPECTION (SPECIAL).

a. Maximum scheduled repack cycle is 630 days.

5. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Parachute Harness Sensing Release Unit Cartridge) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be re-based if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Components without a service/total life shall be removed from service if the components do not pass inspection, as determined by Quality Assurance Representative (QAR) or Collateral Duty Inspector (CDI).

g. Check date placed in-service and date of manufacture on each parachute part for service/total life as follows:

Nomenclature	Service Life (Yr)	Total Life (Yr)
Battery	4	4
Canopy Assembly	None	15
Cartridge MW19	Refer to NAVAIR 11-100-1.1	
Cross-Connector Strap	(See Note 1)	(See Note 1)
Electronics Package Assembly	None	8
Pilot Parachute		15
Pilot Parachute Connector Strap		15
Riser Assembly	None	15
Withdrawal Line	2	None

Note 1: Replace at Canopy Assembly replacement.

(1) Markings for completeness, legibility, and agreement with information on Parachute Record (OPNAV 4790/101).

(2) Compare configuration of parachute assembly to that shown in NAVAIR 13-1-6.2 Record of Applicable Technical Directives, and Illustrated Parts Breakdown.

6. SUSPENSION LINE CONTINUITY CHECK.

a. Grasp line 15 on left side of gore 14 and raise line to a height sufficient to ensure that the line is free of dips and twists from skirt hem to connector links. Continue this procedure with lines 16 thru 28. (QA)

b. Use same procedure as in paragraph a, above on right side of gore 14 except that packer shall start with line 14 and work thru line 1.

c. Pass PDV lines under top group of suspension lines and attach to top connector links between lines 11 and 12, and 17 and 18 (Figure 1).

7. CANOPY ASSEMBLY.

a. Canopy skirt hem, fabric surface, diagonal seams, radial seams, vent hem, water deflation pockets, for cuts, holes, ruptures, contamination, deterioration, and loose or broken stitching.

b. Suspension lines and canopy apex lines for fraying, ruptures, protruding inner core lines, burns, contamination, and presence of twists.

c. Attachment of suspension lines at skirt hem for security and condition of V-tabs.

d. Attachment of four-line release anchor loops to suspension lines 3 and 26.

e. Attachment of four-line release lanyard to anchor loops on suspension lines 3 and 26.

f. Activate the four-line release and retacking per WP 004 00. (QA)

g. PDV lines for the following:

(1) Lines for cuts, tears, ruptures, or contamination.

(2) Weak link for cuts, tears, ruptures, or contamination.

(3) Proper attachment to connector links.

(4) Lines for twists.

h. Connector links for corrosion, distortion, nicks, burrs, sharp edges, and cracks.

NOTE

For Double "L" Connector Link, refer to WP 014 03 for disassembly, assembly, and inspection instructions.

i. Connector links for defective yoke and plate assemblies. Maximum of 1/32-in. play allowable in plate.

j. Torque seal unbroken with yoke and plate assemblies installed with knurled portion facing up and screw heads facing outboard (Figure 2). (QA)

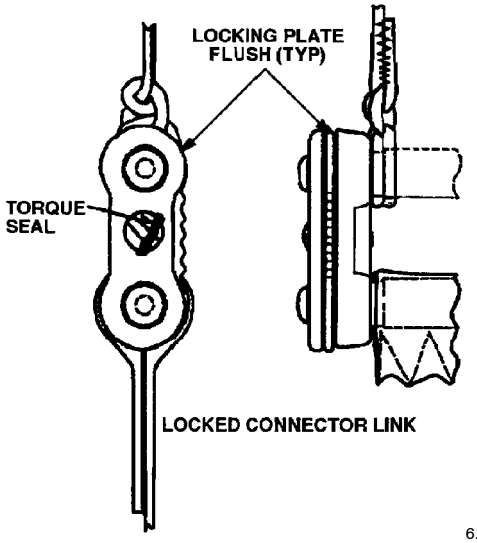


Figure 2. Torque Seal Unbroken

8. PILOT PARACHUTE ASSEMBLY.

a. Fabric surfaces and seams for cuts, tears, fraying, and loose or broken stitching.

b. Seam area at crown for seam separation.

c. Spring assembly for distortion.

d. Loose or broken tackings (4 places) at bottom of coil spring.

e. Locking cone and grommet for cracks, condition and security of attachment.

f. Bridle for cuts, fraying, and loose or broken stitching.

9. WITHDRAWAL LINE.

a. Webbing for contamination, cuts, fraying, deterioration, and loose or broken stitching.

b. Cable and closure pins for corrosion, broken strands, nicks, loose swage fittings, bends, or burrs.

c. Quick release connector assembly fitting for corrosion, cracks, bends, dents, nicks, burrs, sharp edges, stripped threads, damaged swivel, and presence of spring assembly.

d. Special pin and ring for security of attachment, corrosion, burrs, and distortion.

e. Sleeve assembly for contamination, deterioration, and security of stitching; markings for presence and clarity (Figure 3).

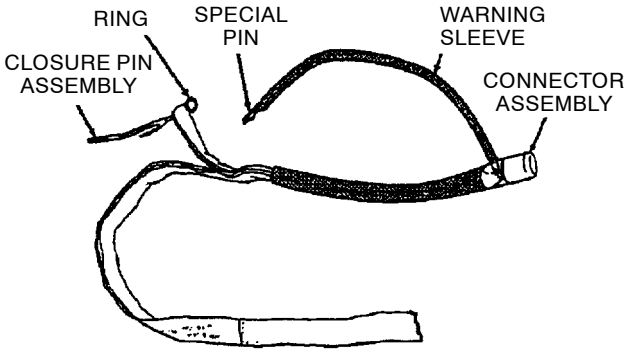


Figure 3. Withdrawal Line

10. RISERS AND CROSS-CONNECTOR STRAPS.

a. Webbing for contamination, rust at points of contact with metal parts, cuts, twists, fading, wear, fraying, burns, abrasions and loose or broken stitching tackings.

b. Four-line release lanyard flute and ripcord tunnel for wear and proper attachment.

c. Four-line release and release lanyard pull loops for loose or broken tackings.

d. Ripcord grip retainer for corrosion, damage, and security of attachment.

e. Ripcord grip retainer cover for condition and tackings.

f. Roller fitting assembly for corrosion, damage, and security of attachment.

g. Cross-connector straps for contamination, cuts, fraying, burns, and loose or broken stitching.

h. Cross-connector straps for proper attachment to connector links.

11. RIPCORD ASSEMBLY.

a. Grip, cable housing, terminal, and terminal ball for signs of corrosion, bends, dents, cracks, loose swaged joints, and breaks.

b. Cable eyelet for cracks.

c. Housing to riser tacking for security of attachment.

12. CONTAINER ASSEMBLY.

a. Hardware, fabric, seams, and webbing, for holes, cuts, tears, fraying, contamination, and deterioration.

b. Grommets, cones, snap fasteners and end tab fasteners for security of attachment, cones for cracks, corrosion, nicks, and gouges.

c. Container for crazing and cracks.

d. Spring opening assemblies for broken springs, contamination, corrosion, cuts, fraying, bent or broken hooks, elasticity, and loose or broken stitching.

e. Spring opening eyes (8) for security of attachment.

f. Snap fastener for nicks, gouges, corrosion, security of attachment, and proper operation.

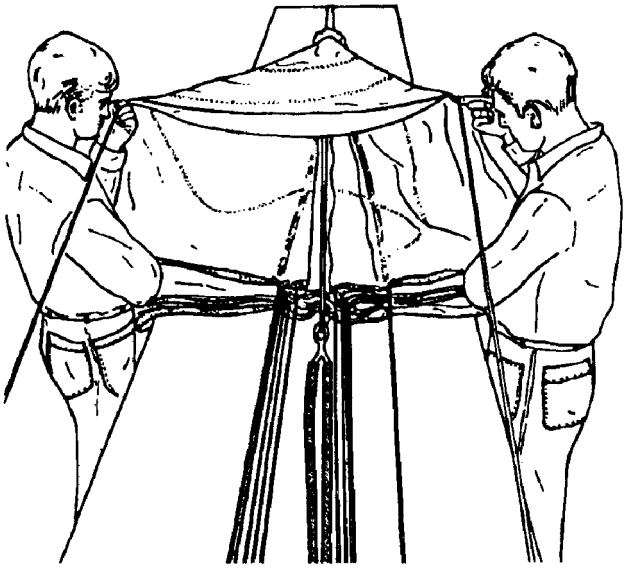
g. Suspension line storage board assembly for condition, corrosion and contamination.

h. Restraint straps for deterioration and wear, brackets for corrosion; riser straps for elasticity.

13. PACKING.

14. WHIPPING AND FOLDING OF CANOPY.

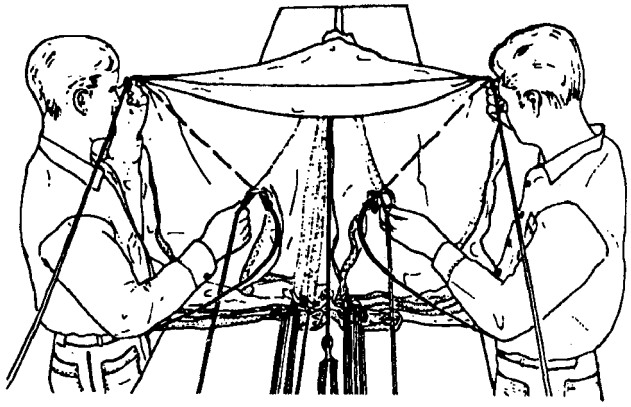
a. Packer and helper shall lift suspension line on each side of top gore up and out. Skirt hem between lines shall be taut so that canopy apex can be seen on inside, while holding suspension lines up. Packer and helper shall whip gore hanging from line outwards to prepare canopy for folding (Figure 4).



6.2-5179A

Figure 4. Lift Suspension Line on Each Side of Nameplate

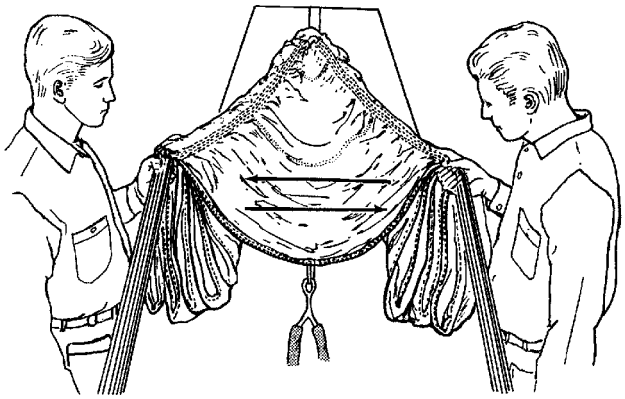
b. Draw next suspension line upwards to suspension line in hand, using a rapid, circular motion (Figure 5).



6.2-5179B

Figure 5. Draw Next Suspension Line Upwards

c. Continue whipping operation for all gores. Ensure that radial seams are not overlapped by gore material. Move whipped gores rapidly back and forth across packing table (Figure 6).

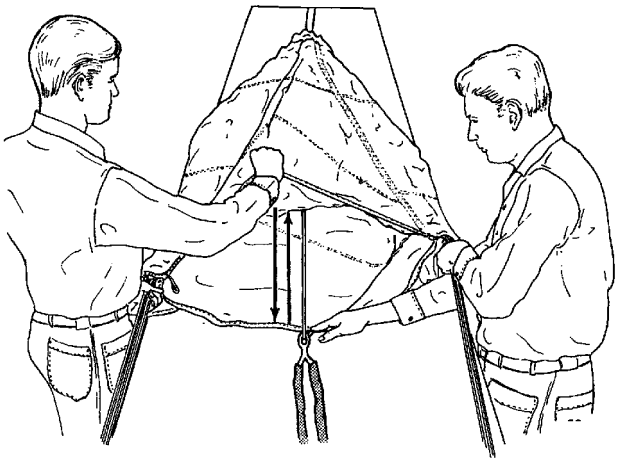


6.2-5179C

Figure 6. Continue Whipping Operation

d. The two groups of suspension lines shall be stretched to edges of packing table with folded gores hanging over sides. Packer and helper shall grasp all folds at outer edges on skirt hem and hold suspension line groups at edges of packing table. Packer and helper shall simultaneously move folds up and down rapidly, in a whipping motion, to end wrinkles.

e. Packer shall flap top gore up and down at skirt hem center as helper holds bottom gore at skirt hem center (Figure 7).



6.2-5179D

Figure 7. Packer Shall Flap Top Gore

f. On signal, both packer and helper shall draw their respective gores, at skirt hem centers, towards table edge while at same time bringing suspension line groups to center of packing table (Figure 8).

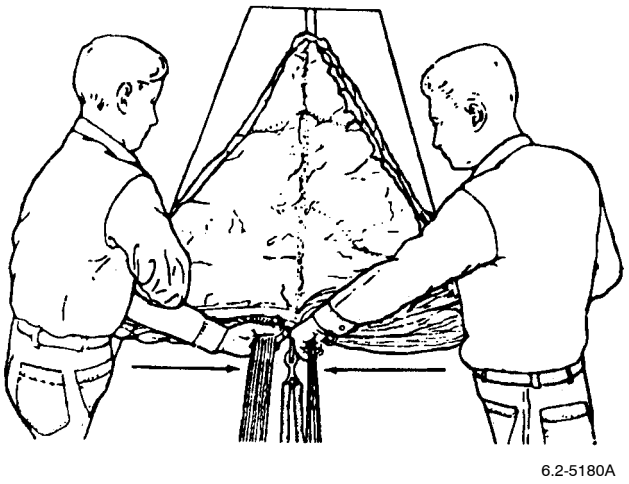


Figure 8. Draw Respective Gores to Center

g. Insert suspension line groups into their respective slots in small line separator and place shot bag on lines. Packer shall place second shot bag across skirt hem on left side of suspension lines. PDV lines are routed under the small line separator.

h. Helper shall rotate all gores as a group, except bottom gore, from helper's side to packer's side of packing table (Figure 9).

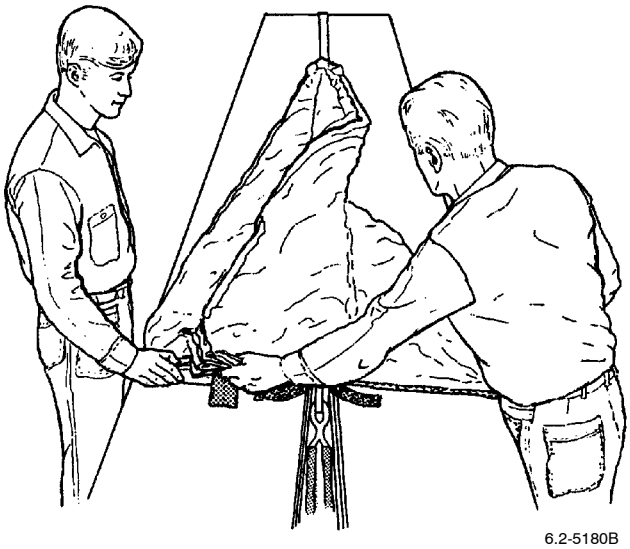


Figure 9. Helper Rotate All Gores to Packer's Side

i. Helper shall straighten and smooth bottom gore on helper's side of packing table throughout its length to apex (Figure 10).

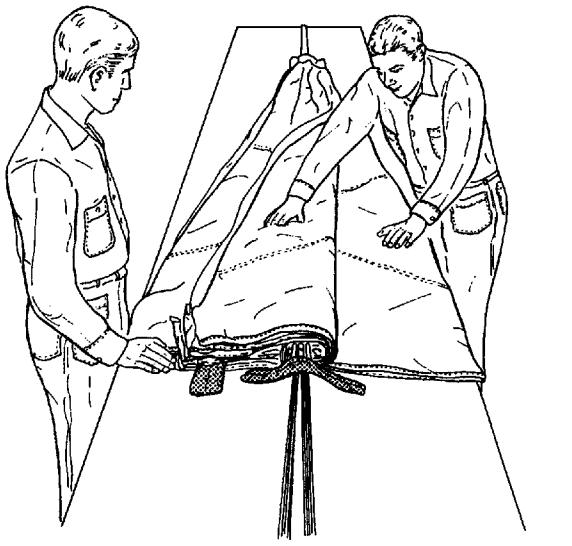


Figure 10. Helper Shall Straighten and Smooth Gores

j. Packer shall return folded gores about shot bag to helper's side of packing table. Helper shall straighten and smooth top gore and place a shot bag on skirt hem (Figure 11).

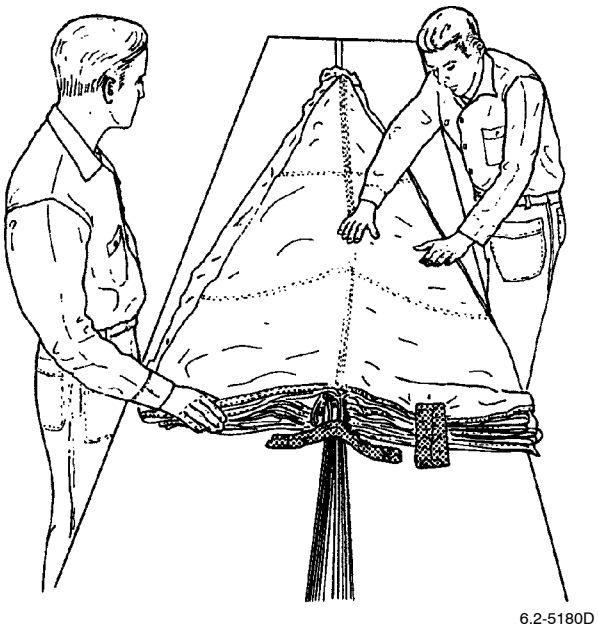


Figure 11. Packer Shall Return Folded Gores Above Shot Bag

k. Packer shall rotate all gores as a group, except bottom gore, from packer's side to helper's side of packing table (Figure 12).

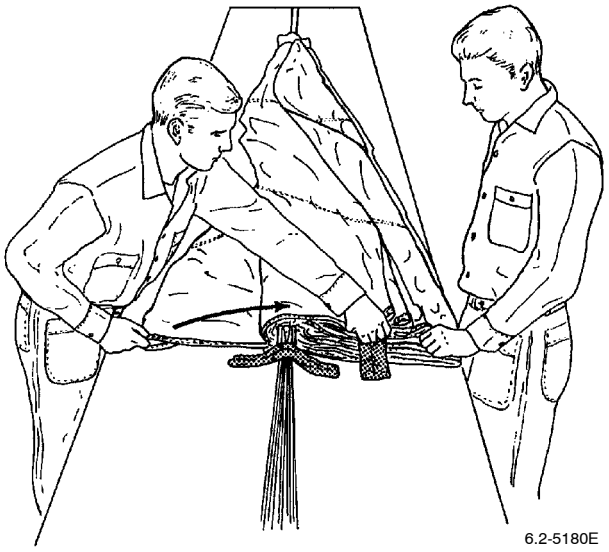


Figure 12. Packer Shall Rotate All Gores

l. Packer shall straighten and smooth bottom gore on packer's side of packing table throughout its length to apex (Figure 13).

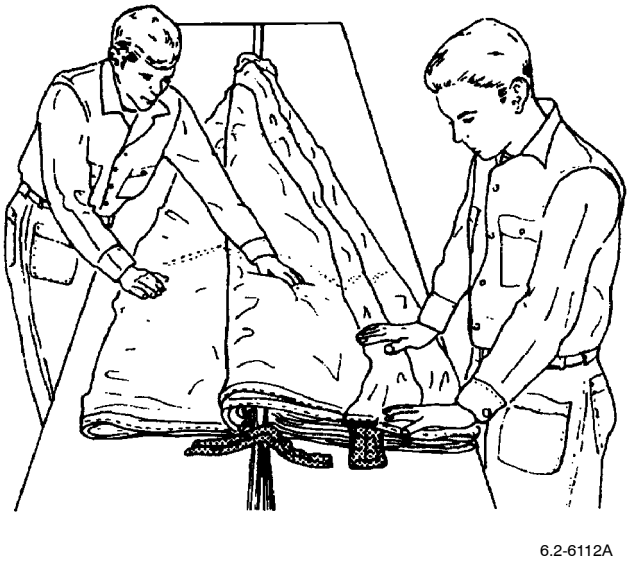


Figure 13. Packer Shall Straighten and Smooth Gores

m. Helper shall return folded gores above shot bag to helper's side of packing table. Packer shall straighten and smooth top gore. Remove shot bag from canopy (Figure 14).

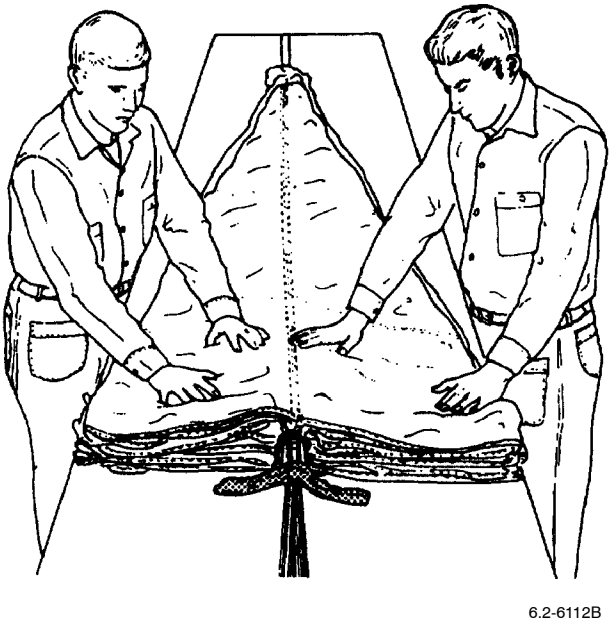


Figure 14. Helper Shall Return Gores Above Shot Bag

n. Packer and helper shall grasp skirt hem at midsections of gores and rotate towards suspension lines (Figure 15).

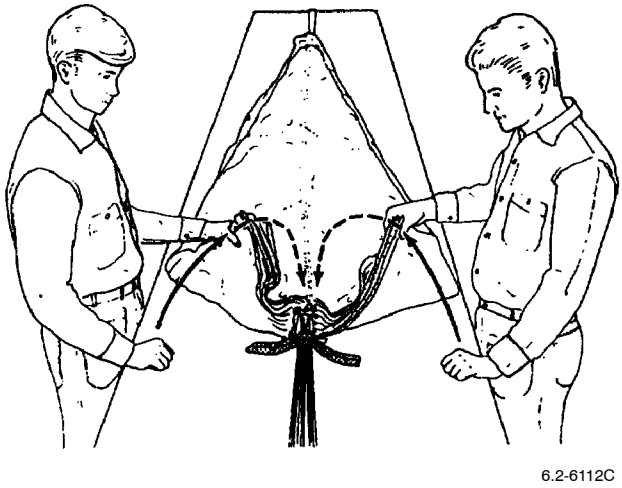


Figure 15. Grasp Skirt Hem and Rotate Towards Suspension Lines

o. Packer and helper shall grasp the bottommost gore fold and extend outwards aligning the edge of the skirt hem and suspension line V-tab reinforcements. The remaining 13 gores shall be aligned in a similar manner. Ensure that all V-tab reinforcements face same direction and that 14 gores have been counted on each side (Figure 16).

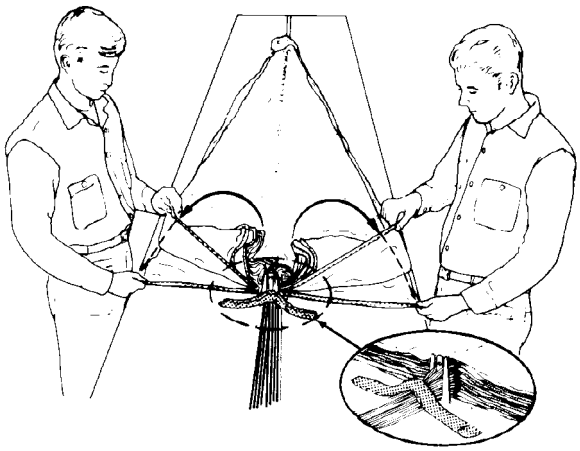


Figure 16. Grasp Gore Fold and Extend Outwards

p. Packer and helper shall grasp skirt hem and folded gores and S-fold canopy towards center. Butt S-folds together. The canopy cannot be S-folded throughout entire length, but will break two-thirds the distance to apex. Place two shot bags on folded canopy (Figure 17).

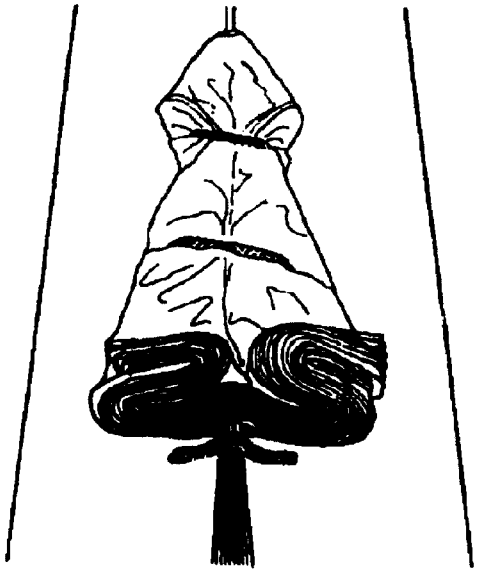


Figure 17. Grasp Skirt Hem and Folded Gores and S-Folds Towards Center

15. ATTACHMENT OF PULLDOWN VENT LINES, PILOT PARACHUTE, AND WITHDRAWAL LINE TO CANOPY APEX.

a. Accordion fold PDV lines at weak links into 5-in. folds and secure with rubberbands (Figure 18).

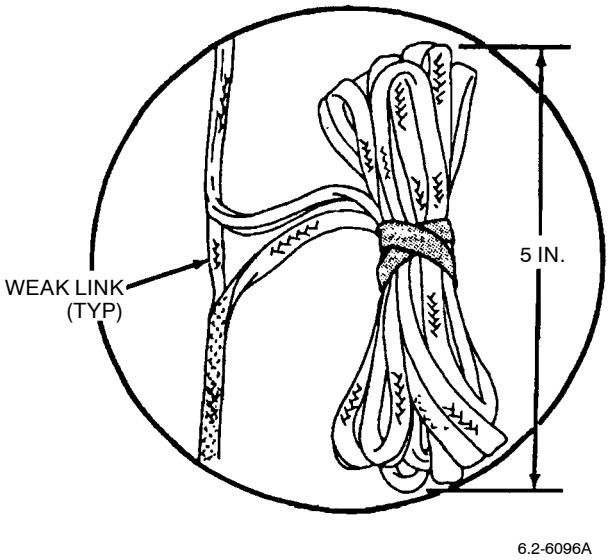


Figure 18. Accordion Fold PDV Lines

b. Release tension from canopy and remove tension strap from canopy apex but not from PDV line tension cord.

c. Separate suspension lines from PDV lines about 14 ft. from connector links and spread each group to edge of table.

d. While helper holds suspension lines at edges of table, packer shall draw canopy down center of table, between suspension lines, to a point where suspension lines between helper's hands and skirt hem become taut and PDV lines protrude thru vent hem (Figure 19).

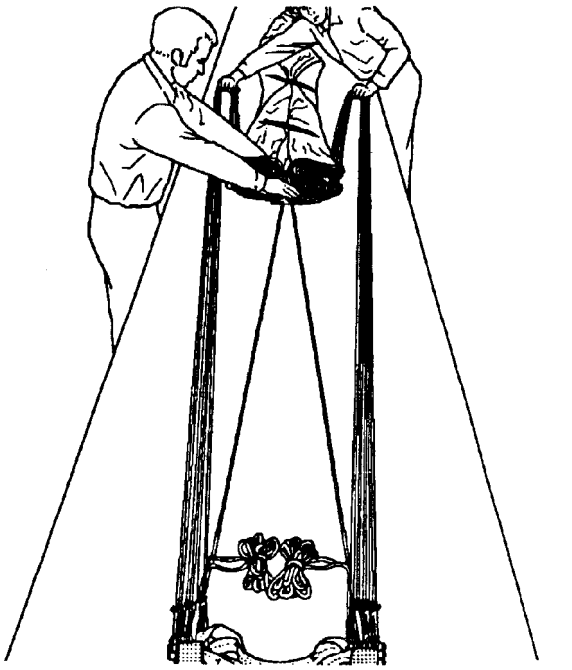


Figure 19. Helper Holds Suspension Lines at Edges of Table

e. Remove messenger cord from PDV lines at apex.

f. Count 14 vent lines in sequence. pass pilot parachute connector strap around vent lines and thru loops in PDV lines. Form a lark's head knot by passing pilot parachute thru loop end of connector strap and drawing tight (Figure 20).

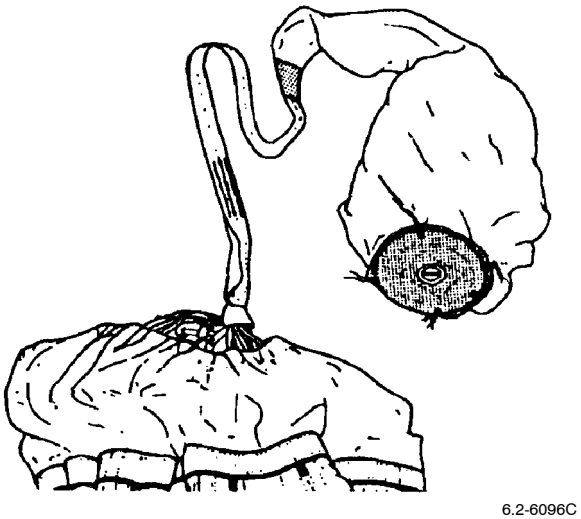


Figure 20. Pass Pilot Parachute Connector Strap Around Vent Lines

g. Pass loop end of withdrawal line around vent lines and thru loops in PDV lines to left of pilot parachute. Form a lark's head knot by passing free end of withdrawal line thru withdrawal line loop and pulling tight. Closure pins must be facing up when withdrawal line is drawn tight. Place pilot parachute and withdrawal line on top of canopy (Figure 21). (QA)

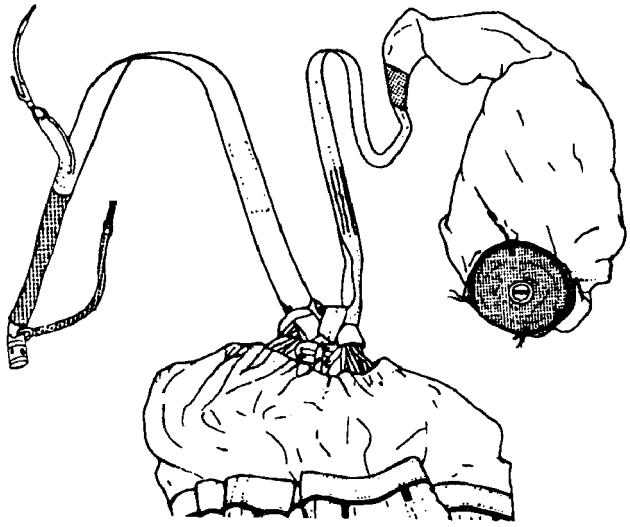


Figure 21. Pass Loop End of Withdrawal Line Around Vent Lines

16. INSTALLATION OF CONNECTOR LINK TIES.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove tension hooks from packing table. Remove connector links from tension hooks.

b. Tie each group of connector links together on each side with one turn size FF thread, single and waxed; tie off (Figure 22).

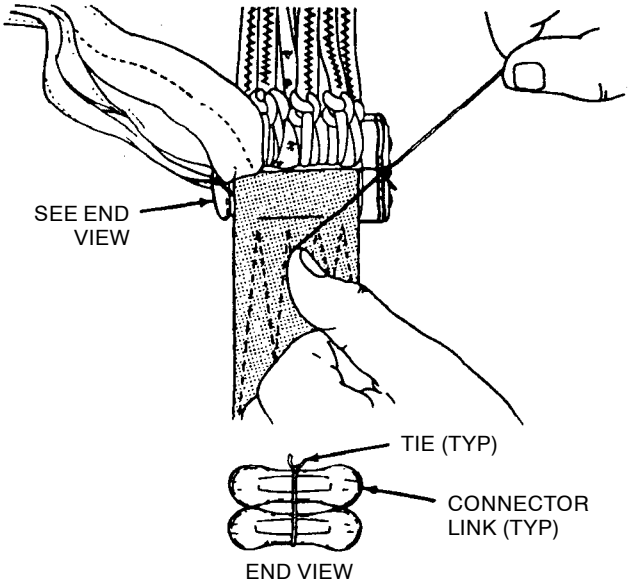


Figure 22. Installation of Connector Link Ties

17. STOWAGE OF SUSPENSION LINES.

NOTE

When stowing suspension lines, incorporate the use of a suspension line stowing aid as shown in WP 005 00. Helper shall hold suspension lines with stowing aid in stowage compartment until the stows are inserted properly.

Beeswax may be lightly applied to the stowage aids as a lubricant.

Connector links may be attached to tension hooks to hold in place.

a. Position line stowage board under suspension lines, 5-in. from connector links. Retention angles with dome nut affixed are turned upward (Figure 23).

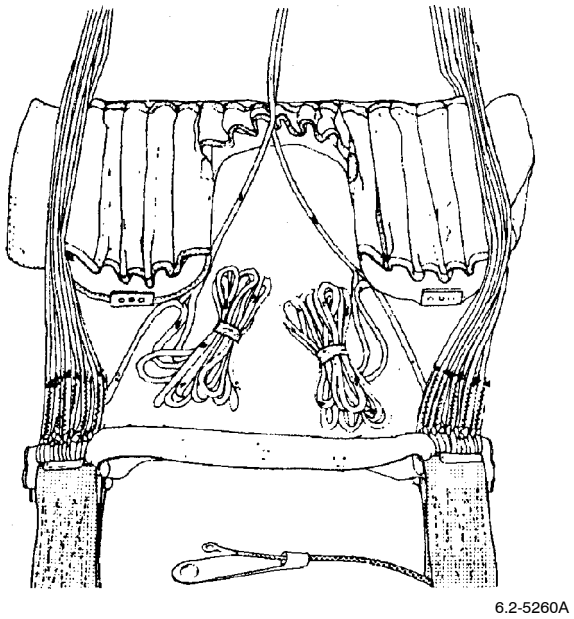


Figure 23. Positioning of Line Stowage Board

b. Packer and helper shall each pass a length of line stowage aid thru outboard stowage channels and form first bight in suspension lines. Do not stow PDV lines. Ensure line stowage board remains 5-in. from connector links (Figure 24).

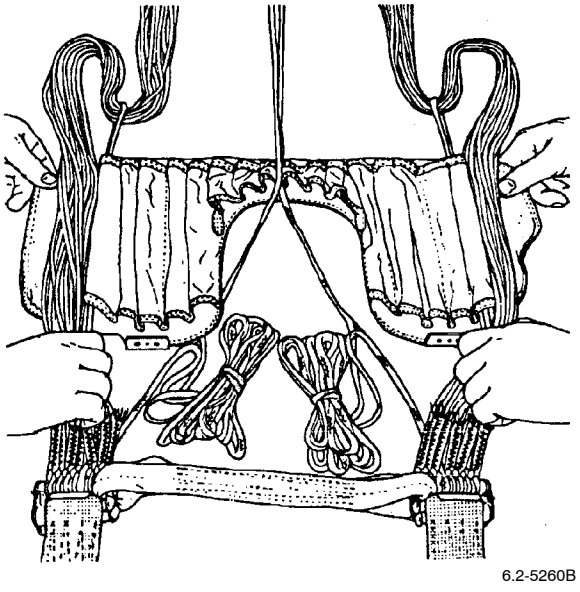
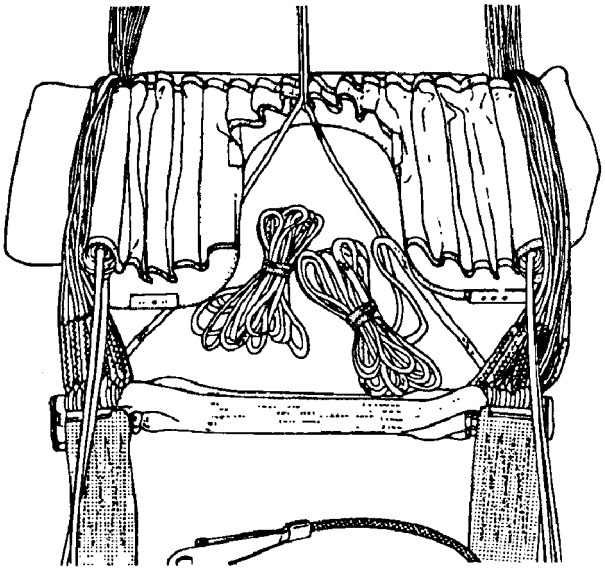


Figure 24. Pass a Length of Line thru Stowage Channel

CAUTION

Rapid removal of line stowage aids can cause damage to suspension lines.

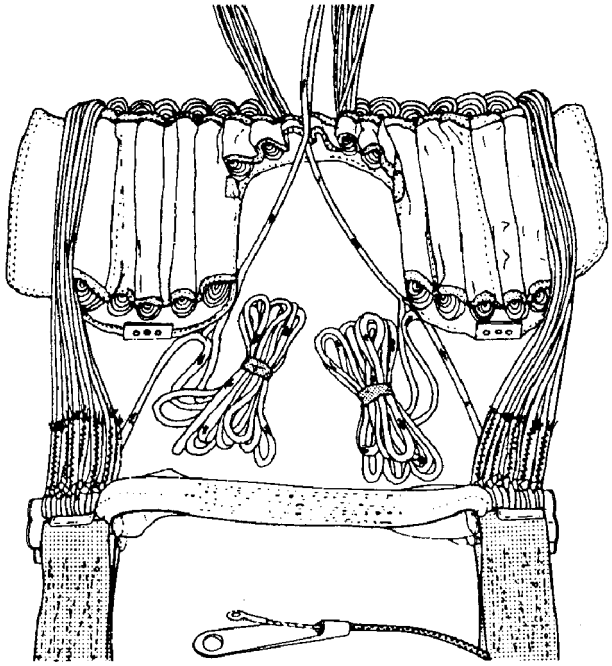
c. Packer and helper shall draw bights thru outboard channels to edge of stowage board. Remove line stowage aids slowly (Figure 25).



6.2-5260C

Figure 25. Draw Bights Thru Channels

d. Continue stowing suspension lines to center of board excluding PDV lines. Do not stow two center stowage board channels (Figure 26).



6.2-5260D

Figure 26. Continue Stowing Lines

e. Turn stowage board toward canopy so retention angles face down (Figure 27).

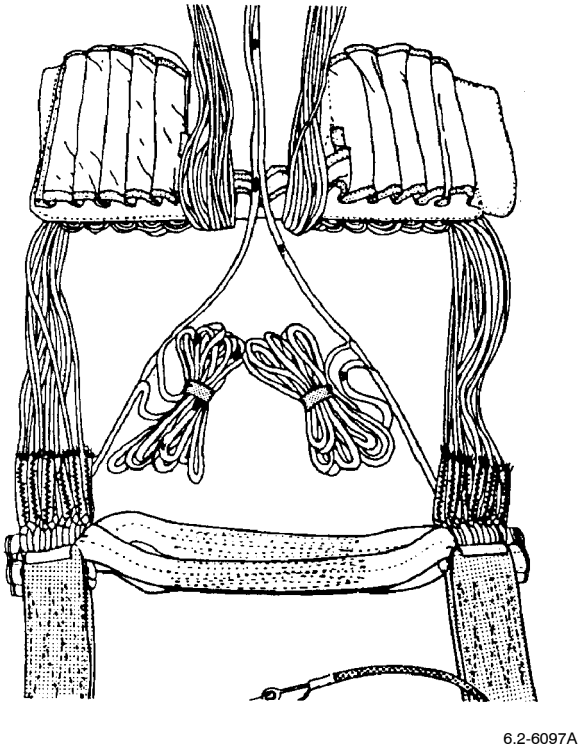


Figure 27. Turn Stowage Board

f. Begin stowing suspension lines in sixth stowage channel from outboard edge of stowage board. Do not stow PDV lines (Figure 28).

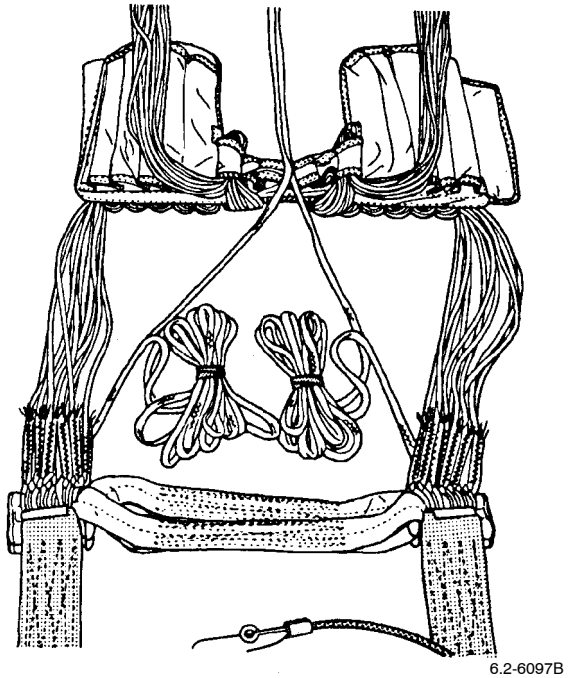


Figure 28. Begin Stowing in Sixth Channel

g. Continue stowing suspension lines to outboard edges of stowage board. Begin stowing PDV line in third stowage channel from outboard edges of stowage board (Figure 29).

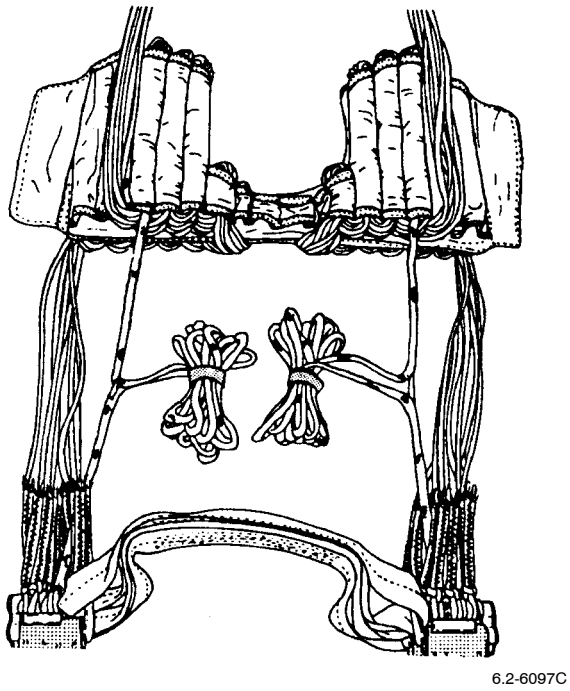


Figure 29. Continue Stowing

h. When suspension lines are stowed, there shall be about 18-in. of unstowed lines (Figure 30). (QA)

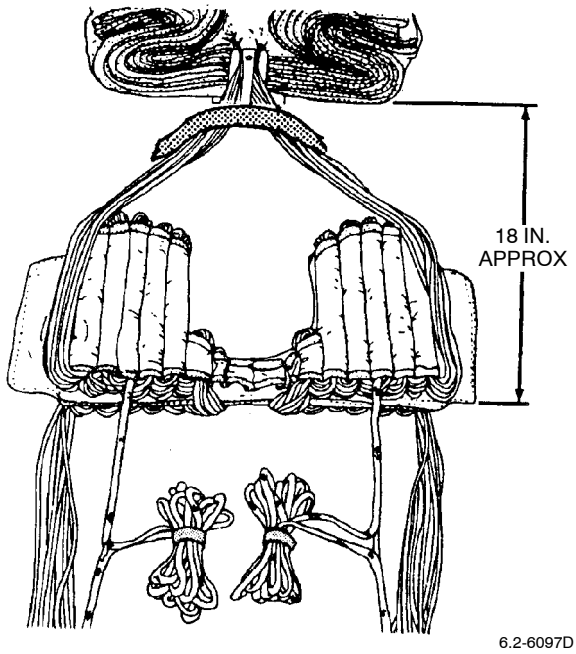


Figure 30. 18-in. of Unstowed Lines

18. INSTALLATION OF LINE STOWAGE BOARD INTO CONTAINER.

a. Rotate risers and line stowage board over toward canopy, so retention angles with dome nuts affixed face up and turned away from canopy. Position container on table with open end facing line stowage board and side ripcord protector flap facing packing table (Figure 31). (QA)

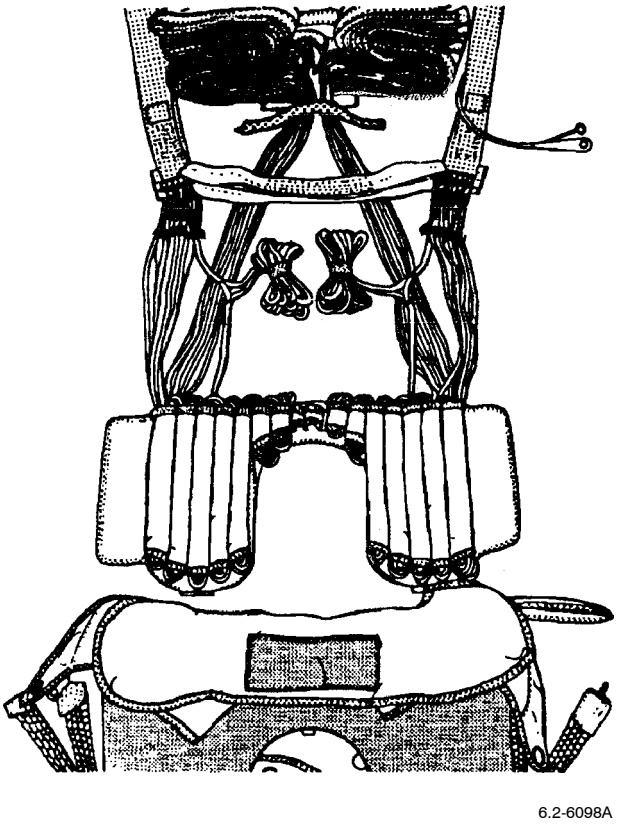


Figure 31. Rotate Risers and Stowage Board

WARNING

Ensure that suspension lines are not trapped between suspension line stowage tray retention angles and container.

b. Remove small line separator and shot bag. Slide container toward line stowage board inserting line stowage board into container. Do not move line stowage board toward container. Ensure suspension lines do not become trapped under line stowage board retention angles. Pilot parachute flap shall not be wedged between line stowage board and container. (QA)

c. Align holes in line stowage board retention angles with grommets in bottom of container legs. Align brackets on container restraint system assemblies above grommets in bottom of container legs. Ensure restraint assembly bracket is turned downward in relation to top of container. Insert screw thru one washer, restraint assembly bracket, and grommet and then into each container leg. Lightly apply sealing compound to screwheads and tighten screws in line stowage board affixed dome nuts (Figure 32). (QA)

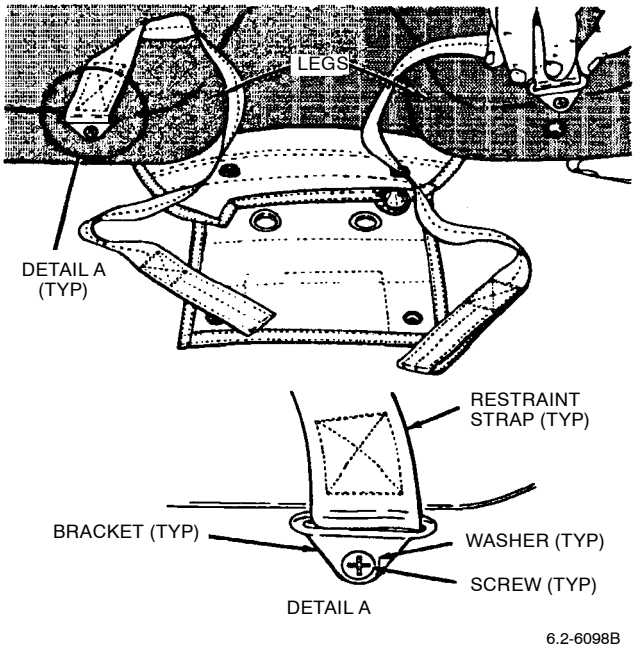


Figure 32. Alignment of Holes

19. STOWAGE OF CANOPY.

a. Place container in container stand. Attach hook tape patch on risers to pile tape patches on inside of container. Stow PDV lines between connector links and stowage board in bottom of container legs. Stow suspension line between stowage board and canopy skirt hem behind stowage board (Figure 33). (QA)

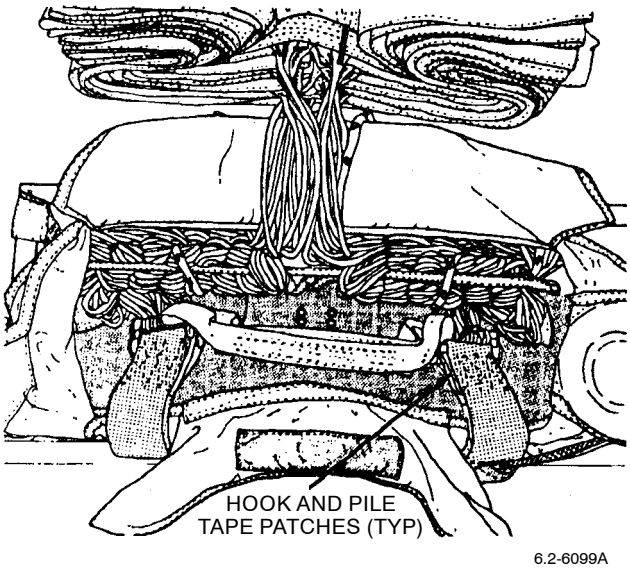


Figure 33. Place Container in Stand

b. Remove shot bag from skirt hem. (QA)

c. Stow all but about 6 ft. of canopy into container. Use the following illustration as a guide while stowing canopy (Figure 34).

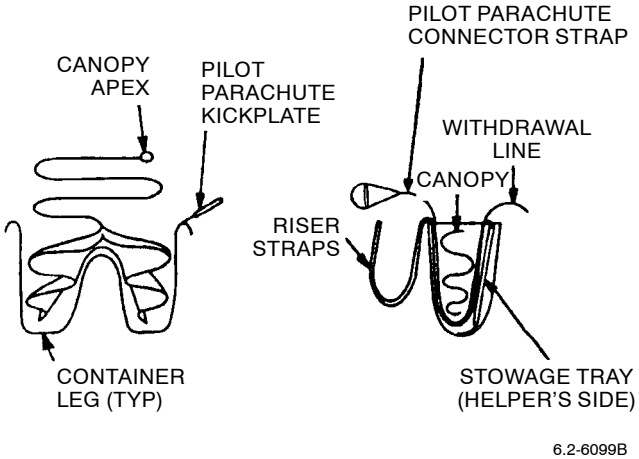


Figure 34. Stow All But 6 ft.

d. Spread suspension line groups about 6-in. Fold skirt hem under 4-in. and tuck into container legs (Figure 35).

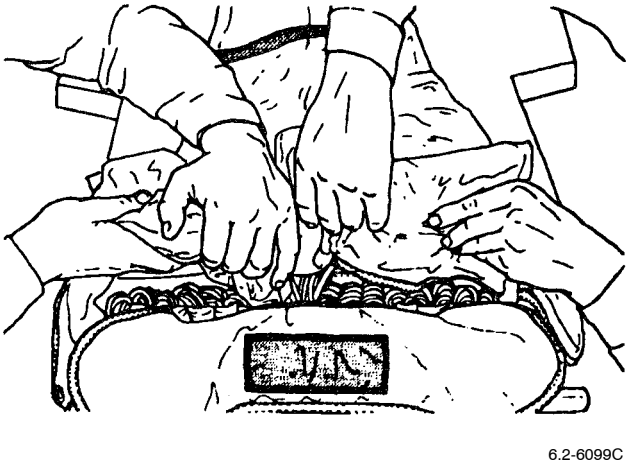


Figure 35. Spread Suspension Line Group

e. Continue to accordion-fold all but about 6 ft. of canopy into container. Separately press each accordion-fold firmly into legs of container. Accordion-fold remainder of canopy on packing table, starting with first fold on packer's side and ending with apex on helper's side. Folds shall extend 3-in. over sides of container. Ensure shot bags are removed from canopy (Figure 36). (QA)

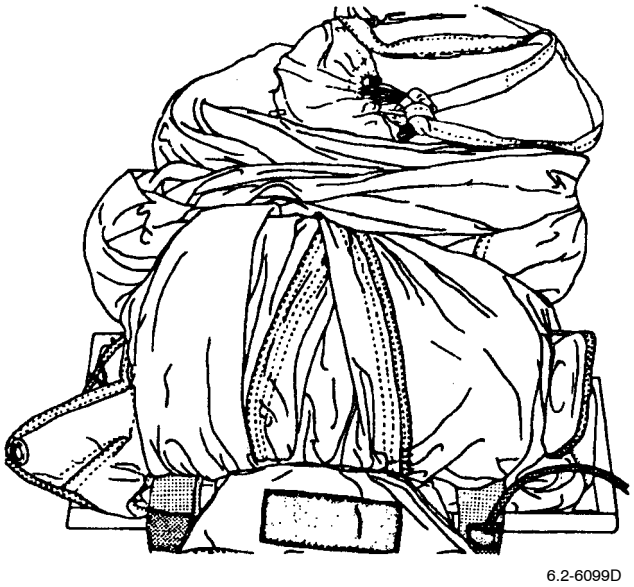


Figure 36. Continue to Accordion Fold

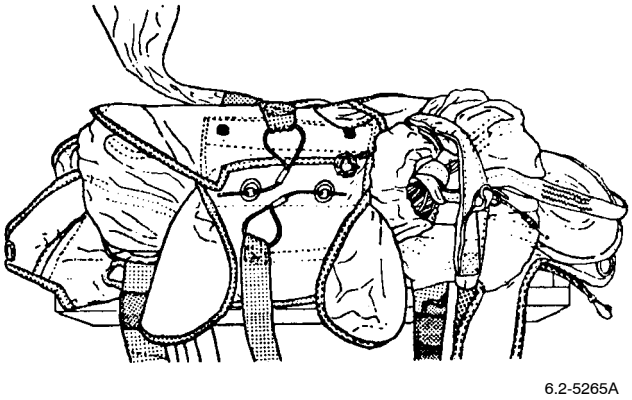
f. Place withdrawal line and pilot parachute back onto packing table. Position remaining accordion-folded canopy on top of canopy in container. Ensure apex is positioned on helper's side of container. (QA)

20. CLOSING OF CONTAINER.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

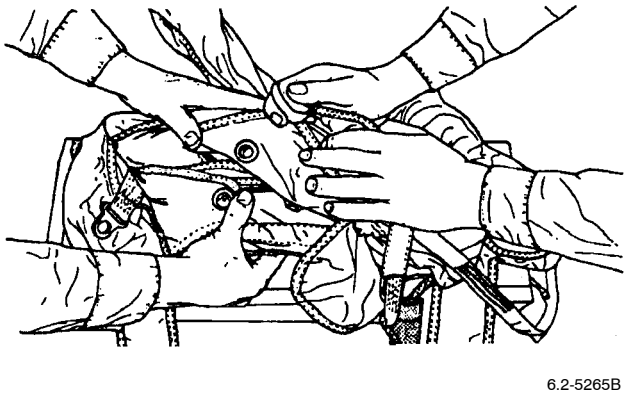
a. Pull side of flap with locking cones over top of folded canopy. Pull side flap with grommets over top side flap with locking cones and place grommets over locking pins (Figure 37).



6.2-5265A

Figure 37. Pull Flap With Locking Cone Over Folded Canopy

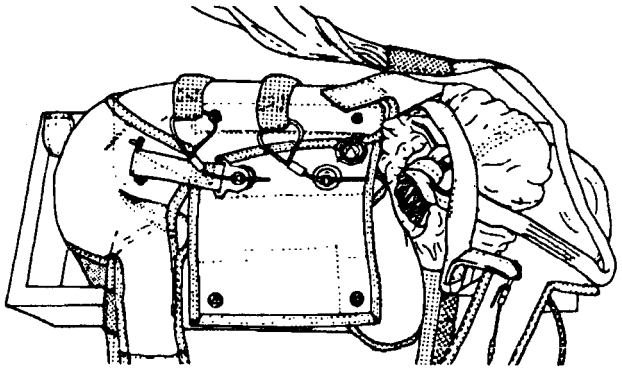
b. Remove temporary locking pin on packer's side and place grommet on end flap over locking cone, between side flaps (Figure 38).



6.2-5265B

Figure 38. Remove Temporary Locking Pin

c. Place side flap grommet back over locking cone and place metal end tab over grommet and locking cone. Reinsert temporary locking pin as shown (Figure 39).



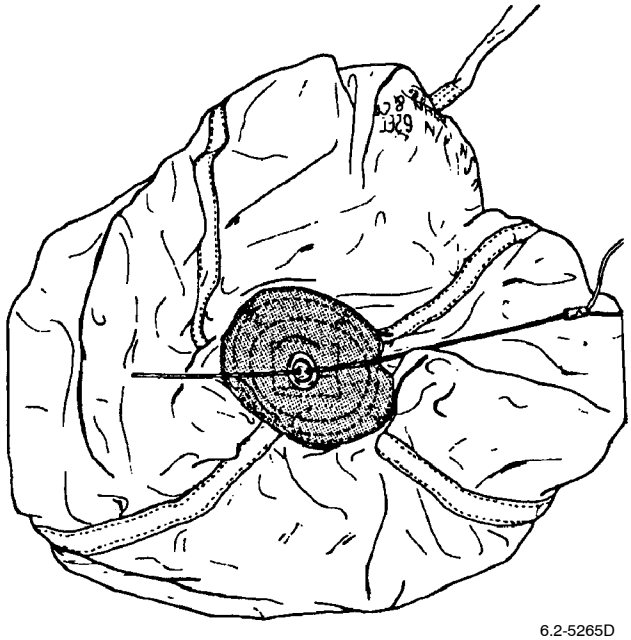
6.2-5265C

Figure 39. Place Metal End Tab Over Grommet

CAUTION

Ensure that pilot parachute cloth is not twisted around or entangled in compressed pilot parachute spring.

d. Insert guide tube thru grommet in crown of pilot parachute and place it over the locking cone on the spring baseplate. Compress pilot parachute fully, remove guide tube, and insert pilot parachute temporary locking pin into locking cone hole (Figure 40).



6.2-5265D

Figure 40. Insert Guide Tube Thru Grommet

e. Accordion-fold withdrawal line about 5-in. width, allowing free end to exit container at semicircular cutout on side flap containing grommets, opposite alignment ring on end flap. Wrap one turn of size E thread, doubled and waxed, around these folds; tie off. (QA)

f. S-fold pilot parachute connector strap over canopy apex on helper's side. Ensure connector strap emerges toward the front of container (Figure 41). (QA)

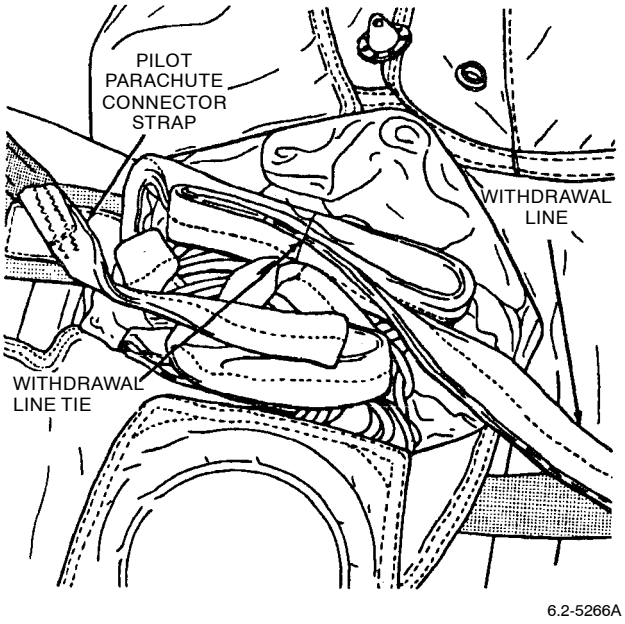


Figure 41. S-Fold Pilot Parachute Connector Strap

g. Place pilot parachute kickplate on top of canopy apex (Figure 42).

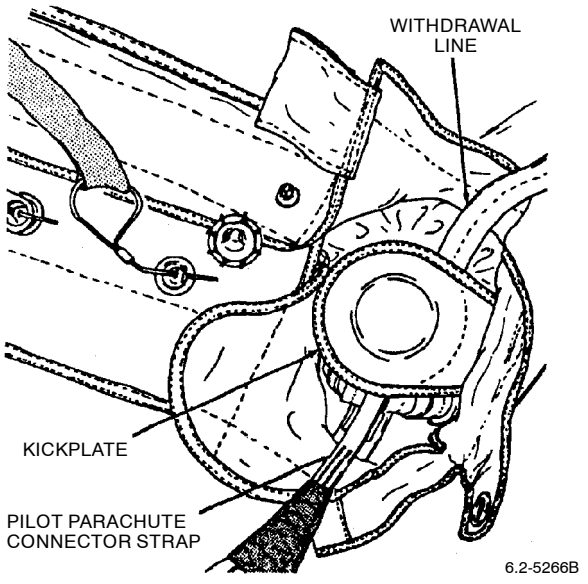


Figure 42. Placement of Kickplate

h. Tuck pilot parachute cloth under pilot parachute crown and place pilot parachute on top of kickplate (Figure 43).

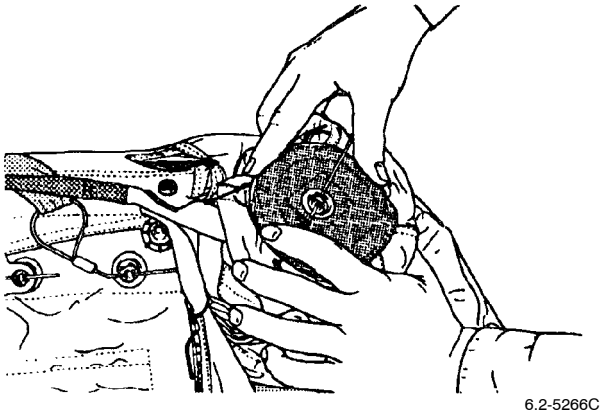


Figure 43. Placement of Pilot Parachute Cloth

WARNING

Withdrawal line must exit container at semicircular cutout on side flap containing grommets, opposite alignment ring on end flap.

i. Remove temporary locking pin on helper's side and pull end flap over compressed pilot parachute. Route withdrawal line and temporary locking pin flag out rear of container at semicircular cutout on side flap containing grommets opposite alignment ring on end flap. Remove grommet side flap from locking cone and place end flap grommet over locking cone. Place side flap grommet over locking cone. Place end tab over locking cone and reinsert temporary locking pin. Insert riser protector flaps using a packing fid (Figure 44). (QA)

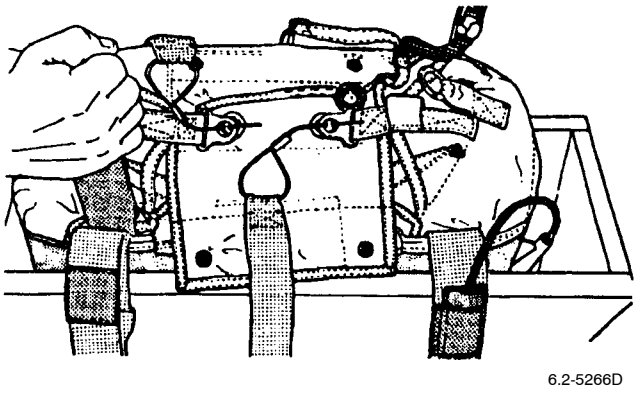


Figure 44. Removal of Temporary Locking Pin

j. Insert ripcord terminal thru webbing loop on end flap. Ripcord cable shall pass over loop. Helper shall hold end tab over locking cone on withdrawal line side of container. Packer shall remove temporary locking pin; then position ripcord terminal over locking cone and reinsert temporary locking pin. Remove pilot parachute temporary locking pin (Figure 45). (QA)

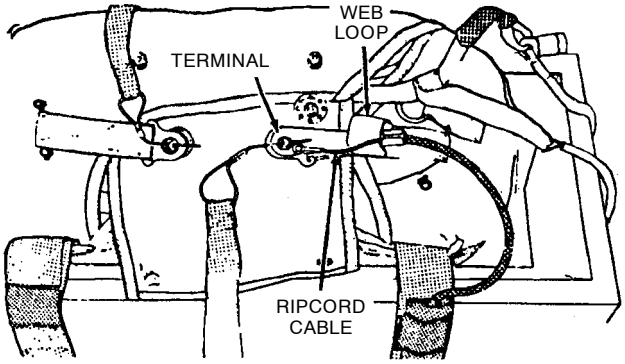


Figure 45. Inserting Ripcord Terminal

WARNING

Ensure that ripcord pins are centered in locking cones so that shoulder of ripcord pin is not jammed against locking cone.

k. Route withdrawal line closure pin assembly thru alignment ring. Insert long pin (curved pin) thru eye on end of ripcord assembly. Helper shall insert long pin into locking cone with ripcord terminal as packer removes temporary locking pin. Insert short pin (straight pin) into second locking cone (Figure 46). (QA)

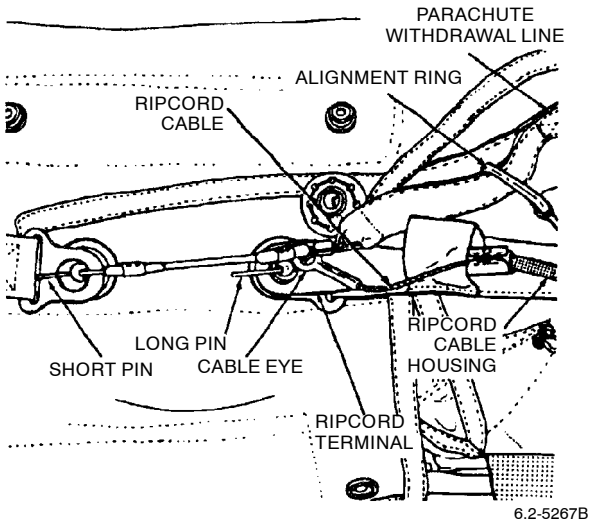


Figure 46. Route Withdrawal Line Closure Pin

l. Remove container from stand, and attach four container spring opening assemblies (two on each end of container). Ensure that manual ripcord housing passes under forward spring opening assembly.

m. Mate snap fasteners on restraint assemblies to snap fasteners on risers. Tack risers to restraint assemblies at snap fasteners by passing two turns of size E thread, single and waxed thru both riser risers and restraint assembly; tie off (Figure 47). (QA)

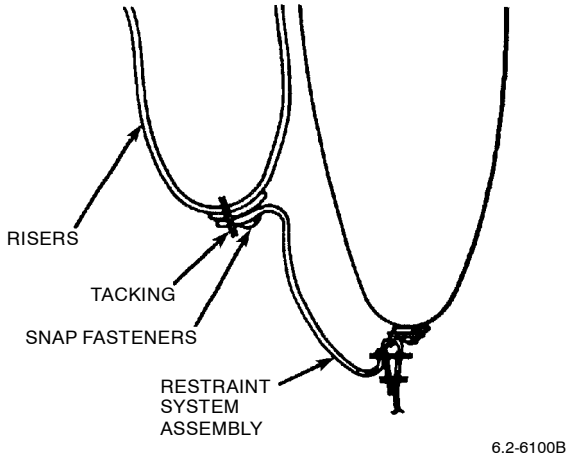


Figure 47. Mate Snap Fasteners

21. RIPCORD GRIP PULL CHECK.

a. Reinstall parachute in stand.

b. Ensure ripcord grip is fully seated in ripcord retainer.

c. Set spring scale to zero.

d. Attach scale to grip using Type IIA or III nylon cord.

e. Helper shall hold ripcord cable in place and, using a straight steady pull, remove grip from retainer. The force required to remove grip from retainer shall be 15 ± 5 lbs. (QA)

22. RIPCORD PIN PULL CHECK.

a. Set spring scale to zero.

b. Insert ripcord pinlock on bottom ripcord pin (Figure 48).

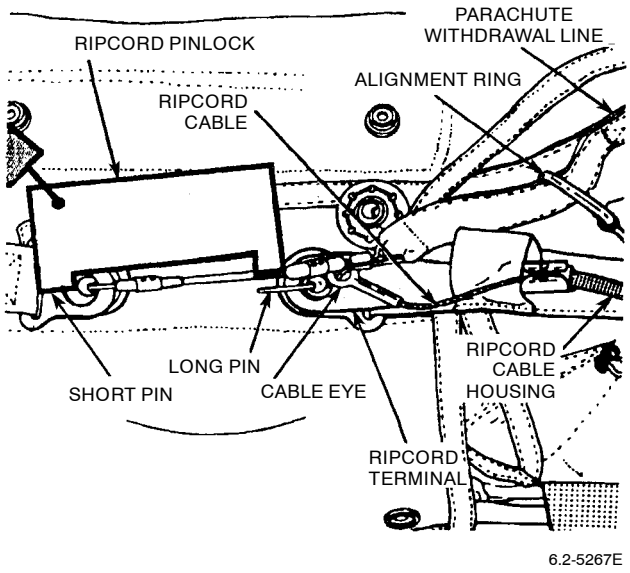


Figure 48. Inserting Ripcord Pinlock

c. Attach spring scale to ripcord grip with Type III nylon cord.

d. Using the scale, apply a straight steady force to ripcord grip until initial movement of the ripcord pins is observed. Maximum allowable force is 27 lbs. (QA)

WARNING

Ripcord pinlock must be removed.

e. Remove ripcord pinlock. Install ripcord grip in ripcord handle clip. (QA)

23. RIPCORD PIN TACKINGS.

a. Loop a 12-in. length size E thread, single and waxed under short pin. Secure pin by bringing thread ends together and forming three to five half-hitches around ripcord cable directly behind ripcord pin ferrule ending with a binder knot. Trim excess within 1/2 to 3/4-in. from binder knot (Figure 49). (QA)

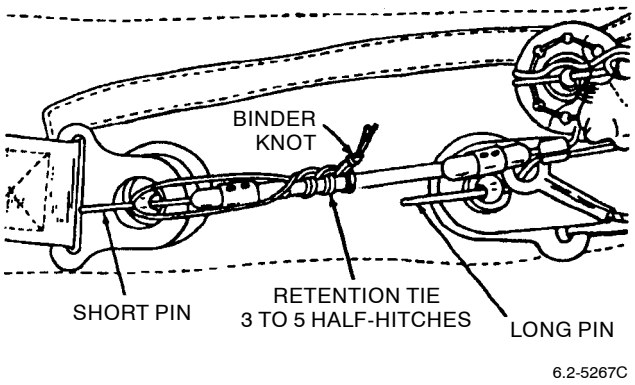


Figure 49. Safetying Short Pin

b. Route withdrawal line sleeve assembly thru alignment ring. Place ring on closure pin line over locking cone and then insert the sleeve assembly special pin. Safety-tie special pin by passing a length of unwaxed size A thread, single, under end of pin and thru loop formed at back of pin (Figure 50). (QA)

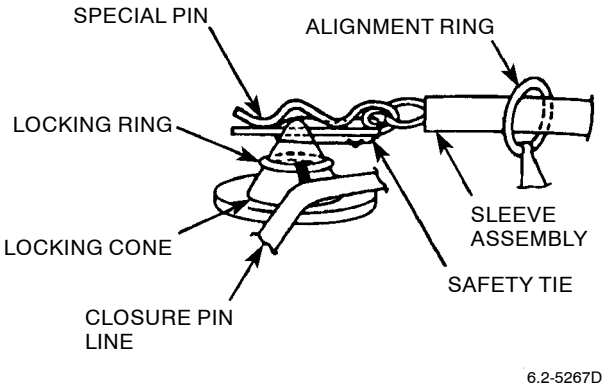


Figure 50. Routing Withdrawal Line Sleeve

c. Using the following illustration as a guide check the following: ensure ripcord terminal passes thru webbing loop and ripcord cables passes over loop; ensure closure pin line and sleeve assembly of withdrawal line pass thru alignment ring; ensure short pin and special pin are properly safety-tied (Figure 51). (QA)

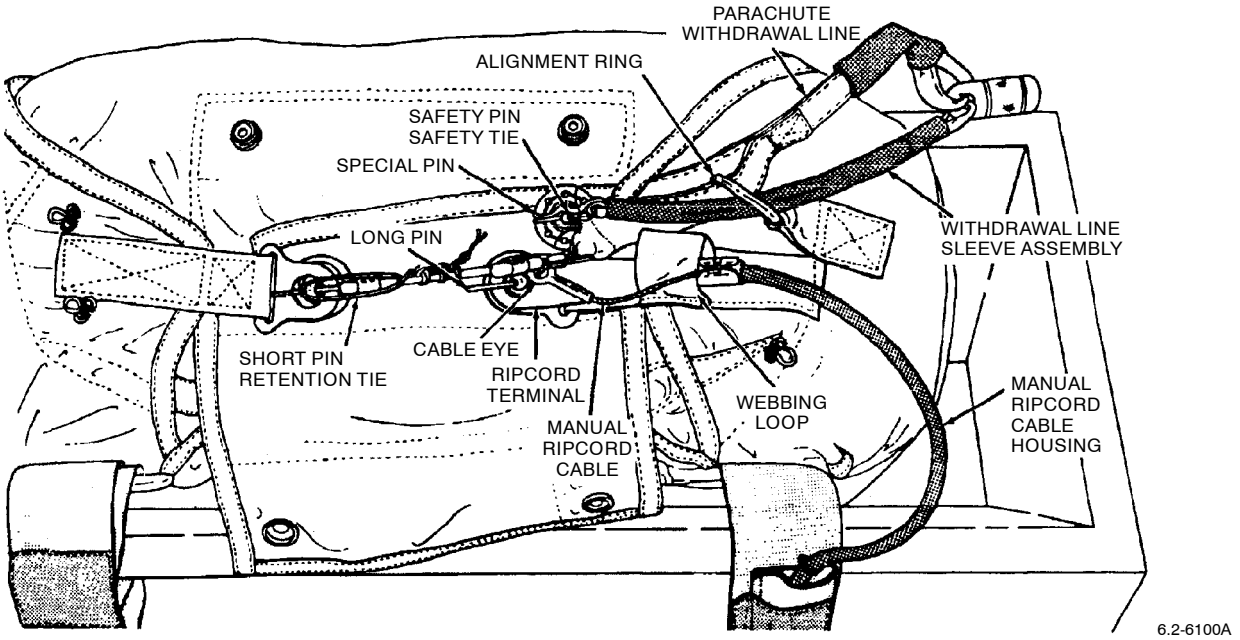


Figure 51. Ensure Ripcord Terminal Passes thru Webbing Loop

d. Position risers on top of container, pass canopy release stowage strap around risers, and snap closed (Figure 52).

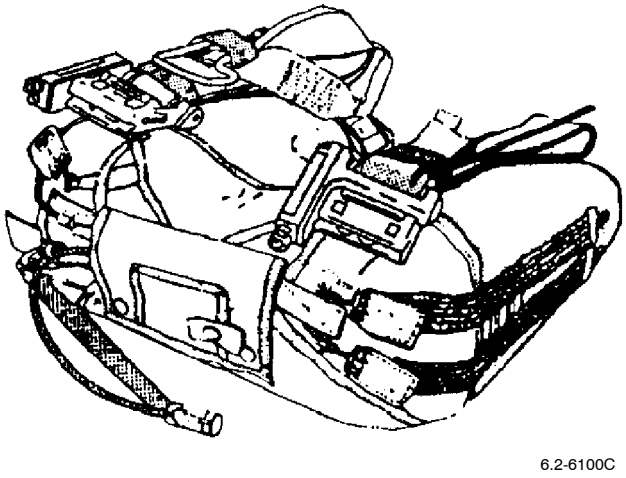


Figure 52. Positioning of Risers on Container

24. PARACHUTE HARNESS SENSING RELEASE UNIT (PHSRU), MXU-746/P AND MXU-747/P.

a. Measure the knurled actuating lever torque as follows:

(1) Hold locking lever in the open position and insert the torque meter with 1/16-in. hex head driver into actuating lever cavity.

(2) Rotate actuating lever to just prior to contact with body. Acceptable torque values are 28 to 50 in.-oz. (Figure 53). (QA)

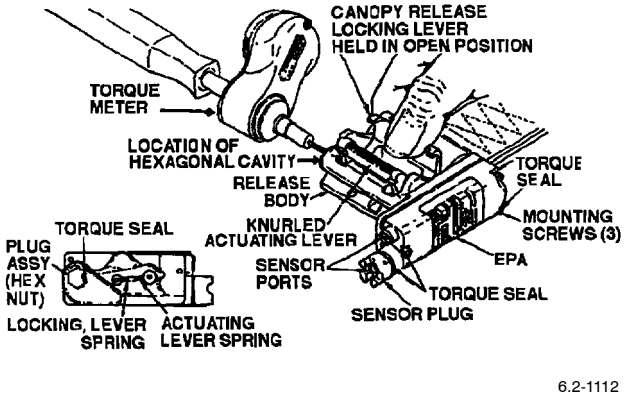


Figure 53. Rotate Actuating Lever

b. Check battery voltage as follows:

(1) Install test leads in multimeter observing proper polarity.

(2) Select VDC and scale exceeding 26 VDC.

CAUTION

Avoid touching the meter probes together when making this test. Firing of the PHSRU may result.

(3) Contact negative (black) probe to sensor plug assembly center conductor. Contact positive (red) probe to EPA sensor center conductor.

(4) Reading of +22.5 volts DC or greater indicates PHSRU is serviceable. (QA)

c. If plug assembly was removed, perform the following:

(1) Forward complete packed parachute assembly to either non-destructive inspection lab or medical facility for X-ray.

(2) From review of X-ray (Figure 54), if plug assembly is suspected or known to be partially or fully recessed, the unit shall have a shear pin integrity check per WP 024 02.

(3) Record inspection on Parachute Record (OPNAV 4790/101).

(4) Attach X-rays to the Parachute Record (OPNAV 4790/101).

(5) If voltage is below +22.5 volts DC, replace battery per WP 024 02.

(6) Record voltage for each EPA in the Local Use Block on the Parachute Record (OPNAV 4790/101).

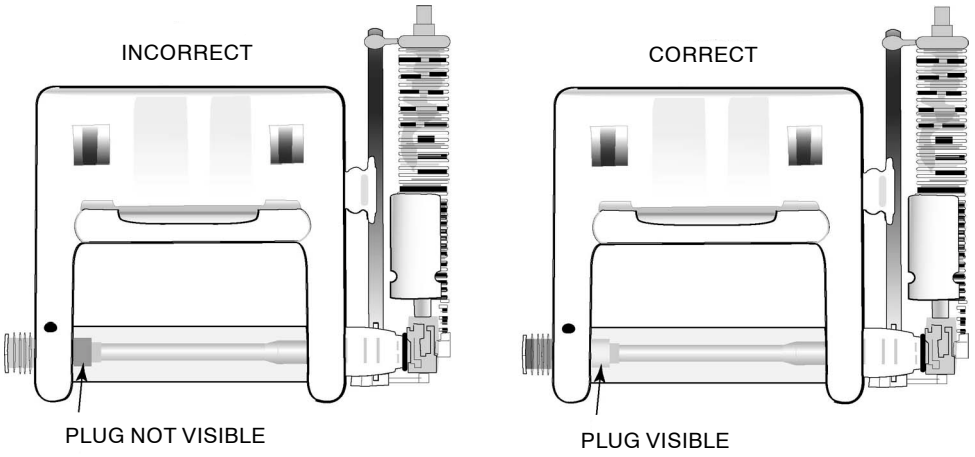


Figure 54. PHSRU X-Ray

25. FINAL CHECKOUT.

a. Measure height of packed parachute. Height shall not exceed 16 1/2-in. measure from screwhead to highest point of container (Figure 55).

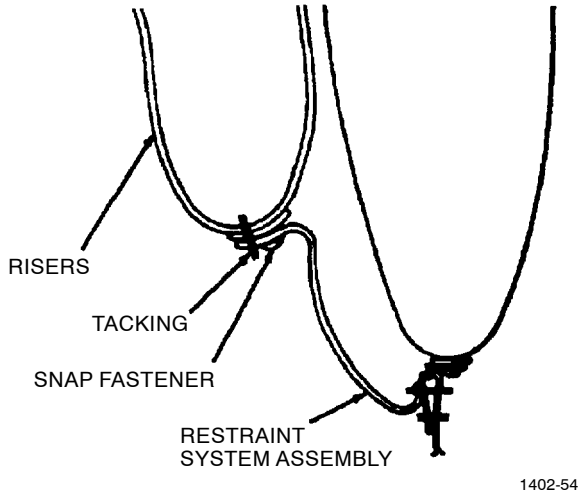


Figure 55. Measure Height of Container Packed

b. Account for all packing tools.

c. Examine packed parachute for general condition and close pin protector flap.

d. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA).

e. QA inspector shall examine completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

f. QA inspector shall sign Parachute Record (OPNAV 4790/101).

g. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPN DIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

INTERMEDIATE AND DEPOT MAINTENANCE

REPAIR PROCEDURES

NES-8B PERSONNEL PARACHUTE ASSEMBLY

PART NO. 574AS100-4

List of Effective Work Package Pages

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1 thru 16	9						

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Intermediate and Depot Maintenance Common Repair Procedures . . . . . WP 004 00
Intermediate and Depot Maintenance Packing Procedures NES-8B Personnel Parachute Assembly . . . . . WP 014 02
Intermediate Maintenance Packing Procedures A/P28S-32 Personnel Parachute Assembly . . . . . WP 026 02
Organizational, Intermediate, and Depot Maintenance Support Equipment . . . . . WP 005 00
Organizational Maintenance, Repair Procedures, NES-8B Personnel Parachute Assembly . . . . . WP 014 01
Parachute Loft Requirements/Administration . . . . . WP 003 00

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Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This work package (WP) contains instructions for the maintenance, repair, replacement, and fabrication of various drogue parachute parts or subassemblies to ensure that appropriate items of equipment remain in a ready-for-issue (RFI) status. Selected repairs shall be documented on the Parachute Record. For common repairs refer to WP 004 00.

2. PILOT PARACHUTE REPAIRS.

3. GENERAL.

a. Repair of the pilot parachute is limited to the following:

(1) Cleaning of contaminated areas.

(2) Replacement of loose or broken tacking.

b. Replace pilot parachute for any of the following:

(1) Service/total life has expired per WP 014 02.

(2) Holes, tears, seam separations, and loose or broken stitching (yarn separation is acceptable) that may affect the safe operation of the parachute assembly.

(3) Pilot parachute spring is bent or broken.

(4) Pilot parachute locking cone or grommet is loose or damaged.

4. REPLACEMENT OF PILOT PARACHUTE.

a. Remove tension hook from apex lines and remove pilot parachute.

b. Inspect replacement pilot parachute per WP 014 02.

c. Pass replacement pilot parachute bridle around vent lines and thru loops in ends of pull down vent (PDV) lines to the right of the withdrawal line. Pass pilot parachute thru loop end of pilot parachute bridle and draw tight (Figure 1). (QA)

d. Mark date placed in service on pilot parachute per WP 004 00. (QA)

5. WITHDRAWAL LINE REPAIRS.

6. GENERAL.

a. Repair of the withdrawal line is limited to cleaning of contaminated area.

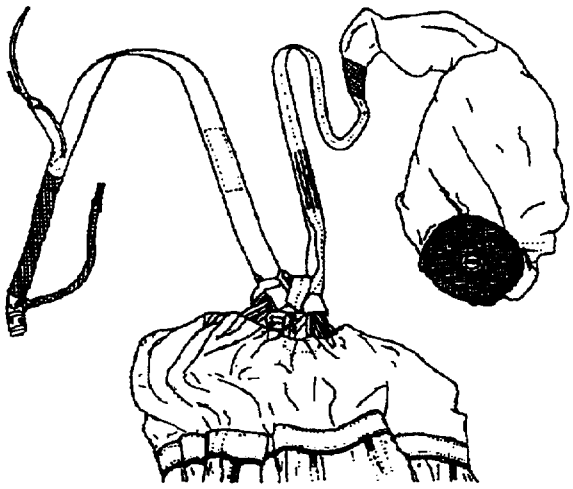

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Figure 1. Pilot Parachute and Withdrawal Line Replacement

b. Replace withdrawal line for any of the following:

(1) Service/total life has expired per WP 014 02.

(2) Any damage that exists that may affect the safe operation of the parachute assembly.

7. REPLACEMENT OF WITHDRAWAL LINE.

a. Inspect replacement withdrawal line per WP 014 02.

b. Remove tension hook from apex lines and remove withdrawal line.

c. Pass loop end of replacement withdrawal line around vent lines and thru PDV lines to left of pilot parachute bridle. Pass free end of withdrawal line thru loop and draw tight. Ripcord pins must be facing up when withdrawal line is drawn tight (Figure 1). (QA)

d. Mark date place in service on withdrawal line per WP 004 00. (QA)

8. CANOPY ASSEMBLY REPAIRS.

9. REPLACEMENT OF CANOPY ASSEMBLY.

Support Equipment

Part Number	Nomenclature
Refer to WP 005 00	Temporary Locking Pin
—	Screwdriver, Torque

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
PIA-C-5040	Cord, Nylon, Type III

NOTE

New PDV lines are to be installed at the time of canopy replacement. Once installed the PDV lines become a permanent part of the canopy and will reach service life accordingly. Remove PDV lines are not reused.

For Double "L" Connector Link, refer to Paragraph 32 for disassembly, assembly, and inspection instructions.

a. Remove pilot parachute and withdrawal line from vent lines. Retain for installation.

b. Remove four-line release rigging from connector links and then remove lanyard from flutes.

c. Remove connector link yoke and plate assemblies.

d. Remove connector links from riser loops and remove cross-connector strap. Reinstall yoke and plate assemblies.

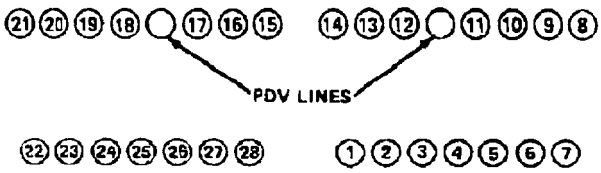
e. Dispose of canopy assembly and PDV lines per current supply directives.

f. Lay out replacement canopy assembly and stretch it to its full length on the packing table.

g. Attach tension strap hook to canopy vent lines.

h. Locate gore 28 (nameplate gore) and place it bottom-most in center of packing table.

i. At skirt hem, separate suspension lines into two equal groups with lines 15 thru 28 on packer's side and 1 thru 14 on helper's side (Figure 2). Grasping each group of lines, walk from skirt hem to connector links removing any dips and twists between two groups.



6.2-5750

Figure 2. Arrangement and Orientation of Suspension Lines on Connector Links

j. Place connector link holding lines 15 thru 21 on top of connector link holding lines 22 thru 28. Place connector link holding lines 8 thru 14 on top of connector link holding lines 1 thru 7. Insert tension hooks into connector links and insert hooks into packing table (Figure 2).

k. Apply tension.

l. Pull vent collar toward canopy and align vent hem.

m. Pull vent collar band back to its original position.

n. Check suspension line continuity on left side of gore 14. Packer shall grasp line 15 at skirt hem and raise to a sufficient height to ensure line is free of dips and twists. Continue this procedure with lines 16 thru 28 (Figure 2). Helper shall be positioned at connector links to check lines selected by packer.

o. Check suspension line continuity on right side of gore 14. Packer shall grasp line 14 at skirt hem and raise to enough height to ensure line is free of dips and twists. Continue procedure with lines 13 thru 1 (Figure 2). Helper shall be positioned at connector links to check lines selected by the packer.

p. Inspect four-line release anchor loops for proper attachment to lines 3 and 26. Measure 30 ± 1/2-in. above upper connector link bar. Anchor loops must be attached with 2-in. of zigzag stitching.

q. Continue to inspect canopy assembly per WP 014 02.

r. Record any damage on canopy damage chart.

s. Reattach pilot parachute, withdrawal line, and new PDV lines per Paragraphs 4, 5 and 12.

t. Lay out riser assembly and cross-connector straps on packing table. Corresponding risers shall be placed on top of each other and positioned at connector links. Ripcord assembly shall face up.

u. Remove connector links from tension hooks. Remove tension hooks from packing table.

v. Remove connector link yoke and plate assemblies from bottom connector links.

w. Insert bottom connector links thru loop in each end of cross-connector strap and thru loops in bottom riser straps.

x. Reattach yoke and plate assemblies to bottom connector links ensuring knurled portions of plate faces up and screw-heads face outboard.

y. Remove connector link yoke and plate assemblies from top connector links.

z. While maintaining suspension line continuity, slide suspension lines onto a temporary locking pin or rod.

aa. Insert connector links top connector links thru loops in each cross-connector strap and then thru loop in top riser straps.

CAUTION

Ensure that clove-hitch and half-hitch at ends of suspension lines do not separate during handling.

ab. Reinstall suspension lines 3 thru 7 and 26 thru 22 onto connector links.

ac. Reattach yoke and plate assemblies to top connector links ensuring knurled portion of plate faces up and screw-heads face outboard.

ad. Insert tension hooks into connector links and then tension canopy.

ae. Perform suspension line continuity check line as in steps n and o. (QA)

af. Tighten screws on top and bottom connector links to a torque value of 20 to 25 in-lbs. (QA)

ag. Apply torque seal to each connector link screwhead.

ah. Mark date placed in service on canopy assembly per WP 004 00. Install new assembly label on container. Hand etch information onto label. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

ai. Fabricate four-line release lanyards, if required per WP 004 00.

aj. Attach four-line release lanyards to suspension lines 3 and 26 per WP 004 00.

ak. Rig four-line release lanyards per WP 004 00.

10. PULLDOWN VENT (PDV) LINES REPAIRS.

11. GENERAL.

a. Repair of PDV lines is limited to removal and replacement. Replace PDV lines if any damage exists that may affect the safe operation of the parachute assembly.

12. REPLACEMENT OF PULLDOWN VENT (PDV) LINES.

Support Equipment

Part Number	Nomenclature
Refer to WP 005 00	Temporary Locking Pin

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type IIA or III
MIL-R-1832	Rubberband, Retaining, Type I

NOTE

New PDV lines are to be installed at the time of canopy replacement. Once installed, the PDV lines become a permanent part of the canopy and will reach service life accordingly. Removed PDV lines are not reused.

For Double "L" Connector Link, refer to Paragraph 32 for disassembly, assembly, and inspection instructions.

a. Remove or replace PDV lines as follows:

(1) Remove pilot parachute and withdrawal line from vent lines and PDV lines.

(2) Remove connector link yoke and plate assemblies from top connector links.

CAUTION

Ensure that suspension line continuity is maintained at all times. Also ensure that the clove-hitch and half-hitch at the ends of the suspension lines have not separated during handling.

(3) While maintaining suspension line continuity, slide suspension lines 8 thru 11 and 21 thru 18 onto a temporary locking pin or rod.

(4) Remove defective PDV line.

(5) Lay out new PDV lines the full length on the packing table. The end with small loop shall be positioned at connector links and end with large loop positioned at skirt hem.

(6) Measure length of new PDV lines while applying 25 lbs. tension for 1 min. PDV lines shall measure 22 ft. 6-in. ± 6-in. with no more than a 4-in. difference between the two lines.

(7) Secure small loop of one PDV line between suspension lines 17 and 18 on top left connector link and other between suspension lines 11 and 12 on top right connector link. PDV lines must pass under the three inboard lines on each connector link.

(8) Reattach yoke and plate assemblies to top connector links ensuring knurled portion of plate faces up and screw-heads face outboard.

(9) Insert tension hooks into connector links and then apply tension to canopy.

(10) Check suspension line continuity (Figure 2).

(11) Tighten screws on top and bottom of connector links to a torque value of 23 ±2 in-lbs. (QA)

(12) Apply torque seal to each connector link screw-head.

(13) Pass a messenger cord thru center of canopy to apex. Ensure cord extends beyond skirt hem and canopy apex.

(14) Attach end of nylon messenger cord to large loop end of each PDV line at skirt hem.

(15) Fold PDV lines at weak links into 5-in. folds and secure with rubberband. Apply tension to PDV lines at canopy apex using nylon messenger cord down thru canopy (Figure 3).

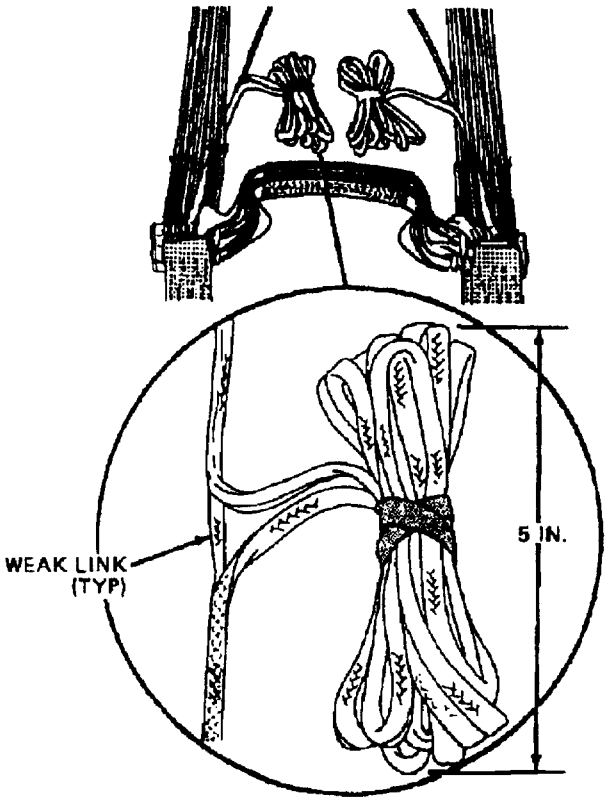


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Figure 3. Fold PDV Lines at Weak Link

(16) Remove tension strap from canopy apex but not from PDV line messenger cord.

(17) Helper shall grasp only suspension lines, excluding PDV lines, 14 1/2 ft. from connector links and spread each group to edge of table. While helper holds suspension lines at edges of table, packer shall draw canopy down center of table, between suspension lines, to a point where suspension lines between helper's hands and skirt hem become taut. At this point, PDV lines should protrude thru vent hem. If PDV lines do not appear at vent collar, adjust the canopy position until they do. Loosen the nylon messenger cord, untie, and remove from the PDV lines (Figure 4).

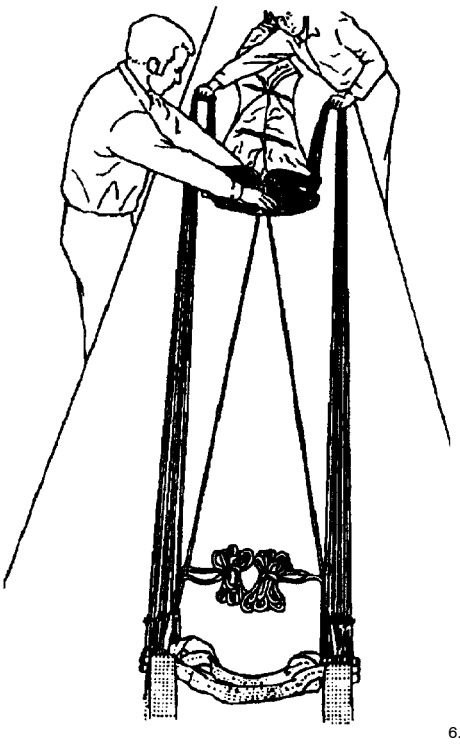


Figure 4. Spread Suspension Lines to Edge of Table

(18) Pass pilot parachute bridle around vent lines and thru loops in ends of PDV lines. Pass pilot parachute thru loop end of pilot parachute bridle and draw tight.

(19) Pass loop end of withdrawal line around vent lines and the PDV lines to left of pilot parachute bridle. Pass free end of withdrawal line thru loop and draw tight. Closure pin line must be facing up when withdrawal line is drawn tight (Figure 5). (QA)

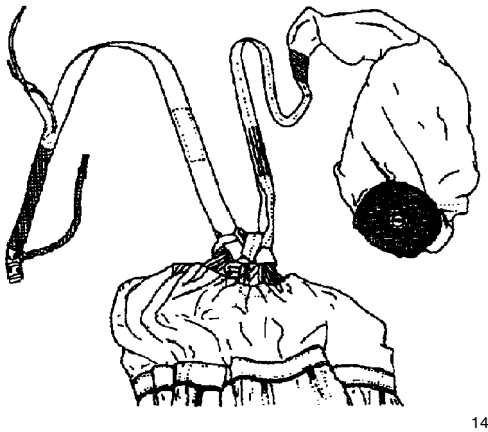


Figure 5. Pass Loop End Around Vent Lines

(20) Inspect replacement PDV lines per WP 014 02.

13. RISER ASSEMBLY REPAIR.

a. Repair of risers is limited to the following:

(1) Cleaning of contaminated areas.

(2) Repair of stitching if less than three stitches are loose or broken.

(3) Repair of loose or broken stitching on ripcord housing flute.

(4) Removal/repair/replacement of four-line release flutes.

b. Replace risers for any of the following:

(1) Service/total life has expired per WP 014 02.

(2) Cuts, tears, or holes in webbing.

(3) Loose or broken stitching in excess of three stitches.

(4) Damaged ripcord grip, roller fittings, retainer fittings, ripcord housing flute, and grip cover.

(5) Twists, fading, excessive wear, fusing, fraying, burns, contamination, and abrasion.

14. REPLACEMENT OF RISER ASSEMBLY.

Support Equipment

Part Number	Nomenclature
Refer to WP 005 00	Temporary Locking Pin
—	Screwdriver, Torque

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon Size FF, Type I or II Class A

NOTE

For Double "L" Connector Link, refer to Paragraph 32 for disassembly, assembly, and inspection instructions.

a. Remove ripcord assembly from riser per Paragraph 28.

b. Remove parachute harness sensing release unit from risers per WP 026 02.

c. Remove four-line release tackings from flutes and carefully remove release lanyards from flutes. Insert temporary locking pin into last four-line release daisy chain.

d. Remove connector link yoke and plate assemblies.

e. Slide riser loops off connector link bar.

r. Reinstall yoke and plate assemblies.

g. Ensuring that suspension line continuity is maintained (Figure 2), insert connector links onto tension hooks.

h. Inspect replacement risers per WP 014 02.

i. Lay out replacement risers on packing (Figure 6).

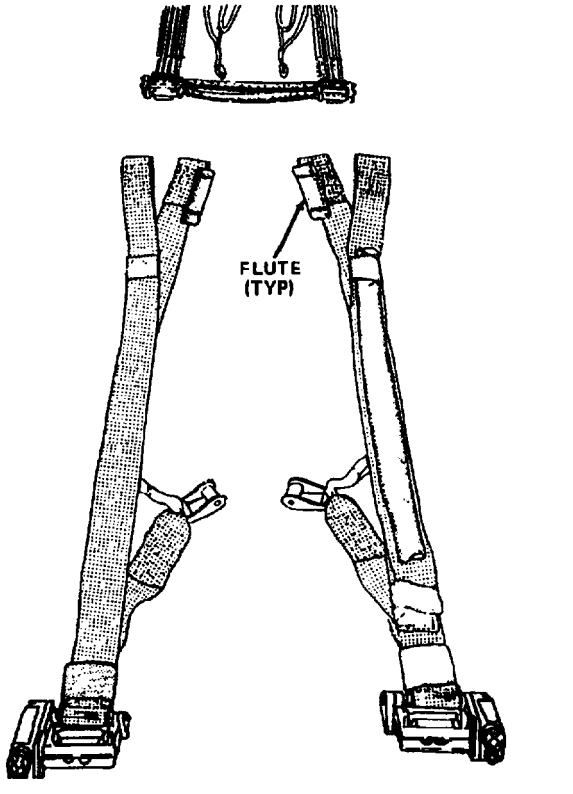


Figure 6. Replacement of Riser Assembly

j. Remove connector link yoke and plate assemblies from bottom connector links.

k. Insert bottom connector links into bottom riser loops.

l. Reinstall yoke and plate assemblies to bottom connector links ensuring knurled plate face up and screwheads face outboard.

m. Remove connector link yoke and plate assemblies from top connector links.

n. Insert top connector links into top riser loops.

o. Reinstall yoke and plate assemblies to top connector links ensuring knurled plate faces up and screwheads face outboard.

p. Check suspension line continuity (Figure 2).

q. Tighten screws on top left and bottom connector links to a torque value of 20 to 25 in-lbs. (QA)

r. Apply torque seal to each torqued connector link screwhead.

s. Using a bodkin or equal tool, insert and pull release lanyard pull loops thru proper lanyard flute. Pull loops should extend completely thru flute with top of loops butted up against lower edge of flute.

t. Remove temporary locking pins from last four-line release daisy chains.

u. Tack release lanyard to flute with one turn of size FF thread, single and waxed. Tacking shall pass thru outer cover of flute, thru the release lanyard, thru and around last daisy chain loop and then back thru flute; tie off per WP 004 00.

v. With lanyard pull loop fully extended, tack risers together. Tack at center of riser and 1/2-in. above bottom of lanyard pull loop with one turn of size FF thread, single and waxed; tie off per WP 005 00. (QA)

w. Reinstall parachute harness sensing release units WP 026 02.

x. Reinstall ripcord assembly per Paragraph 28.

y. Mark date placed in service on identification and service life label per WP 004 00. Make required entries on Parachute Record (OPNAV 4790/101). (QA)

15. REPAIR OF RIPCORD GRIP RETAINER.

a. Repair of the ripcord grip retainer and cover is limited to the following:

(1) Replacement of defective grip retainer.

(2) Replacement of stitching securing grip retainer to riser assembly.

(3) Replacement of ripcord grip retainer cover.

b. Repair or replace ripcord grip retainer for any of the following:

(1) Grip retainer is corroded, bent, or cracked, where that damage may affect the safe operation of the parachute assembly.

(2) Stitching securing grip retainer to riser assembly is loose or missing.

c. Repair or replace grip retainer cover for any of the following:

(1) Cover loose, or deteriorated.

(2) Tacking securing cover to riser assembly is loose or missing.

16. REPLACEMENT OF RIPCORD GRIP RETAINER.

Support Equipment

Part Number	Nomenclature
Refer to WP 005 00	Pinlock, Ripcord
DPP-50	Scale

Materials Required

Specification or Part Number	Nomenclature
MIL-C-5040	Cord, Nylon Type I or IA
MIL-W-4088	Webbing, Nylon Type XII 1 3/4-in. Wide Class 1, 1A or 2
V-T-295	Thread, Nylon Size FF, Type I or II Class A
V-T-295	Thread, Nylon Size 6, Type I or II Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove stitching securing grip retainer cover to riser assembly and slide cover back.

b. Remove stitching securing ripcord grip retainer to webbing riser.

c. Measure 3 1/4 ± 1/8-in. from end of riser assembly and mark for reference.

d. Place grip retainer on riser assembly with lower edge positioned at 3 1/4-in. reference mark.

e. Handstitch grip retainer assembly using a running stitch with size 6 thread, doubled and waxed. Start hand-stitch by placing an overhand knot 5-in. from bitter end of the thread, starting and ending underside of riser assembly at the same hole location; tie off. Repeat procedure for remaining set of holes (Figure 7). (QA)

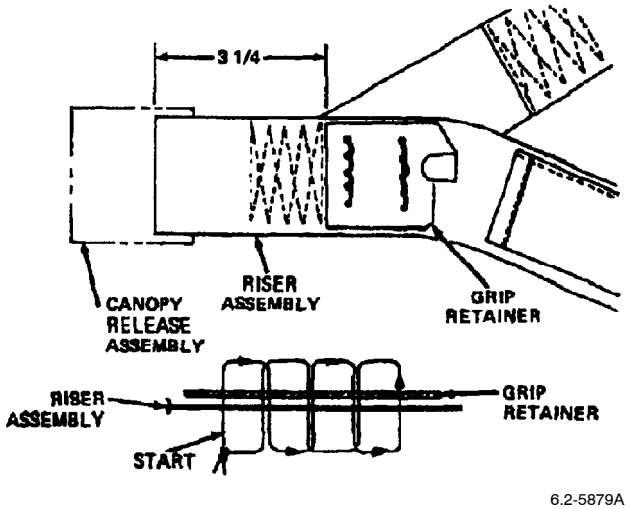


Figure 7. Ripcord Grip Retainer Replacement

f. Ensure grip is fully seated in ripcord retainer.

g. Insert ripcord pinlock on bottom ripcord pin (Figure 8).

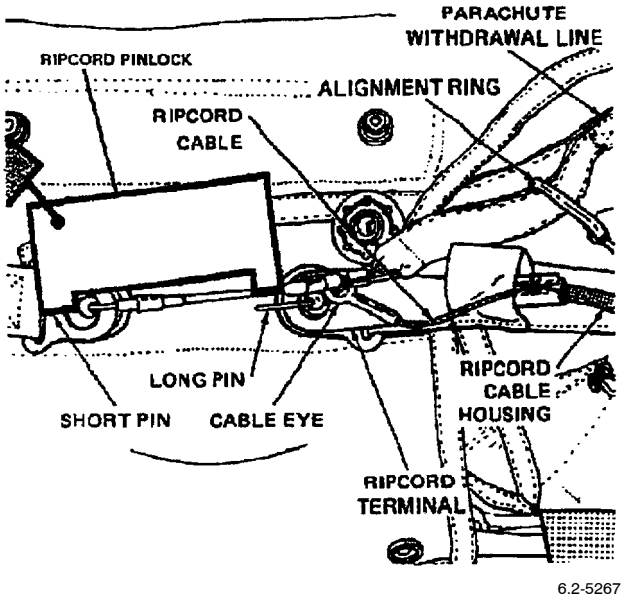


Figure 8. Inserting Ripcord Pinlock

h. Set gage to zero.

i. Attach gage to grip using Type I or IA nylon cord.

j. Apply a straight pull, remove grip from retainer. The force required to remove grip from retainer shall be 15 ±5 lb.

WARNING

Ripcord pinlock must be removed.

k. Remove ripcord pinlock. Install ripcord grip in retainer. (QA)

l. Replace cover per Paragraph 17.

17. REPLACEMENT OF RIPCORD GRIP RETAINER COVER.

Materials Required

Specification or Part Number	Nomenclature
MIL-W-4088	Webbing, Nylon, Type XII, 1 3/4-in. Wide Class 1, 1A or 2
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove defective or loose retainer cover.

b. Cut a 7-in. length of webbing.

c. Sear both ends of webbing, to prevent fraying.

d. Mark 1 3/4-in. from bitter ends.

NOTE

Do not wrap cover around harness restraint strap.

e. Wrap webbing around riser over lapping the 1 3/4-in. mark (Figure 9).

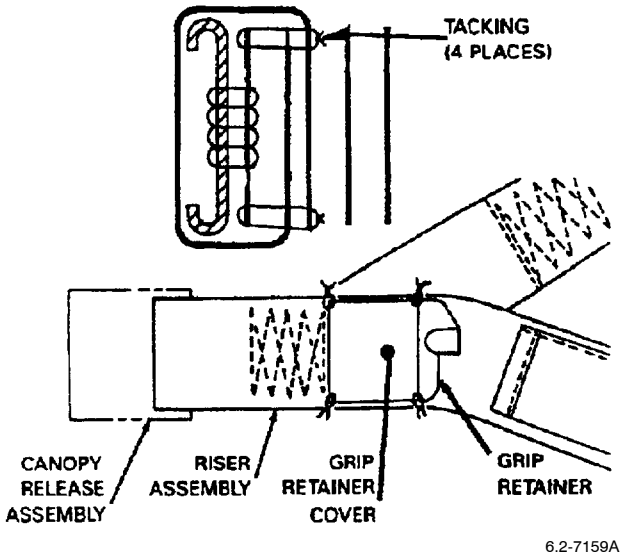


Figure 9. Ripcord Grip Retainer Cover Replacement

f. Tack retainer cover to lower riser in four places with size FF thread, doubled and waxed; tie off (Figure 9). (QA)

18. CONTAINER ASSEMBLY REPAIRS.

a. Repair of container is limited to following:

(1) Containers with crazing, but where no cracking or sharp edges are noted, shall be returned to service without repair.

(2) Cracks which do not penetrate the container surface shall be repaired per Paragraph 19.

(3) Containers with cracks which penetrate the full thickness of the container, but do not exceed the limits given in sub-step (4), shall be replaced. If a replacement container is not available, the cracked container shall be repaired per Paragraphs 20 and 21.

(4) Containers with cracks which exceed the following limits shall be scrapped.

(a) More than three crack.

(b) Any single crack in excess of 4-in.

(c) Combined length of all cracks in excess of 6-in.

19. REPAIR OF SURFACE CRACKS.

Materials Required

Specification or Part Number	Nomenclature
8089ABX	Uralane, Adhesive
O-E-760	Alcohol, Denatured
MIL-T-43618	Cloth, Parachute Pressure Sensitive

WARNING

All solutions used in repair of containers are toxic. Avoid skin contact and use only in well ventilated areas. If spilled on skin surfaces, wash off immediately with mild soap and water.

NOTE

Uralane adhesive has a total life of 6 months from date of manufacture and is furnished in quart kits.

Denatured Alcohol 9

a. Clean cracked area with alcohol, using a clean cotton cloth. Clean area 2-in. past cracks in all directions.

Uralane Adhesive 10

NOTE

Mix uralane solution as follows: 100 parts of uralane 8089-A by weight, to 35 parts uralane 8089-BX by weight. Do not mix more than can be used in 10 min.

b. Paint clean area (do not paint beyond cleaned area) with uralane solution. Treat both inside and outside cracks in same manner, except for covering repairs to container interior. (Refer to step e, for covering interior repairs).

c. Cure container for 24 hrs. at room temperature followed by 3 hrs. at 65-degrees to 69-degrees C (150-degrees to 158-degrees F).

d. (Exterior Only). Return container to service.

Denatured Alcohol 9

e. (Interior Only). After container has cured, clean affected area with alcohol. Allow to dry and cover repaired area with alcohol. Allow to dry and cover repaired area with pressure-sensitive tape. Extend tape 1/2-in. beyond repaired areas. Round corners of tape with a 1/2-in. radius cut. Return container to service.

20. REPAIR OF SURFACE-TO-SURFACE CRACKS (INSIDE RESTRAINT CLIP AREAS ONLY).

Materials Required

Specification or Part Number	Nomenclature
8089ABX	Uralane, Adhesive
MIL-C-7020	Cloth, Parachute Nylon, Type I or II
O-E-760	Alcohol, Denatured
MIL-T-43618	Cloth, Parachute Pressure Sensitive

WARNING

All solutions used in repair of containers are toxic. Avoid skin contact and use only in well ventilated areas. If spilled on skin surfaces, wash off immediately with mild soap and water.

NOTE

Uralane adhesive has a total life of 6 months from date of manufacture and is furnished in quart kits.

a. Remove restraint clip rivets and deburr rivet holes. Use a No. 30 drill to remove upset head from inside of container and punch out the rivet.

NOTE

Ensure that appropriate malfunction description code is recorded.

b. Stop drill cracks using a No. 40 drill and deburr holes.

c. Use coarse abrasive (paper, file, or wheel) and roughen or abrade cracked areas, both inside and out, for at least 2-in. past end of holes.

Denatured Alcohol 9

d. Clean abraded area, inside and out, with alcohol, using a clean cotton cloth. Clean about 2-in. past cracks and holes in all directions.

NOTE

Dryclean or wash in detergent all repair cloth. Be sure material is clean and dry before use.

e. Cut enough nylon cloth to cover damaged areas and to extend 1/2-in. beyond them. Round off fabric corners with a 1/2-in. radius cut.

Uralane Adhesive 10

NOTE

Mix uralane solution as follows: 100 parts of uralane 8089-A by weight, to 35 parts uralane 8089-BX by weight. Do not mix more than can be used in 10 min.

f. Paint inner and outer surfaces of cracks and holes with a uralane solution. Cover 2-in. beyond affected area in all directions past cracks and holes .

g. Position nylon cloth over areas to be repaired, smooth out wrinkles, and brush with a uralane solution. Allow to cure for 3 hr. at 66-degrees to 69-degrees C (150-degrees to 158-degrees F) or 8 days at room temperature.

h. Brush additional coats of uralane solution on treated repair area, and allow to cure per step e.

Denatured Alcohol 9

i. (Interior Only). Clean affected area with alcohol and allow to dry. Cover repair area with pressure-sensitive tape, extending tape 1/2-in. beyond cracks. Round off tape with a 1/2-in. radius cut.

j. Return repaired container to service until a replacement is available.

21. REPAIR OF SURFACE-TO-SURFACE CRACKS (OUTSIDE RESTRAINT CLIP AREAS ONLY).

Materials Required

Specification or Part Number	Nomenclature
8089ABX	Uralane, Adhesive
MIL-C-7020	Cloth, Parachute, Nylon, Type I or II
O-E-760	Alcohol, Denatured
MIL-T-43618	Cloth, Parachute Pressure Sensitive

WARNING

All solutions used in repair of containers are toxic. Avoid skin contact and use only in well ventilated areas. If spilled on skin surfaces, wash off immediately with mild soap and water.

NOTE

Uralane adhesive has a total life of 6 months from date of manufacture and is furnished in quart kits.

a. Stop drill cracks using a No. 40 drill and deburr holes.

NOTE

Ensure that appropriate malfunction description code is recorded.

b. Clean damaged area with alcohol, using a clean cotton cloth. Clean about 2-in. past cracks and holes in all directions.

NOTE

Dryclean or wash in detergent all repair cloth. Be sure material is clean and dry before use.

c. Cut enough nylon cloth to cover damaged area and to extend 1/2-in. beyond them. Round off fabric corners with a 1/2-in. radius cut.

NOTE

Mix uralane solution as follows: 100 parts of uralane 8089-A by weight, to 35 parts uralane 8089-BX by weight. Do not mix more than can be used in 10 min.

d. Paint inner and outer surfaces of cracks and holes with a uralane solution. Cover 2-in. beyond cracks and holes in all directions.

e. Position nylon cloth over areas to be repaired, smooth out wrinkles, and brush with a uralane solution. Allow to cure for 3 hr. at 65-degrees to 69-degrees C (150-degrees to 158-degrees F) or 4 days at room temperature.

f. Brush additional coats of a uralane solution on treated repair area, and allow to cure per step e.

g. (Interior Only). Clean affected area with alcohol, and allow to dry. Cover repair area with pressure-sensitive tape, extending tape 1/2-in. beyond cracks. Round off tape with a 1/2-in. radius cut.

h. Return container to service.

22. FABRICATION AND REPLACEMENT OF RISER RESTRAINT STRAP.

Support Equipment Required

Part Number	Nomenclature
1401	Fastener Chuck
1401	Fastener Die
M-100	Press
—	Punch, 1/8-in.

Materials Required

Specification or Part Number	Nomenclature
MIL-W-5664	Webbing, Elastic, Cotton, Class 1, Type I
MIL-W-5625	Webbing, Nylon, Tubular, Sage Green, 1 in. Wide
MS27980-1B	Button, Fastener
MS27980-6B	Socket, Fastener
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Fabricate and replace riser restraint strap as follows:

(1) Carefully remove box stitching securing defective riser restraint strap to container restraint strap assembly.

(2) Cut a 13 3/4-in. length of tubular webbing. Sear ends, leaving ends open.

(3) Cut a 7 3/4-in. length of elastic webbing.

(4) Insert elastic webbing inside tubular webbing. Stitch ends. Backstitch 1/2-in. (Figure 10).

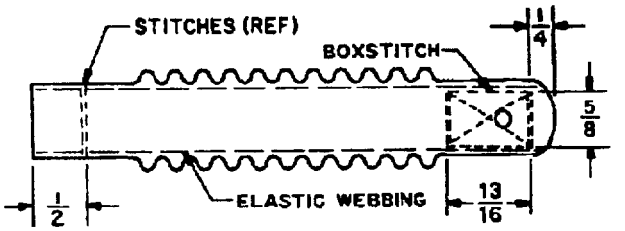


Figure 10. Insert Elastic Webbing

(5) Punch a hole in the end of the strap and install fasteners (Figure 11).

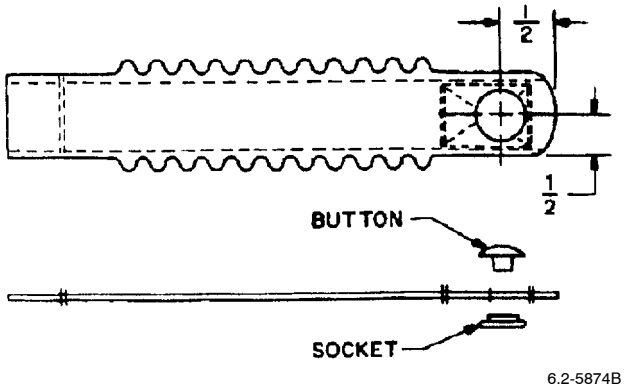


Figure 11. Punch a Hole in Strap

(6) Using dimensions shown, and with socket fastener facing up, sew riser restraint straps to parachute container restraint strap using a boxstitch pattern with size E thread. Backstitch 1/2-in. (Figure 12).

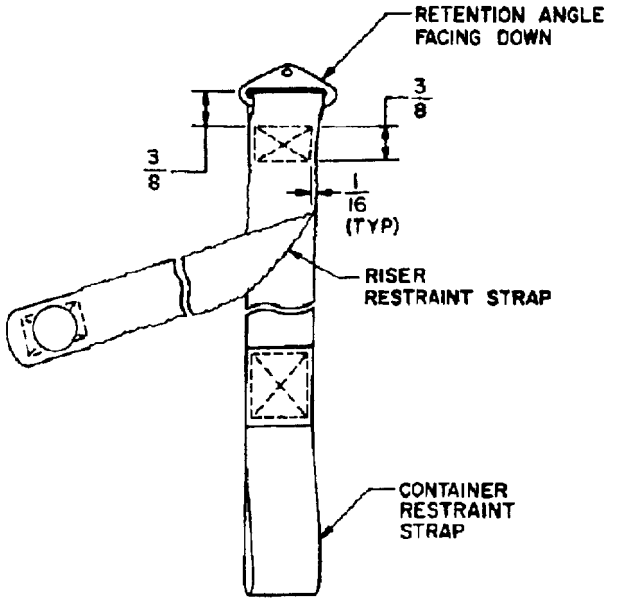


Figure 12. Sew Riser Restraint Straps

23. REPLACEMENT OF RISER RESTRAINT STRAP TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove loose or broken tacking.

b. Mate snap fastener on riser restraint strap to snap fastener on riser. Tack thru both risers and thru riser restraint strap using two turns of size E thread, single and waxed; tie off (Figure 13). (QA)

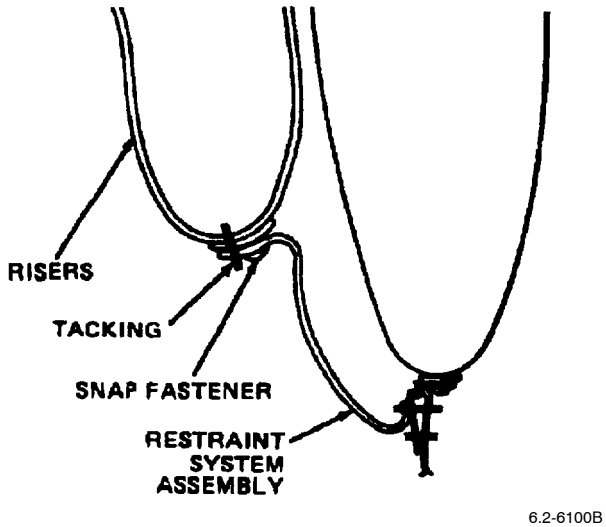


Figure 13. Replacement of Riser Restraint Strap Tacking

24. REPLACEMENT OF CONTAINER ASSEMBLY.

a. Inspect replacement container per WP 014 02.

b. Replace container at proper place during packing procedures.

c. Enter date placed in service (MMYY) on container label. Hand etch information onto assembly label. Make proper entries on Parachute Record (OPNAV 4790/101).

25. REPLACEMENT OF SPRING OPENING ASSEMBLY.

a. Measure length of replacement spring opening assembly. Proper length is 7 7/8 ± 1/8-in. measured with no tension from end of one hook to end of other hook.

b. Inspect replacement spring opening assembly per WP 014 02.

c. With hook facing inboard, attach end of spring assembly without pull tab to lower eye on side of container. Crimp hook to eye.

d. Attach opposite end of spring assembly to eye on end flap.

26. RIPCORD ASSEMBLY REPAIR.

27. GENERAL.

a. Repair of the ripcord assembly is limited to the following:

(1) Cleaning contaminated areas per WP 004 00.

(2) Replacement of loose or broken tackings per WP 014 01.

b. Replace ripcord assembly for any of the following:

(1) Bent, broken, or cracked locking pins.

(2) Corroded, frayed, or permanently bent cable.

(3) Loose cable swage ball or housing ferrule.

(4) Corroded, cracked, or bent grip or housing.

28. REPLACEMENT OF RIPCORD ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove ripcord housing and housing flute tackings.

b. Remove ripcord assembly from ripcord grip retainer and housing flute.

c. Inspect replacement ripcord assembly per WP 014 02.

d. Pass ripcord housing thru ripcord housing tunnel on riser and then insert ripcord grip into ripcord retainer (Figure 14).

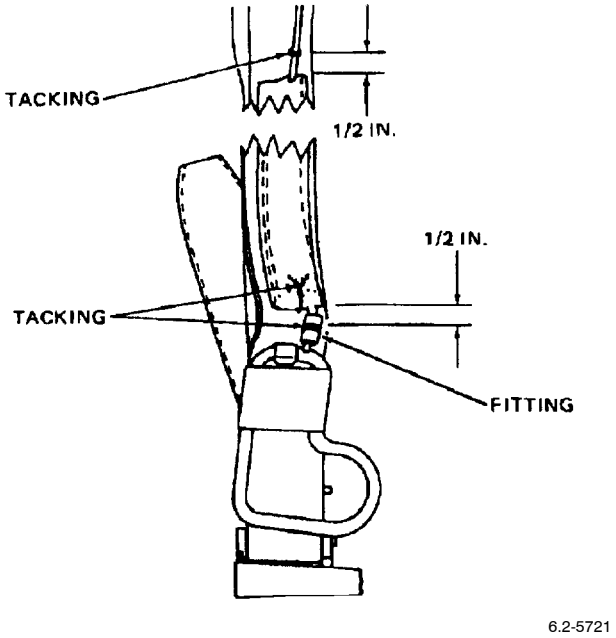


Figure 14. Ripcord Assembly Replacement

e. Measure 1/2-in. down from bottom of ripcord tunnel and tack ripcord housing thru riser at edge of ripcord channel, with three turns of size 6 thread, double and waxed; tie off (Figure 14).

f. Measure 1/2-in. up from top of ripcord tunnel and tack ripcord housing to riser with three turns of size 6 thread, double and waxed; tie off (Figure 14).

g. Tack bottom of ripcord tunnel closed with two turns of size 6 thread, double and waxed; tie off (Figure 14).

29. CONNECTOR STRAP REPAIRS.

30. GENERAL.

a. Repair of connector straps is limited to cleaning of contaminated areas. Replace connector straps if any other damage exists that may affect the safe operation of the parachute assembly.

31. REPLACEMENT OF CONNECTOR STRAP.

Support Equipment

Part Number	Nomenclature
Refer to WP 005 00	Temporary Locking Pin

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

For Double "L" Connector Link, refer to Paragraph 32 for disassembly, assembly, and inspection instructions.

a. Inspect replacement connector strap per WP 014 02.

b. Insert temporary locking pin in last daisy chain loop of four-line release lanyard.

c. Remove connector link yoke and plate assemblies.

d. Remove connector links from riser loops and then remove defective connector strap.

e. Inspect connector strap for contamination, cuts, fraying, burns, and loose or broken stitching.

f. Insert connector links thru loop in each end of connector strap and then thru loops in riser assembly.

g. Reattach yoke and plate assemblies to connector links ensuring knurled portions of plate face up and screwheads face outboard.

h. Remove temporary locking pin from four-line release daisy chain.

i. Tighten screws on top and bottom connector links to a torque value of 20 to 25 in-lbs. (QA)

j. Apply torque seal to each connector link screwhead.

32. REPLACEMENT OF MS22021-1 CONNECTOR LINK (SPEED LINK) WITH MS22002-1 (DOUBLE "L") CONNECTOR LINK.

NOTE

New canopies received from supply may have the Double "L" Connector Links installed.

Instructions for attachment of Firing Lanyards, PDVL's, Four-Line Release Systems, etc., will remain the same and will be contained in the application parachute manual.

Materials Required

Specification or Nomenclature	Part Number
MS22002-1	Connector Link (Double "L")
F-900 Torque Seal (Color Optional)	Sealing Compound
—	Torque Screwdriver
MIL-S-43243 (See WP 002 00)	Separator, Link or Equivalent

a. Remove yoke and plate assembly from parachute connector link, P/N MS22021-1.

b. Slide suspension lines from connector link onto a temporary locking pin or rod.

c. Remove cross-connector strap.

d. Slide riser loop off connector link bar and dispose of connector link, P/N MS22021-1.

e. Remove screws from the double "L" connector link, P/N MS22002-1 and separate the two halves of the link.

f. It may be necessary to use a separator device to separate the two halves of the connector link if a separator device is not available, loosen both screws of the connector link by four turns. Place a long bar between the connector link bars to hold the link in place. Using a rawhide or rubber mallet, tap one screw head and then the other screw head several times until the connector link bars separate.

g. Install suspension lines on the new connector link bar. The short leg of the "L" connector is to be positioned to the inside (Figure 15).

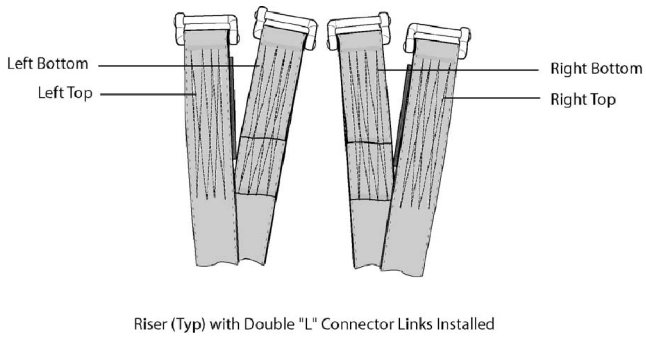


Figure 15. Double "L" Connector Link Layout

h. Install cross-connector strap.

i. Slide riser loop onto opposite connector link bar.

j. Mate both halves of the connector link together.

k. Install screws (2 each).

NOTE

Screws must make a minimum of 6 full turns prior to applying torque.

l. Check suspension line continuity. (QA)

m. Tighten screws to a torque value of 15 in-lbs. (QA)

WARNING

Care must be taken when tightening screws as screwdriver may slip and cause minor injury.

NOTE

It may be necessary to check the torque value on each screw more than once due to the interference fit design feature of the connector link.

n. Apply torque seal to both screw heads and allow to dry before proceeding with remainder of parachute packing.

o. Repeat steps a through l on each riser group.

p. Re-identify the parachute canopy by using an indelible black pen to cross out the existing part number and marking the new superceding part number per Illustrated Parts Breakdown (IPB) WP 014 04.

ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

NES-8B PERSONNEL PARACHUTE ASSEMBLY

PART NO. 574AS100-4

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1	11	2 thru 5	9	6 thru 7	11		

Reference Material

Intermediate and Depot Maintenance, Packing Procedures, NES-8B Personnel Parachute Assembly . . . . . WP 014 02

Alphabetical Index

Title	Page
Introduction	1
Service/Total Life	1
Usable on Codes	1

List of Figures

Title	Page
NES-8B Personnel Parachute Assembly	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the NES-8B Personnel Parachute Assembly (Figure 1).

2. USABLE ON CODES.

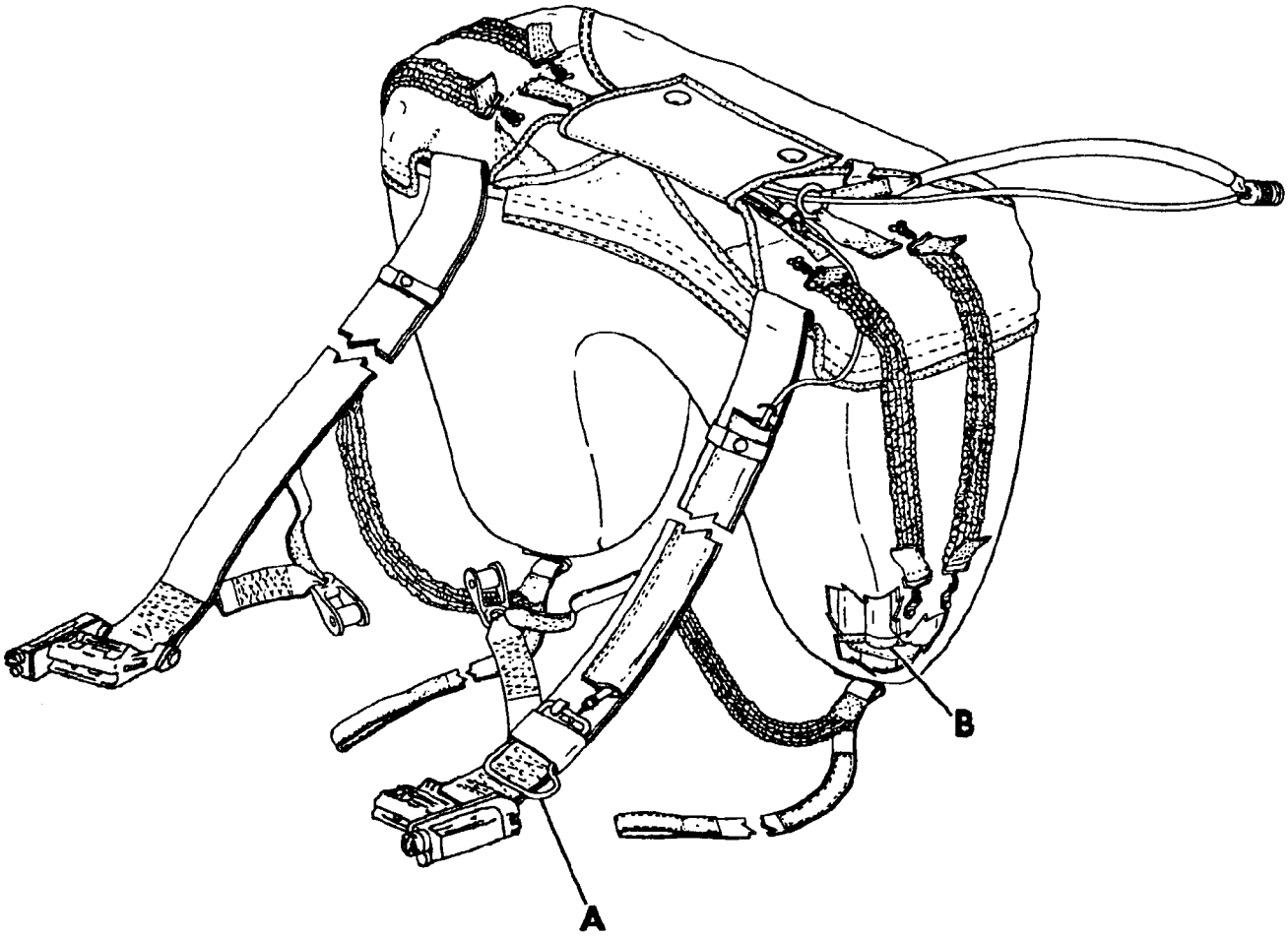
a. The usable on codes in this WP refer to the aircraft applications for the NES-8B Personnel Parachute Assembly.

b. The following usable on codes apply to this WP:

A - F-4

3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in WP 014 02.



6.2-5766

Figure 1. NES-8B Personnel Parachute Assembly (Sheet 1 of 6)

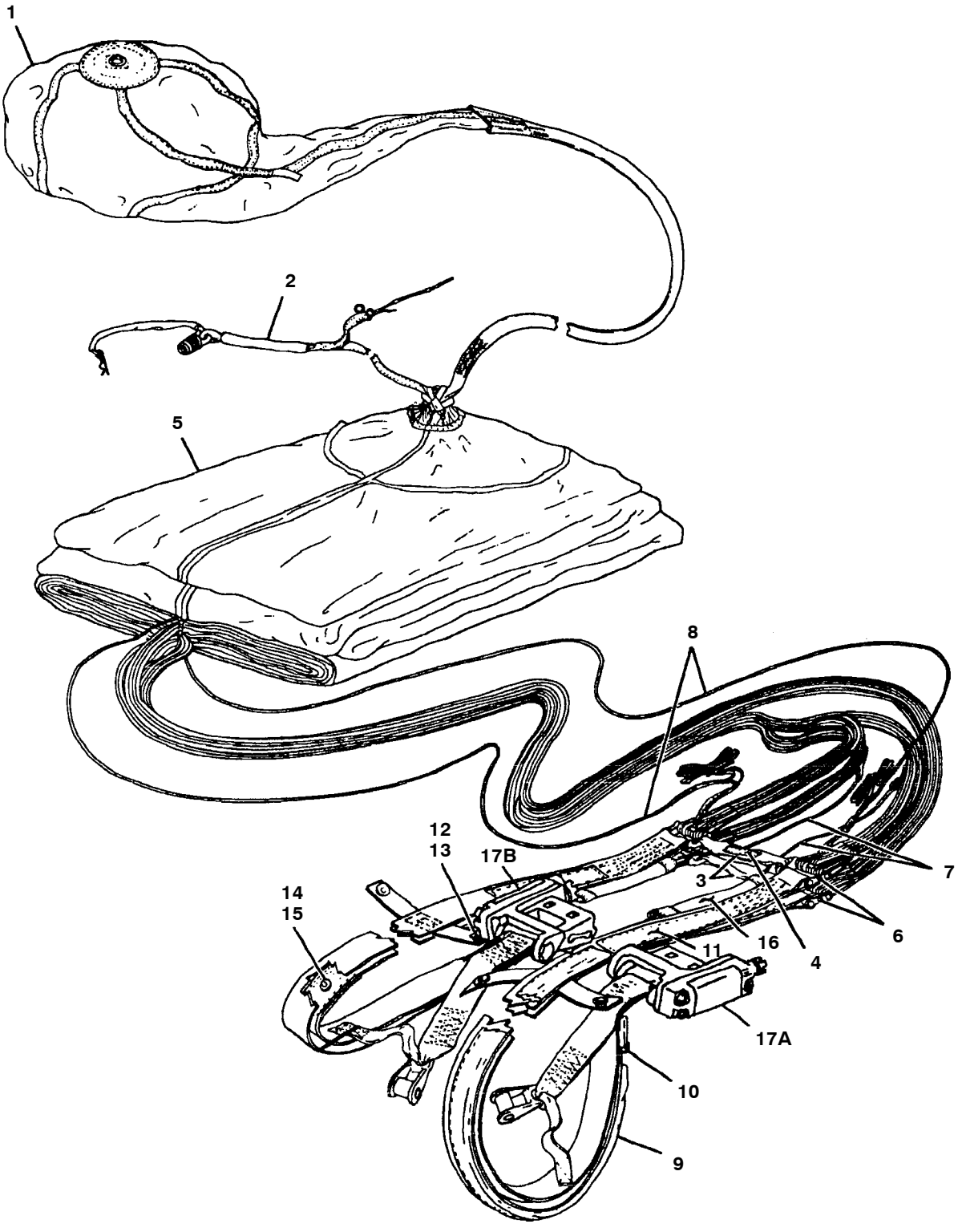


Figure 1. NES-8B Personnel Parachute Assembly (Sheet 2 of 6)

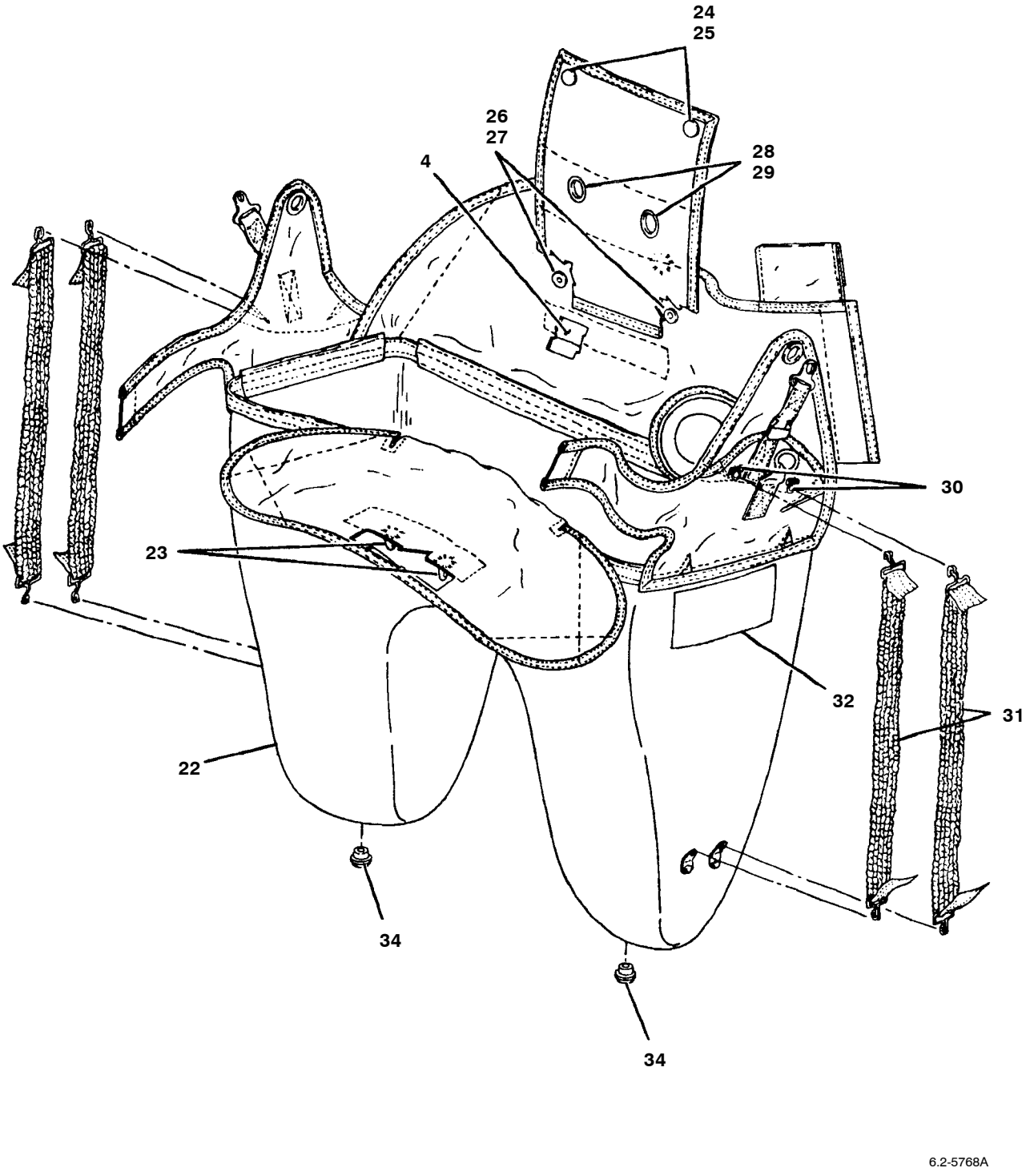


Figure 1. NES-8B Personnel Parachute Assembly (Sheet 3 of 6)

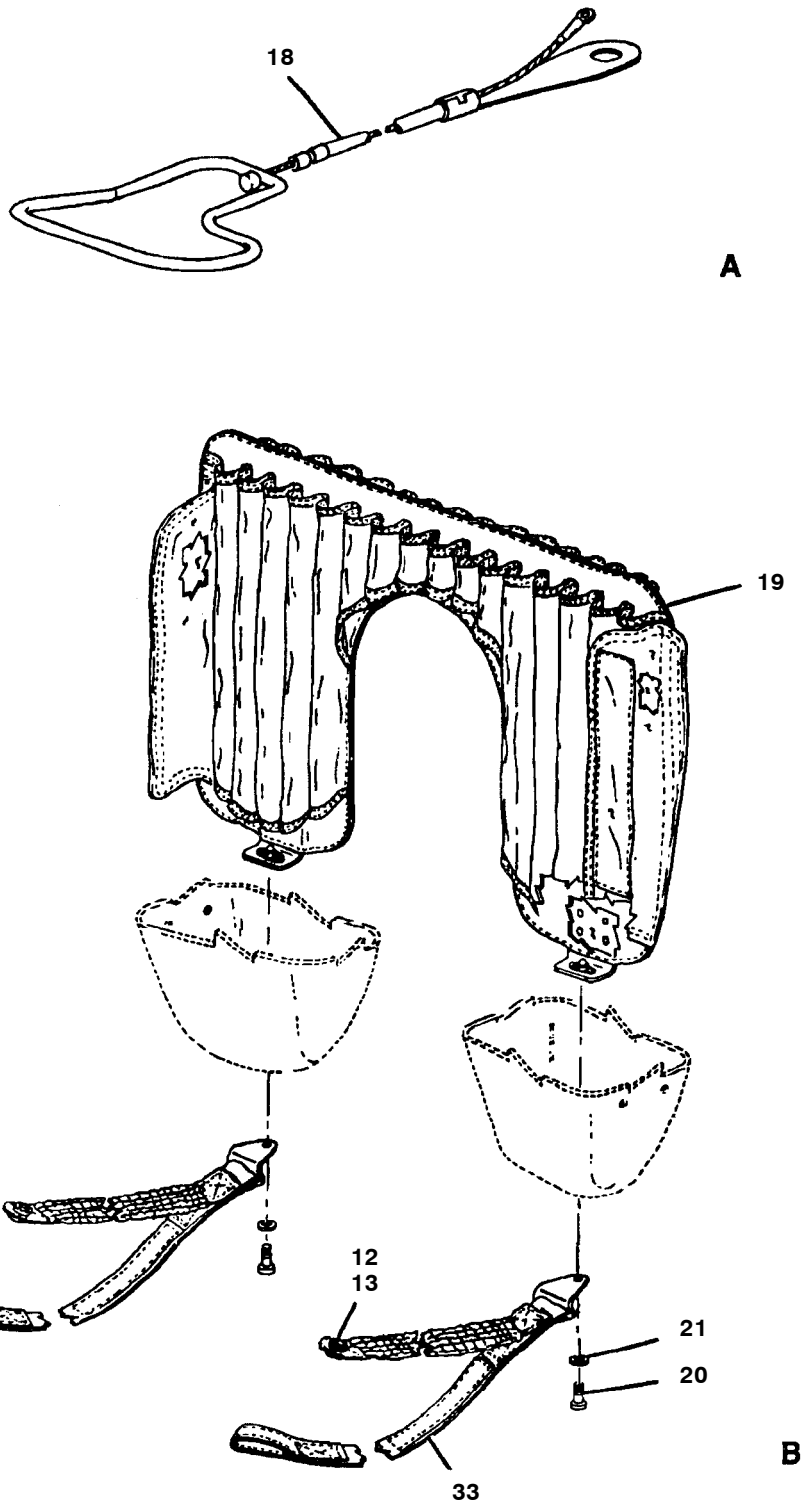


Figure 1. NES-8B Personnel Parachute Assembly (Sheet 4 of 6)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	574AS100-4	PARACHUTE ASSEMBLY, COMPLETE, NES-8B	REF	A	AGOGG
1	755AS105-1	. PARACHUTE ASSEMBLY	1		PCGZZ
2	MBEU12247PA	. LINE, PARACHUTE WITHDRAWAL/U1604/	1		PCGZZ
3	677AS100-2	. STRAP, CROSS CONNECTOR	2		PCGZZ
4	676AS100-1	. . LABEL	4		MDGZZ
5	60A113E5-18	. CANOPY ASSEMBLY	1	*	PCGGG
	60A113E5-20	. CANOPY ASSEMBLY (WITH DOUBLE "L" CONNECTOR LINK INSTALLED)	1	*	PCGGG
6	MS22021-1	. . LINK, REMOVABLE CONNECTOR	4	*	PAGZZ
	MS22002-1	. . CONNECTOR LINK (DOUBLE "L")	4	*	PAGZZ
7	666AS101-6	. . LANYARD, FOUR LINE RELEASE	2		MGGZZ
8	69C128	. LINE ASSEMBLY, PDVL	2		PCGZZ
9	755AS104-22	. RISER ASSEMBLY	1		PCGGG
10	755AS119-1	. . RETAINER, RIPCORD GRIP	1		XBGZZ
11	MS27980-1B	. . FASTENER, BUTTON	3		PAGZZ
12	MS27980-6B	. . FASTENER, SOCKET	3		PAGZZ
13	MS27980-7B	. . FASTENER, STUD	2		PAGZZ
14	MS27980-8B	. . FASTENER, EYELET	2		PAGZZ
15	666AS102-4	. . FLUTE, FOUR-LINE RELEASE LANYARD	1		MGGZZ
16	852AS117-3	. SENSING RELEASE UNIT, PARACHUTE HARNESS MXU-746/P LEFT SIDE	1		AGGGG
17	852AS117-4	. SENSING RELEASE UNIT, PARACHUTE HARNESS MXU-747/P RIGHT SIDE	1		AGGGG
17A	990055-1	. . RELEASE ASSEMBLY, CANOPY/99449/	2	*	PAGZZ
	015-10307-5	. . RELEASE ASSEMBLY, CANOPY/99449/ (USE UNTIL EXHAUSTED)	2	*	PAGZZ
18	7947319-10	. RIPCORD ASSEMBLY	1		PAGZZ
19	755AS108-1	. BOARD ASSEMBLY, LINE STOWAGE/ /ATTACHING PARTS/	1		PAGZZ
20	MS27039-0810	. SCREW, MACHINE	2		PAGZZ
21	AN960PD10	. WASHER, FLAT ---*---	2		PAGZZ
22	7947311-10	. CONTAINER ASSEMBLY/98750/	1		PCGGG
23	60A113C24-1	. . CONE, 0.410 GRIP	3		PAGZZ
24	MS27980-1N	. . FASTENER, BUTTON	2		PAGZZ
25	MS27980-6N	. . FASTENER, SOCKET	2		PAGZZ
26	MS27980-7N	. . FASTENER, STUD	2		PAGZZ
27	MS27980-8N	. . FASTENER, EYELET	2		PAGZZ

Figure 1. NES-8B Personnel Parachute Assembly (Sheet 5 of 6)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
28	MS22048C1	. . GROMMET	4		PAGZZ
29	60A113C25-1	. . WASHER	4		PAGZZ
30	60A113C28-1	. . EYE	4		PAGZZ
31	60A113D11-7	. . SPRING ASSEMBLY, CONTAINER OPENING	4	*	PAOZZ
	MS70105-6	. . SPRING ASSEMBLY, CONTAINER OPENING	4	*	PAOZZ
32	7947359-01	. . MARKER, CONTAINER/98750/	1		MDGZZ
33	MBEU5223PA	. . . RESTRAINT SYSTEM ASSEMBLY	2		PAGGG
34	MS20230B10	. . GROMMET ASSEMBLY	2		PAGZZ

Figure 1. NES-8B Personnel Parachute Assembly (Sheet 6 of 6)

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ORGANIZATIONAL AND DEPOT MAINTENANCE

REPAIR PROCEDURES

MK-H7 DROGUE PARACHUTE SYSTEM

PART NO. MBEU38272

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1 thru 7	10						

Reference Material

Intermediate and Depot Maintenance, Common Repair Procedures . . . . . WP 004 00
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdowns, Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00

Alphabetical Index

Title	Page
Container Assembly	2
Replacement of Drogue Shackle Retention Tie	3
Replacement of Flap Securing Pin Retention Tie	2
Drogue Parachute Assembly Repairs	3
Replacement of Connecting Line	5
Replacement of Controller Drogue	5
Replacement of Controller Drogue Withdrawal Line	6
Replacement of Extender Strap and Shackle	3
Replacement of Link Line	7
Replacement of Stabilizer Drogue	4
Introduction	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains instructions for organizational and depot level repair to ensure that the drogue parachute parts or subassemblies remains in Ready-For-Issue (RFI) status. Selected repairs shall be documented on the Parachute Record. For common repairs refer to WP 004 00.

b. When performing repairs detailed in this WP follow these guidelines:

(1) Review all applicable instructions prior to starting repair.

(2) Ensure that all necessary support equipment and materials required are available prior to starting repair.

(3) When required, remove enough material from it's source for immediate use only. Ensure that the material identification ticket remains with the source material at all times. Material that cannot be identified will not be used.

(4) To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

(5) A Quality Assurance (QA) inspector shall examine the finished work.

2. CONTAINER ASSEMBLY.

3. REPLACEMENT OF FLAP SECURING PIN RETENTION TIE.

Materials Required

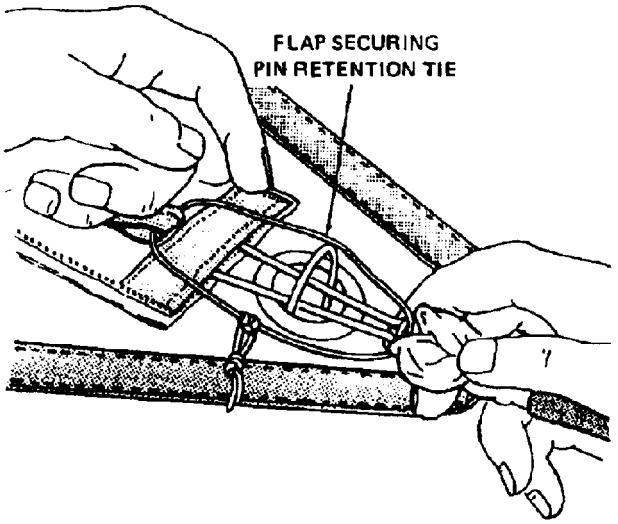
Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I, or II Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

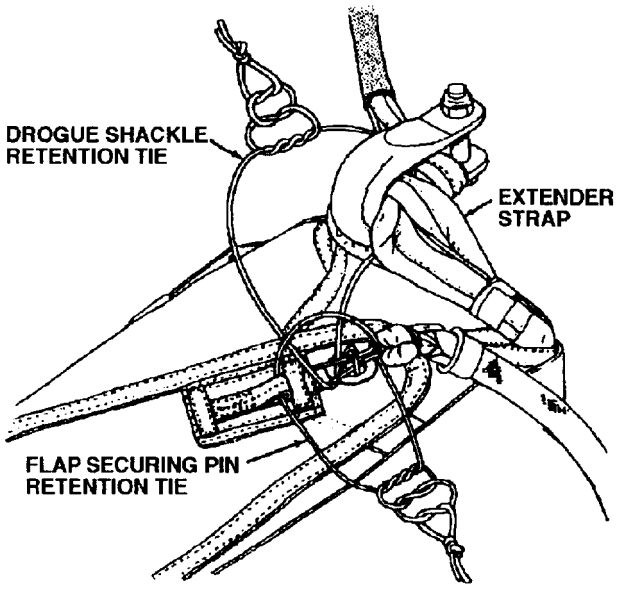
a. Ensure pin is inserted into fabric pocket on front flap (Figure 1).

b. Pass a length of size 6 thread, single and waxed, thru securing pin and then thru fabric loop on pocket; tie off (Figures 1 and 2).



6.2-5660

Figure 1. Flap Securing Pin Retention Tie Replacement



6.2-5661

Figure 2. Drogue Shackle Retention Tie Replacement

4. REPLACEMENT OF DROGUE SHACKLE RETENTION TIE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I, or II Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Pass a length of size 6 thread, single and waxed, thru loop on extender strap, thru shackle, and then around both legs of securing pin forward loop; tie off (Figure 2).

5. DROGUE PARACHUTE ASSEMBLY REPAIRS.

a. Repair of the drogue parachute assembly is limited to the following:

(1) Cleaning of contaminated areas.

(2) Replacement of stabilizer drogue, controller drogue, connecting line, extender strap and shackle, and withdrawal line.

(3) Repair of holes, tears or snags in canopy 1/4-in. in diameter or 1/2-in. in length.

6. REPLACEMENT OF EXTENDER STRAP AND SHACKLE.

Materials Required

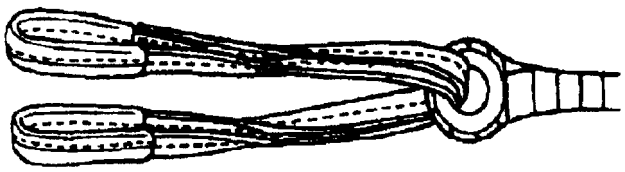
Specification or Part Number	Nomenclature
PPP-T-97	Reinforcing Tape Filament, 3/4 in. Wide -or-
MIL-I-19166	Insulation Tape. Electrical 3/4-in. Wide

a. Cut filament tape and remove extender strap and shackle from stabilizer drogue.

b. Inspect replacement extender strap for contamination, cuts, tears, burns, fraying, and loose or missing stitches.

c. Inspect shackle for nicks, burrs, and corrosion.

d. Pass extender strap thru eye end of main drogue suspension lines (Figure 3).



6.2-5232A

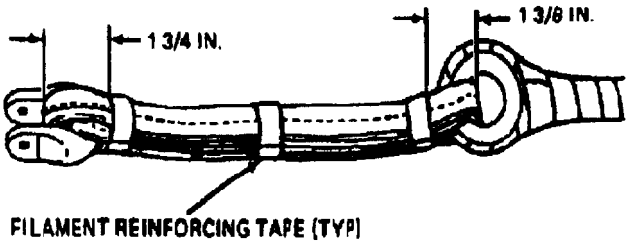
Figure 3. Pass Extender Strap thru Eye

e. Position end loops of straps on shackle (Figure 4).

6.2-5232B

Figure 4. Positioning of End Loops

f. Wrap with four turns of 3/4 in. wide filament reinforcing tape in three places (Figure 5). (QA)



6.2-5232C

Figure 5. Wrapping with Filament Tape

g. Mark date placed in service on extender strap. (QA)

h. Make proper entries on Parachute Record (OPNAV 4790/101).

7. REPLACEMENT OF STABILIZER DROGUE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove extender strap and shackle from stabilizer drogue and retain for reinstallation per Paragraph 6.

b. Cut tacking on connecting line at apex of stabilizer drogue.

c. Route complete controller drogue thru loop of connecting line at apex of stabilizer drogue.

d. Dispose of stabilizer drogue per current supply directives.

e. Inspect replacement stabilizer drogue fabric drag surface, seams, and suspension lines for signs of contamination, mildew, cuts, tears, burns, fraying, and loose or broken stitches.

f. Inspect anti-squid line for proper attachment at canopy apex (Figure 6). (QA)

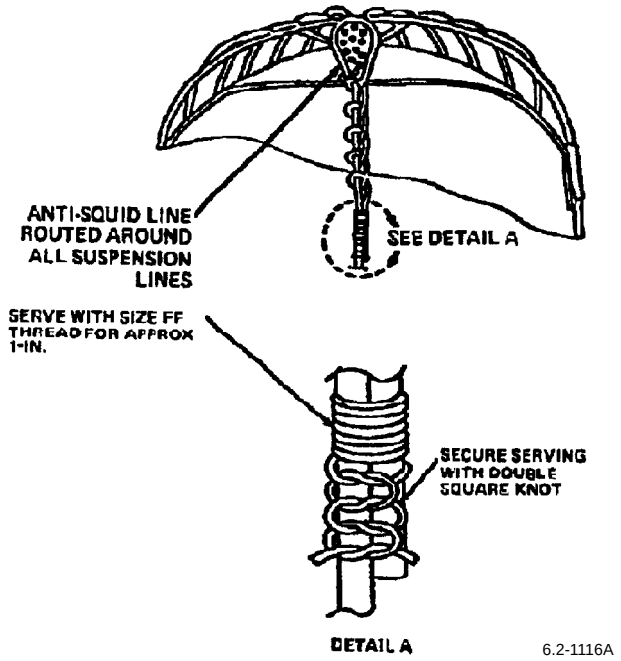


Figure 6. Anti-Squid Line Attachment

g. Suspension lines and anti-squid line from canopy lower lateral band to confluence point for frays, ruptures, contamination, protruding inner core lines, presence of twists, attachment of suspension lines and V-tabs at lower lateral band and security and condition of wraping at confluence point.

h. Inspect braided tubular cover for frays, ruptures, contamination, security of wrappings, and serving at the eye.

i. Pass free end loop of connecting line around apex suspension lines of replacement stabilizer drogue (Figure 7). Route complete controller drogue thru loop of connecting line and pull tight. Tack loop with one turn of size 6 thread, double and waxed; tie off. (QA)

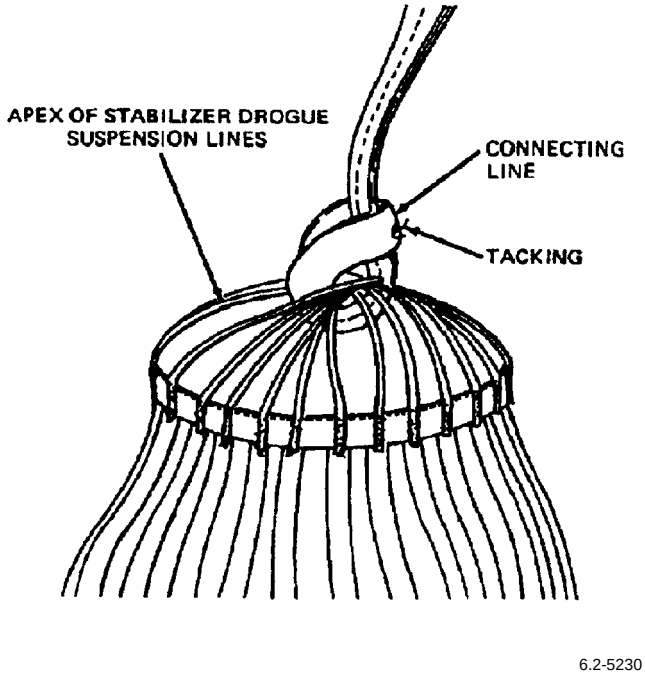


Figure 7. Replacement of Stabilizer Drogue

j. Install extender strap and shackle per Paragraph 6.

k. Mark date placed in service on stabilizer drogue.

l. Make proper entries on Parachute Record (OPNAV 4790/101).

8. REPLACEMENT OF CONNECTING LINE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

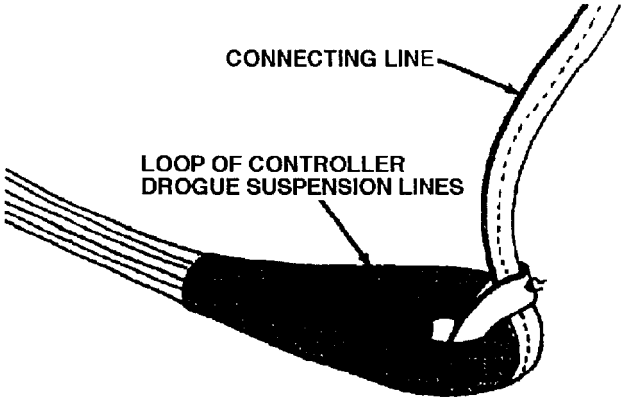
Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Cut tacking on connecting line at apex of stabilizer drogue.

b. Route complete controller drogue thru loop of connecting line at apex of stabilizer drogue.

c. Cut tacking on connecting line at base loop of controller drogue and remove connecting line.

d. Inspect replacement connecting line for contamination, cuts, fraying, burns, and loose or broken stitching. Pass one looped end of replacement connecting line thru base loop of controller drogue (Figure 8). Route opposite end of line thru loop and pull tight. Tack loop with one turn of size 6 thread, doubled and waxed; tie off.



6.2-5229

Figure 8. Replacement of Controller Drogue

e. Pass free end loop of connecting line around apex suspension lines of stabilizer drogue (Figure 7). Route complete controller drogue thru loop of connecting line and pull tight. Tack loop with one turn size 6 thread, double, and waxed; tie off. (QA)

f. Mark date placed in service on connecting line.

g. Make proper entries on Parachute Record (OPNAV 4790/101).

9. REPLACEMENT OF CONTROLLER DROGUE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Cut withdrawal line tacking at apex of controller drogue and remove withdrawal line.

b. Cut tacking on connecting line at apex of stabilizer drogue.

c. Route controller drogue thru loop of connecting line at apex of stabilizer drogue.

d. Cut tacking on connecting line at base loop of controller drogue and remove connecting line.

e. Dispose of controller drogue per current supply directives.

f. Inspect replacement controller drogue fabric drag surface, seams, and suspension lines at canopy apex for signs of contamination, mildew, cuts, tears, burns, fraying, and loose or broken stitching.

g. Anti-squid line for contamination, cuts, fraying, burns, loose or broken stitching, and security of attachment at canopy apex and terminal eye. (QA)

h. Suspension lines:

(1) Lines from canopy skirt hem to terminal eye for frays, ruptures, and contamination.

(2) Protruding inner core lines, presence of twists in individual lines and security of attachment of lower lateral band.

(3) Security and condition of wrapping at terminal eye.

i. Pass one looped end of connecting line thru base loop of replacement controller drogue (Figure 8). Route opposite end of line thru loop and pull tight. Tack loop with one turn of size 6 thread, double and waxed; tie off. (QA)

j. Pass free end loop of connecting line around apex suspension lines of stabilizer drogue (Figure 7). Route complete controller drogue thru loop of connecting line and pull tight. Tack loop with one turn of size 6 thread, double and waxed; tie off. (QA)

k. Reinstall controller drogue withdrawal line per Paragraph 10.

l. Mark date placed in service on controller drogue.

m. Make proper entries on Parachute Record (OPNAV 4790/101).

10. REPLACEMENT OF CONTROLLER DROGUE WITHDRAWAL LINE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

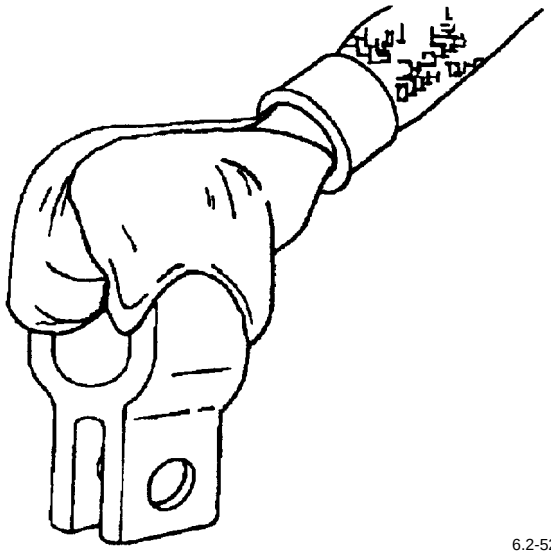
NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Cut withdrawal line tacking at apex of controller drogue and remove withdrawal line.

b. Inspect replacement withdrawal line for contamination, cuts, fraying, burns, and loose or broken stitching.

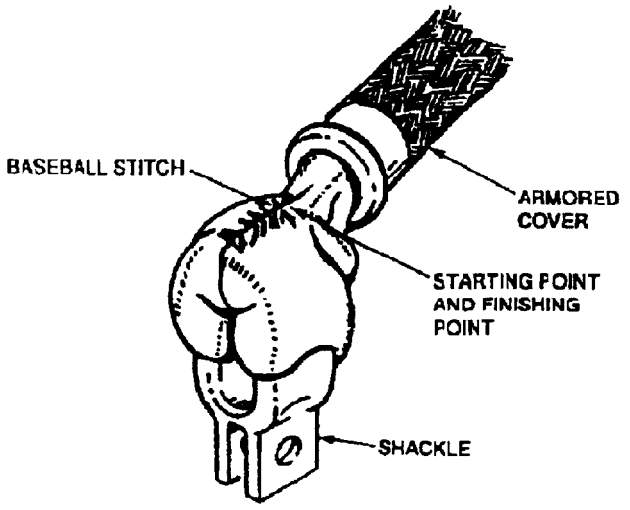
c. Draw edges of withdrawal line upward to butt at centerline of shackle (Figure 9).



6.2-5231A

Figure 9. Draw Up Edges to Shackle

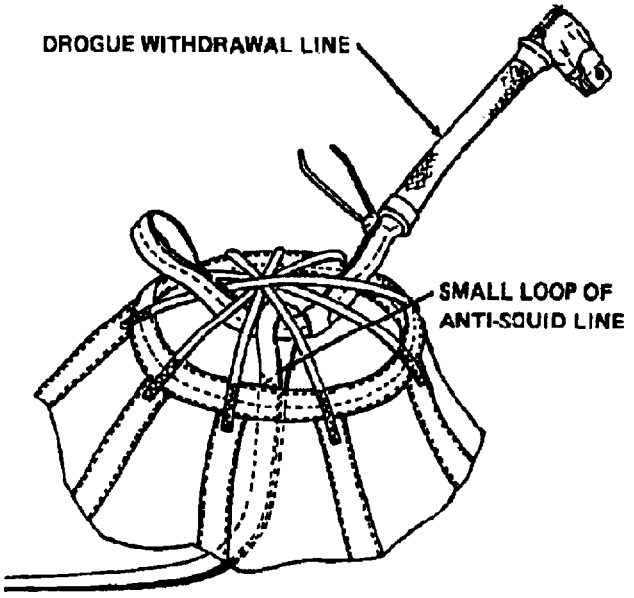
d. Using size FF thread, doubled and waxed. Baseball stitch edges together. Stitches to be about 1/4-in. apart and 1/4-in. from edges of withdrawal line. Start and finish stitch at armored cover end, alternating stitches from one edge of withdrawal line. Start and finish stitch at armored cover end, alternating stitches from one edge of withdrawal line to the opposite edge about 6 stitches) tie off (Figure 10). (QA)



6.2-5231B

Figure 10. Whipstitch Edges Together

e. Hold five controller drogue apex lines centrally to form two clear diametrically opposite openings. Pass loop end of drogue withdrawal line in one side of centrally held apex lines, thru small loop of anti-squid line and out other side of apex lines (Figure 11).



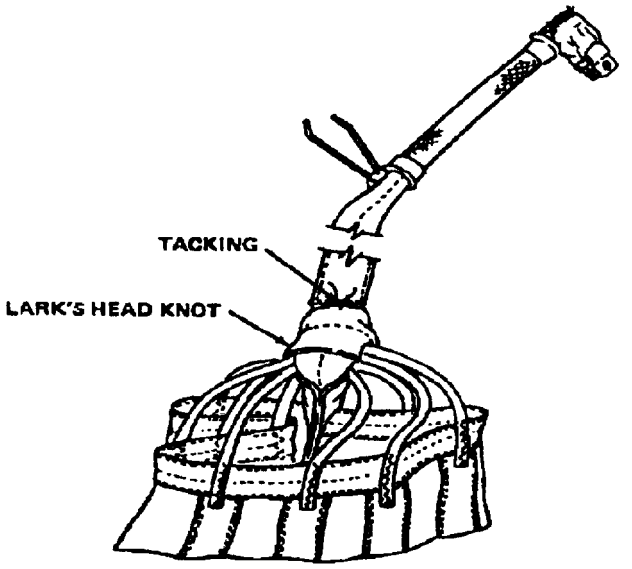
6.2-5231C

Figure 11. Holding Five Controller Drogue Apex Lines

f. Pass spool/shackle end of withdrawal line over outside of apex lines and thru loop at opposite end of withdrawal line (Figure 12). Pull tight to form Lark's head knot. Tack with one turn of size 6 thread, doubled and waxed; tie off. (QA)

g. Mark date placed in service on withdrawal line.

h. Make proper entries on Parachute Record (OPNAV 4790/101).



6.2-5231D

Figure 12. Pass Spool/Shackle End of Line Over Apex Lines

11. REPLACEMENT OF LINK LINE.

a. Remove link line from drogue shackle.

b. Inspect replacement link line webbing for fraying, cuts, tears, and contamination; neoprene sleeve for cuts; pins for nicks, burrs, and corrosion.

c. Install replacement link line on drogue shackle and tighten shackle bolt until one thread is visible. (QA)

d. Mark date placed in service on link line.

e. Make proper entries on Parachute Record (OPNAV 4790/101).

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ORGANIZATIONAL AND DEPOT MAINTENANCE

PACKING PROCEDURES

MK-H7 DROGUE PARACHUTE SYSTEM

PART NO. MBEU38272

List of Effective Work Package Pages

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1	11	5	11	6 thru 12	9	13	11
2 thru 4	9						

Reference Material

Introduction, Organizational, Intermediate and Depot Maintenance With Illustrated Parts Breakdowns, Emergency Personnel and Drogue Parachute Systems ..... WP 002 00
Organizational and Depot Maintenance, Illustrated Parts Breakdown, MK-H7 Drogue Parachute System ..... WP 015 02
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration ..... WP 003 00

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Attachment of Drogue Withdrawal Line to Controller Drogue	4
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Record of Applicable Technical Directives

None

1. GENERAL.

a. Rigging and packing instructions are provided with the assumption that they will be carried out under ideal conditions in a parachute loft (WP 003 00). When a drogue parachute assembly must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

b. In no case shall the packing of a drogue parachute assembly be interrupted after the packing operation has been started. If the packing operation is interrupted, due to unforeseen circumstances, the drogue parachute assembly shall be completely repacked per the instructions contained in this Work Package (WP).

c. Quality Assurance (QA) points have been included in the rigging and packing procedures. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Witnessing completion of QA steps may be delayed by QA if their satisfactory completion is verified in later steps.

d. During rigging and packing procedures, packer shall be positioned on left side of packing table, and helper on right side when viewed from riser end of table.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
—	Stamp Pad
—	Rubber Stamp Kit
	-or-
—	Adjustable Metal Stencil,
	-or-
Style No. 8	Printing Set,
	-or-
GG-P-655	Printing Set

Materials Required

Specification or Part Number	Nomenclature
MIL-I-6903	Ink, Parachute Marking, Light Blue
TT-I-1795	Ink, Marking Black
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
PPP-T-97	Reinforcing Tape, Filament, 3/4-in. Wide
	-or-
MIL-I-19166	Insulation Tape, Electrical, 3/4-in. Wide

a. To prepare the drogue parachute assembly for rigging and packing, perform the following:

(1) Ensure that all support equipment and materials required are available prior to starting.

(2) Inspect packing tools for nicks, burrs, or sharp edges which may cause damage to the drogue parachute assembly.

(3) Count and record number of packing tools.

(4) Clean packing table.

3. ORIGINAL ISSUE RIGGING PROCEDURES (ORGANIZATIONAL MAINTENANCE).

4. LAYOUT OF DROGUE PARACHUTE ASSEMBLY.

a. Lay out drogue parachute assembly on packing table per Figure 1.

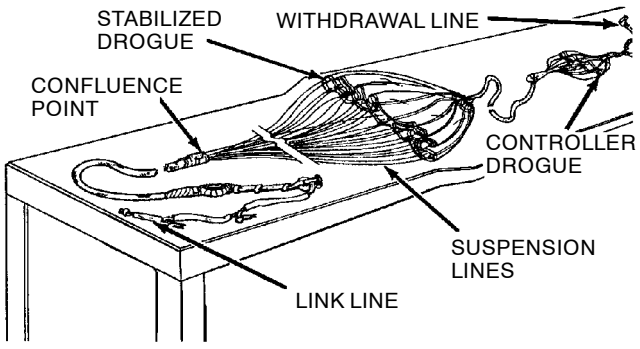

Figure 1. Layout of Drogue Parachute Assembly

5. ATTACHMENT OF CONNECTING LINE TO CONTROLLER DROGUE AND STABILIZER DROGUE.

NOTE

Tie off all tackings with surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Pass one looped end of connecting line thru base loop of controller drogue (Figure 2). Route opposite end of line thru loop and pull tight. Tack loop with one turn of size 6 thread, doubled and waxed; tie off.

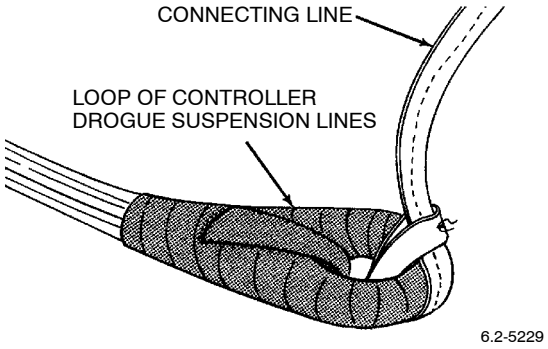

Figure 2. Attachment of Connecting Line to Controller Drogue

b. Pass free end loop of connecting line around apex suspension lines of stabilizer drogue (Figure 3). Route complete controller drogue thru loop of connecting line and pull tight. Tack loop with one turn of size 6 thread, doubled and waxed; tie off.

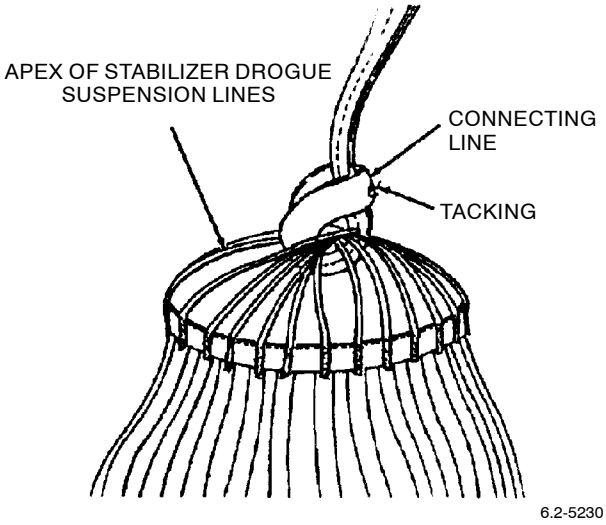

Figure 3. Attachment of Connecting Line to Stabilizer Drogue

6. ATTACHMENT OF ANTI-SQUID LINE TO CONTROLLER DROGUE.

a. Pass large loop end of anti-squid line thru loop inside drogue suspension line union.

b. Pass small loop end of anti-squid line thru large loop and pull tight to form a knot (Figure 4).

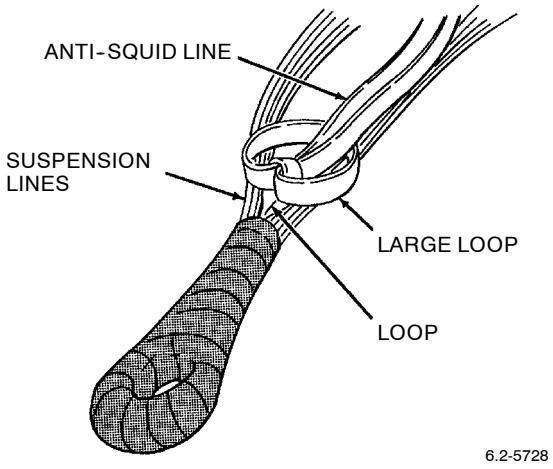

Figure 4. Attachment of Anti-Squid Line to Controller Drogue

7. ATTACHMENT OF EXTENDER STRAP AND SHACKLE TO STABILIZER DROGUE.

a. Pass extender strap thru eye end of main drogue suspension lines (Figure 5).

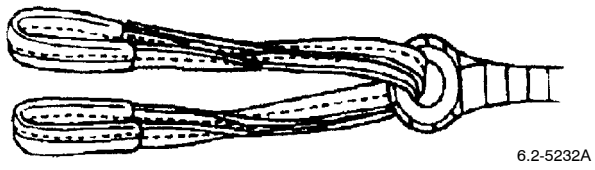

Figure 5. Pass Extender Strap thru Eye

b. Position end loops of straps on shackle (Figure 6).

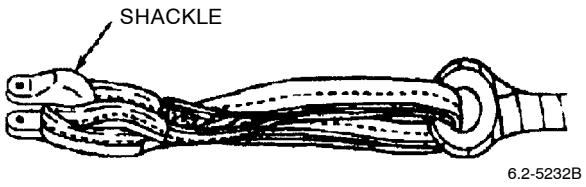

Figure 6. Positioning of End Loops

c. Wrap with four turns of 3/4-in. wide filament reinforcing tape in three places (Figure 7).

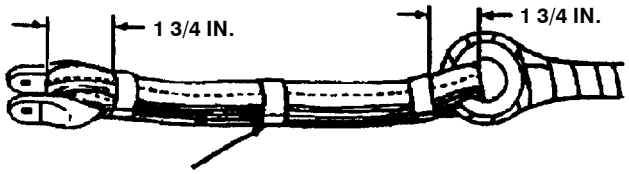

Figure 7. Wrapping with Filament Tape

8. ATTACHMENT OF DROGUE WITHDRAWAL LINE TO CONTROLLER DROGUE.

NOTE

Tie off all tackings with surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Draw edges of withdrawal line upward to butt at centerline of shackle (Figure 8).

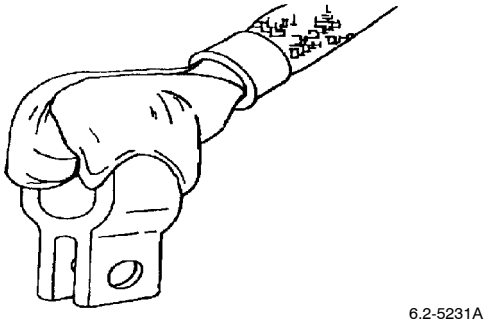

Figure 8. Draw Up Edges to Shackle

b. Using size FF thread, doubled and waxed, whipstitch edges together (Figure 9). Stitches will be about 1/8-in. in length and 1/8-in. from edges of withdrawal line. (Normally, only six stitches will be required.) Tie off. (QA)

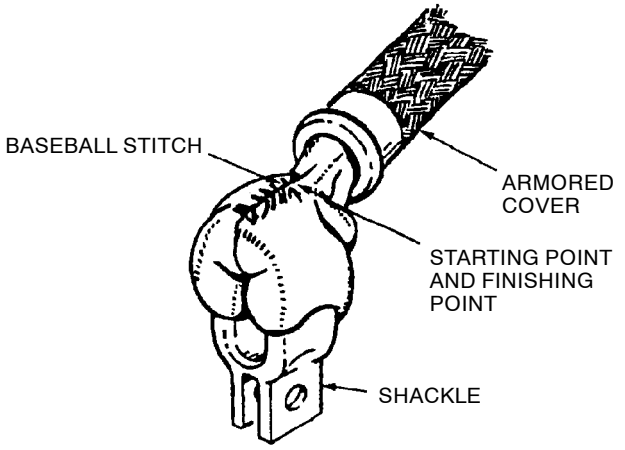

Figure 9. Whipstitch Edges Together

c. Hold five controller drogue apex lines centrally to form two clear diametrically opposite openings. Pass loop end of drogue withdrawal line in one side of centrally held apex lines, thru small loop of anti-squid line and out other side of apex lines (Figure 10).

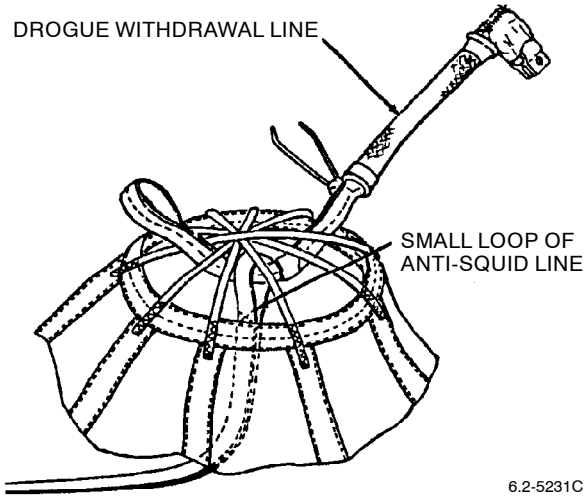

Figure 10. Holding Five Controller Drogue Apex Lines

d. Pass spool/shackle end of withdrawal line over outside of apex lines and thru loop at opposite end of withdrawal line (Figure 11). Pull tight to form lark's head knot. Tack with one turn of size 6 thread, doubled and waxed. Tie off. (QA)

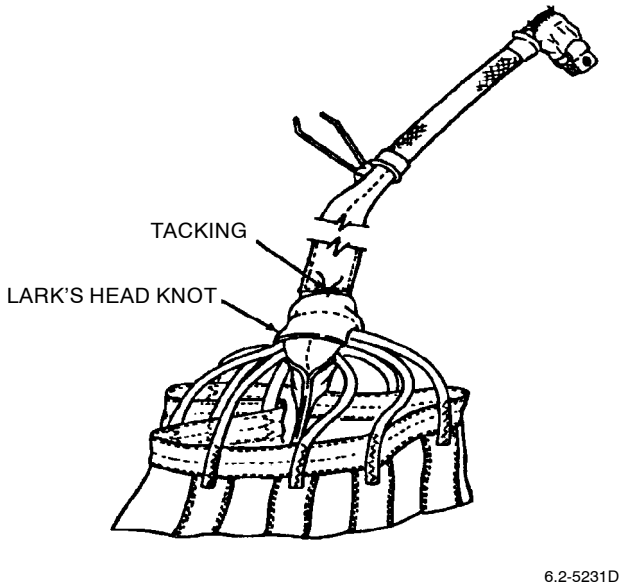

Figure 11. Pass Spool/Shackle End of Line Over Apex Lines

9. INSPECTION (SPECIAL) (ORGANIZATIONAL MAINTENANCE).

a. Maximum scheduled repack cycle is 210 days.

10. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Parachute Harness Sensing Release Unit Cartridge) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be re-based if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Components without a service/total life shall be removed from service if the components do not pass inspection, as determined by Quality Assurance Representative (QAR) or Collateral Duty Inspector (CDI).

g. Check date placed in-service and date of manufacture on each parachute part for service/total life as follows:

Nomenclature	Service Life (Yr)	Total Life (Yr)
5 Ft. Stabilizer Drogue	None	10
22-in. Controller Drogue	None	10
Connecting Line	None	10
Extender Strap	None	13
Link Line	2	10
Withdrawal Line	2	10

NOTE

All metal parts shall remain in-service until they fail to meet inspection criteria.

(1) Marking for completeness, legibility, and agreement with information on Parachute Record (OPNAV 4790/101).

(2) Compare configuration drogue parachute assembly to that shown in WP 015 02.

11. INSPECTION.

a. Controller Drogue

(1) Withdrawal Line shackle for nicks, burrs, dirt, and corrosion, proper attachment of shackle to withdrawal line, and security of tackings. (QA)

(2) Armored cover for broken strands, security of end ferrules, and presence of dirt and corrosion (Figure 12).

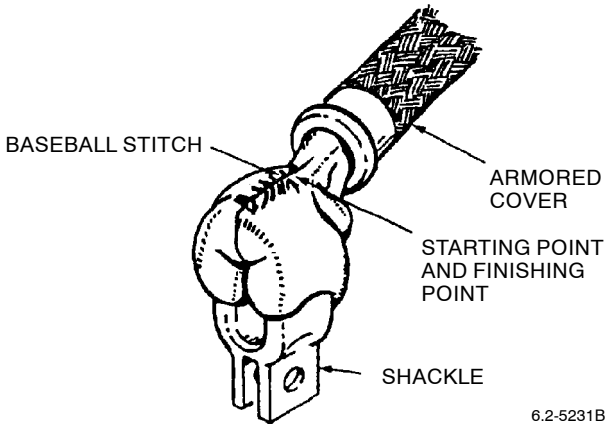

Figure 12. Inspection of Shackle

(3) Flap Securing pin for nicks, burrs, dirt, corrosion, bends, and proper attachment to withdrawal line (Figure 13).

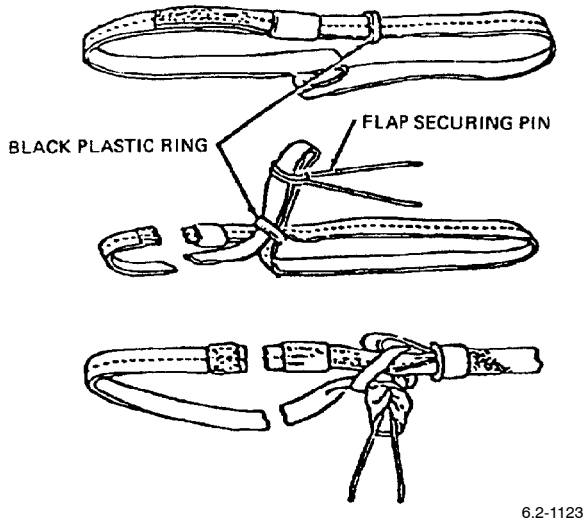

Figure 13. Inspection of Flap Securing Pin

(4) Ensure that all apex suspension lines and anti-squid line are encircled by withdrawal line with a lark's head knot and tacking is properly attached and secure (Figure 14). (QA)

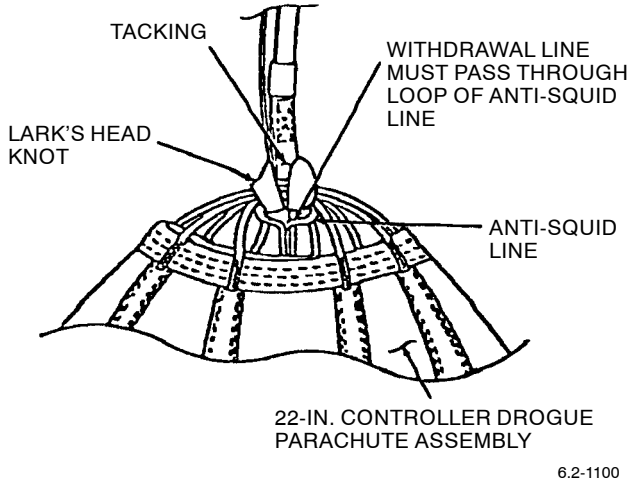

Figure 14. Ensuring Apex Suspension Lines and Anti-Squid Line are Encircled

(5) Withdrawal line for contamination, cuts, fraying, burns, loose or broken stitching, and proper attachment of drogue parachute.

(6) Fabric drag surface, seams, and suspension lines at canopy apex for signs of contamination, mildew, cuts, tears, burns, fraying, and loose or broken stitches.

(7) Anti-squid line for contamination, cuts, fraying, burns, loose or broken stitching and security of attachment at canopy apex and terminal eye. (QA)

(8) Suspension lines:

(a) Lines from canopy lower lateral band to terminal eye for frays, ruptures, and contamination.

(b) Protruding inner core lines, presence of twists in individual lines and security of attachment of lower lateral band.

(c) Security and condition of wrapping at terminal eye.

(9) Drogue connecting line for contamination, cuts, fraying, burns, loose or broken stitching, and attachment of connecting line to 22-in. drogue terminal eye. (QA)

b. Stabilizer drogue:

(1) Ensure that all apex suspension lines on 5 ft. drogue parachute are encircled by lark's head knot formed by connecting line. (QA)

(2) Check tacking at apex (Figure 3).

(3) Fabric surface, seams, and suspension lines for signs of contamination, mildew, cuts, tears, burns, fraying, and loose or broken stitches.

(4) Anti-squid for proper attachment at canopy apex (Figure 15). (QA)

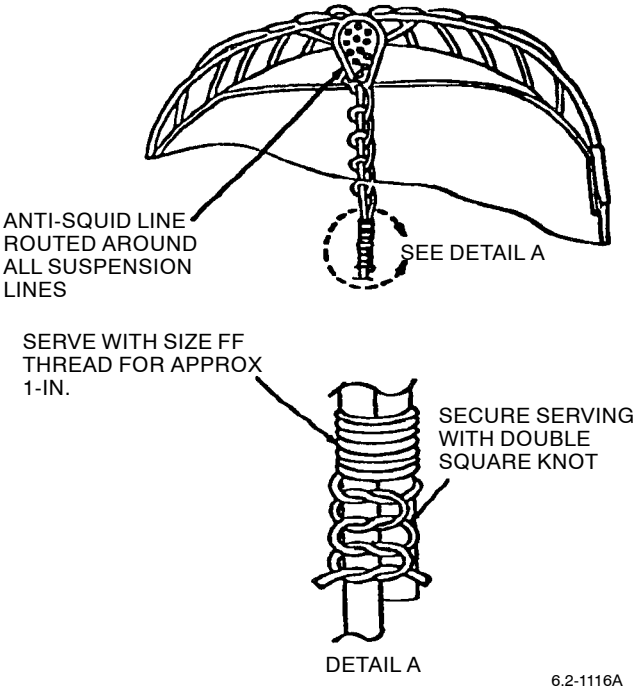

Figure 15. Anti-Squid Line Attachment

(5) Suspension lines and anti-squid line from canopy lower lateral band to confluence point for frays, ruptures, contamination, protruding inner core lines, presence of twists, attachment of suspension lines and V-tabs at lower lateral band and security and condition of warping at confluence point.

(6) Braided tubular cover for frays, ruptures, contamination, security of wrappings, and serving at the eye.

(7) Extender strap for contamination, cuts, tears, burns, fraying, and loose or missing stitches.

(8) Drogue shackle for nicks, burrs, and corrosion.

(9) Attachment bolt for nicks, burrs, corrosion, and stripped threads.

(10) Link line webbing for fraying, cuts, tears, and contamination; neoprene sleeve for cuts; pins for nicks, burrs, and corrosion.

c. Suspension line continuity check:

(1) Walk anti-squid line from tunnel of confluence point to lower lateral band of stabilizer drogue. (QA)

(2) Hold anti-squid line at lower lateral band, form two groups of twelve lines each. (QA)

(3) Ensure anti-squid line is retained in control position with twelve lines on each side. (QA)

(4) Ensure suspension lines are not crossed or entangled at confluence point (Figure 16). (QA)

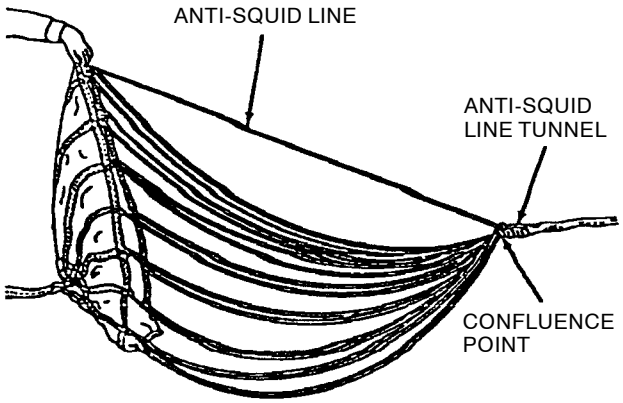

Figure 16. Suspension Line Continuity Check

(5) Stretch controller drogue taut and from 2 groups of 5 lines each; position each group to either side of anti-squid line. Make certain that anti-squid line is retained in central position with 5 lines on each side (Figure 17). (QA)

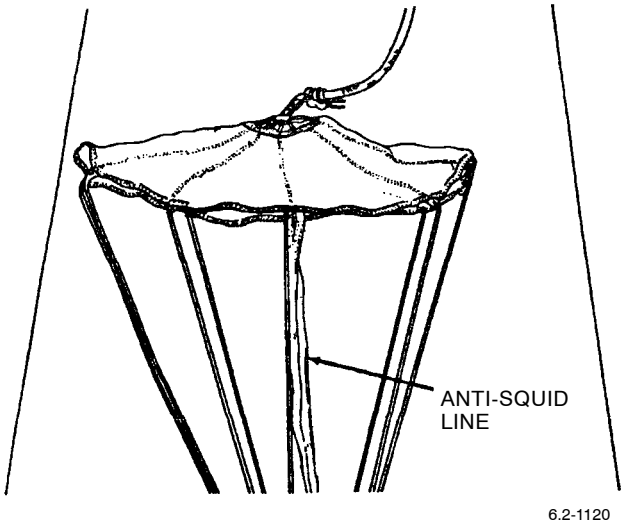

Figure 17. Separation of Suspension Lines into Two Groups of Five

12. PACKING (ORGANIZATIONAL MAINTENANCE).

13. LAYOUT OF DROGUE PARACHUTE ASSEMBLY.

a. Connect drogue shackle to scissor mechanism. Lay out drogue parachute assembly on table (Figure 18).

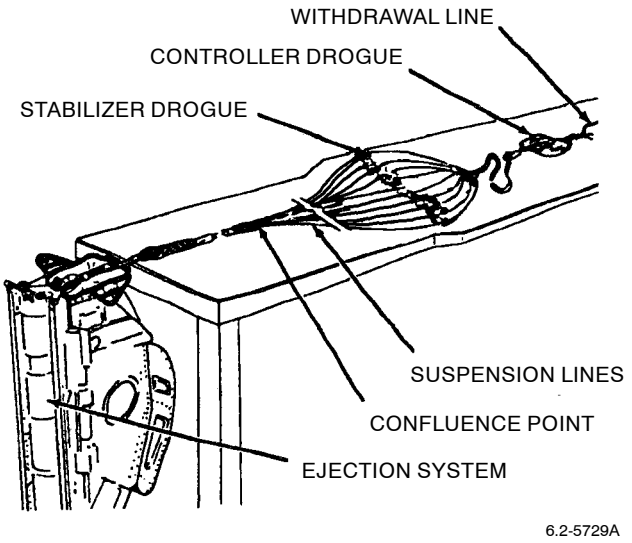

Figure 18. Layout of Rigged Assembly

b. Open and spread the four flaps of drogue parachute container, pull up inner protective sleeve, and roll it inside out so that it does not obstruct the packing operation (Figure 18).

c. Spread stabilizer drogue out drawing suspension lines taut.

d. Position anti-squid line tunnel upward (Figure 19).

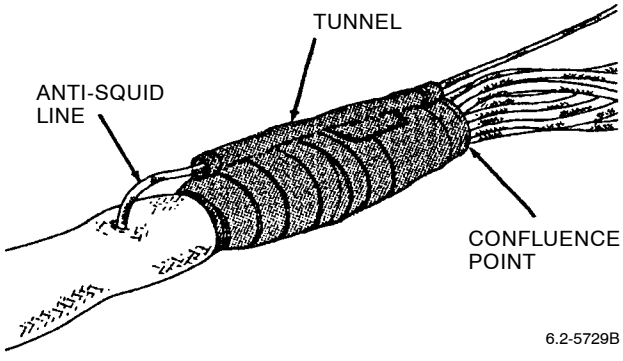

Figure 19. Positioning of Anti-Squid Line Tunnel

14. FOLDING STABILIZER DROGUE.

a. Pair off suspension lines and align V-tabs. There shall be six pairs on each side of anti-squid line (Figure 20).

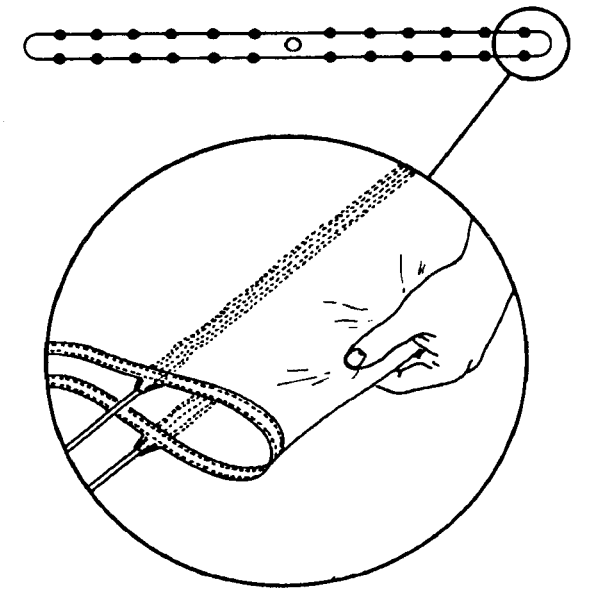

Figure 20. Pair Off Suspension Lines

b. S-fold packer's side of canopy maintaining alignment of V-tabs (Figure 21).

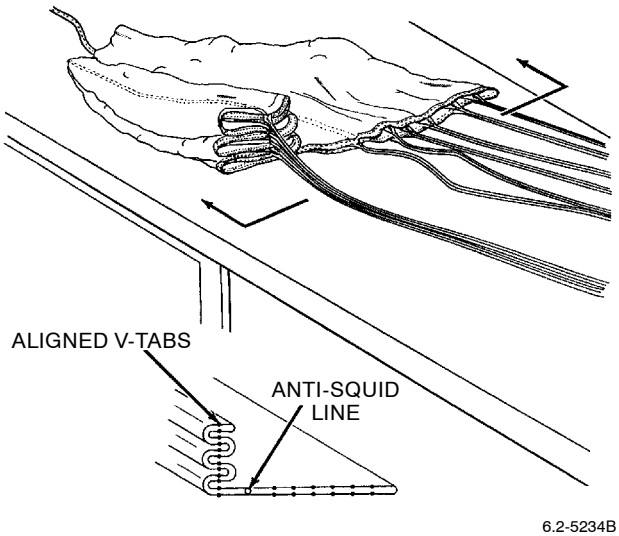

Figure 21. S-Fold Packer's Side of Canopy

c. Repeat same operation for helper's side. Ensure that anti-squid line is positioned between the two groups of folds and suspension lines. Check that anti-squid lines are properly routed between the two groups of suspension lines (Figure 22). (QA)

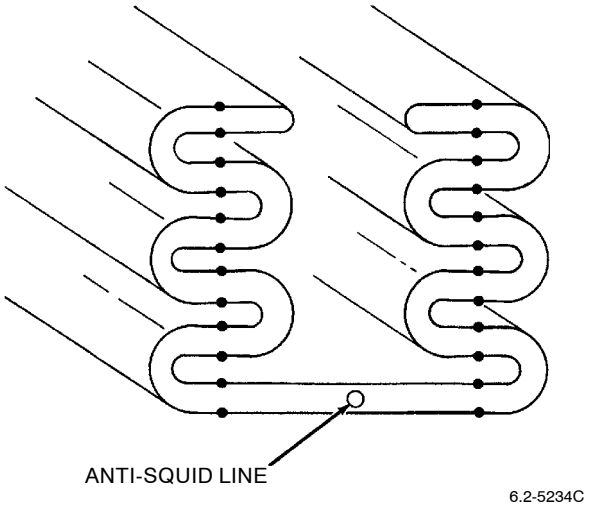

Figure 22. S-Fold Helper's Side of Canopy

d. Grasp two sets of folds at skirt hem and rotate group of folds on helper's side under group of folds on the packer's side (Figure 23).

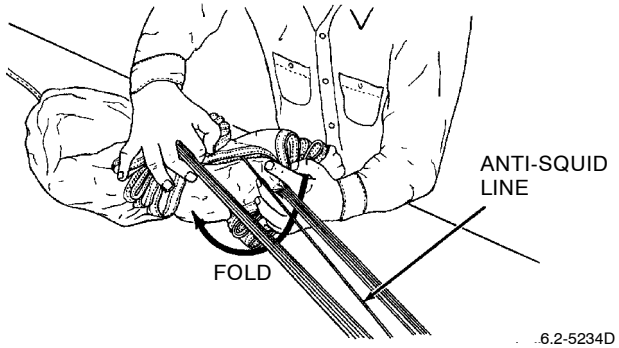

Figure 23. Grasping Two Sets of Folds

e. Straighten folds and fold canopy together; align V-tabs and ensure that anti-squid line is free to confluence point (Figure 24).

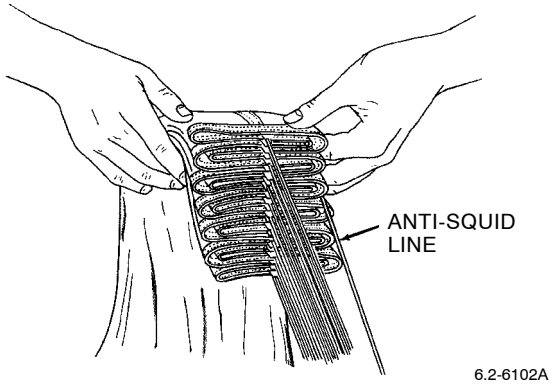

Figure 24. Straighten Folds

f. Place shot bags on folded stabilizer drogue canopy (Figure 25).

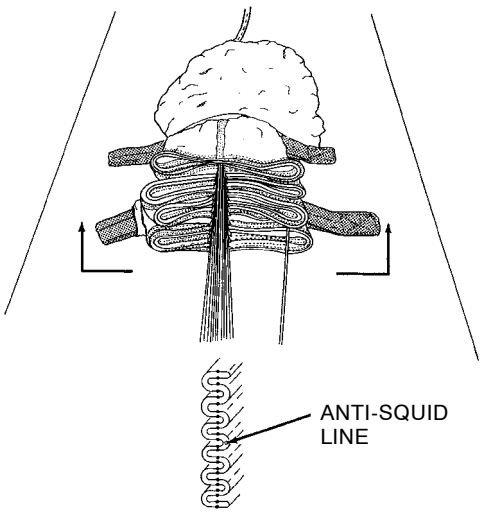

Figure 25. Placement of Shot Bags

15. STOWING STABILIZER DROGUE AND SUSPENSION LINES.

NOTE

Direction of flight will determine front, rear, right, and left reference points.

a. Route drogue extender strap down along inside left rear corner of container. Pack sleeve-protected suspension lines in bottom of container from left to right along rear (Figure 26).

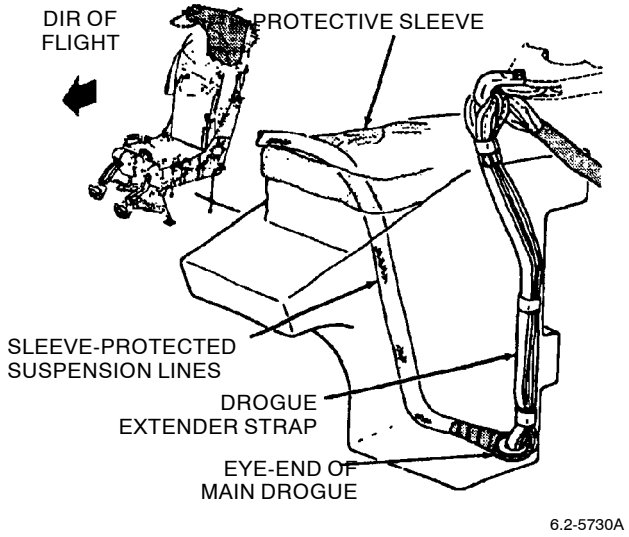

Figure 26. Routing of Drogue Extender Strap

NOTE

Pack line well into all corners, do not waste any space.

b. Route drogue sleeve-protected suspension lines in four tightly packed rows in bottom of container running from left to right while working toward container front (Figure 27).

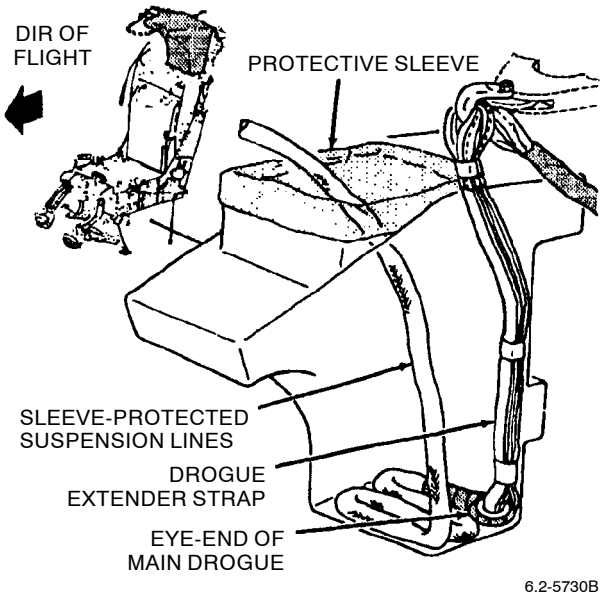

Figure 27. Route Drogue Sleeve-Protected Suspension Lines

c. Continue routing drogue sleeve-protected suspension lines tightly on top of first layer in same manner, working toward rear of container. Pack wrapped confluence point with tunnel between sleeve-protected suspension lines and suspension lines. (QA)

NOTE

Pack suspension lines on top of drogue sleeve protected suspension lines as tightly as possible. Do not waste any space.

d. Pack stabilizer drogue suspension lines on top of packed drogue sleeve-protected suspension lines, routing them from left to right of container. Ensure that drogue suspension lines are properly routed and free of entanglements. (QA)

e. Remove shot bags from folded stabilizer drogue. Grasp folded stabilizer drogue canopy at lower edge. Insert canopy into container on top of packed suspension lines, butting canopy skirt hem against rear of container. Continue stowing canopy into container using accordion folds from front to rear, packing each fold as tightly as possible and finally opening out apex of drogue to lie flat on top (Figure 28).

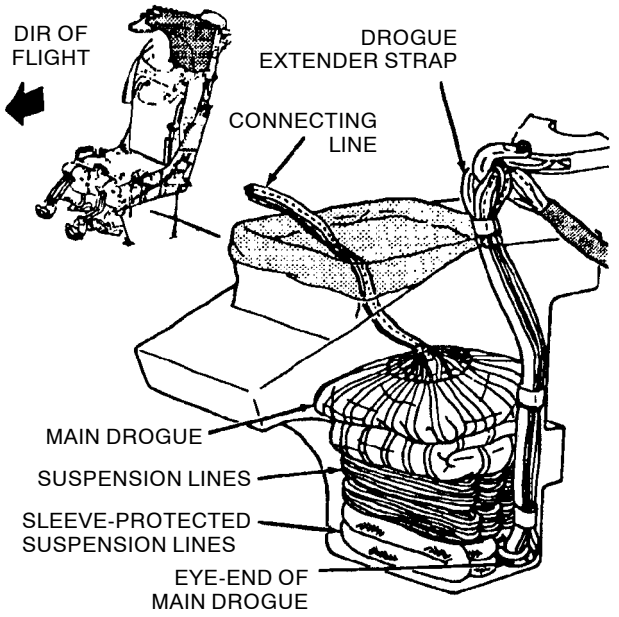

Figure 28. Removal of Shot Bags

f. Pack connecting line directly on top of packed canopy by standing connecting line on its edge. Route connecting line along front of container, tightly running it from side to side, working toward rear of container. Pack entire connecting line in this manner until a length of 12 to 14-in. remains (Figure 29). (QA)

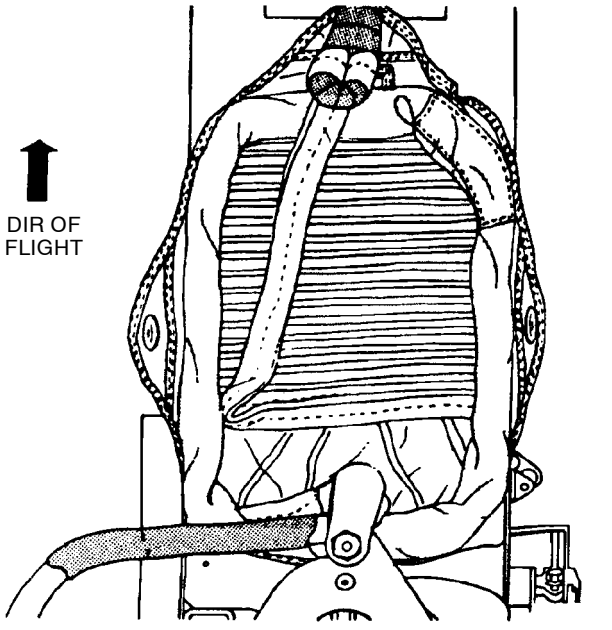

Figure 29. Pack Connecting Line

g. Place remaining length of connecting line over left rear corner of container.

h. Pull up protective sleeve. Fold rear, left, front, and right sides of sleeve down in that order. Ensure that drogue parachute assembly is firmly packed. Adjustment of internal mass by external hand pressure is permissible (Figure 30).

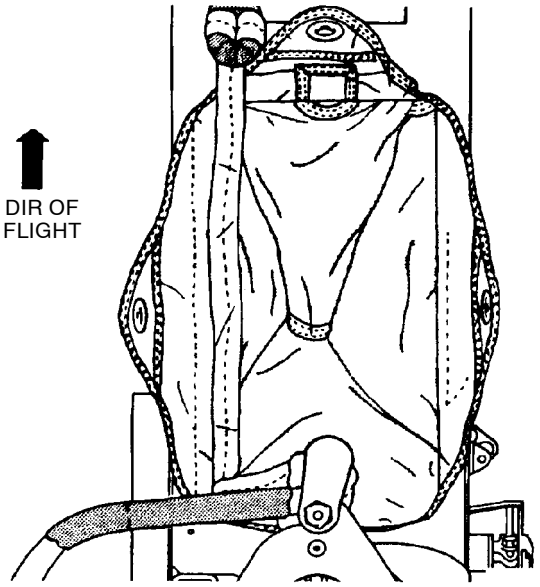

Figure 30. Pull Up Protective Sleeve

i. Route remaining length of stabilizer drogue connecting line forward on top of folded sleeve. Position terminal eye of controller drogue across front of container from left to right (Figure 31). (QA)

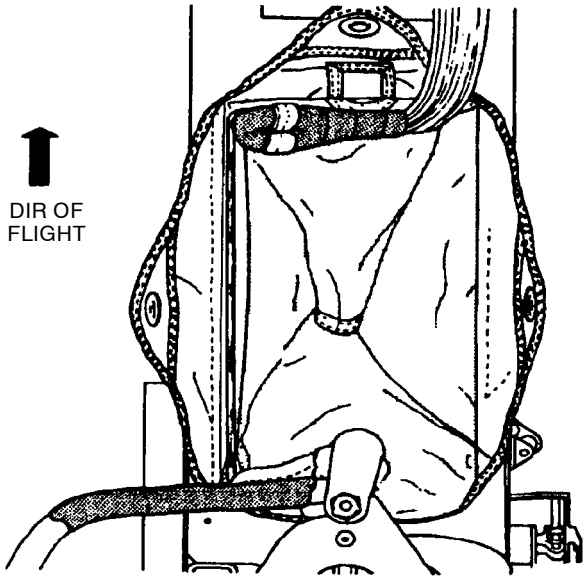

Figure 31. Routing of Remaining Length

16. FOLDING AND STOWING OF CONTROLLER DROGUE.

a. Stretch controller drogue parachute assembly taut and ensure that anti-squid line is not entangled with suspension lines. Pair off suspension lines and straighten canopy (Figure 32).

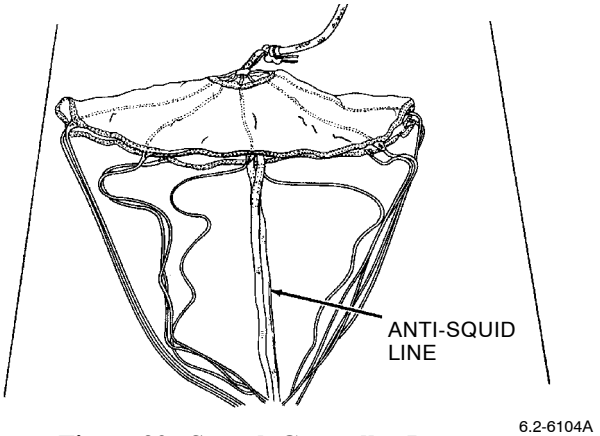

Figure 32. Stretch Controller Drogue

b. Fold drogue into four folds. Adjust to stagger suspension lines and reduce bulk in center (Figure 33). (QA)

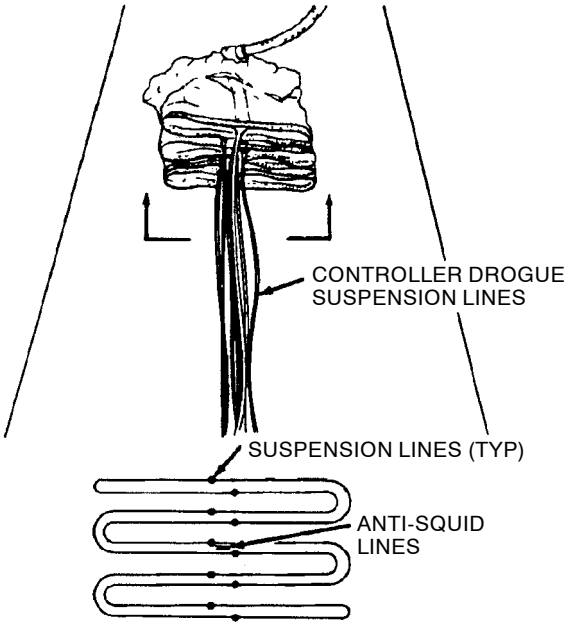

Figure 33. Fold Drogue into Four Folds

c. Stow controller drogue suspension lines on top of folded sleeve, from front to rear of container. Pack drogue by stowing skirt hem into rear of container. Lay to front, fold back, and open out apex so that it lies flat (Figure 34). (QA)

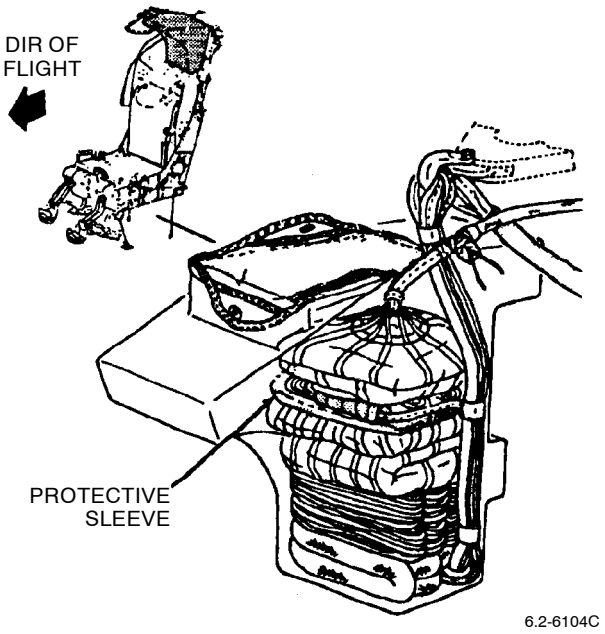

Figure 34. Stow Controller Drogue Suspension Lines

WARNING

Drogue withdrawal line must be forward of extender strap, and both must emerge from left rear corner between left and rear securing flaps.

d. Pull container flaps up; withdrawal line and extender strap shall remain between rear and left flaps.

17. CLOSING CONTAINER.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Close right, left, rear, and front securing flaps, passing wire loop on right flap thru eyelets of other flaps. (QA)

WARNING

Controller drogue withdrawal line must be routed over all other lines so that drogues may be withdrawn without any danger of entanglement.

b. Insert securing pin attached to drogue withdrawal line thru wire loop and into fabric pocket on front flap (Figure 35).

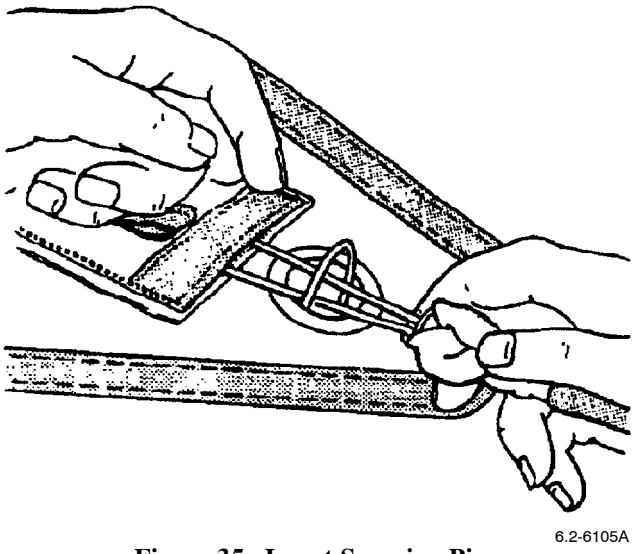

Figure 35. Insert Securing Pin

c. Pass length of size 6 thread, single and waxed, thru flap securing pin and then thru fabric loop on pocket. Tie off. Trim excess (Figure 36). (QA)

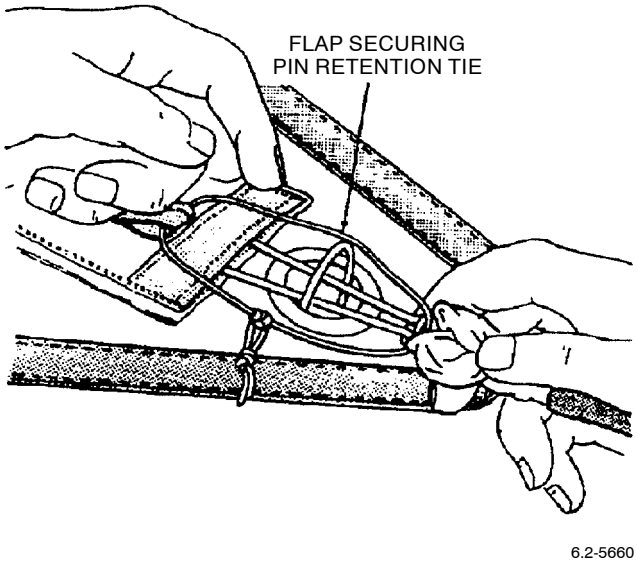

Figure 36. Securing of Flap Securing Pin

d. Rotate scissor shackle forward so that drogue shackle and extender strap loops lie on top of flaps.

e. Retention-tie drogue shackle with one turn size 6 thread, single and waxed, routed thru loop of extender strap, thru shackle, and around both legs of securing pin forward of wire loop; tie off (Figure 37). (QA)

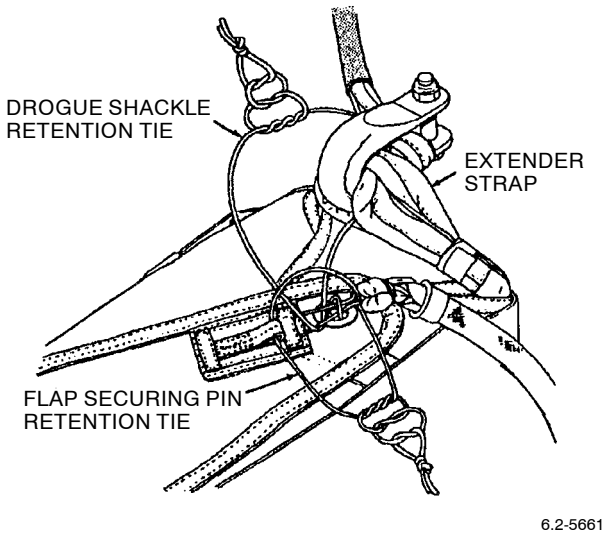

Figure 37. Retention-Tie Drogue Shackle

NOTE

Ensure that the drogue shackle is positioned in scissor shackle with drogue shackle nut facing aft and up. Barostatic time release should be cocked.

f. Ensure first layer of link line is routed thru protective retainer flap assembly.

18. FINAL CHECKOUT.

a. Account for all packing tools.

b. Examine packed drogue parachute for general condition.

c. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA)

d. QA inspector shall examine completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

e. QA inspector shall sign Parachute Record (OPNAV 4790/101).

f. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

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ORGANIZATIONAL AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

MK-H7 DROGUE PARACHUTE SYSTEM

PART NO. MBEU38272

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1 thru 3	10						

Reference Material

Organizational and Depot Maintenance, Packing Procedures, MK-H7 Drogue Parachute System . . . . . WP 015 01

Alphabetical Index

Title	Page
Introduction	1
Service/Total Life	1
Usable on Codes	1

List of Figures

Title	Page
MK-H7 Drogue/Parachute System	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the MK-H7 Drogue Parachute System (Figure 1).

2. USABLE ON CODES.

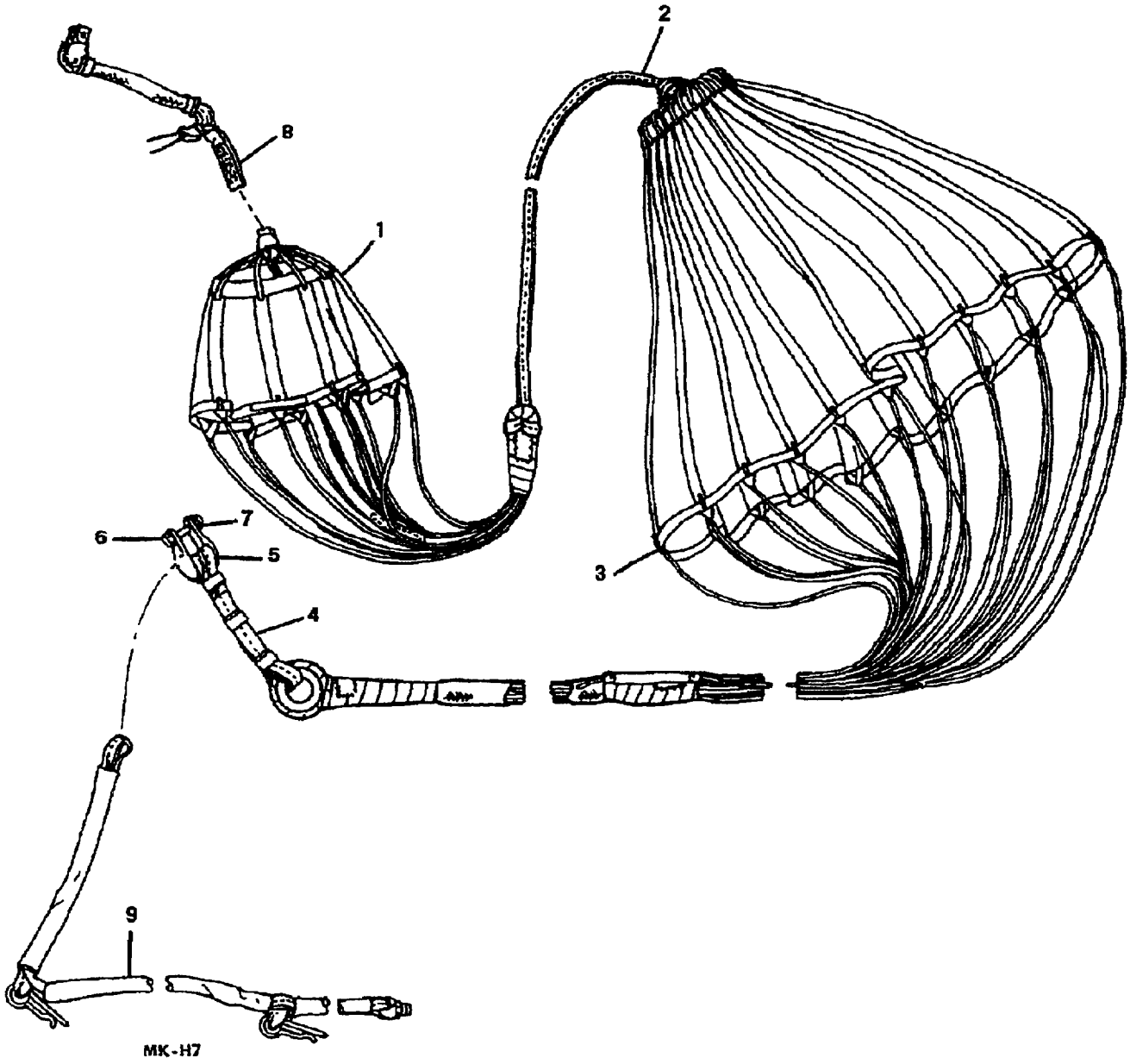
a. The usable on codes in this WP refer to the aircraft applications for the MK-H7 Drogue Parachute System.

b. The following usable on codes apply to this WP:

A – F-4

3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in WP 015 01.



6.2-5753

Figure 1. MK-H7 Drogue Parachute System (Sheet 1 of 2)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	MBEU38272	. DROGUE PARACHUTE SYSTEM, MK-H7	REF	A	AGOOO
1	MBEU34505	. . CONTROLLER DROGUE	1		PCOOO
2	MBEU34010	. . CONNECTING LINE	1		PCOZZ
3	MBEU38271	. . STABILIZER DROGUE	1		PCOOO
4	MBEU38119	. . EXTENDER STRAP	1		PCOZZ
5	MBEU5940	. . DROGUE SHACKLE	1		PAOZZ
		/ATTACHING PARTS/			
6	MBEU12064	. . BOLT	1		PAOZZ
7	A126G	. . NUT	1		PAOZZ
		---*---			
8	MBEU23177	. WITHDRAWAL LINE, CONTROLLER	1		PCOZZ
		DROGUE			
9	MBEU35674	. LINK LINE	1		PCOZZ

Figure 1. MK-H7 Drogue Parachute System (Sheet 2 of 2)

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ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

NES-14 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 607AS102-6

(MK-GRU7, MK-GRU7A, AND MK-GRUEA7 DROGUE PARACHUTE SYSTEMS)

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1	8	3 thru 7	0	8	4	9	8
2	4						

Reference Material

Illustrated Parts Breakdown, NES-14 Personnel Parachute Assembly . . . . . WP 016 04
Illustrated Parts Breakdown, MK-GRU7/MK-GRU7A/MK-GRUEA7 Drogue Parachute Assemblies . . . . . WP 017 03

Alphabetical Index

Title	Page
Configurations	2
Description	2
General	2
Principles of Operation	2
Automatic Operation Above 13,000-Ft. Altitude	2
Automatic Operation Below 13,000-Ft. Altitude	8
Manual Operation	8
Repack Schedule	9
Subassembly Configurations	2

Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 577	30 Nov 93	Stowage Tray Mounting NES-14 (ECP 16264)	1 Oct 94	31 Dec 01

1. DESCRIPTION.

2. GENERAL. The NES-14 Personnel Parachute Assembly and the MK-GRU7, MK-GRU7A, and MK-GRUEA7 Drogue Parachute Assemblies are part of the MK-GRU7, MK-GRU7A and MK-GRUEA7 Escape system and are designed for use with a PCU-33/P or PCU-56/P parachute restraint harness.

3. The NES-14 assembly includes a multicolored (white, olive green, international orange, and sand shade), 28 ft. diameter, flat, circular, nylon canopy with 28 gores and pulldown vent lines (PDV). Water deflation pockets are provided on alternate gores. The canopy is packed in a hardshell container and installed in the ejection seat.

4. The PCU-33/P or PCU-56/P parachute restraint harness incorporates the aircrew's parachute harness and provides attachment points for the lap and shoulder restraint systems. The harness members are channeled thru the torso vest to retain it in position and facilitate donning.

5. When aboard the aircraft and seated, the aircrew connects the canopy release fittings on the parachute riser to canopy release adapters on the parachute restraint harness. The survival kit and lapbelt restraint straps are also connected to the parachute restraint harness by means of the lapbelt adapters.

6. The MK-GRU7, MK-GRU7A, and MK-GRUEA7 drogue parachutes are used to stabilize and decelerate the seat and to position the seat in the proper attitude for aircrew separation.

7. The drogue parachute consist of two parachutes: a 22-in. diameter controller drogue and a 5 ft. diameter stabilizer drogue parachute, both made of cotton material. Both parachutes are interconnected by a connecting line and packed together within the headbox container.

8. CONFIGURATIONS. Authorized configurations for the NES-14 and the MK-GRU7, MK-GRU7A and MK-GRUEA7 parachute assemblies are shown in (Figures 1 and 2). Refer to Illustrated Parts Breakdowns work packages WP 016 04 and WP 017 03 for exact configuration requirements.

9. SUBASSEMBLY CONFIGURATIONS. The subassemblies listed below make up the NES-14 and are shown in (Figure 3). Refer to WP 016 04 for detailed information on subassemblies.

Pilot Parachute Assembly

Withdrawal Line Assembly

Withdrawal Line Connector Strap

Canopy Assembly

Riser Assembly

Cross-Connector Straps

Ripcord Assembly

Canopy Release

Parachute Harness Sensing Release Units (PHSRU)

Stowage Tray

Pulldown Vent Lines

Back Pad Assembly

Container Assembly

Container Opening Spring Assembly

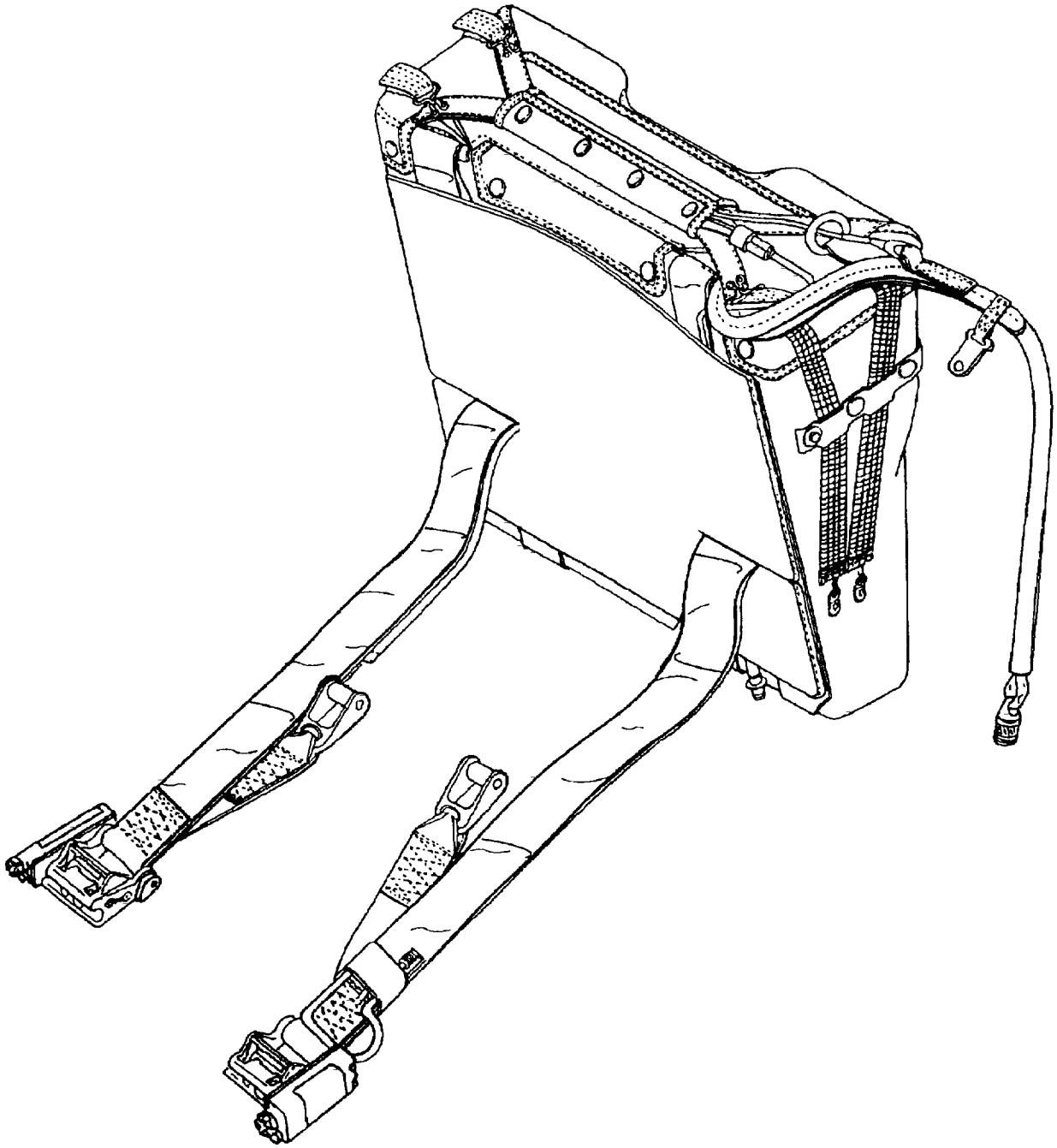
10. PRINCIPLES OF OPERATION.

11. AUTOMATIC OPERATION ABOVE 13,000 FT. ALTITUDE. When an aircrew ejects from the aircraft above the ejection seat predetermined aircrew/seat separation altitude, the following functions take place:

a. The ejection seat drogue gun fires a piston, deploying the controller drogue. The controller drogue parachute, in turn, deploys the stabilizer drogue parachute. The duplex drogue parachute system decelerates and stabilizes the seat.

b. The aircrew continues to free fall while still restrained in seat. The stabilizer drogue remains attached to the seat by a scissor shackle. As the preset altitude is reached (13,000 ± 1500 ft.) and after a 2.0 sec. time delay, the barostat allows the seat time release mechanism to operate which opens the scissor shackle. At the same time, the harness restraints, lapbelt, leg restraints, and face curtain are unlocked.

c. The stabilizer drogue now free from the seat, pulls the withdrawal line from the parachute container. As the withdrawal line reaches full line stretch, the ripcord locking pins are removed from the locking cones, permitting the grommets, locking cones, and end tabs to separate. The container spring opening assemblies pull the end and side flaps apart, exposing the canopy and allowing the pilot parachute to deploy.



6.2-6106

Figure 1. Personnel Parachute Assembly, NES-14

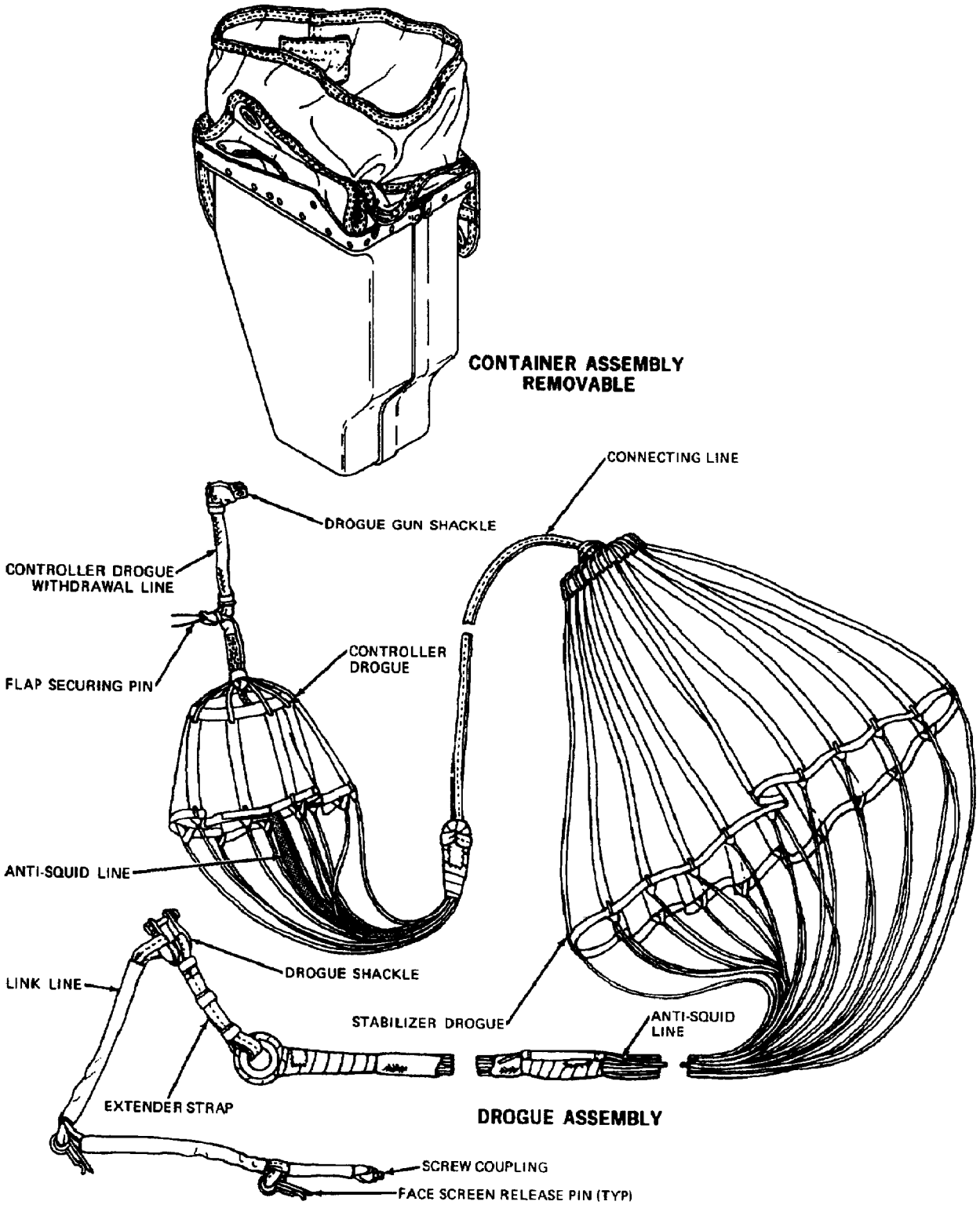
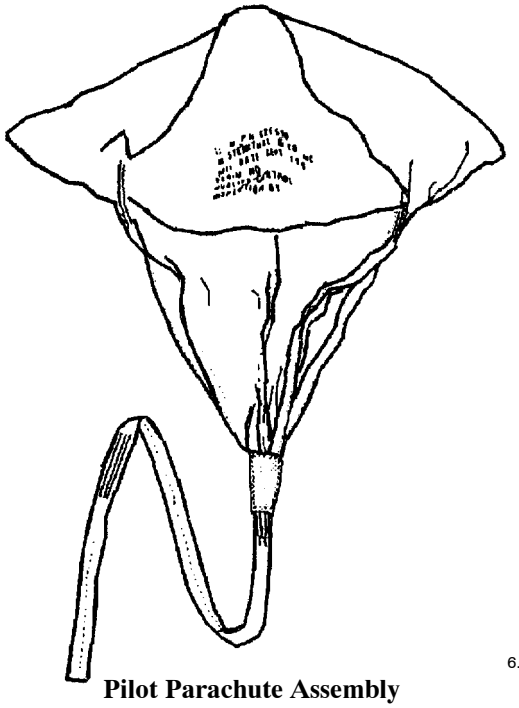
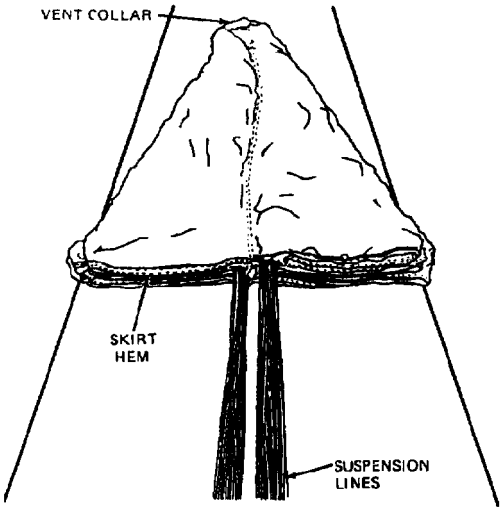


Figure 2. Drogue Parachute System Martin-Baker, MK-GRU7, MK-GRU7A and MK-GRUEA7



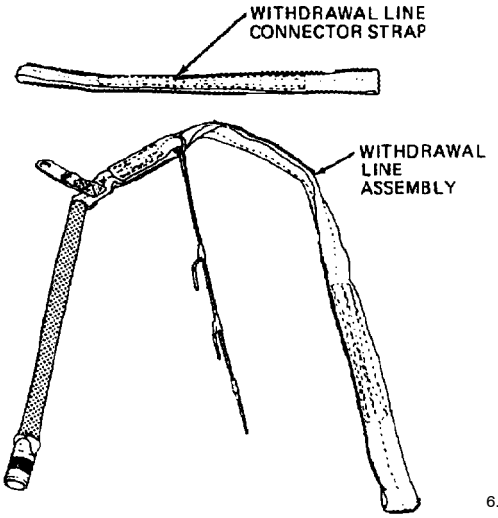
6.2-5158

Pilot Parachute Assembly



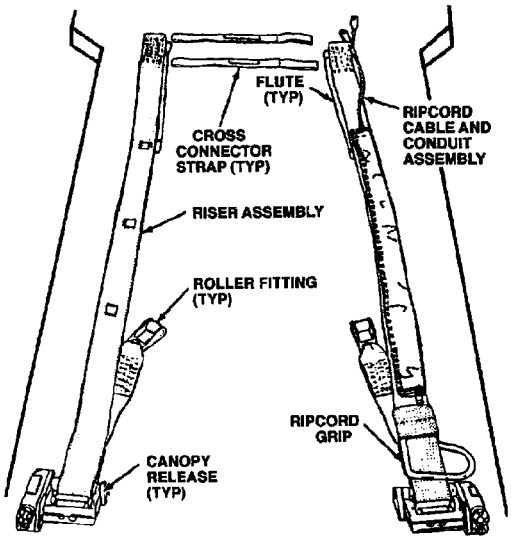
6.2-5158B

Canopy Assembly



6.2-5158A

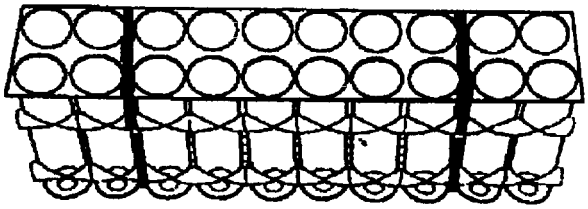
Withdrawal Line Assembly, Withdrawal Line Connector Strap



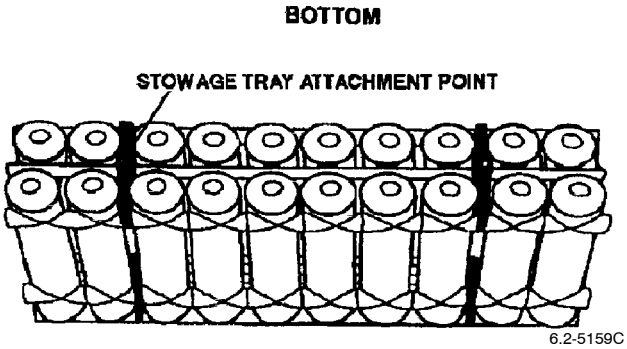
6.2-5158C

Riser Assembly, Cross Connector Straps, Ripcord Assembly

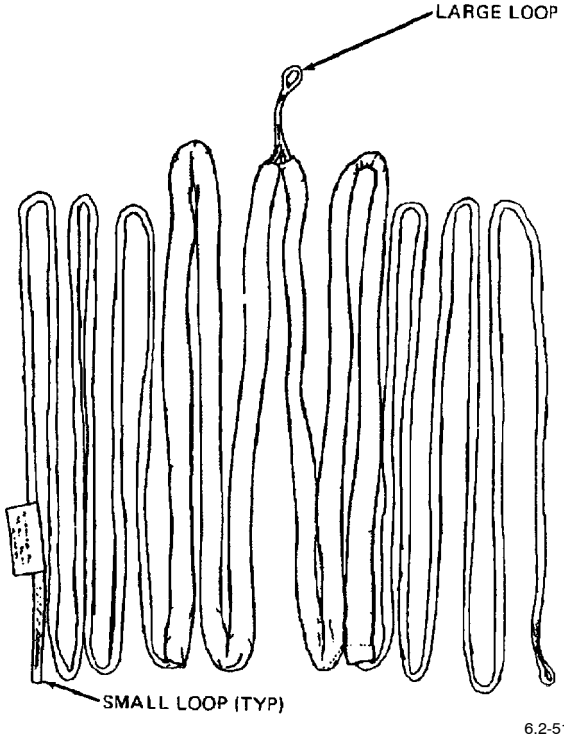
Figure 3. Subassemblies, NES-14 (Sheet 1 of 3)



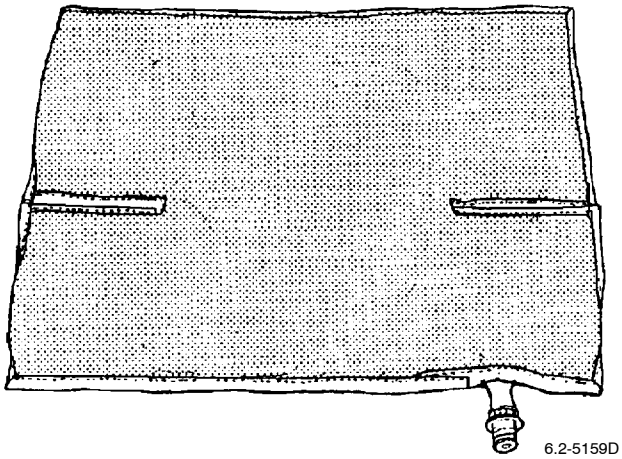
Stowage Tray



Stowage Tray

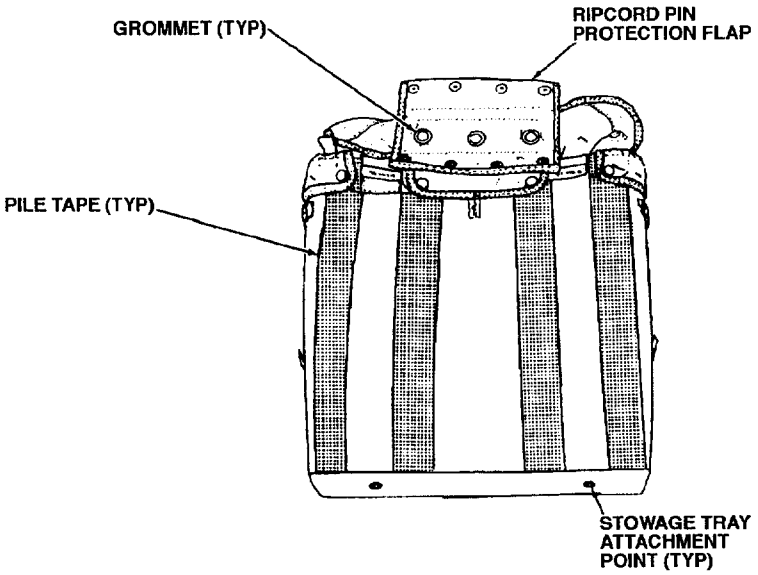


Pull Down Vent Lines

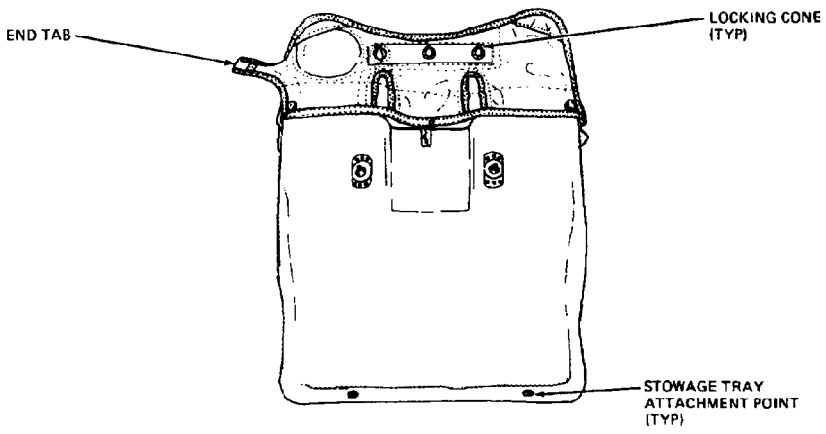


Back Pad Assembly

Figure 3. Subassemblies, NES-14 (Sheet 2 of 3)



Container Assembly (Front)



Container Assembly (Back)

Figure 3. Subassemblies, NES-14 (Sheet 3 of 3)

d. The stabilizer drogue, still attached to the withdrawal line which is attached to the canopy apex, extracts the canopy followed by the suspension lines. The canopy starts to inflate during this operation. The PDV lines, which are shorter than the suspension lines bear the load of the drogue parachutes and prevent squidding of the canopy. However, the PDV lines may break during high speed openings.

e. As the canopy deploys, a load is applied to the risers, separating the cross-connector straps from their fastener tape connection and pulling them from the container. The connector link ties break and the canopy fully opens, separating the aircrew from the seat.

f. The aircrew descends suspended from the canopy by the risers and the PCU-33/P or PCU-56/P parachute restraint harness.

g. During descent, the aircrew may manually actuate the four-line release system which will reduce oscillation and allow the aircrew to maneuver the parachute to a less hazardous landing site.

h. Upon landing, the aircrew disengages the canopy from the PCU-33/P or PCU-56/P parachute restraint harness by actuating the canopy release fittings.

i. The parachute harness sensing release units will provide an automatic backup method of releasing the risers after the aircrew makes a seawater entry.

12. AUTOMATIC OPERATION BELOW 13,000 FT. ALTITUDE. When an aircrew ejects from the aircraft at or below the ejection seat predetermined aircrew/seat separation altitude, the following functions take place:

a. The ejection seat drogue gun fires a piston, deploying the controller drogue. The controller drogue parachute, in turn, deploys the stabilizer drogue parachute. The duplex drogue parachute system decelerates and stabilizes the seat.

b. After a 2.0 sec. time delay, the seat time release mechanism opens the scissor shackle. At the same time, the harness restraints, lapbelt, leg restraints, and face curtain are unlocked.

c. The stabilizer drogue, now free from the seat, pulls the withdrawal line from the parachute container. As the withdrawal line reaches full line stretch, the ripcord locking pins are removed from the locking cones, permitting the grommets, locking cones, and end tabs to separate. The container spring opening assemblies pull the end and side flaps apart, exposing the canopy and allowing the pilot parachute to deploy.

d. The stabilizer drogue, still attached to the withdrawal line which is attached to the canopy apex, extracts the canopy followed by the suspension lines. The canopy starts to inflate during this operation. The PDV lines which are shorter than the suspension lines, bear the load of the drogue parachutes and prevent squidding of the canopy. However, the PDV lines may break during high speed openings.

e. As the canopy deploys, a load is applied to the riser, separating the cross-connector straps from their fastener tape connection and pulling them from the container. The connector link ties break and the canopy fully opens, separating the aircrewmember from the seat.

f. The aircrew descends suspended from the canopy by the risers and the PCU-33/P or PCU-56/P parachute restraint harness.

g. During descent, the aircrew may manually actuate the four-line release system which will reduce oscillation and allow the aircrew to maneuver the parachute to a less hazardous landing site.

h. Upon landing, the aircrew disengages the canopy from the PCU-33/P or PCU-56/P parachute restraint harness by actuating the canopy release assembly.

i. The parachute harness sensing release units will provide an automatic backup method of releasing the risers after the aircrew makes a seawater entry.

13. MANUAL OPERATION. If the aircrew should have to manually separate from the seat or if he is forced to select manual bailout, the following functions take place once he is clear of the seat/aircraft:

a. Manually pulling the ripcord grip removes the ripcord locking pins from the locking cones, permitting the grommets, locking cones, and end tabs to separate. The container spring opening assemblies pull the end and side flaps apart, exposing the canopy and allowing the pilot parachute to deploy.

b. The aircrew falling away from the pilot parachute causes the canopy to be extracted from the container followed by the suspension lines. The canopy starts to inflate during this operation.

c. As the canopy deploys, a load is applied to the risers, separating the cross-connector straps from their fastener tape connection and pulling them from the container. The connector link ties break and the canopy fully opens separating the aircrew from the seat.

d. The aircrew descends suspended from the canopy by the risers and the PCU-33/P or PCU-56/P parachute restraint harness.

e. During descent, the aircrew may manually actuate the four-line release system which will reduce oscillation and allow the aircrew to maneuver the parachute to a less hazardous landing site.

f. Upon landing, the aircrew disengages the canopy from the PCU-33/P or PCU-56/P parachute restraint harness by actuating the canopy release assembly.

g. The parachute harness sensing release units will provide an automatic backup method of releasing the risers after the aircrew makes a seawater entry.

14. REPACK SCHEDULE.

a. Scheduled repack cycle is 672 days for the F-14A/B Aircraft.

b. Scheduled repack cycle is 728 days for the EA-6B Aircraft.

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ORGANIZATIONAL MAINTENANCE

REPAIR PROCEDURES

NES-14 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 607AS102-6

List of Effective Work Package Pages

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Reference Material

None

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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 577	30 Nov 93	Stowage Tray Mounting NES-14 (ECP 16264)	1 Oct 94	31 Dec 01

1. INTRODUCTION.

2. This work package (WP) contains instructions for organizational level repair to ensure that the parachute remains in ready-for-issue (RFI) status.

3. When performing repairs detailed in this WP, follow these guidelines:

a. Review all applicable instructions prior to starting any repair.

b. Ensure that all necessary support equipment and materials required are available prior to starting any repair.

c. When required, remove enough material from its source for immediate use only. Ensure that the material identification ticket remains with the source material at all times. Material that cannot be identified will not be used.

d. To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at the completion of the work.

e. A quality assurance (QA) inspector shall examine the finished work.

4. RISER ASSEMBLY.

5. FOUR-LINE RELEASE LANYARD PULL LOOP TACKINGS REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Fully extend the pull loop and position it between the risers.

b. Tack at the centerline of the riser, thru riser cover, 1/2-in. above the bottom of the pull loop with one turn of size FF thread, single and waxed; tie off (Figure 1).

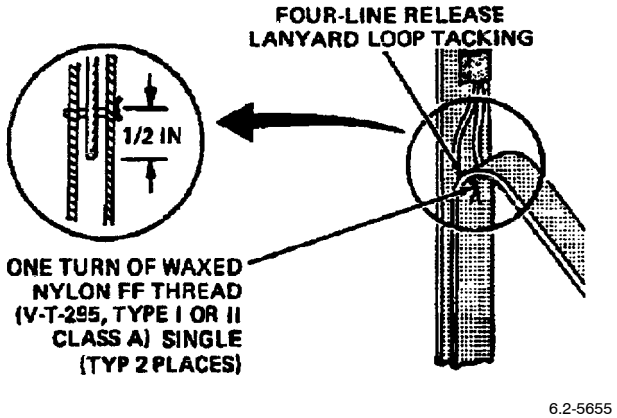

Figure 1. Replacement of Four-Line Release Lanyard Pull Loop Tackings

6. CONTAINER ASSEMBLY.

7. SPRING OPENING ASSEMBLY REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
60A113D11-2	Spring Assembly, Container Opening

a. Measure length of replacement spring opening assembly. Proper length is 9 1/4 ± 1/8-in. measured with no tension applied from end of one hook to end of other hook.

b. Inspect replacement spring opening assembly per WP 016 02.

c. With hook facing inboard, attach end of spring assembly without pull tab to lower eye on side of container. Crimp hook on to each spring opening assembly to each eye on the container.

d. Attach opposite end of spring assembly to eye on end flap. Ensure that the pull tabs are facing out and are positioned for fastening on the side flaps.

8. RIPCORD ASSEMBLY.

9. RIPCORD ASSEMBLY AND RETAINER WEBBING TACKINGS REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Lay the riser flat; measure and mark the upper riser 2 1/2-in. above the top edge of the ripcord channel and 1/4-in. below the bottom edge of the ripcord channel (Figure 2).

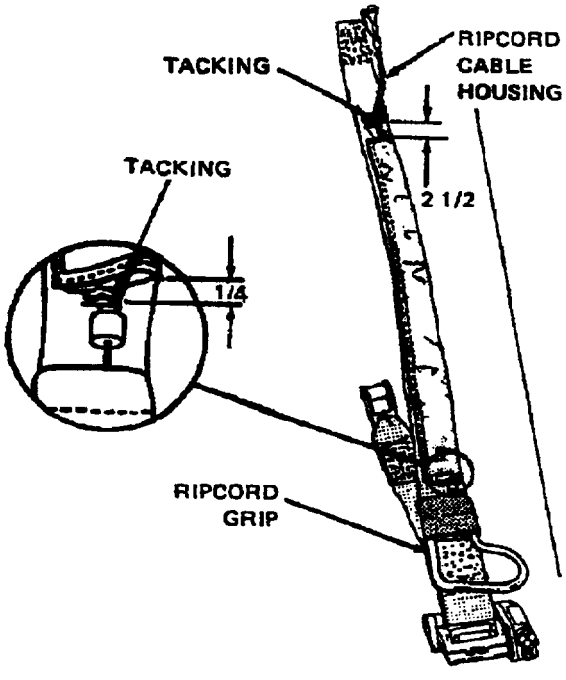

Figure 2. Ripcord Assembly Replacement

b. Position the ripcord housing on the markings.

c. Tack to the upper riser with six turns of size 6 thread, doubled and waxed; tie off.

d. Handstitch the retainer cover webbing to the bottom side of the riser assembly at each corner with one turn of size FF thread, doubled and waxed. Tackings shall pass thru both layers of the cover webbing and the bottom riser webbing. Pull tacking taut and tie off (Figure 3).

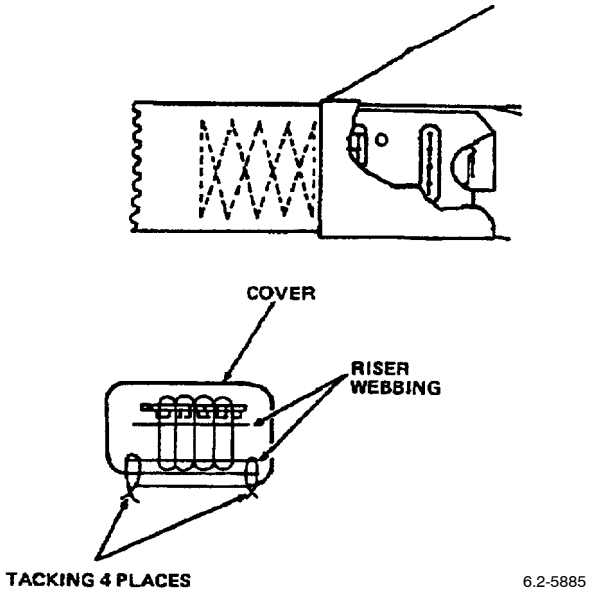

Figure 3. Replacement of Retainer Webbing Tackings

e. Tie an overhand knot as close to the securing knot as possible and cut the bitter ends leaving 1/2-in. Sear the ends. (QA)

10. BACK CUSHION SLIP COVER REPLACEMENT.

a. Remove and replace old slip cover.

b. Replace when worn, torn or frayed.

11. PARACHUTE HARNESS SENSING RELEASE UNIT (PHSRU).

12. PHSRU TORQUE SEAL REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Torque loose screws to a value of 11 to 13 in-lbs.

b. Apply torque seal to the plug assembly, sensor plug and electronics package assembly attaching screws (Figure 4).

13. PHSRU BATTERY AND SENSOR PLUG REPLACEMENT.

Support Equipment Required

Specification or Part Number	Nomenclature
FLUKE-77	Multimeter
SA852AS112	Torque Driver
SA852AS113	Torque Tool, Sensor Plug
GGG-W-641	Socket Handle, 1/4-in. Drive
3405AS101-2	Socket, Special 7/16 x 1/4-in. Drive

a. Perform PHSRU Organizational Level Maintenance in accordance with WP 024 02 for the following tasks:

(1) Removal of battery.

(2) Installation of battery.

(a) Conduct the following:

1) Battery voltage check.

2) Battery polarity check.

3) Battery installation.

4) Final check.

(3) Removal of sensor plug.

(4) Installation of sensor plug.

(a) Conduct the following:

1) Sensor plug resistance check.

2) Final check.

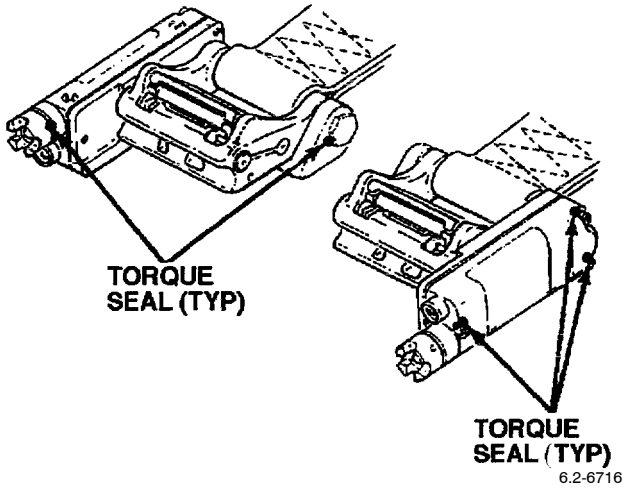

Figure 4. Replacement of Torque Seal on PHSRU

INTERMEDIATE AND DEPOT MAINTENANCE

PACKING PROCEDURES

NES-14 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 607AS102-6

List of Effective Work Package Pages

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Reference Material

Cartridge Actuated Devices (CADS) and Propellant Actuated Devices (PADS) (IETM) . . . . . NAVAIR 11-100-1.1
Intermediate and Depot Maintenance, Common Repair Procedures . . . . . WP 004 00
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdown, Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration . . . . . WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment . . . . . WP 005 00

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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 577	30 Nov 93	Stowage Tray Mounting NES-14	1 Oct 94	31 Dec 01

1. GENERAL.

a. Packing instructions are provided with the assumption that they will be carried out under ideal conditions in a parachute loft Work Package (WP) 003 00. When a parachute assembly must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

b. In no case shall the packing of a parachute assembly be interrupted after the packing operation has been started. If the packing operation is interrupted due to unforeseen circumstances, the parachute assembly shall be completely repacked per instructions contained in this WP.

c. Quality Assurance (QA) points have been included in the packing procedures. When a procedural step is followed by "QA" there is a quality assurance requirement. Witnessing of QA steps may be omitted by the QA if their satisfactory completion is verified in later steps.

d. During packing procedures, the packer shall be positioned on the left side of packing table and the helper on the right side, when viewed from the riser end of the table.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
TMA2	Hex Head Driver 1/16-in. Bit
Refer to WP 005 00	Fid
Refer to WP 005 00	Guide Tube
Refer to WP 005 00	Line Stowing Aid
Refer to WP 005 00	Long Bar
Refer to WP 005 00	Long Pin, Pilot Parachute
FLUKE 77	Multimeter
Refer to WP 005 00	Ripcord Pinlock
DPP-50	Scale, Spring
Refer to WP 005 00	Shot Bag (4)
11-1-3512	Small Line Separator
Refer to WP 005 00	Temporary Locking Pin (2)
TQS6	Torque Meter

Materials Required

Specification or Part Number	Nomenclature
C-B-191	Beeswax
PIA-C-5040	Cord, Nylon, Type I or IA
MIL-I-19166	Tape, Electrical Insulation, 3/4-in. Wide
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

a. Ensure that all support equipment and materials required are available prior to starting.

b. Inspect packing tools for nicks, burrs, or sharp edges which may cause damage to the parachute.

c. Count and the record number of packing tools.

d. Clean the packing table.

3. LAYOUT OF RIGGED PARACHUTE ASSEMBLY.

a. Completely open the parachute container and detach the spring opening assemblies.

b. Remove the back cushion and the two stowage tray securing screws holding the stowage tray in the container.

c. Remove the canopy from the container.

d. Remove the stowage tray from the container.

e. Cut lanyard pull loop tacking. Remove and scrap the used riser covers.

f. Remove the suspension lines from the stowage tray.

g. Insert the tension hooks into the connector links and then into the packing table.

h. Disconnect the pull down vent (PDV) lines and withdrawal line from the apex.

i. Connect one end of a 16 ft. nylon cord to the vent lines and the other end to the large loop of PDV lines.

j. Lay out the canopy and suspension lines and stretch full length on a clean packing table.

k. Locate gore 28 (nameplate gore) and place it bottom-most in the center of the packing table.

l. Attach the tension strap hook to the canopy vent lines.

m. Tension the canopy using the tension strap.

n. Separate the suspension lines into two equal groups with lines 15 thru 28 on the packer's side and lines 1 thru 14 on the helper's side. Grasping each group of lines, walk from the skirt hem to the connector links, removing any twists between the two groups (Figure 1).

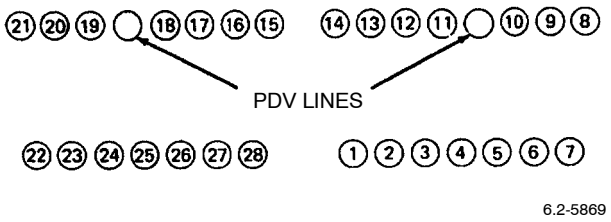

Figure 1. Arrangement and Orientation of Suspension Lines on Connector Links

o. Pull the canopy vent collar below the vent hem. Ensure that the vent hem is even.

p. Straighten the vent hem if necessary.

q. Pull the vent collar back to its original position.

4. INSPECTION (SPECIAL).

a. Maximum scheduled repack cycle is 672 days for the F-14A/B Aircraft.

b. Maximum scheduled repack cycle is 728 days for the EA-6B Aircraft.

5. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Parachute Harness Sensing Release Unit Cartridge) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be re-based if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Components without a service/total life shall be removed from service if the components do not pass inspection, as determined by Quality Assurance Representative (QAR) or Collateral Duty Inspector (CDI).

g. Check date placed in-service and date of manufacture on each parachute part for service/total life as follows:

Nomenclature	Service Life (Yr)	Total Life (Yr)
Battery	4	4
Canopy Assembly	None	15
Cartridge MW19	Refer to NAVAIR 11-100-1.1	
Cross-Connector Strap	(See Note 1)	(See Note 1)
Electronics Package Assembly	None	8
PDV Lines	(See Note 1)	(See Note 1)
Pilot Parachute		15
Pilot Parachute Connector Strap		15
Riser Assembly	None	15
Withdrawal Line	3	None
Withdrawal Line Connector Strap	7	None

NOTE 1: Replace at Canopy Assembly replacement.

NOTE 2: Deleted.

(1) Markings for completeness, legibility, and agreement with information on Parachute Record (OPNAV 4790/101).

(2) Compare configuration of parachute assembly to that shown in WP 002 00 Record of Applicable Technical Directives, and Illustrated Parts Breakdown.

6. SUSPENSION LINE CONTINUITY CHECK.

a. Grasp line 15 on left side of gore 14 and raise line to a height sufficient to ensure that the line is free of dips and twists from skirt hem to connector links. Continue this procedure with lines 16 thru 28. (QA)

b. Use same procedure as in paragraph a, above on right side of gore 14 except that packer shall start with line 14 and work thru line 1. (QA)

c. Pass PDV lines under top group of suspension lines and attach to top connector links between lines 10 and 11, and 18 and 19 (Figure 1). (QA)

7. CANOPY ASSEMBLY.

a. Canopy skirt hem, fabric surface, diagonal seams, radial seams, vent hem, water deflation pockets, for cuts, holes, ruptures, contamination, deterioration, broken vent ring, and loose or broken stitching.

b. Suspension lines and canopy apex lines for fraying, ruptures, protruding inner core lines, burns, contamination, and presence of twists.

c. Attachment of suspension lines at skirt hem for security and condition of V-tabs.

d. Attachment of four-line release anchor loops to suspension lines 3 and 26.

e. Attachment of four-line release lanyard to anchor loops on suspension lines 3 and 26.

f. Activate the four-line release and retacking per WP 004 00. (QA)

g. Pulldown vent (PDV) line.

(1) Lines for twists, fraying, burns, ruptures, stitch pattern, and proper material.

(2) Ensure that sleeve tackings are not missing, loose, or broken.

(3) Proper attachment to connector links.

h. Connector links for corrosion, distortion, nicks, burrs, sharp edges, cracks, and security of ties.

i. Connector links for defective yoke and plate assemblies. Maximum of 1/32-in. play allowable in plate.

j. Torque seal unbroken with yoke and plate assemblies installed with knurled portion facing up and screwheads facing outboard (Figure 2). (QA)

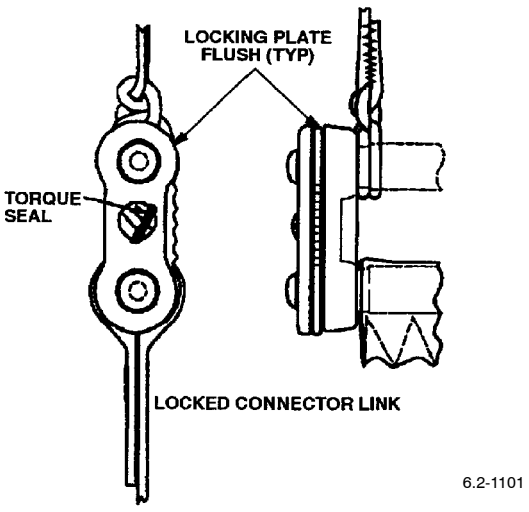

Figure 2. Torque Seal Unbroken

8. PILOT PARACHUTE ASSEMBLY.

a. Fabric surfaces and seams for cuts, tears, fraying, and loose or broken stitching.

b. Seam area at crown for seam separation.

c. Spring assembly for distortion.

d. Loose or broken tackings (4 places) at bottom of coil spring.

e. Locking cone and grommet for cracks, condition, and security of attachment.

f. Bridle for cuts, fraying, and loose or broken stitching.

9. WITHDRAWAL LINE.

a. Webbing for contamination, cuts, fraying, deterioration, and loose or broken stitching.

b. Cable and closure pins for corrosion, broken strands, nicks, loose swage fittings, bends, or burrs.

c. Quick release connector for corrosion, cracks, bends, dents, nicks, burrs, sharp edges, stripped threads, damaged swivel, and presence of stake pin.

d. Lug end for nicks, dents, corrosion, and security of attachment to withdrawal line.

10. RISERS AND CROSS-CONNECTOR STRAPS.

a. Webbing for contamination, oil, grease, acid, rust at points of contact with metal parts, cuts, twists, fading, wear, fraying, abrasions, and loose or broken tackings and stitching.

b. Four-line release lanyard flute and ripcord channel for wear and proper attachment.

c. Four-line release and release lanyard pull loops for loose or broken tackings.

d. Proper attachment of cross-connector straps to connector links.

e. Cross-connector straps for contamination, cuts, fraying, burns, loose or broken stitching, and presence and proper attachment of hook and pile tape.

f. Grip pocket for contamination, cuts, tears, fraying, and loose or broken stitches.

g. Loose or broken stitching securing retainer to the riser.

h. Retainer for corrosion, sharp edges, bends, twists, and dents.

i. Pulley fitting assembly for corrosion, damage, and security of attachment.

11. RIPCORD ASSEMBLY.

a. Cable for corrosion, bends, broken strands, and security of swaged terminal ball and terminal fitting.

(1) Ensure terminal fitting is secured to cable housing by means of center crimp in the cable housing slot (Figure 3).

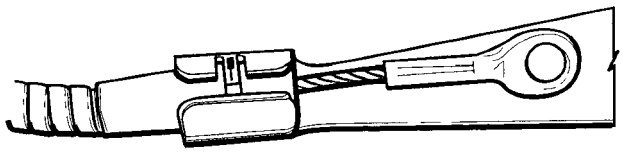

Figure 3. Terminal Fitting Center Crimp

b. Cable eyelet for cracks.

c. Housing for corrosion, dents, loose ferrules, breaks, and cracks, and security of plate.

d. Housing to riser tacking for security of attachment.

e. Grip for dents, cracks, and corrosion.

12. CONTAINER ASSEMBLY.

a. Container for crazing and cracks. Security of attachment of pressure sensitive tape, over the two studs near top of container.

b. Grommets, cones, fasteners, and end tabs for security of attachment.

c. Cones for cracks corrosion, nicks, and gouges, and fasteners for proper operation.

d. Fabric area for seam separations, loose or broken stitching, cuts, tears, contamination, and deterioration.

e. Stowage tray for crazing and cracks.

f. Spring opening assemblies for broken springs, contamination, corrosion, cuts, fraying, bent or broken hooks, elasticity, and loose or broken stitching.

g. Spring opening eyes (8) for security of attachment.

h. Grommets and washers for proper placement and condition.

NOTE

For Double "L" Connector Link, refer to WP 016 03 for disassembly, assembly, and inspection instructions.

i. Fastener for nicks, gouges, corrosion, and security.

j. Suspension line tray foam for deterioration and security (inside of container).

k. Rivets for security of attachment of securing lugs. Rivets must completely fill countersink.

13. PACKING.

14. WHIPPING AND FOLDING OF CANOPY.

a. Packer and helper shall lift suspension line on each side of top gore up and out. Skirt hem between lines shall be taut so that canopy apex can be seen on inside, while holding suspension lines up. Packer and helper shall whip gore hanging from line outwards to prepare canopy for folding (Figure 4).

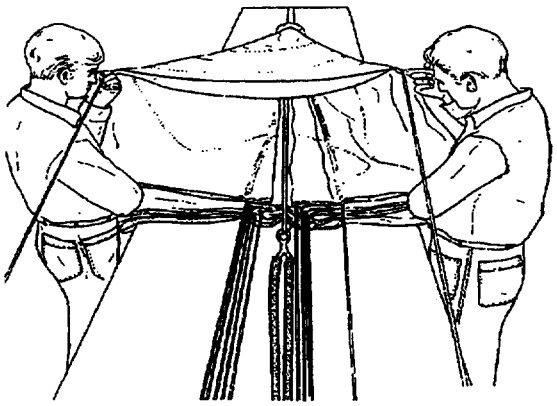

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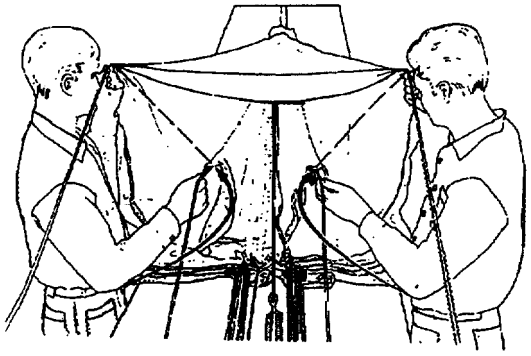
Figure 4. Lift Suspension Lines on Each Side of Gore

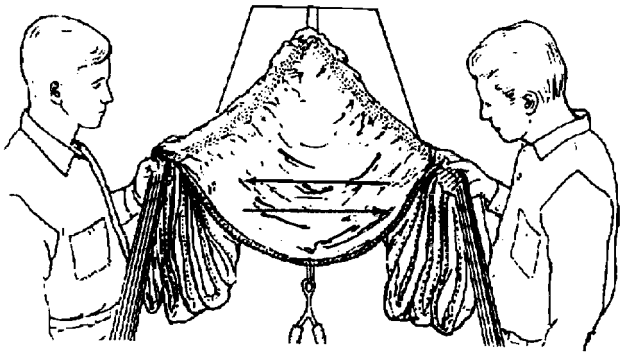
b. Draw next suspension line upwards to suspension line in hand, using a rapid, circular motion (Figure 5).



6.2-5179B

Figure 5. Draw Next Suspension Line Upwards

c. Continue whipping operation for all gores. Ensure that radial seams are not overlapped by gore material. Move whipped gores rapidly back and forth across packing table (Figure 6).



6.2-5179C

Figure 6. Continue Whipping Operation

d. Two groups of suspension lines shall be stretched to edges of packing table with folded gores hanging over sides. Packer and helper shall grasp all folds at outer edges on skirt hem and hold suspension line groups at edges of packing table. Packer and helper shall simultaneously move folds up and down rapidly, in a whipping motion, to end wrinkles.

e. Packer shall flap top gore up and down at skirt hem center as helper holds bottom gore at skirt hem center (Figure 7).

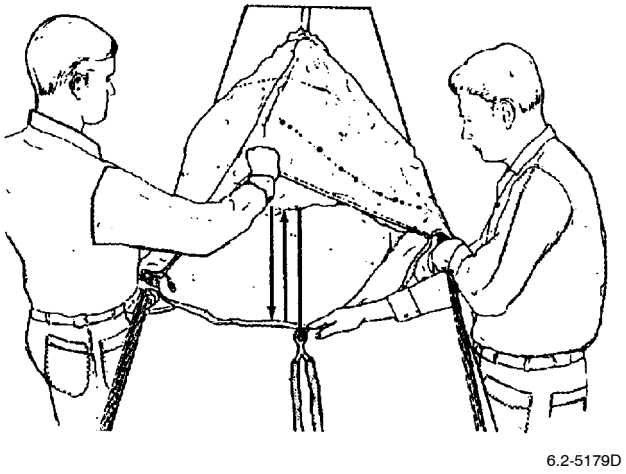


Figure 7. Packer Flap Top Gore Up and Down

f. On signal, both packer and helper shall draw their respective gores, at skirt hem center, towards table edge while at same time bringing suspension line groups to center of packing table (Figure 8).

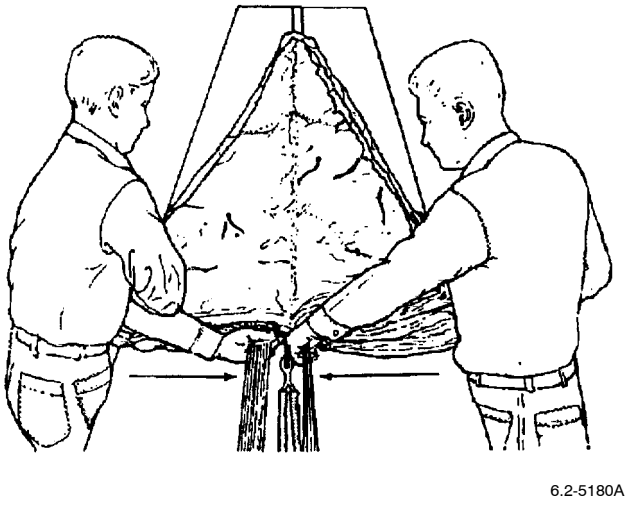


Figure 8. Draw Respective Gores to Center

g. Insert suspension line groups into their respective slots in small line separator and place shot bag on lines. Packer shall place second shot bag across skirt hem on left side of suspension lines. The PDV lines are routed under small line separator.

h. Helper shall rotate all gores as a group, except bottom gore, from helper's side to packer's side of packing table (Figure 9).

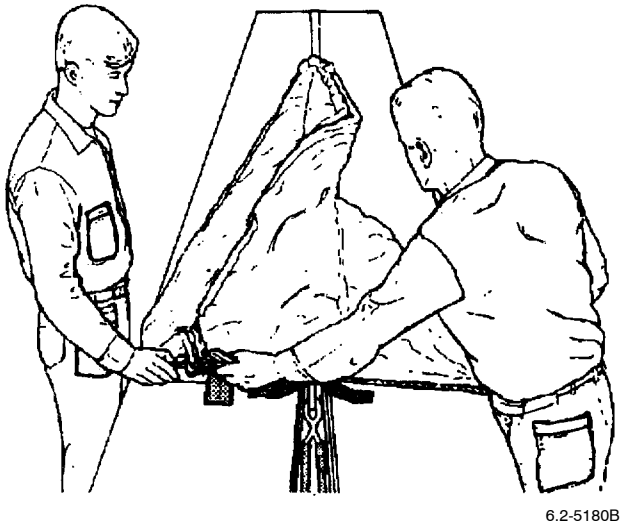


Figure 9. Helper Rotate All Gores Except Bottom Gore

i. Helper shall straighten and smooth bottom gore on helper's side of packing table throughout its length to apex (Figure 10).

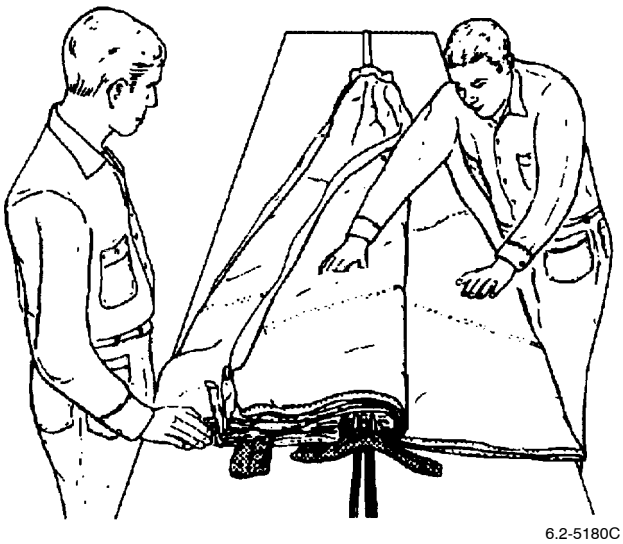
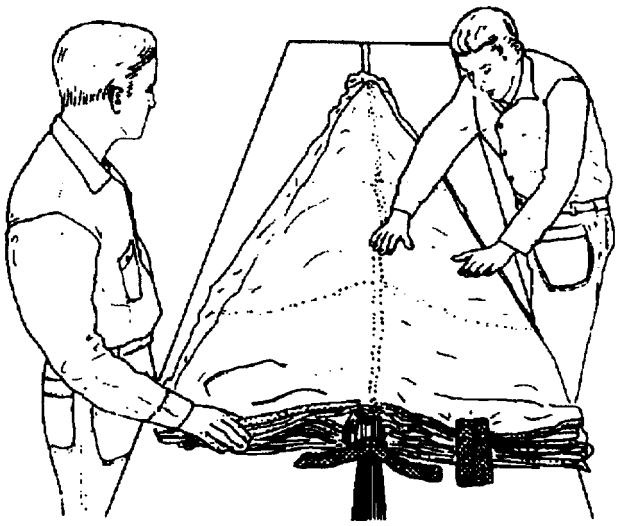


Figure 10. Helper Straighten and Smooth Each Gore

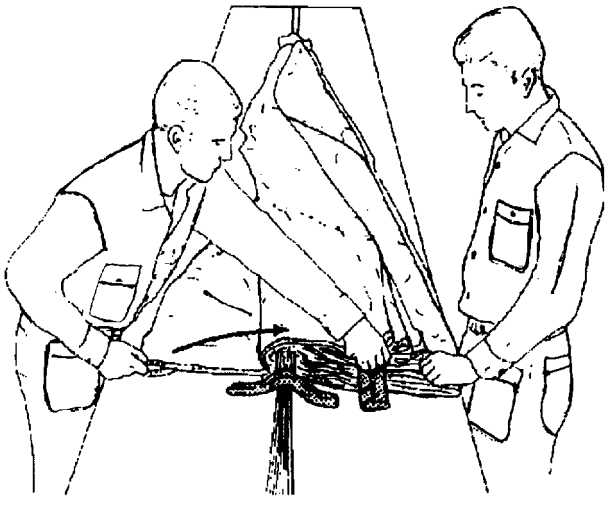
j. Return gores above shot bag on helper's side of packing table to packer's side one at a time. Each fold shall be straightened and smoothed (Figure 11).



6.2-5180D

Figure 11. Packer Return Folded Gores Above Shot Bag

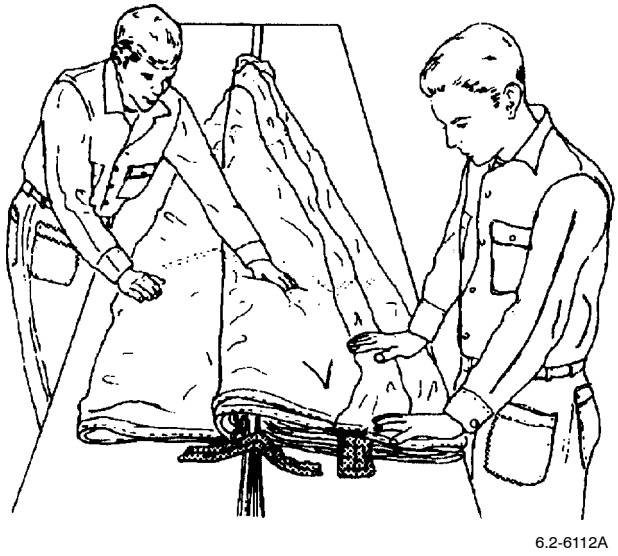
k. Packer shall rotate all gores as a group, except bottom gore, from packer's side to helper's side of packing table (Figure 12).



6.2-5180E

Figure 12. Packer Rotate All Gores Except Bottom Gores

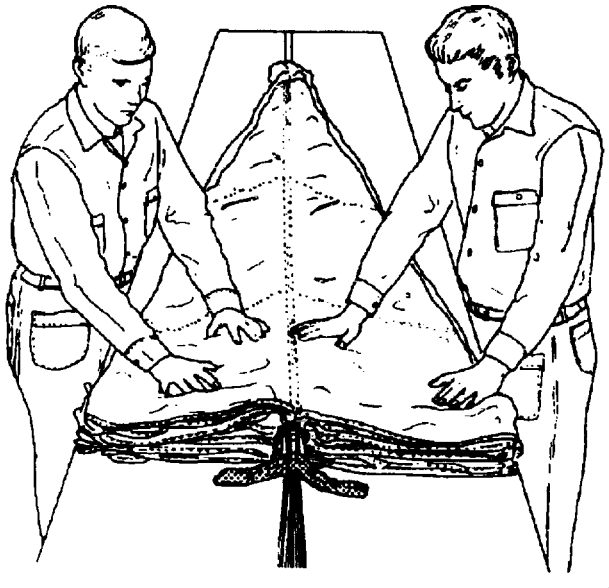
l. Packer shall straighten and smooth bottom gore on packer's side of packing table thru out its length to apex (Figure 13).



6.2-6112A

Figure 13. Packer Straighten and Smooth Each Gore

m. Packer shall straighten and smooth each gore. Remove shot bag from canopy (Figure 14).



6.2-6112B

Figure 14. Helper Return Folded Gores Above Shot Bag

n. Packer and helper shall grasp skirt hem at midsections of gores and rotate towards suspension lines (Figure 15).

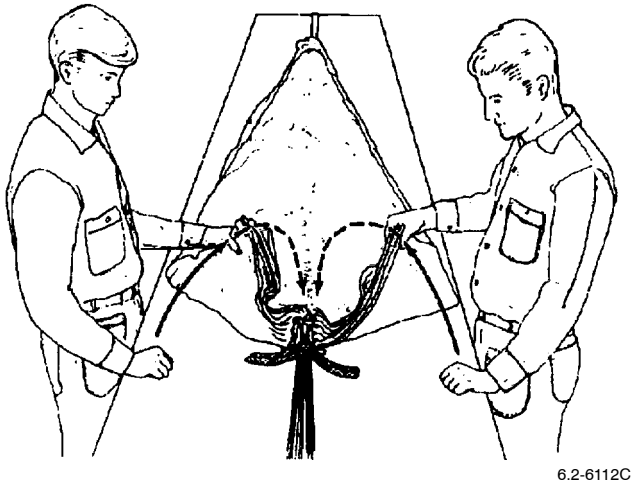


Figure 15. Grasp Midsections of Gores and Rotate

o. Packer and helper shall grasp bottommost gore fold and extend outwards, aligning edge of skirt hem and suspension line V-tab reinforcements. The remaining 13 gores shall be aligned in a similar manner. Ensure that all V-tab reinforcements face same direction and that 14 gores have been counted on each side (Figure 16).

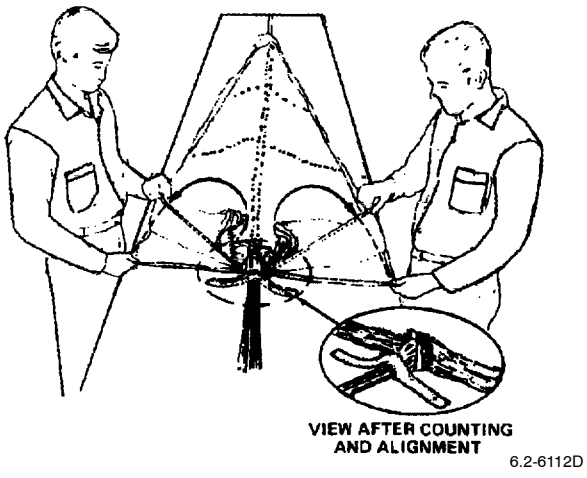


Figure 16. Each Fold Shall Be Aligned

p. Packer and helper shall grasp skirt hem and folded gores and S-fold canopy towards center. Butt S-folds together. Canopy cannot be S-folded throughout entire length, but will break two-thirds the distance to apex. Place two shot bags on folded canopy (Figure 17).

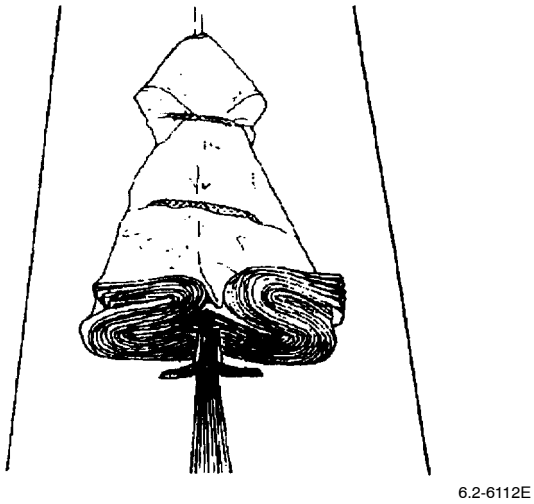


Figure 17. Grasp Skirt Hem and Folded Gores and S-Fold Towards Center

15. ATTACHMENT OF PULLDOWN VENT LINES AND WITHDRAWAL LINE TO CANOPY APEX.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Release tension from canopy and remove tension strap from canopy apex but not from PDV line messenger cord. Remove small line separator and shot bag.

b. Separate suspension lines from PDV lines 14-ft. 6-in. from connector links and spread each group to edge of table.

c. While helper holds suspension lines at edges of table, Packer shall draw canopy down center of table, between suspension lines, to a point where suspension lines between helper's hands and skirt hem become taut and PDV lines protrude thru vent hem (Figure 18).

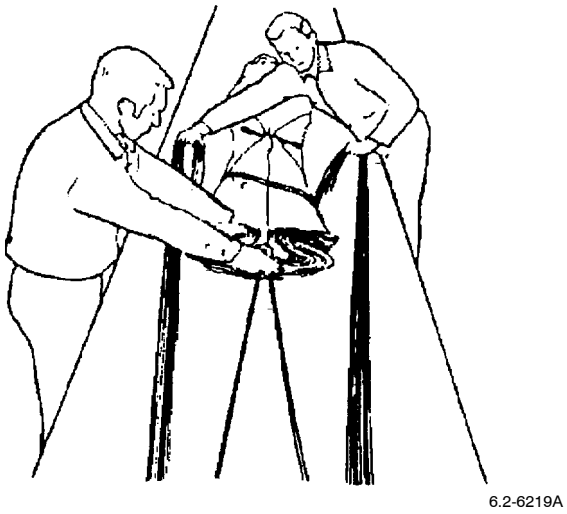


Figure 18. Packer Shall Draw Canopy Down Center of Table

d. Remove the messenger cord from PDV lines at apex.

e. Packer and helper shall bring their respective group of suspension lines to center of canopy (Figure 19).

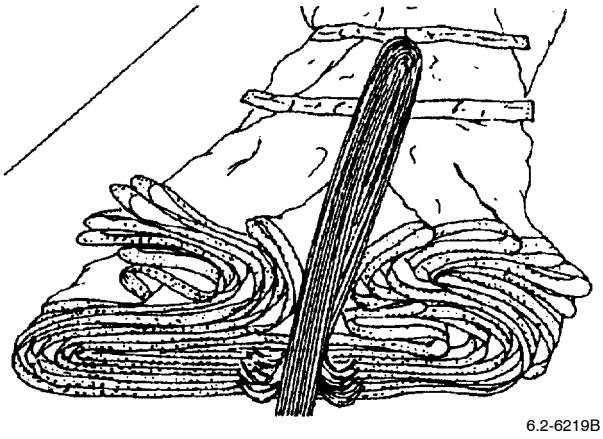


Figure 19. Respective Group of Suspension Lines to Center of Canopy

f. Route withdrawal line connector strap thru group of apex suspension lines and thru large loop of PDV line (Figure 20). (QA)

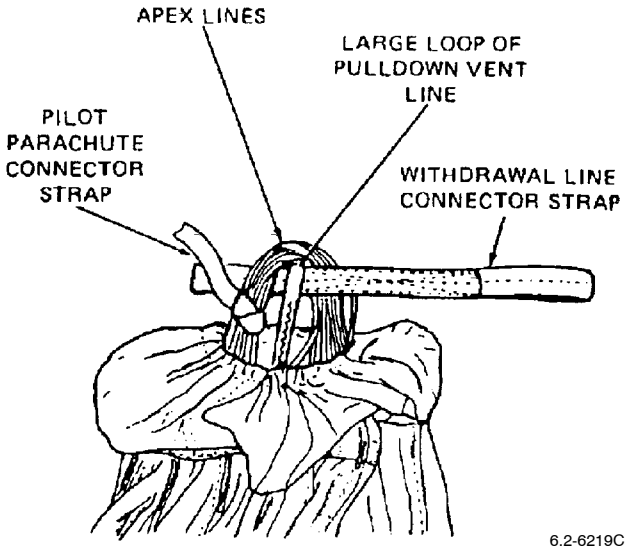


Figure 20. Routing of Withdrawal Line Connector Strap

g. Pass loop end of withdrawal line thru both loops of withdrawal line connector strap and position to right of pilot parachute connector strap. Pass free end of withdrawal line thru loop (Figure 21). (QA)

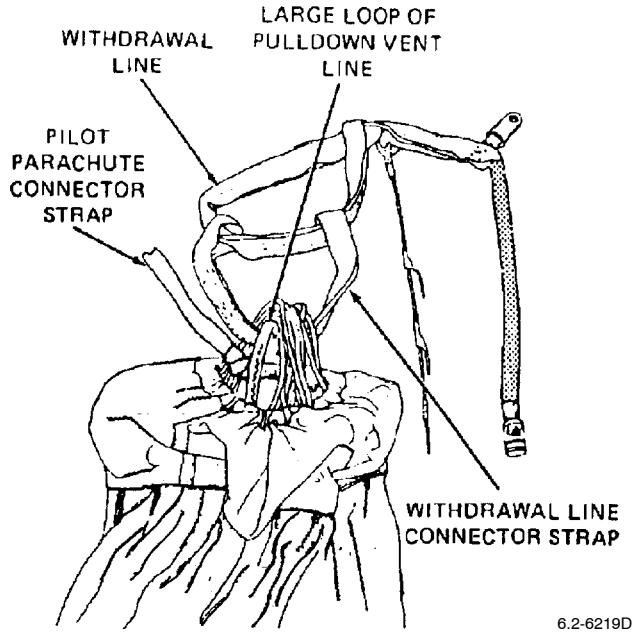


Figure 21. Pass Loop End Thru Both Loops of Withdrawal Line Connector Strap

h. Pull remainder of line thru loop and draw tight (Figure 22).

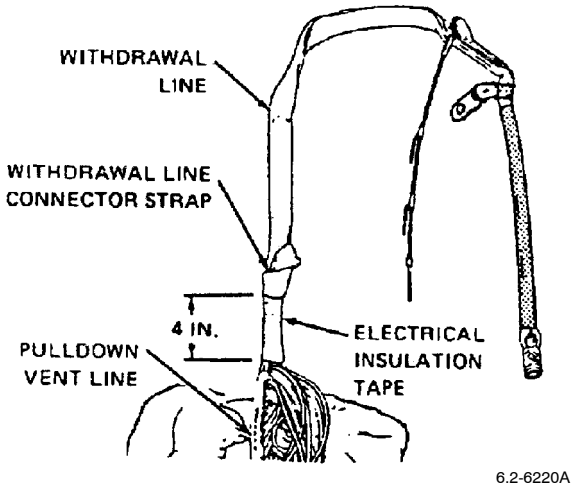


Figure 22. Pull Remainder of Line Thru Loop

i. Tape withdrawal line connector strap together using electrical insulation tape for a distance of 4-in. centered between lark's head knot of withdrawal line and vent lines. (Pilot parachute not shown for clarity) (Figure 22).

j. Remove tension hooks from packing table. Remove connector links from tension hooks. Tie each group of connector links together on each side using waxed size FF thread, single; tie off (Figure 23).

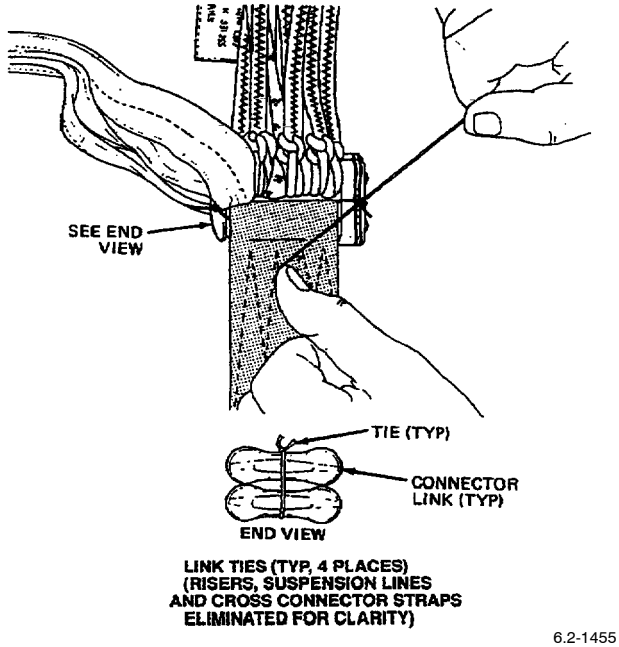


Figure 23. Remove Tension Hooks

16. STOWAGE OF SUSPENSION LINES.

NOTE

When stowing suspension lines, incorporate the use of a line stowing aid as shown in WP 005 00. The helper shall hold the suspension lines with the stowing aid in the stowage compartment until stows are inserted properly.

All stows shall extend full length into the stowage tubes. No slack in the suspension lines shall be on top of the stowage tray between stows.

Beeswax may be lightly applied to the stowage aids as a lubricant.

a. Position stowage tray under suspension lines. Ensure that forward side is facing up (Figure 24).

b. Numerical sequence of stowage tray compartments is shown in (Figure 24).

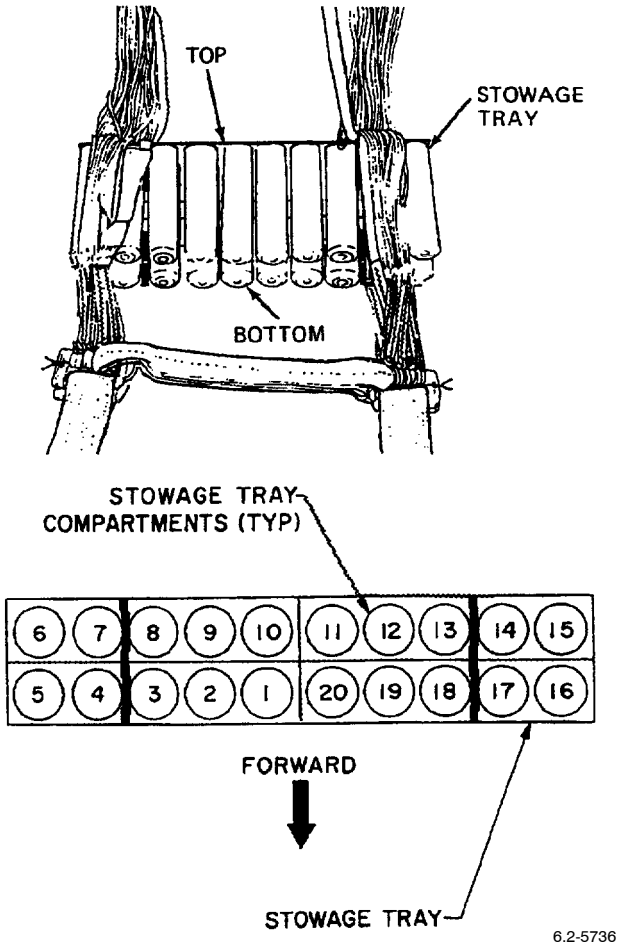


Figure 24. Positioning of Stowage Tray

WARNING

The suspension line group on helper's side must pass under PDV lines before making first stow. Do not stow PDV lines before stowing number 11, 12, or 13 as applicable.

c. Helper shall grasp PDV lines and place outboard of stowage tray on helper's side. Suspension line group on helper's side must pass under PDV lines before making first stow. (QA)

WARNING

Rapid removal of the line stowage aids can cause damage to suspension lines.

d. Stow suspension lines.

e. Using the line stowage aid, begin stowing only suspension lines in stowage compartment 1. Suspension lines shall extend full length of tube (Figure 25).

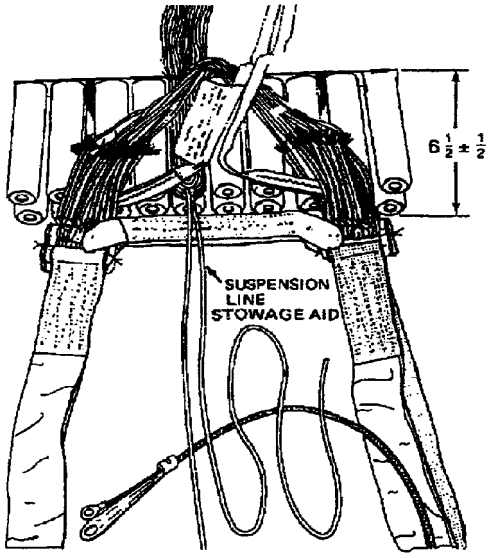


Figure 25. Begin Stowing Suspension Lines

f. Continue stowing the suspension lines in sequence until suspension lines are same length as PDV lines (stow 11, 12, or 13). No slack shall be allowed to form in suspension lines on top of stowage tray between stow tubes (Figure 26).

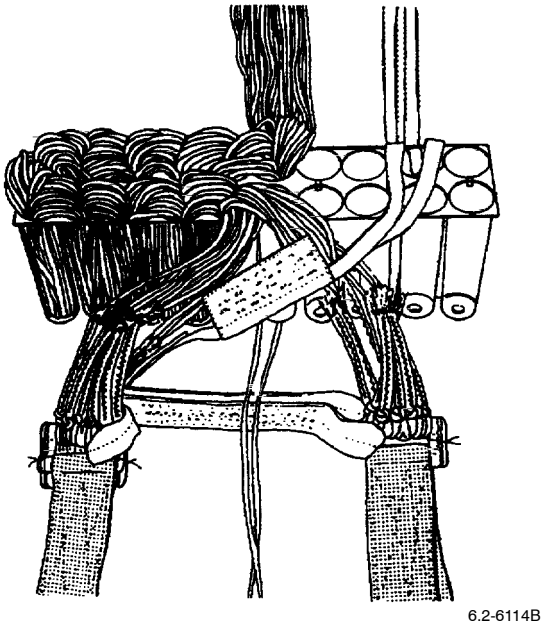


Figure 26. Continue Stowing Suspension Lines

g. Starting with stow 11, 12, or 13, as applicable, stow both suspension and PDV lines to and including stow 19.

h. Ensure that 12 ± 2-in. remain between top of stowage tray and skirt of canopy. Remaining suspension lines and PDV lines may be stowed in stowage compartment 20 to achieve specified dimension (Figure 27). (QA)

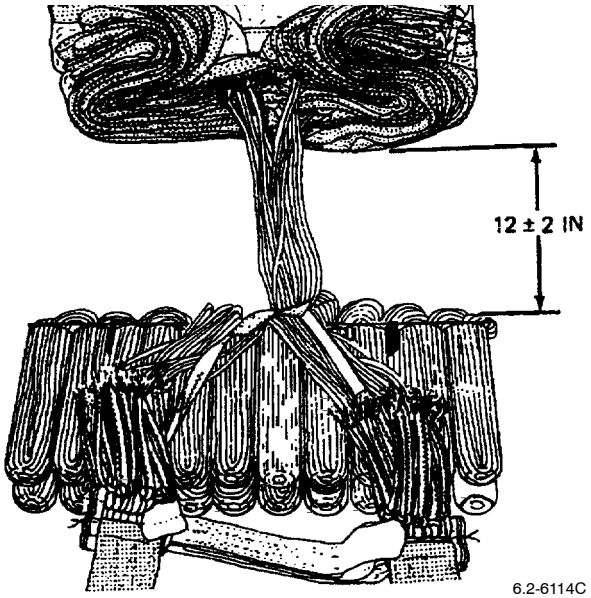


Figure 27. Ensure that 12 ± 2-in. Remain Between Top of Stowage Tray and Skirt

17. INSTALLATION OF RISER COVERS.

a. Lay new riser cover on table with hook fastener facing up and canopy release assembly end to the left. Center riser assembly on cover with shoulder harness link facing up. Separate front riser from rear riser.

b. Line up 1 1/2-in spaces on riser cover around riser pile fastener tape.

c. Secure hook fastener to pile, working from middle of riser to each end. (QA)

d. Secure front and rear risers together by securing riser pile fastener to riser hook fastener. (QA)

e. Tack at centerline of riser, thru riser cover, 1/2-in. above bottom of steering handle loop with one turn of size FF thread, single and waxed; tie off.

f. Repeat steps a thru e for other riser. On left riser cover 5-in. from connector link end make a 1-in. vertical cut, using a hot knife for ripcord housing (Figure 28).

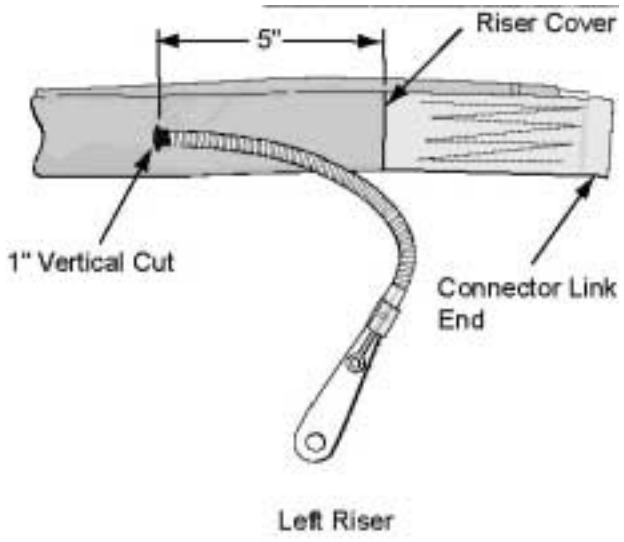


Figure 28. Vertical Cut on Left Riser

18. INSTALLATION OF STOWAGE TRAY INTO CONTAINER.

a. Position container on packing table with open end toward stowage tray and all container flaps folded out. Fold risers onto canopy and move container up to stowage tray. Front of container has pile tape and should be facing up (Figure 29).

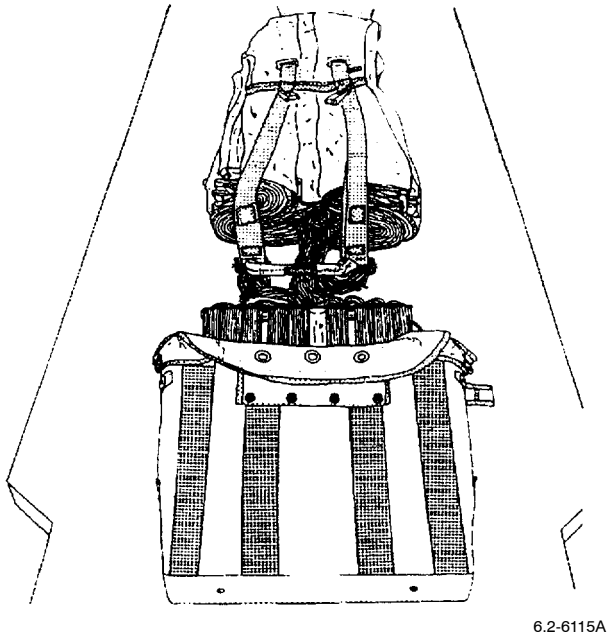


Figure 29. Position Container on Packing Table

b. Insert stowage tray into container ensuring that none of lines are disturbed. Push tray evenly into molded rubber stop until tray attachment points are aligned with those of container. (QA)

c. Insert two screws and washers and tighten the two line stowage tray securing screws. Torque screws to a torque value of 20 in-lbs. Apply torque seal to the line stowage tray mounting screws (Figure 30).

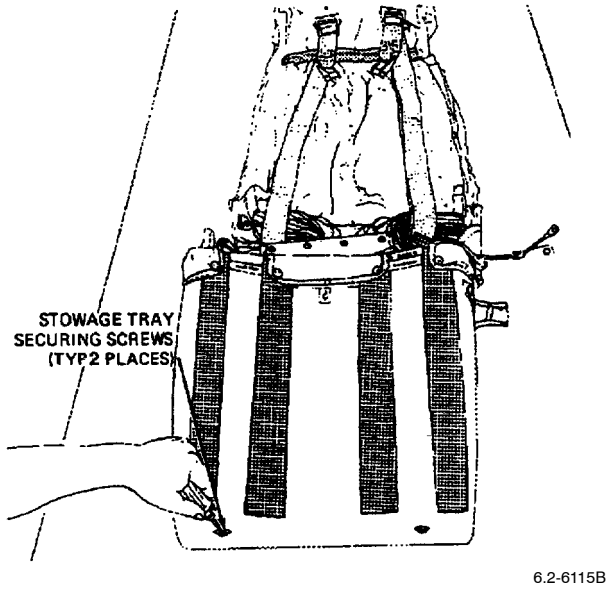
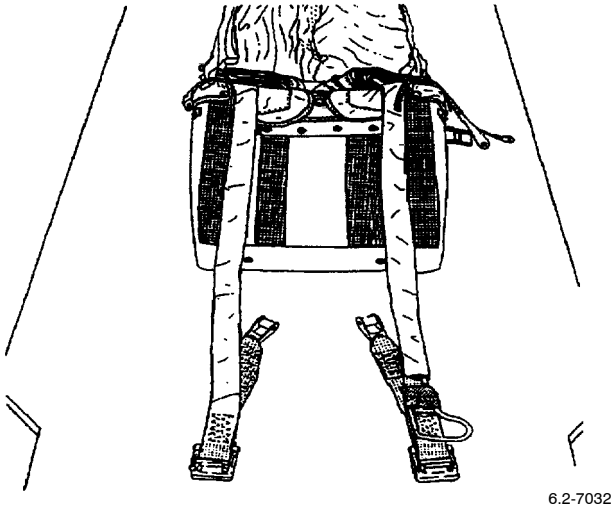


Figure 30. Insert and Tighten Tray

d. Position risers and cross-connector straps in container. Align hook tape sewed to risers with pile tape located inside container. When aligned, press firmly into place. Fold remainder of risers over onto container (Figure 31).

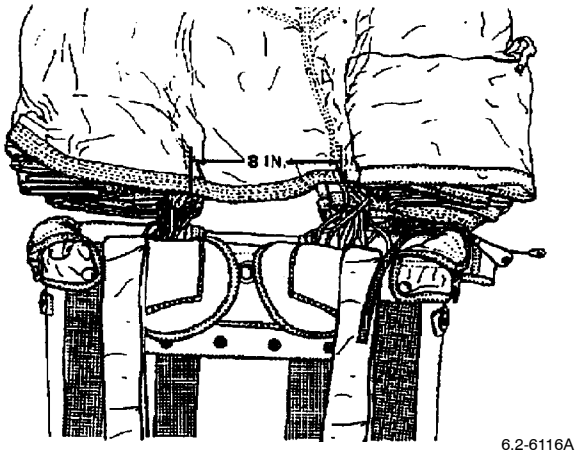


6.2-7032

Figure 31. Position Risers and Cross-Connector Straps

19. STOWAGE OF CANOPY.

a. Remove shot bags from canopy. Position canopy S-folds 8-in. apart (Figure 32). (QA)



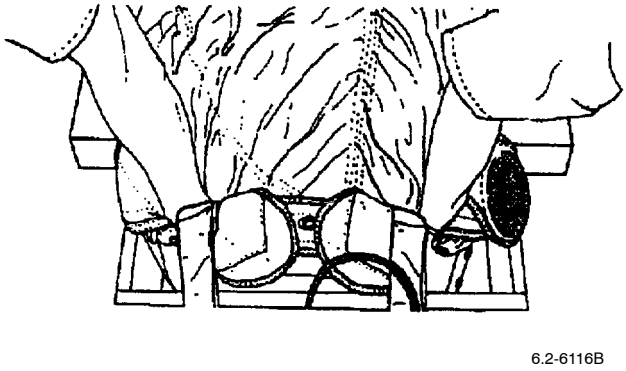
6.2-6116A

Figure 32. Placement of Container

WARNING

Use extreme care when stowing canopy. Ensure that risers and cross-connector strap do not separate from their fastener tape connection.

b. Place container in packing stand (Figure 33).



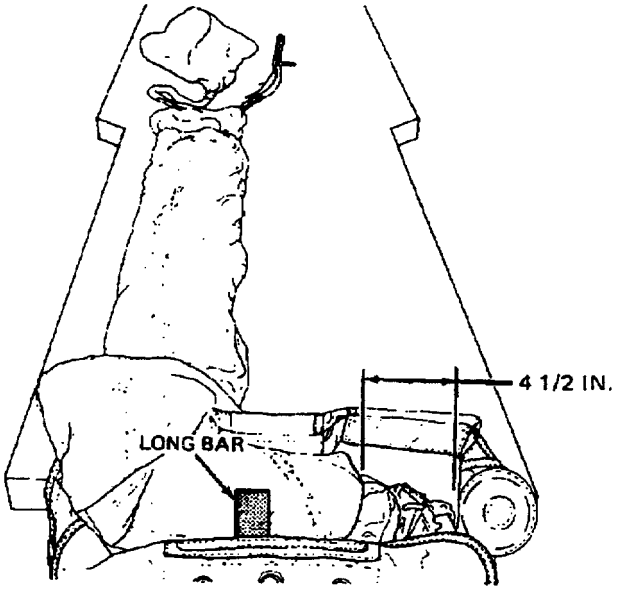
6.2-6116B

Figure 33. Begin Stowing Canopy

c. Place a long bar between canopy and cross-connector strap to keep riser straps secured to container during canopy stowage.

d. Begin stowing canopy by pushing skirt as far down into container as possible. This permits bulk of canopy to be positioned on sides of container (Figure 33).

e. Accordion-fold canopy, keeping folds on packer's side of parachute container creating a 4 1/2-in. void on helper's side of container. Stow until 5 1/2 ± 1/2-ft. exit from container to apex of canopy (Figure 34).



6.2-6116C

Figure 34. Accordion-Fold Canopy

f. Remaining 5 1/2 ± 1/2 ft. should exit container on helper's side. Remove long bar from container (Figure 35). (QA)

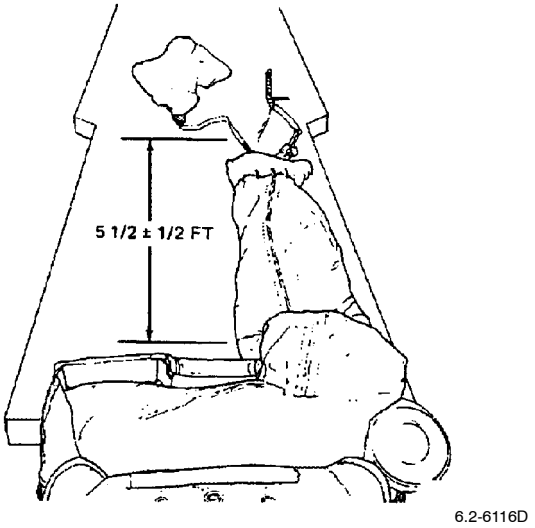


Figure 35. Remaining 5 1/2 ± 1/2-ft. Should Exit Container on Helper's Side

NOTE

Temporary pin helping lines are made of nylon cord 18-in. in length.

g. Position rear flap with locking cones over canopy. Insert temporary pin helping lines thru holes in center and left (packer's side) locking cone (Figure 36).

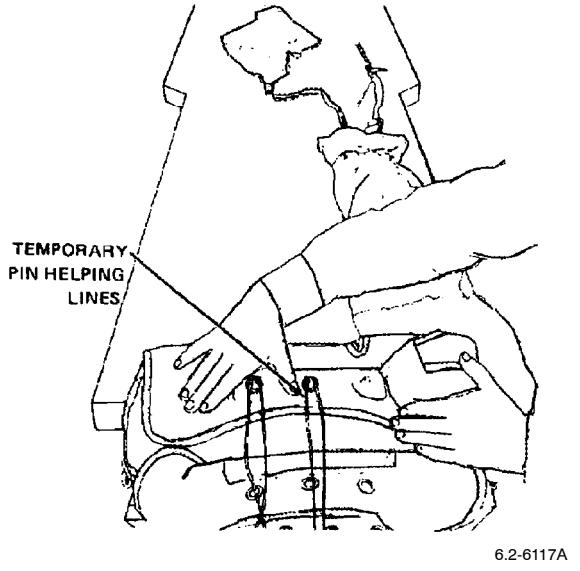


Figure 36. Position Rear Flap with Locking Cones over Canopy

h. Place end protector flap on packer's side of container into position. Route two temporary pin helping lines thru grommets in forward flap (Figure 37).

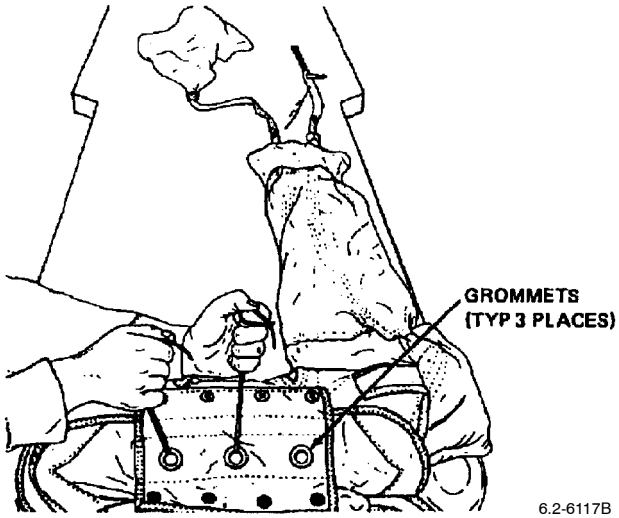


Figure 37. Place End Protector Flap on Packer's Side of Container

i. Draw two temporary pin helping lines taut, thus drawing front flap grommets over rear flap locking cones. At this time, end flap on packer's side of container is pulled in and placed over locking cone. Secure with temporary locking pins (Figure 38).

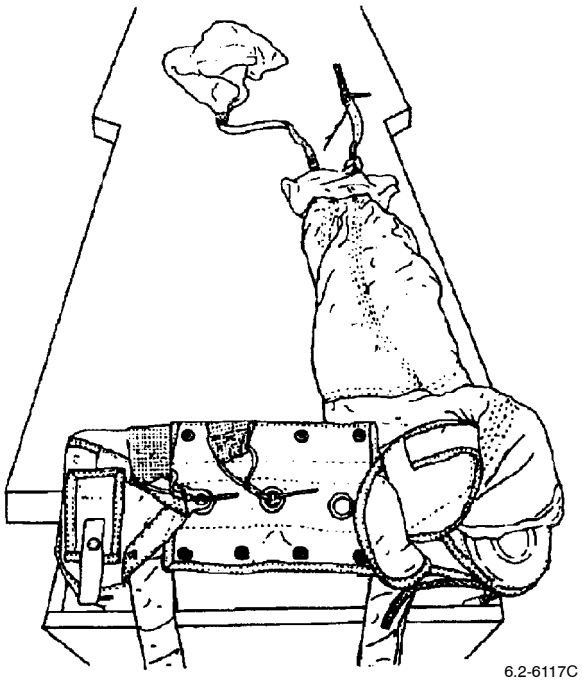


Figure 38. Draw Two Temporary Pin Helping Line Taut

j. Stow remaining 5 1/2 ± 1/2-ft. of canopy down into space provided on helper's side of parachute container. Apex of canopy should be spread out to relieve bulk on helper's side of container (Figure 39). (QA)

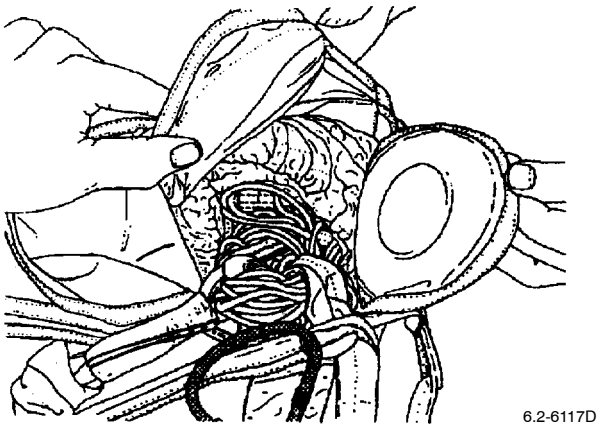


Figure 39. Stow Remaining 5 1/2 ± 1/2-Ft. of Canopy Down into Space on Helper's Side of Container

20. CLOSING OF CONTAINER.

CAUTION

Ensure that Lark's head knot is pulled tight.

Ensure that Lark's head knot is aligned along forward edge of container even with center grommet.

a. With apex of canopy located on helper's side of container, route withdrawal line along forward edge of container aligning Lark's head knot with center grommet. Withdrawal line and pilot parachute connector strap shall exit forward section of container on ripcord grip side (Figure 40).

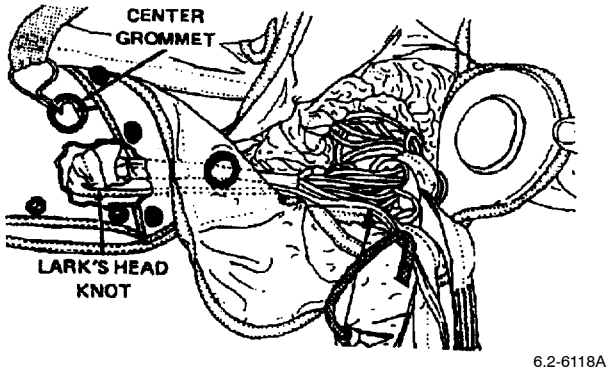


Figure 40. Route Withdrawal Line Along Forward Edge of Container

b. Position pilot parachute kickplate into position on top of apex of canopy. Kickplate shall be 1-in. below top edge of container (Figure 41).

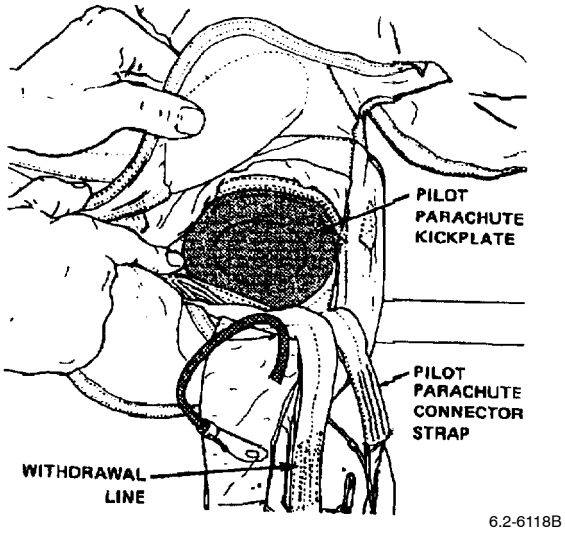


Figure 41. Position Pilot Parachute Kickplate

c. Ensure that hook and pile tape has not separated from container behind kickplate. (QA)

WARNING

Do not trap pilot parachute cloth under spring of pilot parachute.

d. Compress pilot parachute, insert temporary locking pin into locking cone (Figure 42).

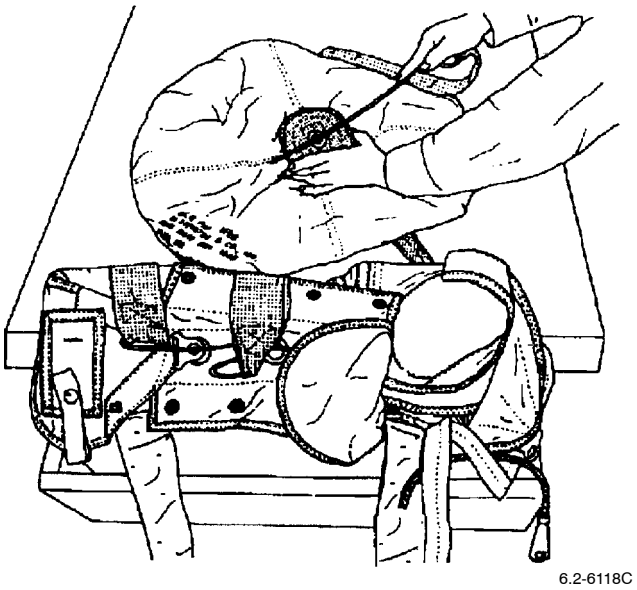


Figure 42. Compress Pilot Parachute

e. Accordion-fold pilot parachute connector strap flat on top of kickplate (Figure 43).

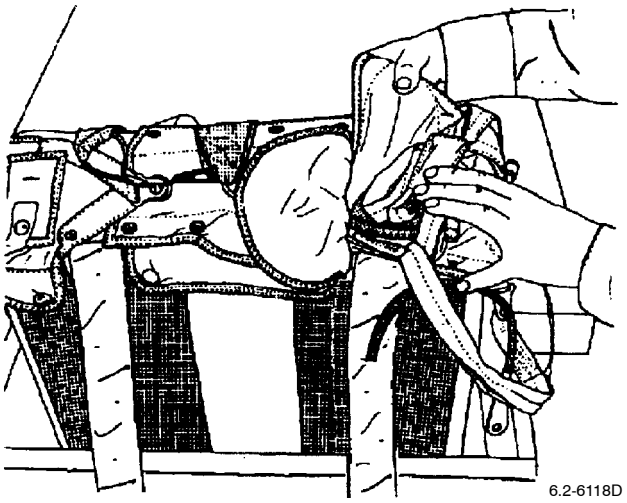


Figure 43. Accordion-Fold Pilot Parachute

f. Helper shall position pilot parachute in container on top of kickplate (Figure 44).

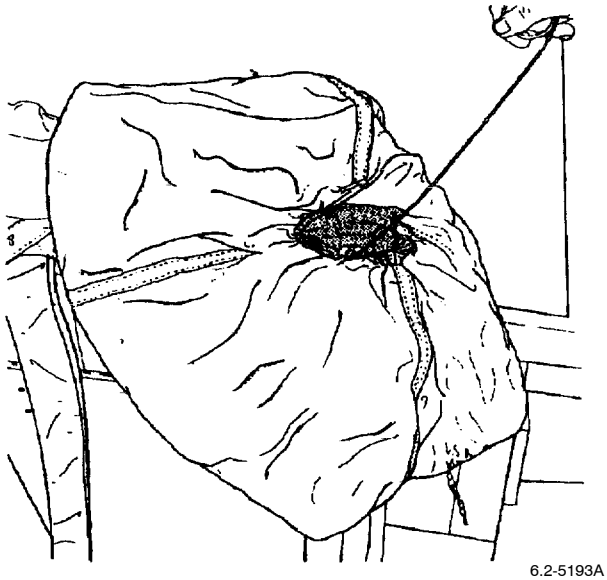


Figure 44. Helper Shall Position Pilot Parachute

g. Tuck skirt hem around periphery of crown. Pilot parachute temporary locking pin shall exit container on helper's side, rear corner.

h. Using a fid, helper shall tuck in rear tab located on rear flap on helper's side of container (Figure 45).

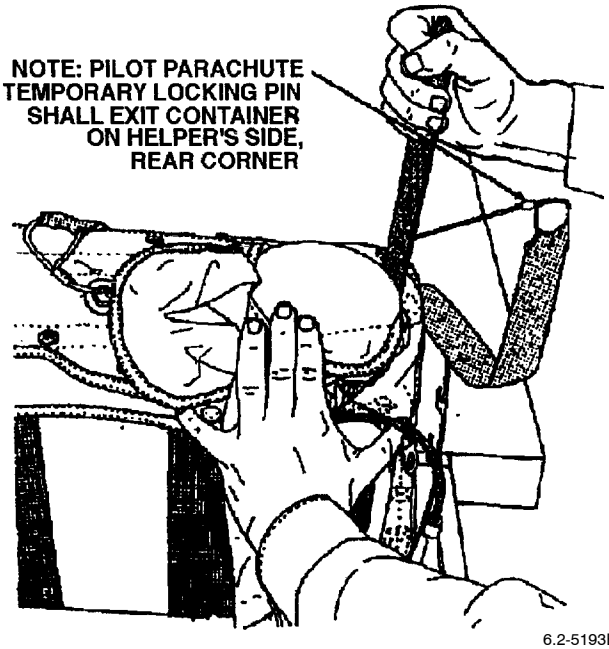


Figure 45. Helper Shall Tuck in Rear Tab

i. Accordion-fold withdrawal line behind riser on helper's side of container (Figure 46).

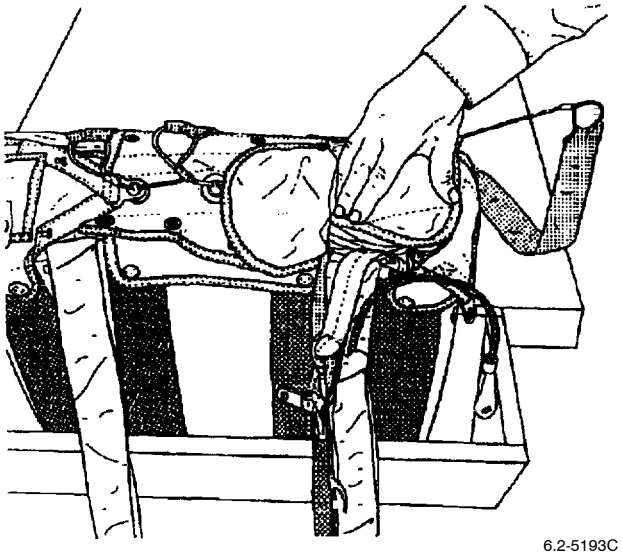


Figure 46. Accordion-Fold Withdrawal Line

NOTE

Ensure that 3-in. remain between container and ripcord cable attachment point.

j. Position end flap on helper's side of container into position (Figure 47).

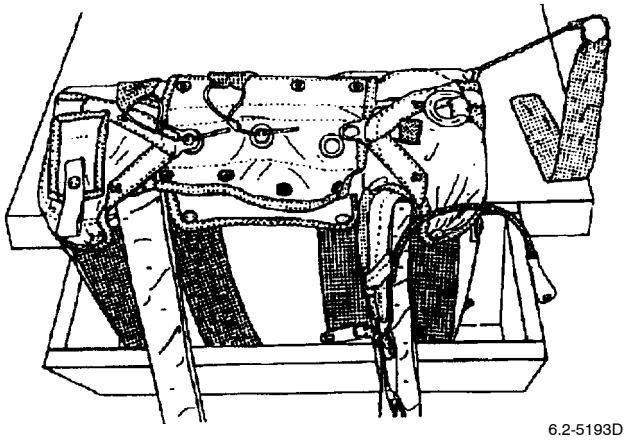


Figure 47. Position End Flap

k. Route temporary pin helping lines thru cone on helper's side of container. Route helping line thru grommet and pull taut, thus drawing front flap grommets over rear flap locking cones. At this time, end flap on helper's side of container is pulled up and placed over locking cone. Secure with temporary locking pins.

l. Remove temporary pin helping lines. (QA) If necessary, pull on upper protector flap to compress pack ends for end tab installation (Figure 48).

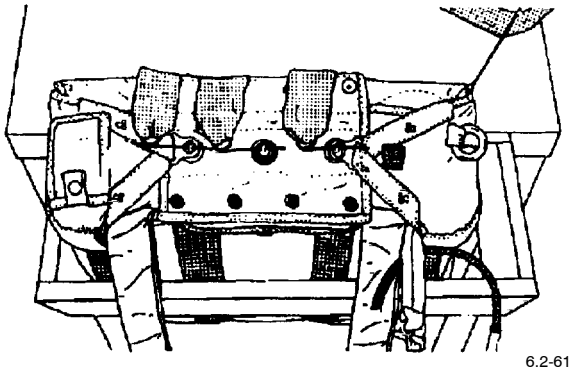


Figure 48. Remove Temporary Pin

WARNING

Ensure that manual ripcord cable passes over webbing loop.

m. Pass manual ripcord anchor plate thru webbing loop on end flap. Manual ripcord cable shall pass over loop. Helper shall hold end tab over locking cone on withdrawal line end of container, and packer shall remove temporary locking pin. Packer shall position anchor plate over locking cone and insert temporary locking pin (Figure 49).

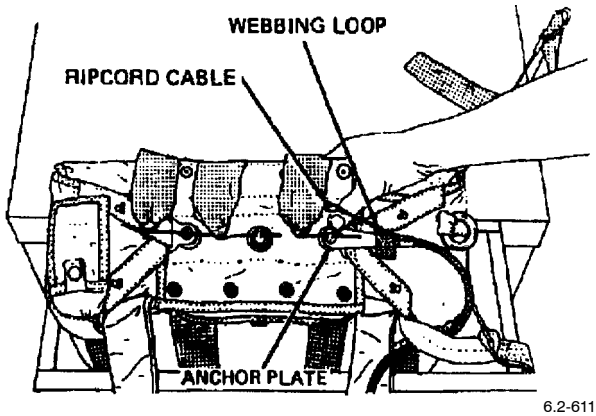


Figure 49. Pass Manual Ripcord Anchor Plate Thru Webbing Loop

WARNING

Ensure that withdrawal line passes over manual ripcord cable housing.

Use of pins as alignment aids during installation may cause bending of pins and result in excessive pull forces.

n. Route withdrawal line pins thru alignment ring. Insert curved ripcord pin thru eye on end of manual ripcord cable. Helper shall partially insert curved ripcord pin into locking cone with anchor plate as packer removes temporary locking pin. Insert straight ripcord pins into second and third locking cones in same manner (Figure 50). (QA)

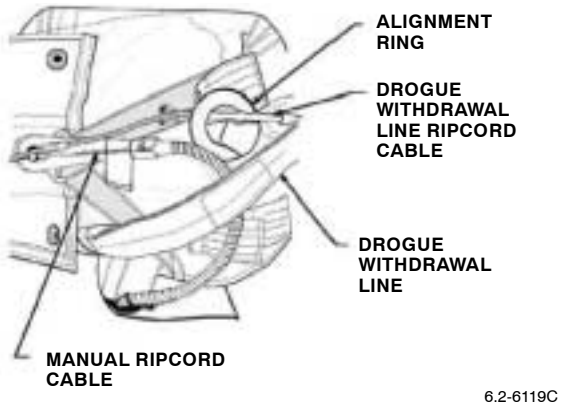


Figure 50. Routing of Withdrawal Line

WARNING

Ensure that ripcord pins are centered in locking cones so that shoulder of ripcord pin is not jammed against locking cone.

NOTE

Ensure that manual ripcord housing passes over forward container spring opening band.

o. Center all ripcord pins in cones. Remove pilot parachute temporary locking pin. Remove container from packing stand, route container spring opening bands thru alignment straps, and attach to container. Ensure that manual ripcord housing assembly passes over forward container spring opening band (Figure 51).

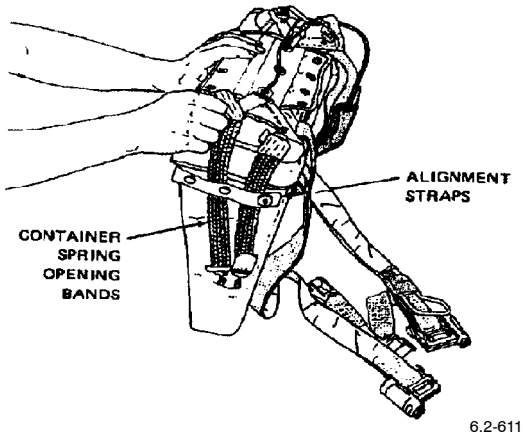


Figure 51. Center All Ripcord Pins

21. RIPCORD GRIP PULL CHECK.

a. Reinstall parachute in stand.

b. Ensure ripcord grip is fully seated in ripcord retainer.

c. Set spring scale to zero.

d. Attach scale to grip using Type IIA or III nylon cord.

e. Helper shall hold ripcord in place and, using a straight steady pull, remove grip from retainer. The force required to remove grip from retainer shall be 15 ±5 lbs. (QA)

22. RIPCORD PIN PULL CHECK.

a. Remove ripcord grip from ripcord handle clip. Insert ripcord pinlock on bottom ripcord pin (Figure 52).

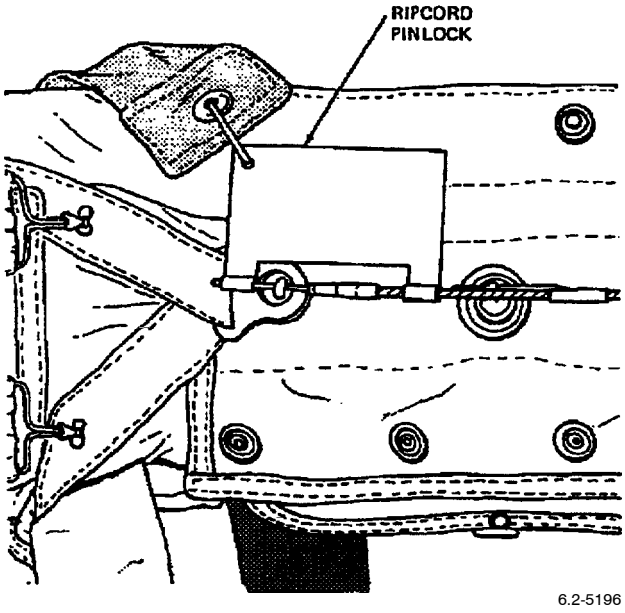


Figure 52. Ripcord Pin Pull Check

b. Attach spring scale to ripcord grip with a nylon cord. Set spring scale to zero.

c. Using scale, apply a straight steady force to ripcord grip until initial movement of ripcord pins is observed. Most allowable force is 15 lbs. (QA)

WARNING

Ripcord pinlock must be removed.

d. Remove ripcord pinlock. Install ripcord grip in ripcord handle clip. (QA)

e. If necessary, reposition ripcord pins so they are centered in locking cones.

23. PARACHUTE HARNESS SENSING RELEASE UNIT (PHSRU), MXU-746/P AND MXU-747/P.

a. Measure the knurled actuating lever torque as follows:

(1) Hold locking lever in the open position and insert the torque meter with 1/16-in. hex head driver into actuating lever cavity.

(2) Rotate actuating lever to just prior to contact with body. Acceptable torque values are 28 to 50 in-oz. (Figure 53). (QA)

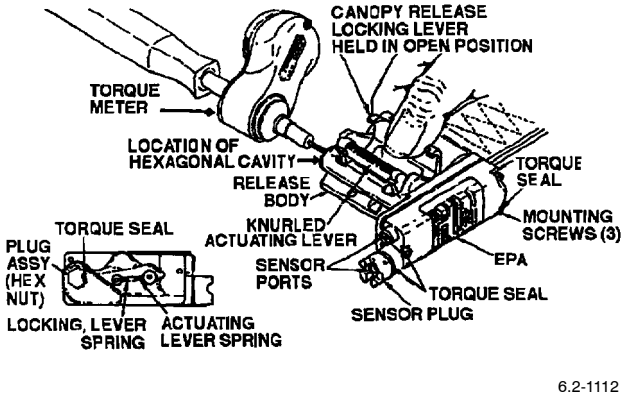


Figure 53. Rotate Actuating Lever

b. Check battery voltage as follows:

(1) Install test leads in multimeter observing proper polarity.

(2) Select VDC and scale exceeding 26 VDC.

CAUTION

Avoid touching the meter probes together when making this test. Firing of the PHSRU may result.

(3) Contact negative (black) probe to sensor plug assembly center conductor. Contact positive (red) probe to EPA sensor center conductor.

(4) Reading of +22.5 volts DC or greater indicates PHSRU is serviceable. (QA)

c. If plug assembly was removed, perform the following:

(1) Forward complete packed parachute assembly to either non-destructive inspection lab or medical facility for X-ray.

(2) From review of X-ray (Figure 54), if plug assembly is suspected or known to be partially or fully recessed, the unit shall have a shear pin integrity check per WP 024 02.

(3) Record inspection on Parachute Record (OPNAV 4790/101).

(4) Attach X-rays to the Parachute Record (OPNAV 4790/101).

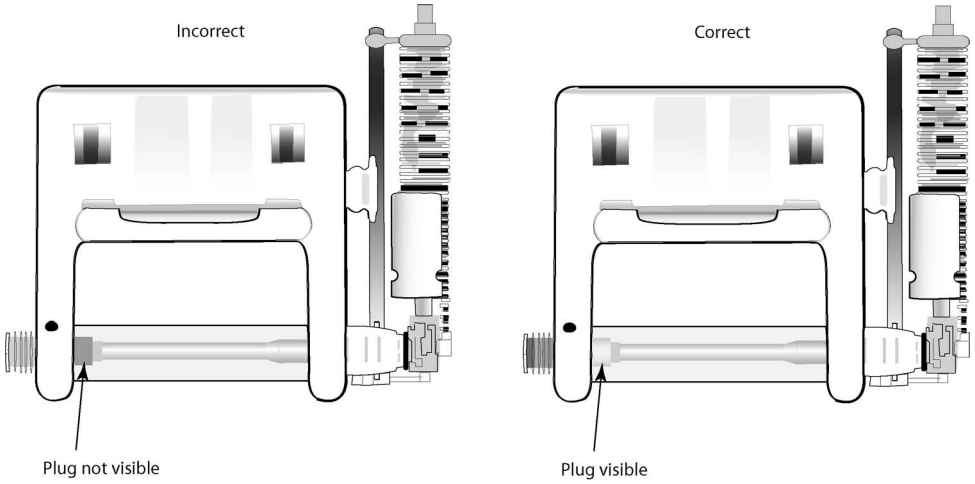


Figure 54. PHSRU X-Ray

(5) If voltage is below +22.5 volts DC, replace battery per WP 024 02.

(6) Record voltage for each EPA in the Local Use Block on the Parachute Record (OPNAV 4790/101).

24. FINAL CHECKOUT.

a. Close ripcord pin protector flap by means of four snap fasteners (Figure 55).

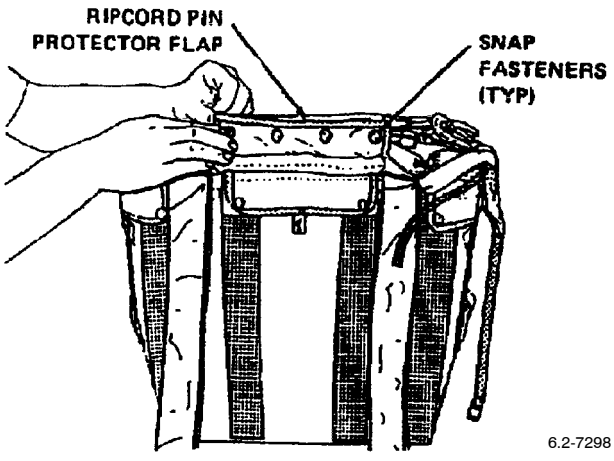


Figure 55. Close Ripcord Pin Protector Flap

b. Lay container on table and route risers between pile tape on front of container (Figure 56).

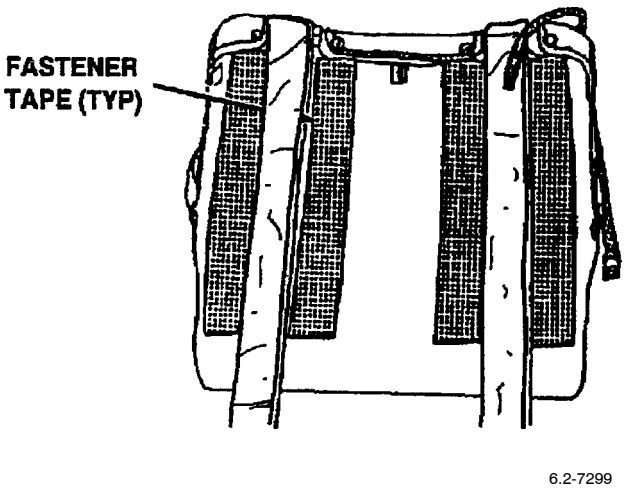


Figure 56. Lay Container on Table

c. Align hook tape on back cushion with pile tape on container. Risers should exit thru slots in back cushion (Figure 57).

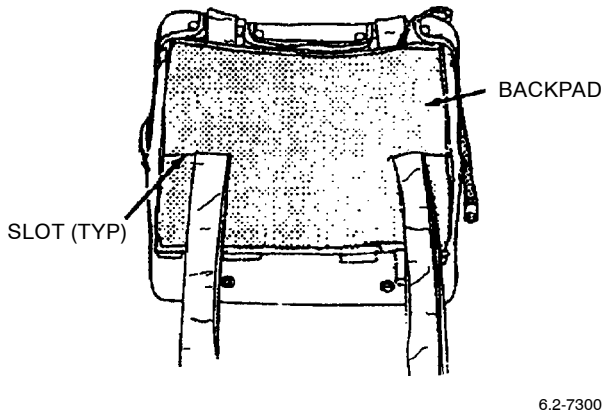


Figure 57. Align Hook Tape on Back Cushion

d. Account for all the packing tools. examine packed parachute for general condition.

e. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA)

f. QA inspector shall examine completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

g. QA inspector shall sign Parachute Record (OPNAV 4790/101).

h. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

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INTERMEDIATE AND DEPOT MAINTENANCE

REPAIR PROCEDURES

NES-14 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 607AS102-6

List of Effective Work Package Pages

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Intermediate and Depot Maintenance, Maintenance Procedures, Parachute Harness Sensing Release Units (PHSRU), MXU-746/P and MXU-747/P ..... WP 024 02
Intermediate and Depot Maintenance, Original Issue Rigging Procedures, Parachute Harness Sensing Release Units (PHSRU) MXU-746/P and MXU-747/P ..... WP 024 01
Intermediate and Depot Maintenance, Packing Procedures, NES-14 Personnel Parachute Assembly ..... WP 016 02
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdowns, Emergency Personnel and Drogue Parachute Systems ..... WP 002 00
Organizational, Intermediate and Depot Maintenance, Illustrated Parts Breakdown, NES-14 Personnel Parachute System ..... WP 016 04
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration ..... WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment ..... WP 005 00

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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 577	30 Nov 93	Stowage Tray Mounting NES-14 (ECP 16264)	1 Oct 94	31 Dec 01

1. INTRODUCTION.

a. This Work Package (WP) contains instructions for the maintenance, repair, replacement, and fabrication of various parachute parts or subassemblies to ensure that items of equipment remain in a Ready-For-Issue (RFI) status. Selected repairs shall be documented on the Parachute Record (OPNAV 4790/101). For common repairs refer to WP 004 00.

2. PILOT PARACHUTE REPAIRS.

a. Repair of the pilot parachute and bridle is limited to the following:

(1) Cleaning of contaminated areas.

(2) Replacement of loose or broken tacking.

b. Replace pilot parachute for any of the following:

(1) Service/total life has expired per WP 016 02.

(2) Seam separations, holes, tears and loose or broken stitching (yarn separation is acceptable) that may affect safe operation of the parachute.

(3) Pilot parachute spring is broken or distorted.

(4) Pilot parachute locking cone or grommet is loose or damaged.

3. REPLACEMENT OF PILOT PARACHUTE.

a. Inspect replacement pilot parachute per WP 016 02.

b. Remove tension hook from apex lines, and then remove pilot parachute.

c. Count 14 apex lines in sequence. Pass the replacement pilot parachute bridle around apex lines. Form a Lark's head knot by passing entire pilot parachute thru loop end of bridle and drawing tight (Figure 1).

d. Mark date placed in service on pilot parachute per WP 004 00. (QA)

4. REPLACEMENT OF PILOT PARACHUTE LOOSE OR BROKEN TACKING (PLATE ASSEMBLY).

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

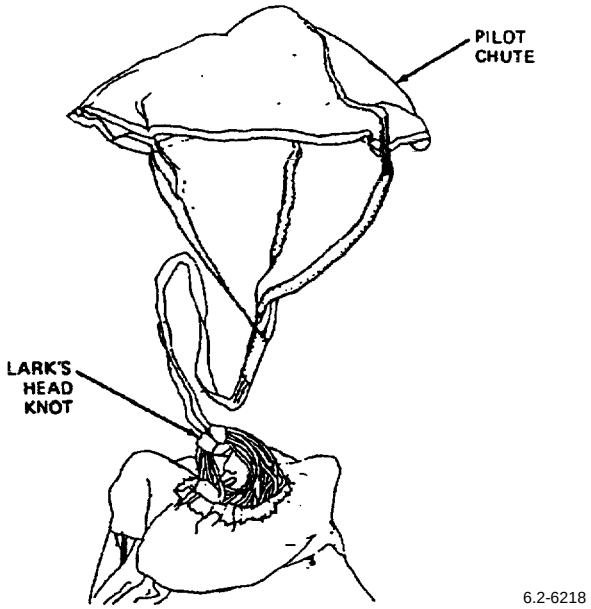

Figure 1. Removal and Replacement of Pilot Parachute

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove broken tacking, or completely remove loose tacking.

NOTE

The plate is attached at the base of the coil spring.

b. Locate the four holes in plate within pilot parachute fabric.

c. Tack thru holes with two turns of size 6 thread, doubled and waxed; tie off.

5. WITHDRAWAL LINE AND CONNECTOR STRAP REPAIRS.

a. Repair of withdrawal line and connector strap is limited to cleaning of contaminated area.

b. Replace withdrawal line or connector strap for any of following:

(1) Service/total life has expired per WP 016 02.

(2) Any damage that exists that may affect safe operation of parachute.

6. REPLACEMENT OF WITHDRAWAL LINE AND CONNECTOR STRAP.

Materials Required

Specification or Part Number	Nomenclature
MIL-I-19166	Tape, Electrical, Insulation

a. Inspect replacement withdrawal line and/or connector strap per WP 016 02.

b. Remove tension hook from apex lines.

c. Remove withdrawal line at Lark's head knot.

d. Remove tape from connector strap and remove defective connector strap.

e. Route replacement withdrawal line connector strap around apex lines of canopy and thru large loop of pull down vent (PDV) lines.

f. Pass the replacement withdrawal line thru both loops in the withdrawal line connector strap, and route the connector end of the withdrawal line thru the withdrawal line loop (Figure 2). (QA)

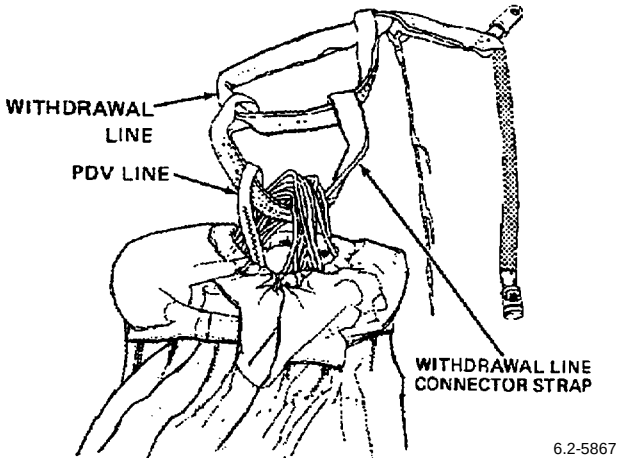

Figure 2. Replacement of Withdrawal Line and Connector Strap

g. Pull remainder of line thru loop and draw tight.

h. Tape withdrawal line connector strap together using electrical insulation tape for a distance of 4-in., centered between Lark's head knot of withdrawal line and vent lines (Figure 3).

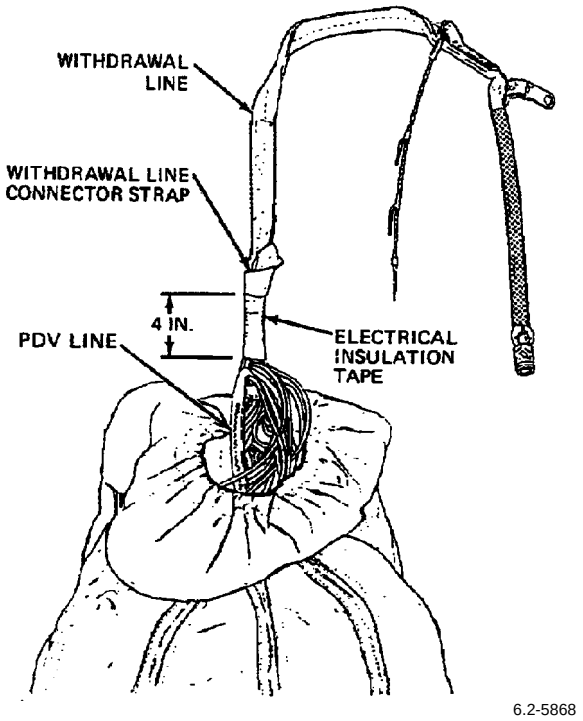

Figure 3. Installation of Insulation Tape to Withdrawal Line Connector Strap

i. Mark date placed in service on replacement withdrawal line per WP 004 00. (QA)

7. CANOPY ASSEMBLY REPAIRS.

8. REMOVAL AND REINSTALLATION OF SUSPENSION LINES FOR PROPER SEQUENCING.

Support Equipment

Part Number	Nomenclature
Refer to WP 005 00	Temporary Locking Pin

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compund

NOTE

For Double "L" Connector Link, refer to Paragraph 41 for disassembly, assembly, and inspection instructions.

a. Remove connector link yoke and plate.

b. Slide suspension lines onto a temporary locking pin or rod.

CAUTION

Ensure clove-hitch and half-hitch at ends of suspension lines do not separate during handling.

c. Sequence lines on connector link bar per (Figure 4).

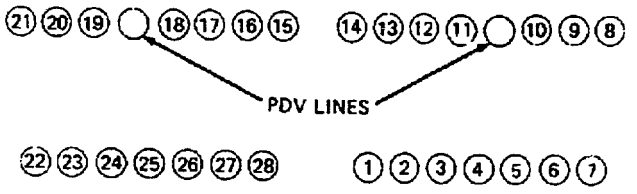

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Figure 4. Arrangement and Orientation of Suspension Lines on Connector Links

d. Attach yoke and plate to connector link so knurled plate portion faces up and screwheads face outboard.

e. Check suspension line continuity (Figure 4).

f. Tighten screw on yoke and plate to a torque value of 20 to 25 in-lbs. (QA)

g. Apply torque seal to screwhead.

9. REPLACEMENT OF CANOPY ASSEMBLY.

Support Equipment

Part Number	Nomenclature
Refer to WP 005 00	Temporary Locking Pin
—	Torque, Screwdriver

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
PIA-C-5040	Cord, Nylon, Type III

NOTE

For Double “L” Connector Link, refer to Paragraph 41 for disassembly, assembly, and inspection instructions.

a. Remove pilot parachute, withdrawal line and withdrawal line connector strap from vent lines.

b. Remove four-line release rigging from connector links and then remove lanyard from riser flutes.

c. Remove connector link yoke and plates.

d. Remove PDV lines from connector links per Paragraph 13.

e. Remove connector links from riser loops and then reinstall yoke and plates.

f. Dispose of canopy per supply directives.

g. Lay out replacement canopy and stretch it to its full length on packing table.

h. Attach tension strap hook to canopy vent lines.

i. Locate gore 28 (nameplate gore) and place it bottommost in center of packing table.

j. At skirt hem, separate suspension lines into two equal groups with lines 15 thru 28 on packer’s side and 1 thru 14 on helper’s side (Figure 4). Grasping each group of lines, walk from skirt hem to connector links removing any dips and twists between two groups.

k. Place connector link holding lines 15 thru 21 on top of connector link holding lines 22 thru 28. Place connector link holding lines 8 thru 14 on top of connector link holding lines 1 thru 7. Insert tension hooks into connector links and insert hooks into packing table (Figure 4).

l. Apply tension.

m. Pull vent collar toward canopy and adjust vent hem.

n. Pull vent collar back to its original position.

o. Check suspension line continuity on left side of gore 14. Packer shall grasp line 15 at skirt hem and raise to a sufficient height to ensure line is free of dips and twists. Continue this procedure with lines 16 thru 28 (Figure 4). Helper shall be positioned at connector links to check lines selected by packer.

p. Check suspension line continuity on right side of gore 14. Packer shall grasp line 14 at skirt hem and raise to enough height to ensure line is free of dips and twists. Continue procedure with lines 13 thru 1 (Figure 4). Helper shall be positioned at connector links to check lines selected by the packer. (QA)

q. Inspect four-line release anchor loops for proper attachment to lines 3 and 26. Measure 30 ± 1/2-in. above upper connector link bar. Anchor loops must be attached with 2-in. of Type 304 single throw zigzag stitching.

r. Continue to inspect canopy per WP 016 02.

s. Record any damage on canopy damage chart WP 003 00.

t. Reattach pilot parachute, withdrawal line, withdrawal line connector strap, and PDV lines to apex lines Paragraph 13.

u. Lay out riser and cross-connector straps on packing table. Corresponding risers shall be placed on top of each other and positioned at connector links. Ripcord shall face up.

v. Remove connector links from tension hooks. Remove tension hooks from packing table.

w. Remove connector link yoke and plates from bottom connector links.

x. Insert connector links into bottom riser loops.

y. Reattach yoke and plates to bottom connector links ensuring knurled portions of plate faces up and screwheads face outboard.

z. Remove connector link yoke and plates from top connector links.

aa. While maintaining continuity, slide suspension lines onto a temporary locking pin or rod.

ab. Insert connector links into top riser loops.

CAUTION

Ensure that clove-hitch and half-hitch at ends of suspension lines do not separate during handling.

ac. Reinstall suspension lines 3 thru 7 and 26 thru 22 onto respective connector links.

ad. Reattach yoke and plates to top connector links ensuring knurled portion of plate faces up and screwheads face outboard.

ae. Insert tension hooks into connector links and then tension canopy.

af. Perform suspension line continuity check as in steps o and p. (QA)

ag. Tighten screws on top and bottom connector links to a torque value of 20 to 25 in-lbs. (QA)

ah. Apply torque seal to each connector link screwhead.

ai. Mark date placed in service on canopy per WP 004 00. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

aj. Fabricate four-line release lanyards per WP 004 00.

ak. Attach four-line release lanyards to suspension lines 3 and 26 per WP 004 00.

al. Rig four-line release lanyards per WP 004 00.

10. PULL DOWN VENT (PDV) LINE REPAIR.

11. GENERAL.

a. Repair of PDV lines is limited to cleaning of contaminated areas and replacement of tackings.

b. Replace PDV lines for any of following:

(1) Service/total life has expired per WP 016 02.

(2) Any damage that exists that may affect safe operation of the parachute.

12. REPLACEMENT OF PULL DOWN VENT LINE TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size A, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Replace missing, loose or broken tackings; tie off (Figure 5).

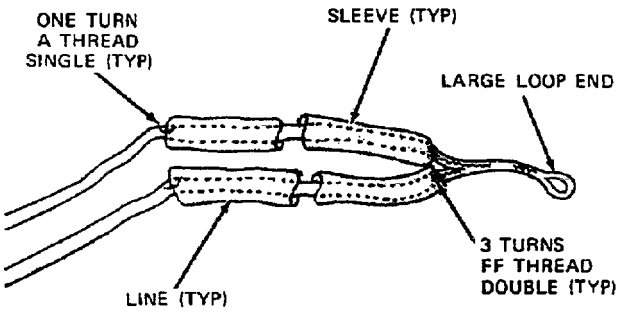


Figure 5. PDV Line Tacking Replacement

13. REPLACEMENT OF PULL DOWN VENT LINE.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
—	Torque Screwdriver
MIL-I-19166	Tape, Electrical, Insulation

NOTE

For Double "L" Connector Link, refer to Paragraph 41 for disassembly, assembly, and inspection instructions.

a. Remove and replace PDV lines per Figure 6.

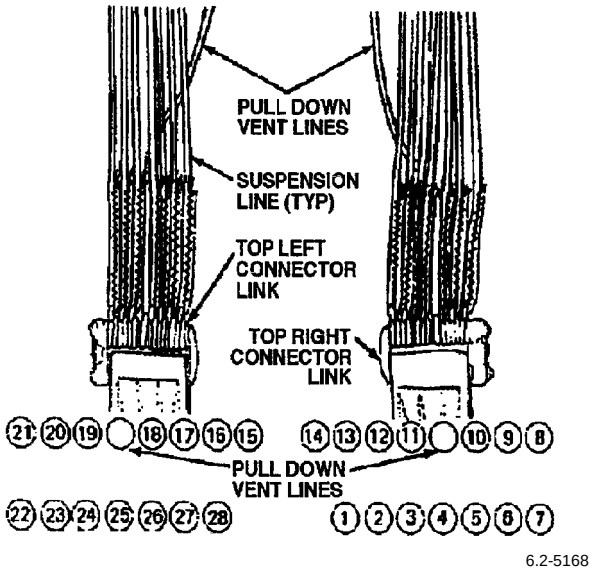


Figure 6. Attachment of PDV Lines To Connector Links

b. Remove yoke, plates, and cross-connector strap from top connector links.

c. Remove damaged PDV lines from connector links and tie end (large loop) of new lines to old lines. Pull old lines out thru vent, bringing new lines up thru canopy.

d. Attach new PDV lines by securing small loop of one PDV line to top left connector link between suspension lines 18 and 19 and other PDV line to top right connector link between suspension lines 10 and 11.

NOTE

Ensure that knurled portions of connector link yoke and plates face up and screwheads face outboard.

e. Reattach cross connector strap, yoke, and plates to top connector links. Tighten screws to a torque value of 20 to 25 in-lbs. apply a torque seal to each connector link screwhead. Verify routing of PDV lines.

f. Route withdrawal line connector strap thru group of apex suspension lines and thru large loop of PDV line (Figure 7).

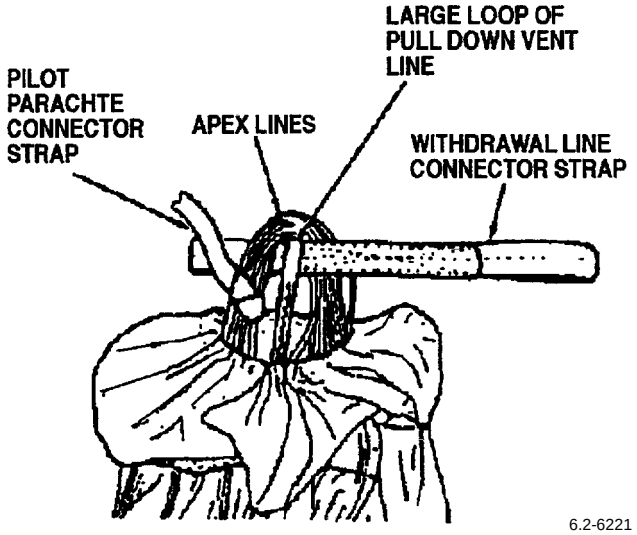


Figure 7. Routing of Withdrawal Line Connector Strap

g. Pass loop end of withdrawal line thru both loops of connector strap and position to right of pilot parachute connector strap. Pass free end of withdrawal line thru loop (Figure 8). (QA)

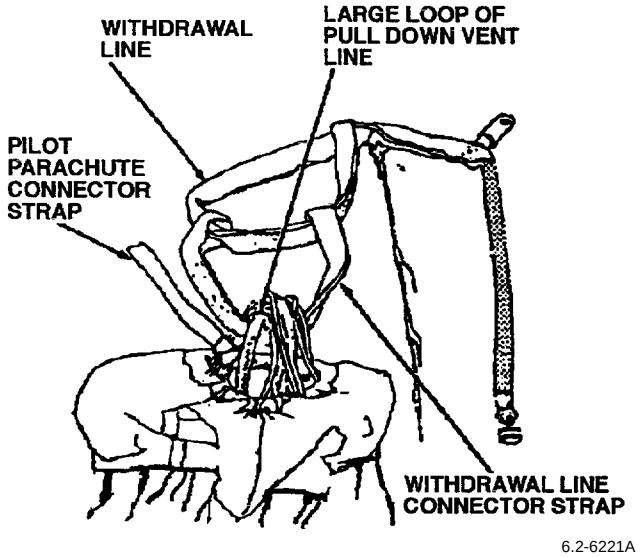


Figure 8. Pass Loop End Thru Both Loops of Withdrawal Line Connector Strap

h. Pull remainder of line thru loop and draw tight (Figure 9).

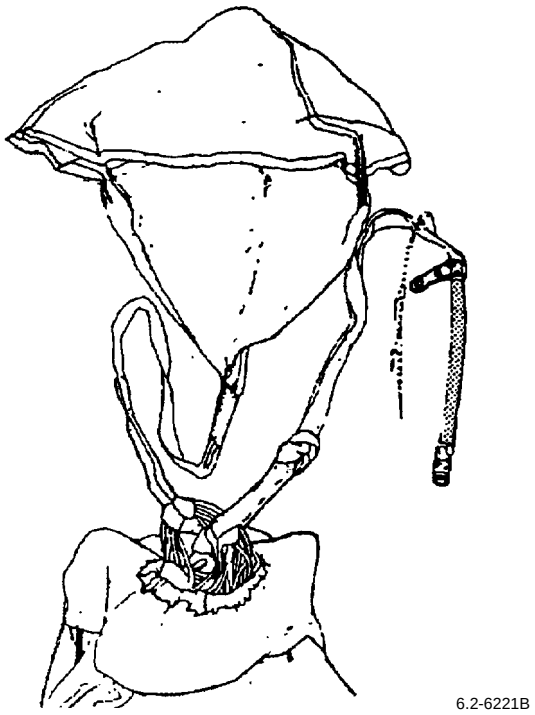


Figure 9. Pull Remainder of Line Thru Loop

i. Tape withdrawal line connector strap together using 24-in. of electrical insulation tape for a distance of 4-in., centered between Lark's head knot of withdrawal line and vent lines.

j. Mark date placed in service on PDV lines and make proper entry on Parachute Record (OPNAV 4790/101) (Figure 3). (QA)

14. RISER ASSEMBLY REPAIR.

a. Repair of risers is limited to following:

(1) Cleaning of contaminated areas.

(2) Repair of stitching if less than three stitches are loose or broken.

(3) Repair of loose or broken stitching on ripcord housing flute.

(4) Removal/repair/replacement of four-line release flutes.

b. Replace risers for any of following:

(1) Service/total life has expired per WP 016 02.

(2) Cuts, tears, or holes in webbing.

(3) Loose or broken stitching in excess of three stitches.

(4) Damaged ripcord grip, roller fittings, retainer fittings, and ripcord housing flute.

(5) Twists, fading, fusing, fraying, burns, contamination, and abrasion.

15. REPLACEMENT OF RISER ASSEMBLY.

Support Equipment

Part Number	Nomenclature
Refer to WP 005 00	Bodkin
—	Torque Screwdriver

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

For Double "L" Connector Link, refer to Paragraph 41 for disassembly, assembly, and inspection instructions.

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Insert a temporary locking pin in last daisy chain loop to prevent inadvertent release of daisy chain.

b. Carefully break tackings at top of flute and pull lanyard pull loop up thru flute.

c. Remove connector link yoke and plate from each connector link. Remove riser from connector links.

d. Loosely reattach connector link yoke and plate.

e. Lay out replacement riser on packing table with loop ends positioned toward connector links.

f. Remove yoke and plates from connector links. Slide riser loops onto connector link bars.

g. Attach yoke and plates to connector link bars so that knurled portions face up.

h. Check suspension line continuity (Figure 4). (QA)

i. Tighten screws on yoke and plates to a torque value of 20 to 25 in-lbs. (QA)

j. Apply torque seal to screwhead.

k. Using a bodkin or equal tool, insert and pull release lanyard pull loops thru proper lanyard flutes. Pull loops should extend completely thru flutes with tops of loops butted up against lower edge or flute.

l. Tack release lanyard to flute with one turn of size FF thread, single and waxed. Tacking shall pass thru outer cover of flute, thru the release lanyard, thru and around last daisy chain loop, and then back thru flute; tie off per WP 004 00.

m. With lanyard pull loop fully extended, tack risers together. Tack at center of risers and 1/2-in. above bottom of lanyard pull loop with one turn of size FF thread, single and waxed; tie off per WP 004 00.

n. Remove canopy release from defective riser and disassemble PHSRU per WP 024 02.

o. Install serviceable canopy release per WP 024 02.

p. Mark date placed in service on riser and make entry on Parachute Record (OPNAV 4790/101). (QA)

16. FABRICATION OF RISER COVER.

Support Equipment Required

Part Number	Nomenclature
—	Hot Knife
—	Shears
—	Square

Materials Required

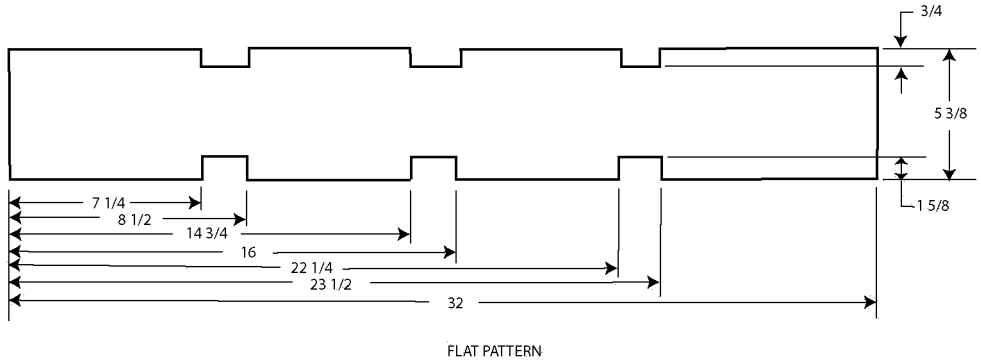
Specification or Part Number	Nomenclature
PIA-C-7219	Cloth, Nylon Duck Type III, Class I, Sage Green
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MIL-F-21840	Fastener Tape, Hook Type II, Class I 5/8-in., Sage Green
MIL-F-21840	Fastener Tape, Pile Type II, 1-in. Sage Green

NOTE

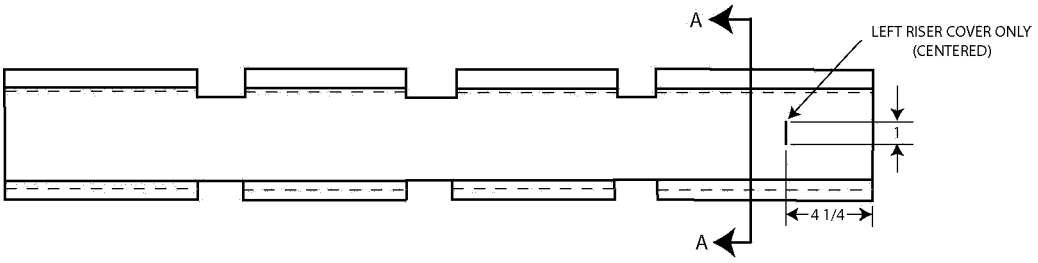
If several riser covers are to be manufactured, it is recommended that a flat pattern (Template) be fabricated to ensure consistency.

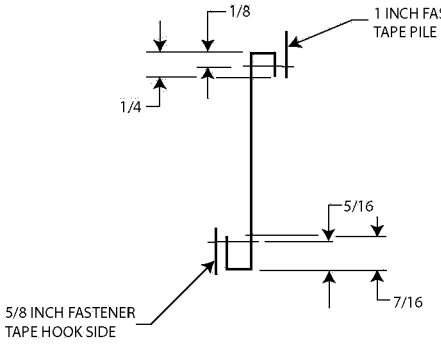
a. Lay out a 32 x 5 3/8-in. piece of nylon cloth. Mark the top left portion of the riser cover with "canopy release end". This will be used as a reference.

b. Using flat pattern in Figure 10 as a guide, continue with riser cover lay out. Do not mark the 1-in. slit at this time.



FLAT PATTERN





SECTION A-A

Figure 10. Riser Cover Fabrication

c. Using a hot knife, completely cut out the riser cover. Take care to reduce sharp edges.

d. With canopy release end facing up, fold the bottom of the riser cover over 7/16-in. and sew down using E thread.

e. Sew 5/8-in. hook fastener tape in place (Figure 10).

f. Turn riser cover over, with canopy release end to the left, fold the bottom portion over 1/4-in. and sew down using E thread.

g. Sew 1-in. pile fastener tape in place (Figure 10).

h. On left riser cover only, fold riser cover in half, matching nylon cloth only and mark the center, approximately 4 1/4-in. from right side. This will be where the 1-in. slit will be made for the ripcord cable housing.

i. Using hot knife, cut a 1-in. slit.

17. INSTALLATION OF RISER COVERS.

a. Lay new riser cover on table with hook fastener facing up and canopy release assembly end to the left. Center riser assembly on cover with shoulder harness link facing up. Separate front riser from rear riser.

b. Line up 1 1/2-in. spaces on riser cover around riser pile fastener tape.

c. Secure hook fastener to pile, working from middle of riser to each end. (QA)

d. Secure front and rear risers together by securing riser pile fastener to riser hook fastener. (QA)

e. Tack at centerline of riser, thru riser cover, 1/2-in. above bottom of steering handle loop with one turn of size FF thread, single and waxed; tie off.

f. Repeat steps a thru e for other riser. On left riser cover 5-in. from connector link end make a 1-in. vertical cut, using a hot knife for ripcord housing (Figure 11).

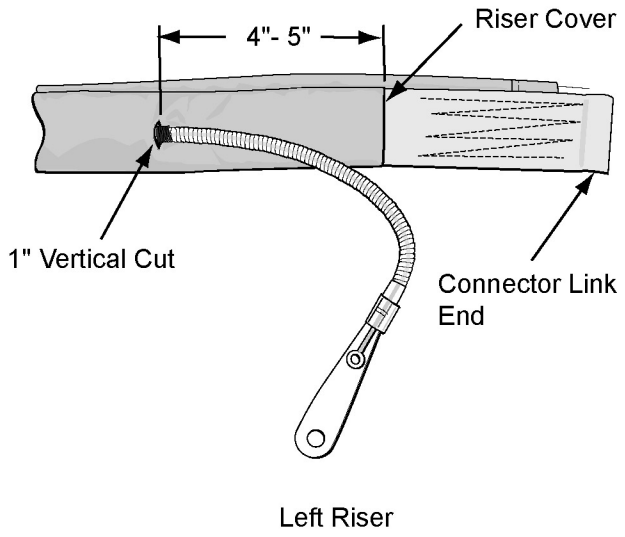


Figure 11. Vertical Cut on Left Riser

18. REPAIR OF RIPCORD GRIP RETAINER.

a. Repair of grip retainer and cover is limited to following:

(1) Replacement of defective grip retainer.

(2) Replacement of stitching securing grip retainer to riser.

(3) Replacement of ripcord grip retainer cover.

b. Repair or replace ripcord grip retainer for any of the following:

(1) Grip retainer is corroded, bent, or cracked, where that damage may affect safe operation of parachute.

(2) Stitching securing grip retainer to riser assembly is loose or missing.

c. Repair or replace grip retainer cover for any of the following:

(1) Cover loose or deteriorated.

(2) Tackings securing cover to riser are loose or missing.

19. REPLACEMENT OF RIPCORD GRIP RETAINER.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove stitching securing grip retainer cover to riser and slide cover back.

b. Remove stitching securing ripcord grip retainer to webbing riser.

c. Measure 3 1/4 ± 1/8-in. from end of riser and mark for reference.

d. Place grip retainer on riser with lower edge positioned at 3 1/4-in. reference mark.

e. Handstitch grip retainer to riser using a running stitch with size 6 thread, doubled and waxed. Start handstitch by placing an overhand knot 5-in. from bitter end of thread, starting and ending underside of riser at same hole location; tie off. Repeat procedure for remaining set of holes (Figure 12). (QA)

f. Perform Ripcord Grip retainer test per WP 016 02.

g. Reinstall ripcord grip retainer cover by positioning cover over grip retainer with lower edges aligned.

h. Handstitch cover to riser on both edges with size FF thread, doubled and waxed; tie off (Figure 12). (QA)

20. REPLACEMENT OF RIPCORD GRIP RETAINER COVER.

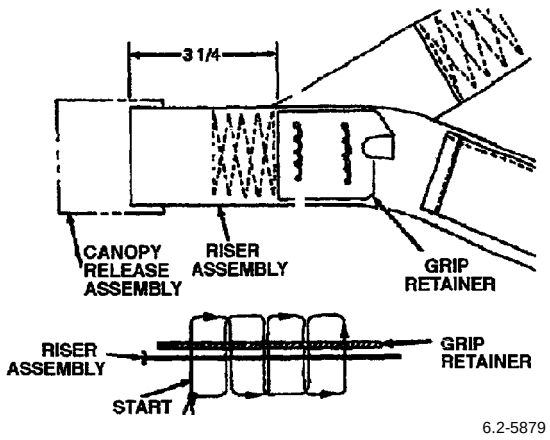


Figure 12. Ripcord Grip Retainer Replacement

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon, Type XII, 1 3/4-in. Wide, Class 1, 1A or 2
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove defective ripcord grip retainer cover.

b. Cut a 7-in. length of webbing.

c. Sear both ends of webbing to prevent fraying.

d. Mark 1 3/4-in. from bitter ends.

NOTE

Do not wrap cover around harness restraint strap.

e. Wrap webbing around riser over lapping the 1 3/4-in. mark (Figure 13).

f. Tack ripcord grip retainer cover to lower riser in four places with one turn of size FF thread, doubled and waxed (Figure 13). (QA)

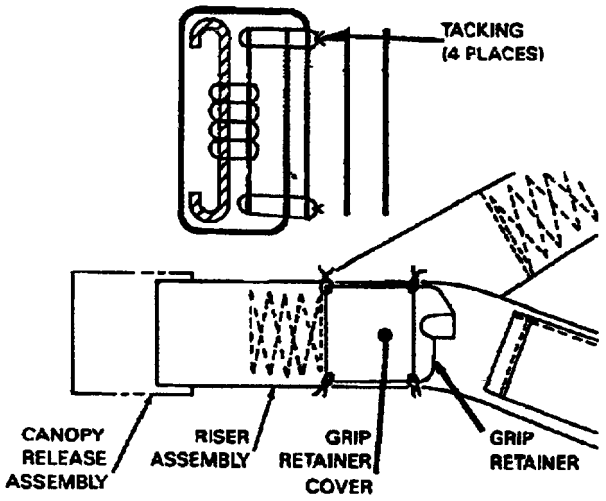


Figure 13. Ripcord Grip Retainer Cover Replacement

21. CONTAINER ASSEMBLY REPAIRS.

a. Repair of container is limited to following:

NOTE

Damaged areas on containers exceeding 3-in. either in length or width shall not be repaired. Damage (cracks, splits, etc.) extending into mounting bosses or into corners having less than 1-in. radii shall not be repaired.

(1) Surface scratches and cracks that penetrate but do not go thru first ply of laminate shall be repaired per Paragraph 24.

(2) Cracks, holes, and scratches that penetrate thru one or several plies of laminate but not thru surface opposite to that which is damaged shall be repaired per Paragraph 25.

(3) Cracks or holes which penetrate container wall shall be repaired per Paragraph 25.

(4) Damaged attachment points (grommet and washer) shall be removed and replaced per Paragraph 26.

22. REPLACEMENT OF CONTAINER STRAP ASSEMBLY RIVET.

Materials Required

Specification or Part Number	Nomenclature
AN970-3	Washer
MS20470A6-4	Rivet

a. Remove damaged rivet using care not to damage container or strap.

b. Install new rivet, head of rivet on inside of container, use washer previously removed or install new washer.

23. FABRICATION OF CONTAINER STRAP ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon, Type XVII, 1-in., Class 1, 1A or 2
MS27980-6B	Socket, Snap Fastener
MS27980-1B	Snap, Fastener, Button

a. Cut a 6-in. length of nylon webbing and sear ends (avoid sharp ends).

b. Locate and install snap fasteners (Figure 14).

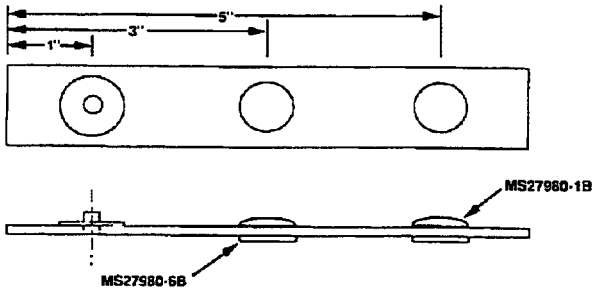


Figure 14. Fabrication of Container Strap Assembly

24. REPAIR OF SURFACE SCRATCHES AND CRACKS.

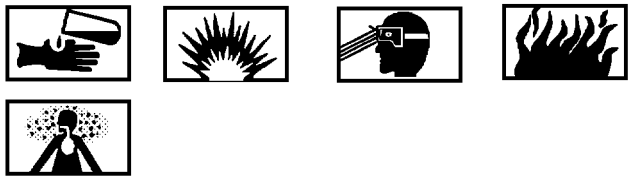
Materials Required

Specification or Part Number	Nomenclature
MIL-R-9300 (CAGE 86961)	Epoxy Resin, Type II, Form A, Grade D

Specification or Part Number	Nomenclature
O-D-1271	Hardener, (Diethylene Triamine)
MIL-C-9084	Glass Cloth, Type VIII B, Class 2
MIL-L-1953B	Lacquer, Color-34087, Class 2
MIL-P-23377	Epoxy Primer, Class 2
LP00370	Cellophane
O-A-51	Technical Acetone
PC451	Aluminum Oxide, Paper (240 Grit), Milled Glass Fiber
(CAGE 45255)	(Glass Floc), 1/32-in.

Technical Acetone, O-A-51 **1**

a. Clean damaged area with technical acetone, using a clean, cotton cloth. Clean about 2-in. past damaged area in all directions.



Epoxy Resin, MIL-R-9300 **6**

Diethylene Triamine, O-D-271 **4**

NOTE

Mix 100 parts of epoxy resin to 10 parts diethylene triamene (hardener). Do not mix more than can be used in 25 min.

b. Paint cleaned area with one or more coats of resin (number of coats to be applied depends on severity of damage).

c. Fill any small fractures with a mixture of resin and milled glass fibers (mix to a putty consistency).

d. Over coated surface, apply sheet of cellophane extending 2 to 3-in. beyond treated surface. Smooth out all entrapped air bubbles either by hand or with a rubber roller.

e. Allow resin to cure overnight at room temperature. If necessary, resin may be cured in an oven heated to 212_F (100_C) in order to reduce curing time.

Aluminum Oxide, PC 451 **2**

f. After resin has cured, remove cellophane sheet and lightly sand off any excess resin down to the original surface of the container. Clean sanded area with clean, cotton cloth.

Epoxy Primer, MIL-P-23377 **5**

g. Refinish surface with one coat of epoxy primer and two coats of camouflage green acrylic lacquer.

h. Upon completion of repair, return container to service.

25. REPAIR OF CRACKS, HOLES, AND SCRATCHES.

Materials Required

Specification or Part Number	Nomenclature
MIL-R-9300 (CAGE 86961)	Epoxy Resin, Type II, Form A, Grade D
O-D-1271	Hardener, (Diethylene Triamine)
MIL-C-9084	Glass Cloth, Type VIII B, Class 2
MIL-L-1953B	Lacquer, Color-34087, Class 2
LP00370	Cellophane
O-A-51	Technical Acetone
PC451	Aluminum Oxide, Paper (240 Grit)
MIL-P-23377	Epoxy Primer, Class 2

a. Sand any damaged areas lightly either by hand or machine to a smooth contour (Figure 15).

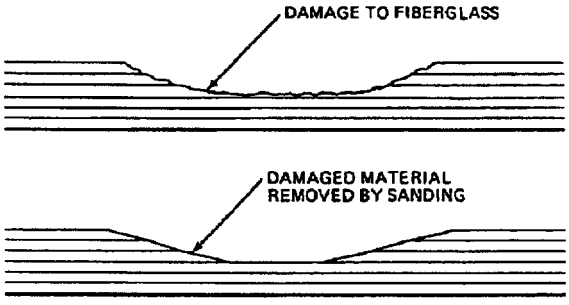
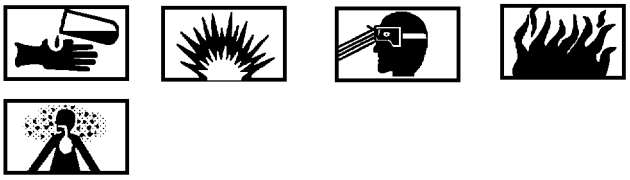


Figure 15. Sand Any Damaged Area

Technical Acetone, O-A-51 **1**

b. Clean sanded area with technical acetone, using clean, cotton cloth. Clean about 2-in. past sanded area in all directions.



Epoxy Resin, MIL-R-9300 **6**

Diethylene Triamine, O-D-1271 **4**

NOTE

Mix 100 parts of epoxy resin to 10 parts diethylene triamine (hardener). Do not mix more than can be used in 25 min.

c. Paint sanded area with one coat of resin.

d. Cut any sections of glass fabric to shape of damaged area. Soak cut sections in resin until resin content 50 percent has been achieved.

e. Place soaked sections of glass fabric in sanded depression area (Figure 16).

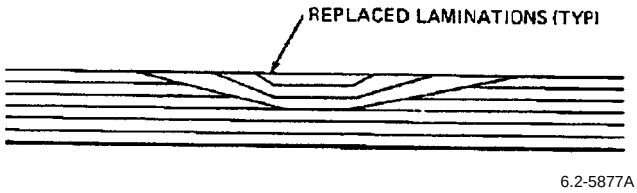


Figure 16. Placement of Soaked Sections

f. Place a sheet of cellophane over repaired area, and work out any excess resin.

g. Allow resin to cure overnight at room temperature. If necessary, resin may be cured in oven heated to 100°C (212°F) in order to reduce curing time.

Epoxy Primer, MIL-P-23377 **5**

h. After resin has cured, remove cellophane sheet and hand or machine sand surface of repaired area to remove excess resin. Clean sanded area with a clean cotton cloth.

i. Refinish surface with one coat of epoxy primer and two coats of camouflage black acrylic lacquer.

j. Upon completion of repair, return container to service.

26. REPAIR OF CRACKS OR HOLES.

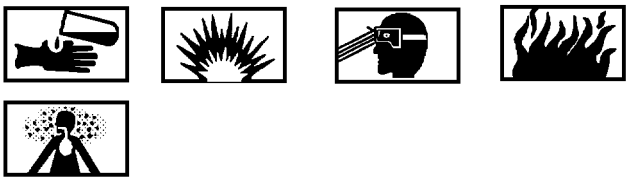
Materials Required

Specification or Part Number	Nomenclature
MIL-R-9300 (CAGE 86961)	Epoxy Resin, Type II, Form A, Grade D
O-D-1271	Hardener, (Diethylene Triamine)
MIL-C-9084	Glass Cloth, Type VIII B, Class 2
MIL-L-1953B	Lacquer, Color-34087, Class 2
LP00370	Cellophane
O-A-51	Technical Acetone
PC451	Aluminum Oxide, Paper (240 Grit)
A-11 or B11	Plastic Hydrocal, (Locally Purchased)
MIL-P-265	Polyvinyl Alcohol, (Locally Purchased)
MIL-P-23377	Epoxy Primer, Class 2

NOTE

To repair extensively damaged containers, a mold must be used in forming/shaping replacement part to proper curvature. Plaster molds formed of materials such as Hydrocal A-11 or B-11 have proven satisfactory. Steps a thru e, below pertain to fabrication of molds; Steps g thru q, below pertain to container repairs.

a. Construct a suitable wood frame or container that follows roughly the contour of convex side of parachute container for holding soft plaster mold material.



Polyvinyl Alcohol, MIL-P-265 **7**

b. After plaster has been applied to frame, coat a similar undamaged area on parachute container with release agent (paste wax, polyvinyl alcohol, vinyl film, or cellophane); then embed container in soft plaster to form surface of required size and shape.

c. After plaster has hardened (set), remove container and allow mold to dry for 12 to 15 hr. mold should be oven-dried at about 104 _C (220 _F) for several hours.

d. Carefully hand sand mold surface with fine sandpaper; while mold is still warm, coat with DC-4 silicone grease.

e. After excess grease has been removed, spray or brush on two or three coats of releasing lacquer (grease lease 915 or XD-481) onto mold surface. When these coats of releasing lacquer are completely dry, apply additional coat of DC-4 silicone grease and rub off any excess. Mold is now ready for use.

f. Trim (cut out) damaged portion carefully to either circular or oval shape.

g. Carefully sand damaged area either by hand or machine a distance of at least 25 times thickness of container wall (Figure 17).

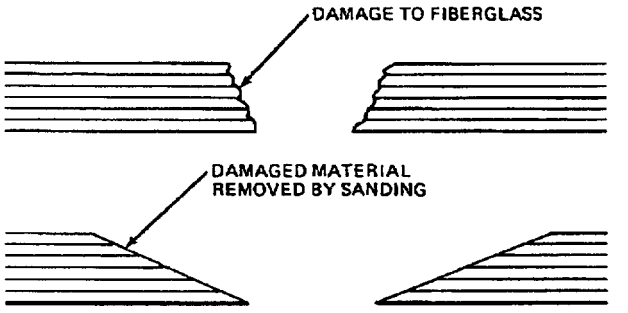
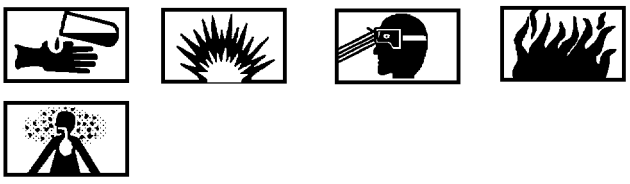


Figure 17. Carefully Sand Damaged Area

h. Prepare glass-fabric laminations for repairing container wall by cutting largest piece of fabric to exact outer shape of the sanded surface.

i. Cut smallest piece so that it overlaps scarfed area a proportionate distance (depending upon number of plies in repair). Cut intermediate size pieces so they overlap equally.



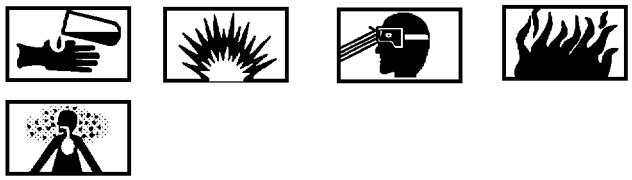
Epoxy Resin, MIL-R-9300 **6**

Diethylene Triamine, O-D-1271 **4**

NOTE

Mix 100 parts of epoxy resin to 10 parts diethylene triamine (hardener). Do not mix more than can be used in 25 min.

j. A convenient way to prepare these laminations is to brush-spread resin on them and then sandwich spread fabric between two sheets of colored cellophane. Sections of glass fabric can then be cut to shape without fraying at edges. Resin content of all applied fabric should be about 50 percent.



Polyvinyl Alcohol, MIL-P-265 **7**

NOTE

When its necessary to use a mold to rebuild part of a container wall, surface of mold must be treated to prevent sticking (adhesion of resin). One or more coats of following release agents may be applied: Heavy duty paste wax, polyvinyl alcohol, vinyl film, polyester film, or cellophane.

k. (If required) place required mold inside container.

l. Lay/spread prepared sections of glass fabric into place as shown by first removing cellophane sheet from one side of fabric, placing exposed fabric into position over the damaged area, and then removing second sheet of cellophane (Figure 18).

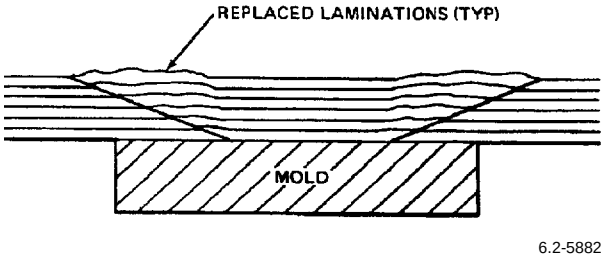


Figure 18. Lay/Spread Prepared Sections

m. Cover entire repaired area with a sheet of cellophane, and carefully work surface to remove as much excess resin as possible.

n. Allow resin to cure overnight at room temperature. If necessary, resin may be cured in an oven heated to 100°C (212°F) in order to reduce curing time.

Epoxy Primer, MIL-P-23377 **5**

o. After resin has cured, remove cellophane sheet and lightly sand off excess resin. Clean sanded area with a clean cotton cloth.

p. Refinish surface with one coat of epoxy primer and two coats of camouflage black acrylic lacquer.

q. Upon completion of repair, return container to service.

27. REPLACEMENT OF FORWARD FLAP ASSEMBLY PLASTIC STIFFENER.

Support Equipment

Part Number	Nomenclature
—	Punch, 5/32-in.
1412	Fastener, Chuck
1407	Fastener, Die
M-100	Press
—	Hook Knife

Materials Required

Specification or Part Number	Nomenclature
MIL-P-46144	ABS Plastic, Sheet, Type II, Class I or II, Grade A
MS27980-8B	Snap, Fastener, Eyelet
MS27980-7B	Stud, Snap Fastener
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

ABS Plastic is available from:

Uniroyal Inc. (CAGE 97488)
Sales Department
Warsaw, IN. 46580

a. Remove four fasteners from forward flap pocket containing stiffener.

CAUTION

During removal of stitches, use care not to damage binding tape.

b. At either end, remove stitching from 3/4-in. binding tape which encloses stiffener in pocket.

c. Remove stitching from end of flap which is sewed thru stiffener. Remove stiffener and discard.

NOTE

Ensure that proper malfunction description code is recorded.

d. Cut a new stiffener, 2 x 8 1/4-in. (rectangular shape). Install new stiffener into pocket.

e. Reinstall binding tape over stiffener pocket and secure with two rows stitching, then backstitch 1/2-in.

f. Punch four 5/32-in. holes thru stiffener, using existing stiffener pocket holes as a guide. Install stud and eyelet fasteners with stud facing downward, so that when flap is turned 90-degrees over ripcord, fasteners will match and can be mated.

g. On outer edge of flap, secure stiffener with one row stitching, then backstitch 1/2-in.

28. REPLACEMENT OF CONTAINER ASSEMBLY.

a. Inspect replacement container per WP 016 02.

b. Replace container at proper place during packing procedures.

29. REPLACEMENT OF CONTAINER ASSEMBLY PRESSURE SENSITIVE TAPE OVER STUDS.

Materials Required

Specification or Part Number	Nomenclature
MIL-I-19166	Tape, Pressure Sensitive

a. Remove old pressure sensitive tape if applied.

b. Cut two pieces of pressure sensitive tape 3 1/2-in. long.

c. Apply one piece of tape horizontally over the two MS27980-7B studs located near the top side of the container just under the side flap. Apply a second piece of pressure sensitive tape to the other side. Ensure that the ends of the tape have adhered to the container surface so as to avoid peeling during parachute packing.

30. REPLACEMENT OF ALIGNMENT RING SECURING TAPE.

Materials Required

Specification or Part Number	Nomenclature
MIL-T-5038	Tape, Nylon, Type II, 1-in.
	-or-
MIL-T-5038	Tape, Nylon, Type IV, 1-in.
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

a. Remove aft flap from container.

b. Cut tape securing alignment ring to flap 1/8-in. from box-X stitching, two layers. Remove alignment ring and discard tape.

c. Cut and sear a 4-in. length of tape.

d. Route end of tape thru alignment ring fold in half and bring seared ends together.

e. Place tape containing alignment ring on top of remaining tape containing box-X stitching with alignment ring toward end tab.

f. Using size FF thread, secure with box-X stitch 3/4-in. by 1 1/4-in. Backstitch exposed ends a minimum of 1/2-in.

31. REPAIR OF STOWAGE TRAY.

a. (P/N 607AS113-12 or 128ESP1048-9). To repair defective stowage trays, remove bolts securing tubes together, replace defective tubes, (from salvaged trays) install bolts, and tighten self locking screws to show 10 to 12 threads beyond the nut.

32. REPLACEMENT OF SPRING OPENING ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
60A113D11-2	Spring Assembly, Container Opening

a. Measure length of replacement spring opening assembly. Proper length is 9 1/4 ± 1/8-in. measured with no tension from end of one hook to end of other hook.

b. Inspect replacement spring opening assembly per WP 016 02.

c. With hook facing inboard, attach end of spring assembly without pull tab to lower eye on side of container. Crimp hook on to each spring opening assembly to each eye on the container.

d. Attach opposite end of spring assembly to eye on end flap. Ensure that the pull tabs are facing out and are positioned for fastening on the side flaps.

33. REPLACEMENT OF CONTAINER SECURING LUG.

Materials Required

Specification or Part Number	Nomenclature
MS20470AD57-7	Rivet (12)

a. Drill out discrepant rivets. Enlarge holes to 5/32-in. diameter.

b. Be careful not to damage lug plates.

c. Install new rivet.

NOTE

Rivets must completely fill countersink.

d. Rivet shop end must have a diameter of .218 - .230-in.

e. Height of rivet shop end not to exceed height of shoulder on lug plate. Inspect. (QA)

34. INSTALLATION OF PARACHUTE HARNESS SENSING RELEASE UNITS (PHSRU).

a. Install per WP 024 01 and WP 024 02.

35. RIPCORD ASSEMBLY REPAIR.

36. GENERAL.

a. Repair of ripcord is limited to following:

(1) Cleaning contaminated areas per WP 004 00.

(2) Replacement of loose or broken tackings WP 016 01.

b. Replace ripcord for any of the following:

(1) Bent, broken, or cracked locking pins.

(2) Corroded, frayed, or bent cable.

(3) Loose cable swage ball or housing ferrule.

(4) Corroded, cracked, or bent grip or housing.

37. REPLACEMENT OF RIPCORD ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove ripcord housing and housing flute tackings.

b. Remove ripcord from ripcord grip retainer and housing flute.

c. Inspect replacement ripcord per WP 016 02.

d. Pass the ripcord housing thru the ripcord housing flute on riser and then insert ripcord grip into ripcord retainer (Figure 19).

e. Lay riser flat. Measure and mark the (upper riser) 2 1/2-in. above top edge of the ripcord channel and 1/4-in. below the bottom edge of the ripcord channel (Figure 19).

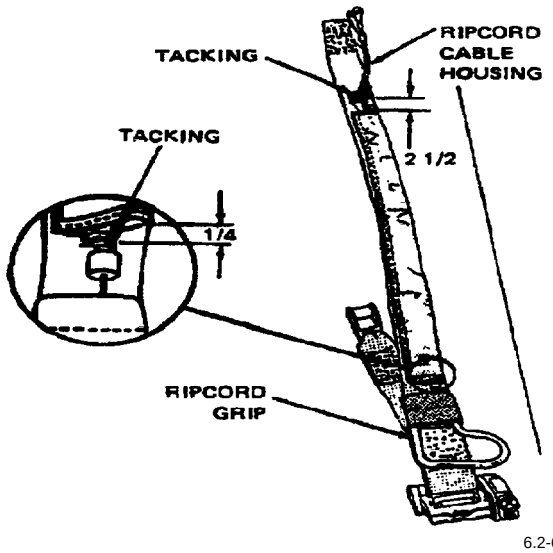


Figure 19. Ripcord Assembly Replacement

f. Position the ripcord housing on the markings, and tack to the upper riser with six turns of size 6 thread, doubled and waxed, tie ends of size 6 thread to underside of riser; tie off. (QA)

38. CROSS-CONNECTOR STRAP REPAIR.

39. GENERAL.

a. Repair of cross-connector straps is limited to cleaning of contaminated areas. Replace cross-connector straps if any other damage exists that may affect safe operation of parachute assembly.

40. REPLACEMENT OF CROSS-CONNECTOR STRAP.

Materials Required

Specification or Part Number	Nomenclature
—	Torque Screwdriver
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

For Double "L" Connector Link, refer to Paragraph 41 for disassembly, assembly, and inspection instructions.

a. Insert temporary locking pin in last daisy chain loop of four-line release lanyard.

b. Remove connector link yoke and plates.

c. Remove connector links from riser loops and then remove cross-connector strap.

d. Inspect cross-connector strap for contamination, cuts, fraying, burns, and loose or broken stitching.

e. Insert connector links thru loop in each end of cross-connector strap and then thru loops in riser assembly.

f. Reattach yoke and plates to connector links ensuring knurled portions of plate face up and screwheads face outboard.

g. Remove temporary locking pin from four-line release daisy chain.

h. Tighten screws on top and bottom connector links to a torque value of 20 to 25 in-lbs. (QA)

i. Apply torque seal to each connector link screwhead.

j. Mark date placed in service on cross-connector strap.

k. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

41. REPLACEMENT OF MS22021-1 CONNECTOR LINK (SPEED LINK) WITH MS22002-1 (DOUBLE "L") CONNECTOR LINK.

NOTE

New canopies received from supply may have the Double 'L" Connector Links installed.

Instructions for attachment of Firing Lanyards, PDVL's, Four-Line Release Systems, etc., will remain the same and will be contained in the application parachute manual.

Materials Required

Specification or Nomenclature	Part Number
MS22002-1	Connector Link (Double "L")
F-900 Torque Seal (Color Optional)	Sealing Compound
—	Torque Screwdriver
MIL-S-43243 (See WP 002 00)	Separator, Link or Equivalent

a. Remove yoke and plate assembly from parachute connector link, P/N MS22021-1.

b. Slide suspension lines from connector link onto a temporary locking pin or rod.

c. Remove cross-connector strap.

d. Slide riser loop off connector link bar and dispose of connector link, P/N MS22021-1.

e. Remove screws from the double "L" connector link, P/N MS22002-1 and separate the two halves of the link.

f. It may be necessary to use a separator device to separate the two halves of the connector link if a separator device is not available, loosen both screws of the connector link by four turns. Place a long bar between the connector link bars to hold the link in place. Using a rawhide or rubber mallet, tap one screw head and then the other screw head several times until the connector link bars separate.

g. Install suspension lines on the new connector link bar. The short leg of the ”L” connector is to be positioned to the inside (Figure 20).

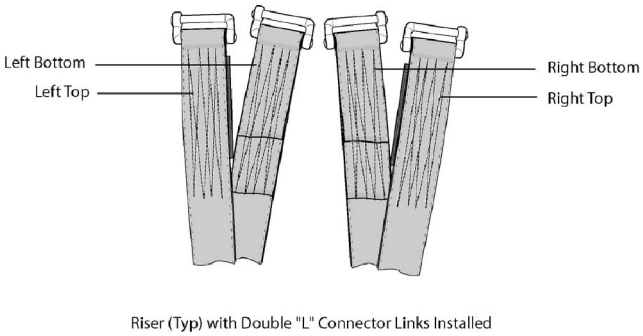


Figure 20. Double “L” Connector Link Layout

h. Install cross-connector strap.

i. Slide riser loop onto opposite connector link bar.

j. Mate both halves of the connector link together.

k. Install screws (2 each).

NOTE

Screws must make a minimum of 6 full turns prior to applying torque.

l. Check suspension line continuity. (QA)

m. Tighten screws to a torque value of 15 in-lbs. (QA)

WARNING

Care must be taken when tightening screws as screwdriver may slip and cause minor injury.

NOTE

It may be necessary to check the torque value on each screw more than once due to the interference fit design feature of the connector link.

n. Apply torque seal to both screw heads and allow to dry before proceeding with remainder of parachute packing.

o. Repeat steps a through l on each riser group.

p. Re-identify the parachute canopy by using an indelible black pen to cross out the existing part number and marking the new superceding part number per Illustrated Parts Breakdown (IPB) WP 016 04.

ORGANIZATIONAL, INTERMEDIATE AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

NES-14 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 607AS102-6

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

Intermediate and Depot Maintenance, Packing Procedures, NES-14 Personnel Parachute Assembly ..... WP 016 02

Alphabetical Index

Title	Page
Introduction	1
Service/Total Life	1
Usable on Codes	1

List of Figures

Title	Page
NES-14 Personnel Parachute Assembly	2

Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 577	30 Nov 93	Stowage Tray Mounting NES-14 (ECP 16264)	1 Oct 94	31 Dec 01

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the NES-14 Personnel Parachute Assembly (Figure 1). In addition, reference material provides configuration information on parachutes in production A-6 aircraft.

2. USABLE ON CODES.

a. The usable on codes in this WP refer to the aircraft applications for the NES-14 Personnel Parachute Assembly.

b. The following usable on codes apply to this WP:

A – EA-6B, F-14

3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in WP 016 02.

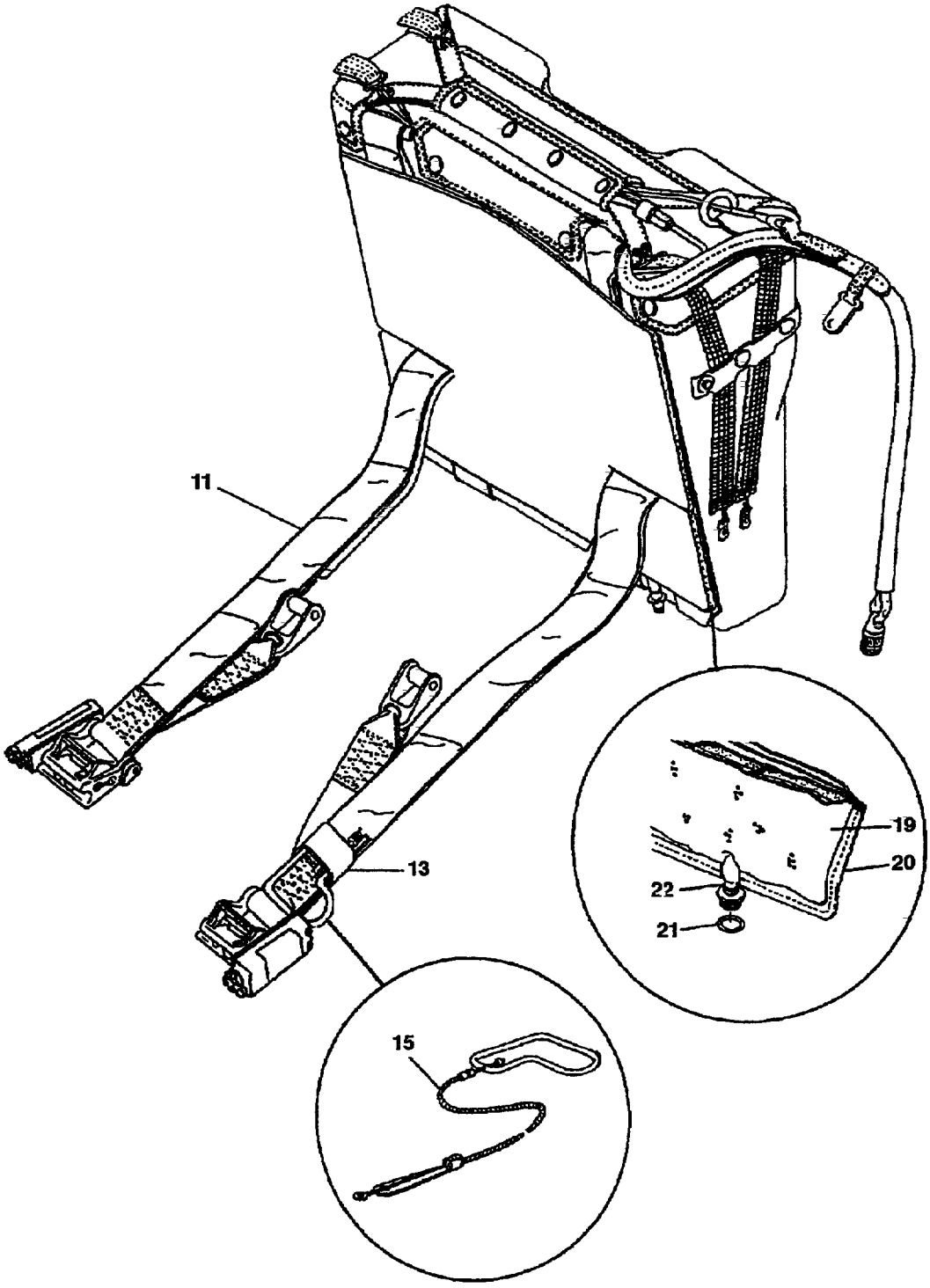

Figure 1. NES-14 Personnel Parachute Assembly (Sheet 1 of 5)

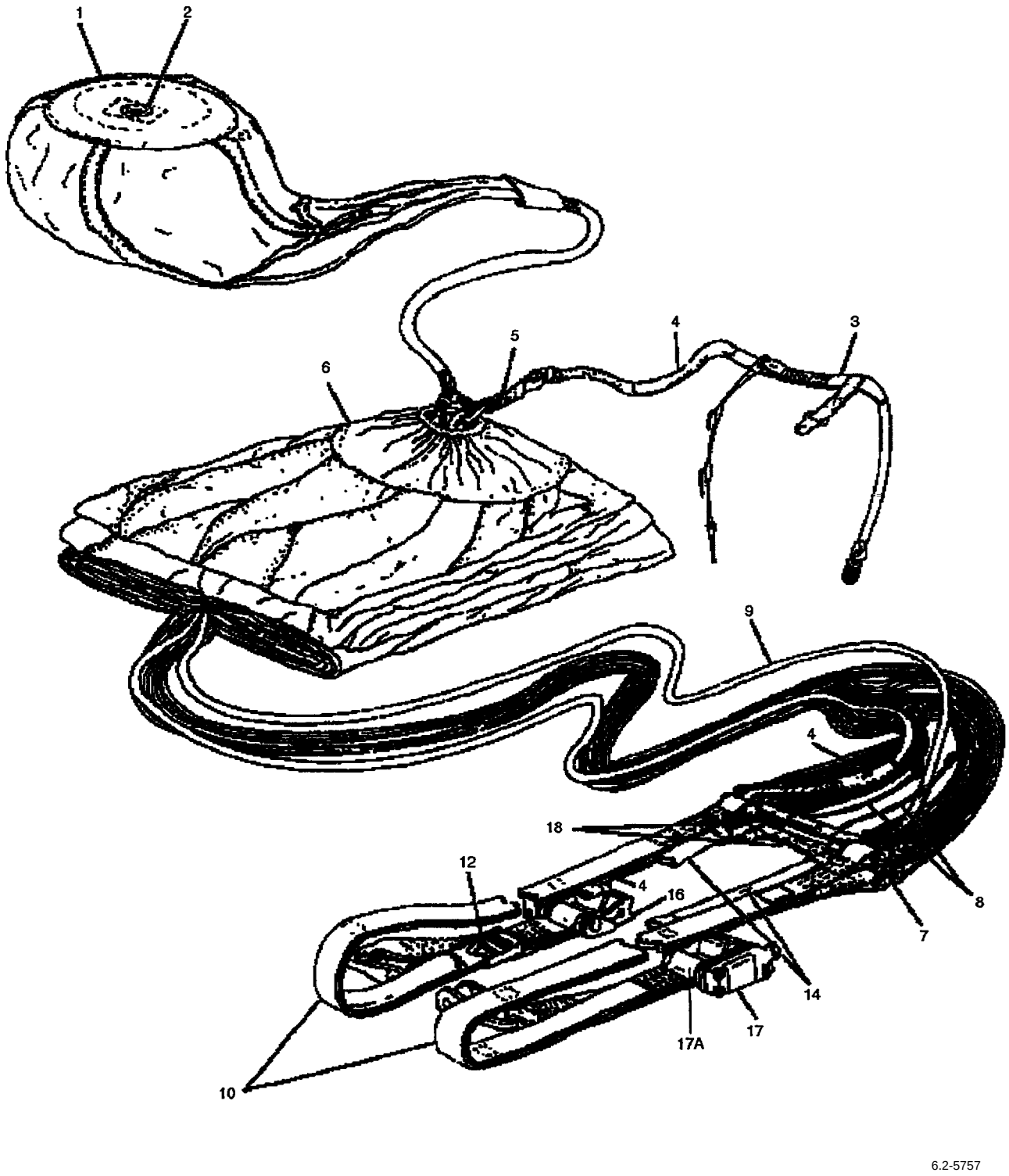

Figure 1. NES-14 Personnel Parachute Assembly (Sheet 2 of 5)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	607AS102-6	PARACHUTE ASSEMBLY, NES-14	1	A	AGOGG
	A51D60002-107	PARACHUTE ASSEMBLY, NES-14	1	A	AGOGG
1	755AS105-1	. PARACHUTE ASSEMBLY, PILOT	1	*	PCGZZ
	32-821552-15	. PARACHUTE ASSEMBLY, PILOT	1	*	PCGZZ
	128SCES105-1	. PARACHUTE ASSEMBLY, PILOT/NOTE 1/	1	*	XBGZZ
2	MS22058C1	. . GROMMET AND WASHER, PARACHUTE PACK	1		PAGZZ
3	607AS104-2	. LINE, WITHDRAWAL	1	*	PCGZZ
	MB 300-1622	. LINE, WITHDRAWAL	1	*	PCGZZ
	128SCES101-97	. LINE, WITHDRAWAL/NOTE 1/	1	*	XBGZZ
4	676AS100-1	. . LABEL/SEE NOTE 2/	6		XBGZZ
5	607AS106-1	. STRAP, CONNECTOR WITHDRAWAL LINE	1	*	PCGZZ
	128ES10003-1	. STRAP, CONNECTOR/NOTE 1/	1	*	XBGZZ
6	60A113E5-18	. CANOPY ASSEMBLY	1	*	PCGGG
	60A113E5-20	. CANOPY ASSEMBLY (WITH DOUBLE “L” CONNECTOR LINK INSTALLED)	1	*	PCGGG
	GP521A18	. CANOPY ASSEMBLY /NOTE 1/	1	*	XBGZZ
7	MS22021-1	. . LINK, REMOVABLE CONNECTOR	4	*	PAGZZ
	MS22002-1	. . CONNECTOR LINK (DOUBLE “L”)	4	*	PAGZZ
8	666AS101-4	. . LANYARD, FOUR-LINE RELEASE	2		MGGZZ
9	607AS118-1	. LINE ASSEMBLY, PDV	2	*	PCGZZ
	128SCES101-75	. LINE ASSEMBLY, PDV/NOTE 1/	2	*	XBGZZ
	MBEU6836PA	. LINE ASSEMBLY, PDV/NOTE 1/	2	*	XBGZZ
10	607AS103-22	. RISER ASSEMBLY	1		PCGZZ
11	607AS143-1	. . RISER COVER ASSEMBLY	1		PAGZZ
12	755AS119-1	. . RETAINER, RIPCORD GRIP	1		XBGZZ
13	607AS103-8	. . COVER, RETAINER	1		MDOZZ
14	666AS102-3	. . FLUTE, FOUR-LINE RELEASE LANYARD	2		MGGZZ
15	607AS109-3	. RIPCORD ASSEMBLY, PARACHUTE	1		PAGZZ
	607AS109-1	. RIPCORD ASSEMBLY, PARACHUTE, (USE UNTIL EXHAUSTED)	1		PAGZZ
16	852AS117-3	. SENSING RELEASE UNIT, PARACHUTE HARNESS MXU-746/P LEFT SIDE	1		AGGGG
17	852AS117-4	. SENSING RELEASE UNIT, PARACHUTE HARNESS MXU-747/P RIGHT SIDE			AGGGG
17A	990055-1	. . RELEASE ASSEMBLY, CANOPY/99449/	2	*	PAGZZ
	015-10307-5	. . RELEASE ASSEMBLY, CANOPY/99449/ (USE UNTIL EXHAUSTED)	2	*	PAGZZ
18	607AS107-10	. CROSS CONNECTOR STRAP	1	*	PCGZZ
	A51D60021-7	. CROSS CONNECTOR STRAP/NOTE 1/	1	*	XBGZZ
	A51D60021-5	. CROSS CONNECTOR STRAP/NOTE 1/	1	*	XBGZZ
	607AS107-9	. . STRAP ASSEMBLY, CROSS CONNECTOR	1	*	PCGZZ
19	607AS108-22	. SLIP COVER	1		PAOZZ
20	607AS108-9	. CUSHION ASSEMBLY, BACK	1	*	PAOZZ
	A51D60025-9	. CUSHION ASSEMBLY, BACK/NOTE 1/	1	*	XBOZZ
	A51D60025-1	. CUSHION ASSEMBLY, BACK/NOTE 1/	1	*	XBOZZ

Figure 1. NES-14 Personnel Parachute Assembly (Sheet 3 of 5)

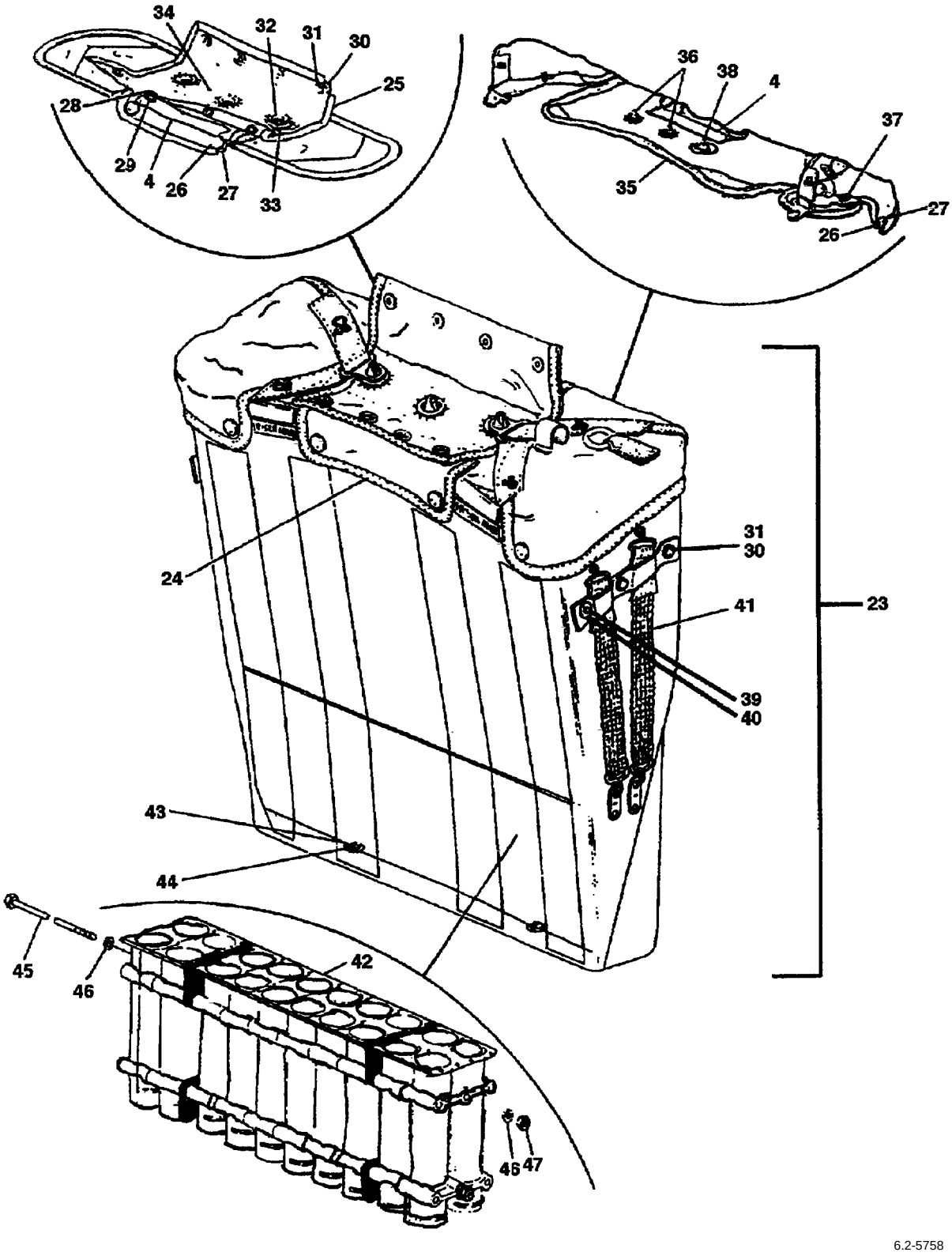

Figure 1. NES-14 Personnel Parachute Assembly (Sheet 4 of 5)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
21	MS28775-111	. . O-RING	1		PCOZZ
22	NAS397-10	. . CLAMP, RATCHET	1		PAGZZ
23	607AS110-2	. CONTAINER ASSEMBLY	1	*	AGGGG
24	607AS111-10	. . CONTAINER SUB-ASSEMBLY	1		PAGGD
25	607AS114-1	. . FLAP ASSEMBLY, FORWARD	1	*	PCGZZ
	A51D60024-31	. . FLAP ASSEMBLY, FORWARD/NOTE 1/	1	*	XBGZZ
26	MS27983-1	. . . FASTENER, BUTTON	6		PAGZZ
27	MS27983-2N	. . . FASTENER, SOCKET	6		PAGZZ
28	MS27980-8B	. . . FASTENER, EYELET	4		PAGZZ
29	MS27980-7B	. . . FASTENER, STUD	4		PAGZZ
30	MS27980-1B	. . . FASTENER, BUTTON	8		PAGZZ
31	MS27980-6B	. . . FASTENER, SOCKET	8		PAGZZ
32	MS22048GC1	. . . GROMMET	3		PAGZZ
33	60A113C25-1	. . . WASHER, GROMMET	3		PAGZZ
34	607AS114-10	. . . STIFFENER	1		MGGZZ
35	607AS115-1	. . FLAP ASSEMBLY, AFT	1	*	PCGZZ
	A51D60023-1	. . FLAP ASSEMBLY, AFT/NOTE 1/	1	*	XBGZZ
36	60A113C31-1	. . . CONE, 0.338 GRIP	2		PAGZZ
37	60A113C28-1	. . . EYE	4		PAGZZ
38	607AS128-1	. . . CONE 0.540 GRIP	1	*	PAGZZ
	MB300-816	. . . CONE /26512/	1		PAGZZ
39	607AS140	. . WASHER	2		PAGZZ
40	MS20470A-6	. . RIVET	2		PAGZZ
41	60A113D11-2	. . SPRING ASSEMBLY, CONTAINER OPENING	4	*	PAOZZ
	MS70105-6	. . SPRING ASSEMBLY, CONTAINER OPENING		*	PAOZZ
42	607AS113-12	. . TRAY ASSEMBLY, STOWAGE	1		PAGZZ
	128ESP10148-9	. . TRAY ASSEMBLY, STOWAGE /26512//NOTE 1/ (USE UNTIL EXHAUSTED) /ATTACHING PARTS/	1	*	XBGZZ
43	MS27039C4-08	. . SCREW, MACHINE	2		PAGZZ
44	MS15795-810	. . WASHER, FLAT	2		PAGZZ
		---*---			
45	607AS113-6	. . SCREW	2		PAGZZ
46	AN960D10L	. . WASHER, FLAT	4		PAGZZ
47	MS21042L3	. . NUT, SELF-LOCKING	2		PAGZZ

NOTES: 1. Delivered with new aircraft, but not stocked.
2. Available at no cost from the In-Service Support Team (ISST).

Figure 1. NES-14 Personnel Parachute Assembly (Sheet 5 of 5)

ORGANIZATIONAL MAINTENANCE

REPAIR PROCEDURES

MK-GRU7/MK-GRU7A/MK-GRUEA7 DROGUE PARACHUTE SYSTEM

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

None

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Title	Page
Container Assembly	2
Drogue Shackle Retention Tie Replacement	2
Flap Securing Pin Retention Tie Replacement	2
Introduction	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

2. This work package (WP) contains instructions for organizational level repair to ensure that the escape system remains in ready-for-issue (RFI) status.

3. When performing repairs detailed in this WP, follow these guidelines:

a. Review all applicable instructions prior to starting repair.

b. Ensure that all necessary support equipment and materials required are available prior to starting repair.

c. When required remove enough material from it's source for immediate use only. Ensure that the material identification ticket remains with the source material at all times. Material that cannot be identified will not be used.

d. To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

e. A quality assurance (QA) inspector shall examine the finished work.

4. CONTAINER ASSEMBLY.

5. FLAP SECURING PIN RETENTION TIE REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Ensure pin is inserted into fabric pocket on front flap (Figure 1).

b. Pass a length of size 6 thread, single and waxed, thru flap securing pin and then thru fabric loop on pocket; tie off. Trim excess (Figure 1).

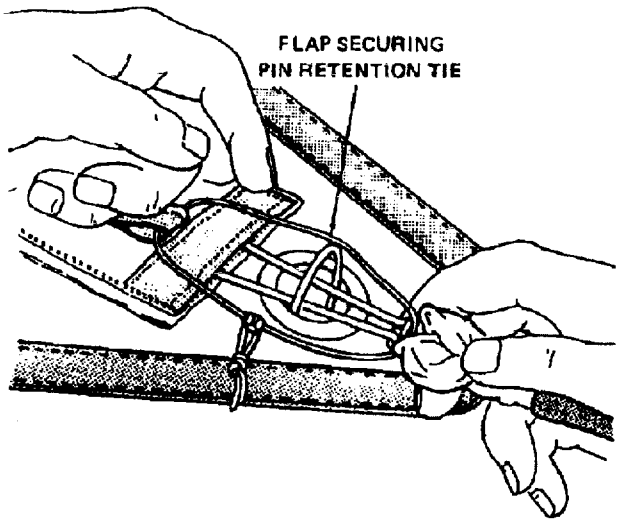

Figure 1. Replacement of Flap Securing Pin Retention Tie

6. DROGUE SHACKLE RETENTION TIE REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Retention-tie drouge shackle with one turn of size 6 thread, waxed and single, routed thru loop of extender strap, thru shackle, and around both legs of securing pin forward of wire loop; tie off. Trim excess (Figure 2). (QA)

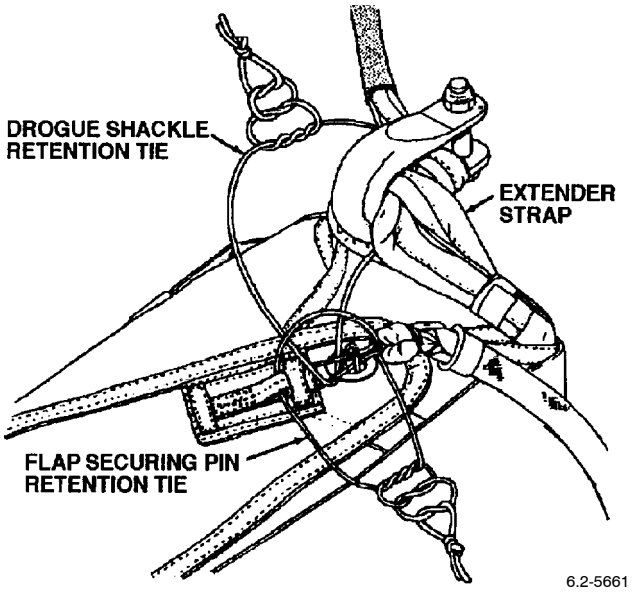

Figure 2. Replacement of Drogue Shackle Retention Tie

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INTERMEDIATE AND DEPOT MAINTENANCE

PACKING PROCEDURES

MK-GRU7/MK-GRU7A/MK-GRUEA7 DROGUE PARACHUTE SYSTEM

List of Effective Work Package Pages

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Reference Material

Introduction, Organizational, Intermediate and Depot Maintenance With Illustrated Parts Breakdowns, Emergency Personnel and Drogue Parachute Systems ..... WP 002 00
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration ..... WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment ..... WP 005 00

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Closing of Container	12
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Preliminary Procedures	2
Rigging	6
Attachment of Anti-Squid Line to Controller Drogue	6
Attachment of Connecting Line to Controller Drogue and Stabilizer Drogue	6
Attachment of Drogue Withdrawal Line to Controller Drogue	7
Attachment of Extender Strap, Link Line, and Shackle to Stabilizer Drogue	6
Layout of Drogue Parachute Assembly	2

Record of Applicable Technical Directives

None

1. GENERAL.

a. Rigging and packing instructions are provided with the assumption that they will be carried out under ideal conditions in a parachute loft (WP 003 00). When a drogue parachute assembly must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

b. In no case shall the packing of a drogue parachute assembly be interrupted after the packing operation has been started. If the packing operation is interrupted, due to unforeseen circumstances, the drogue parachute assembly shall be completely repacked per instructions contained in this Work Package (WP).

c. Quality Assurance (QA) points have been included in the rigging and packing procedures. When a procedural step is followed by "(QA)", there is a quality assurance requirement. Witnessing of QA steps may be delayed by QA if their satisfactory completion is verified in later steps.

d. During rigging and packing procedures, packer shall be positioned on left side of packing table, and helper on right side when viewed from riser end of table.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
—	Stamp Pad
	-or-
—	Rubber Stamp Kit
	-or-
—	Adjustable Metal Stencil
	-or-
Style No. 8	Printing Set
	-or-
GG-P-655	Printing Set
128GT10156	Packing Fixture

Materials Required

Specification or Part Number	Nomenclature
MIL-I-6903	Ink, Marking, Light Blue
TT-I-1795	Ink, Marking, Black
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
MIL-I-19166	Insulation Tape, Electrical 3/4-in. Wide

a. To prepare the drogue parachute for rigging and packing, perform the following:

(1) Ensure that all support equipment and materials required are available prior to starting.

(2) Inspect packing tools for nicks, burrs, or sharp edges which may cause damage to the parachute.

(3) Count and record number of packing tools.

(4) Clean packing table.

3. LAYOUT OF DROGUE PARACHUTE ASSEMBLY.

a. Lay out drogue parachute on packing table (Figure 1).

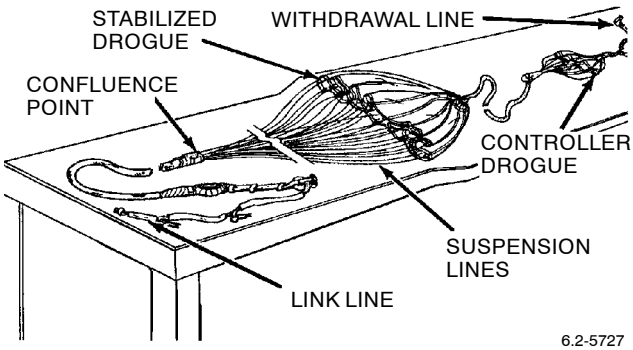

Figure 1. Layout of Drogue Parachute Assembly

4. INSPECTION (SPECIAL).

a. Maximum scheduled repack cycle is 448 days for the F-14A/B Aircraft.

b. Maximum scheduled repack cycle is 364 days for the EA-6B Aircraft.

5. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Parachute Harness Sensing Release Unit Cartridge) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be rebased if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Components without a service/total life shall be removed from service if the components do not pass inspection, as determined by Quality Assurance Representative (QAR) or Collateral Duty Inspector (CDI).

g. Check date placed in-service and date of manufacture on each parachute part for service/total life as follows:

Nomenclature	Service Life (Yr)	Total Life (Yr)
5-ft. Stablizer Drogue	None	10
22-in. Controller Drogue	None	10
Connecting Line	None	10
Extender Strap	None	13
Link Line	2	10
Withdrawal Line	2	10

(1) Markings for completeness, legibility, and agreement with information on Parachute Record (OPNAV 4790/101).

(2) Compare configuration of parachute assembly to that shown in NAVAIR 13-1-6.2 Record of Applicable Technical Directives, and Illustrated Parts Breakdown.

6. CONTROLLER DROGUE.

a. Withdrawal Line shackle for nicks, burrs, dirt, and corrosion, proper attachment of shackle to withdrawal line, and security of tackings. (QA)

b. Armored cover for broken strands, security of end ferrules, and presence of dirt and corrosion (Figure 2).

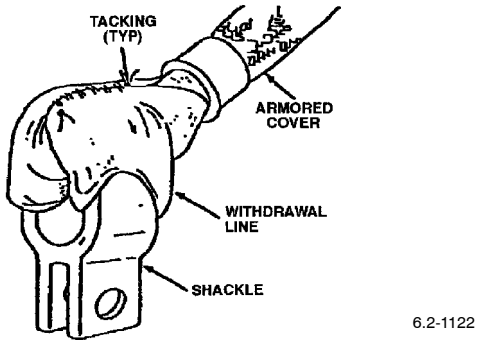

Figure 2. Controller Drogue Inspection

c. Flap securing pin for nicks, burrs, dirt, corrosion, bends, and proper attachment of the withdrawal line (Figure 3).

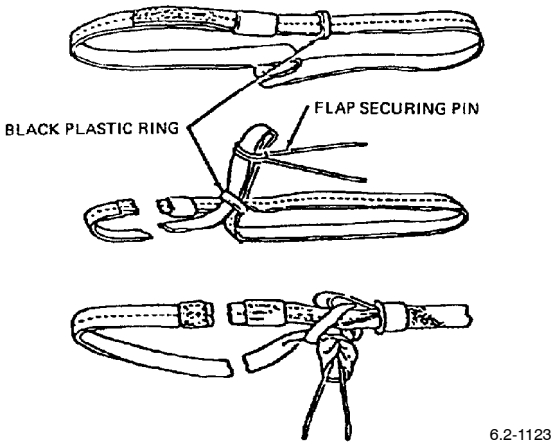

Figure 3. Proper Attachment of Withdrawal Line

d. Ensure that all apex suspension lines and anti-squid line are encircled by withdrawal line with a Lark's head knot and tacking is properly attached and secured (Figure 4). (QA)

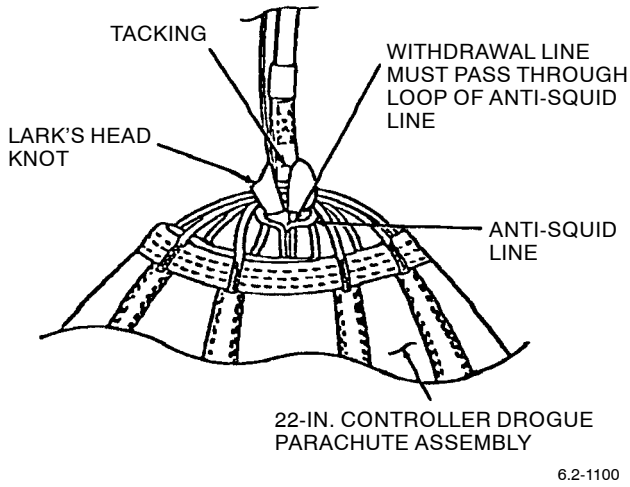

Figure 4. Proper Attachment of Lark's Head Knot

e. Withdrawal line for contamination, cuts, fraying, burns, loose or broken stitching, proper attachment of drogue parachute.

f. Fabric drag surface, seams, and suspension lines at canopy apex for contamination, mildew, cuts, tears, burns, fraying, and loose or broken stitches.

g. Anti-squid line for contamination, cuts, fraying, burns, loose or broken stitching, and security of attachment at canopy apex and terminal eye. (QA)

h. Suspension lines for the following:

(1) Lines from canopy skirt hem to terminal eye for frays, ruptures, dirt, lumps, and hard or thin spots.

(2) Protruding inner core lines for presence of twists in individual lines.

(3) Security of attachment at the skirt hem.

(4) Condition of V-tabs at the skirt hem.

(5) Security and condition of wrapping at terminal eye.

i. Drogue connecting line for contamination, cuts, fraying, burns, loose or broken stitching, and attachment of connecting line to 22-in. drogue parachute eye (Figure 5). (QA)

7. STABILIZER DROGUE.

a. Ensure that all apex suspension lines on 5 ft. drogue parachute are encircled by a Lark's head knot formed by connecting line. (QA)

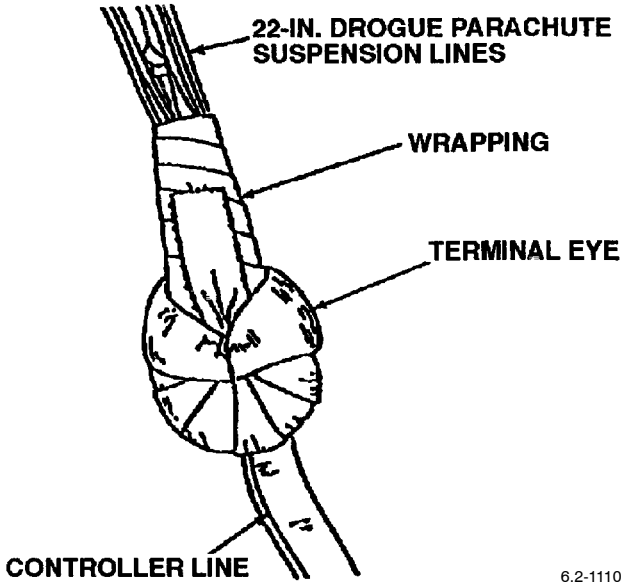

Figure 5. Drogue Connecting Line

b. Check tacking at apex (Figure 6).

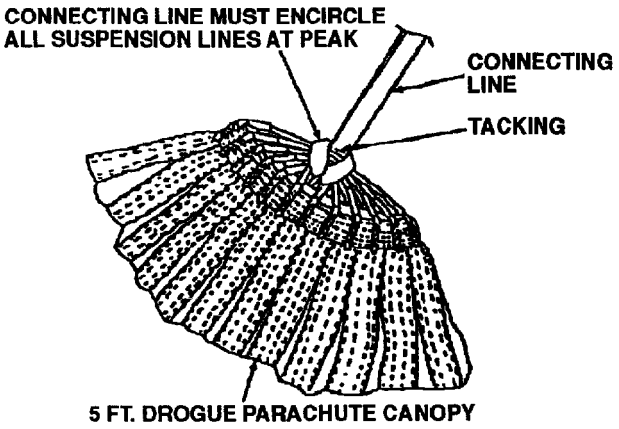

Figure 6. Tacking at Apex

c. Fabric drag surface, seams, and suspension lines for contamination, mildew, cuts, tears, burns, fraying, and loose or broken stitches.

d. Anti-squid line for proper attachment at canopy apex (Figure 7). (QA)

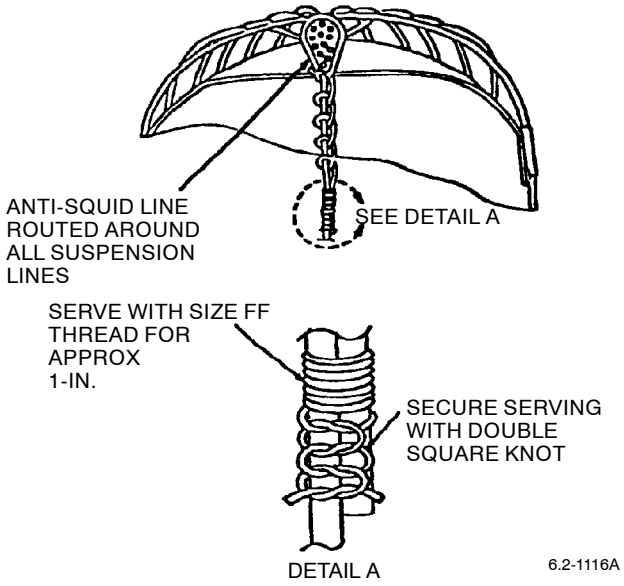

Figure 7. Anti-Squid Line Attachment

e. Suspension lines and anti-squid line from canopy skirt hem to confluence points for frays, ruptures, dirt, lumps, hard or thin spots, protruding inner core lines, presence of twists in individual lines, attachment of suspension lines and V-tabs at skirt hem, and security and condition of wrapping at confluence point.

f. Braided tubular cover for frays, ruptures, dirt, lumps, hard or thin spots, security of wrappings, and serving at the eye.

g. Extender strap for contamination, mildew, cuts, tears, burns, fraying, and loose or missing stitches.

h. Drogue shackle for nicks, burrs, dirt, and corrosion.

i. Attachment bolt for nicks, burrs, dirt, corrosion, and stripped threads.

j. Link line webbing for fraying, cuts, tears, mildew; neoprene sleeve for cuts; pins for nicks, burrs, dirt, and corrosion.

8. CONTAINER ASSEMBLY.

a. Interior of container for foreign objects, corrosion, cleanliness, and structural integrity.

b. Container for cracks. Cracks one inch long near holes securing the metal strip and flaps to container are acceptable.

c. Flaps for contamination, mildew, fraying, cuts, tears, loose or broken stitches, and security of attachment.

d. Grommets and wire loop for nicks, burrs, dirt, corrosion, and security of attachment.

9. SUSPENSION LINE CONTINUITY CHECK.

a. Continuity check (QA):

(1) Walk anti-squid line from tunnel of confluence point to skirt hem of stabilizer drogue.

(2) Hold anti-squid line at skirt hem, from two groups of twelve lines each.

(3) Ensure anti-squid line is retainer in central position with twelve lines on either side.

(4) Ensure suspension lines are not crossed or entangled at confluence point (Figure 8).

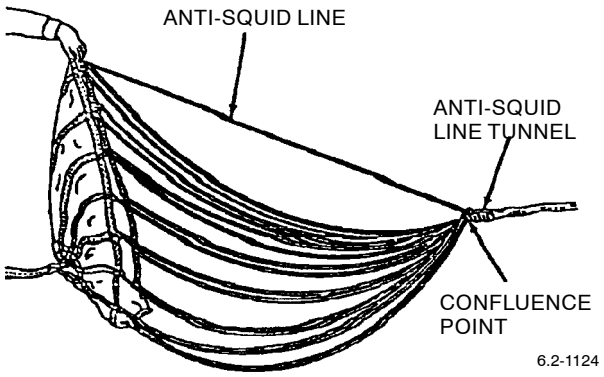

Figure 8. Continuity Check

b. Stretch controller drogue taut and form 2 groups of 5 lines each; position each group to either side of anti-squid line. Make certain that anti-squid line is retainer in central position with 5 lines on each side (Figure 9).

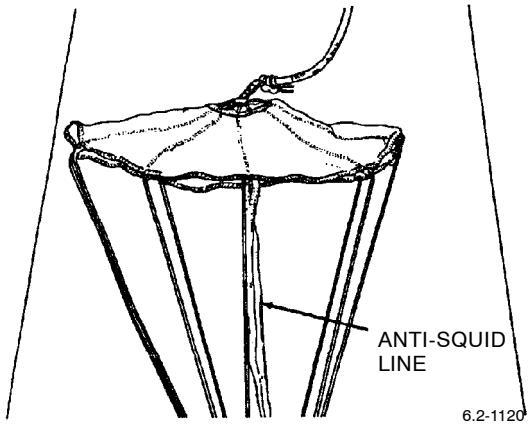

Figure 9. Stretch Controller Drogue Taut

10. RIGGING.

11. ATTACHMENT OF CONNECTING LINE TO CONTROLLER DROGUE AND STABILIZER DROGUE.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Pass one looped end of connecting line thru base loop of controller drogue (Figure 10). Route opposite end of line thru loop and pull tight. Tack loop with one turn of size 6 thread, double and waxed; tie off.

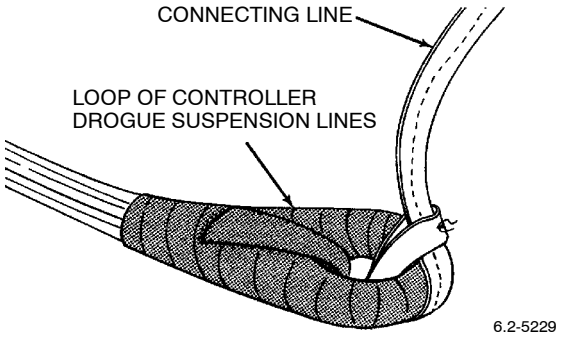

Figure 10. Attachment of Connecting Line to Controller Drogue

b. Pass free end loop of connecting line around apex suspension lines of stabilizer drogue (Figure 11). Route complete controller drogue thru loop of connecting line and pull tight. Tack loop with one turn of size 6 thread, double and waxed; tie off.

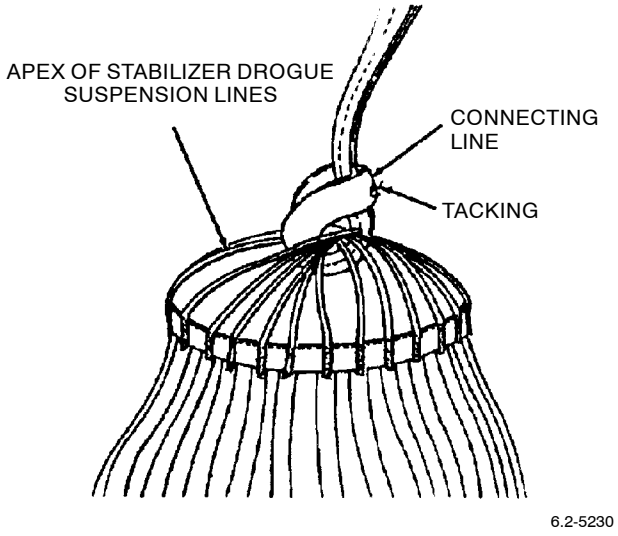

Figure 11. Attachment of Connecting Line to Stabilizer Drogue

12. ATTACHMENT OF ANTI-SQUID LINE TO CONTROLLER DROGUE.

a. Pass large loop end of anti-squid line thru loop inside drogue suspension line union.

b. Pass small loop end of anti-squid line thru large loop and pull tight to form a knot (Figure 12).

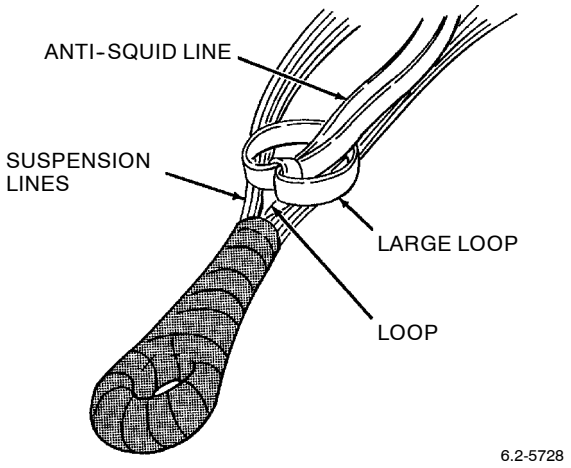

Figure 12. Attachment of Anti-Squid Line to Controller Drogue

13. ATTACHMENT OF EXTENDER STRAP, LINK LINE, AND SHACKLE TO STABILIZER DROGUE.

a. Pass extender strap thru eye end of main drogue suspension lines (Figure 13).

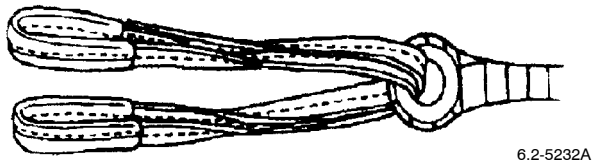

Figure 13. Pass Extender Strap thru Eye

b. Position end loops of straps on shackle (Figure 14).

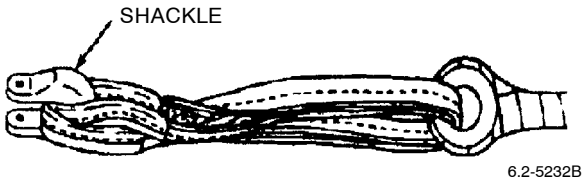

Figure 14. Positioning of End Loops

c. Wrap with four turns of electrical insulation tape in three places (Figure 15).

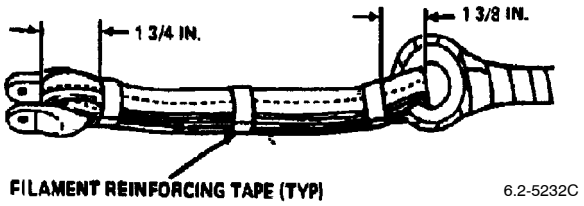

Figure 15. Wrapping with Filament Tape

d. Install link line on drogue shackle, ensure drogue shackle nut is in the uppermost position. Tighten drogue shackle nut until one complete thread is visible. (QA)

14. ATTACHMENT OF DROGUE WITHDRAWAL LINE TO CONTROLLER DROGUE.

a. Draw edges of withdrawal line upward to butt at centerline of shackle (Figure 16).

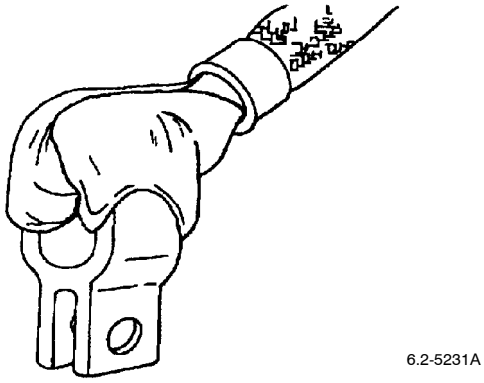

Figure 16. Draw Up Edges to Shackle

b. Using size FF thread, doubled and waxed, whipstitch edges together (Figure 17). Stitches to be about 1/8-in. and 1/8-in. from edges of withdrawal line. Normally, only six stitches will be required. Tie off. (QA)

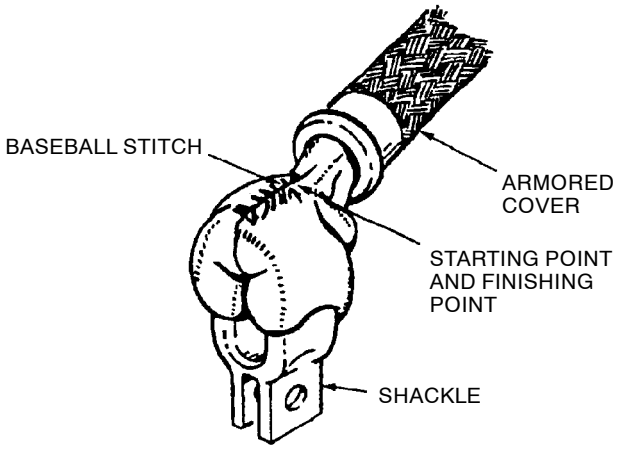

Figure 17. Whipstitch Edges Together

c. Hold five controller drogue apex lines centrally to form two clear diametrically opposite openings. Pass loop end of drogue withdrawal line in one side of centrally held apex lines, thru small loop of anti-squid line and out other side of apex lines (Figure 18).

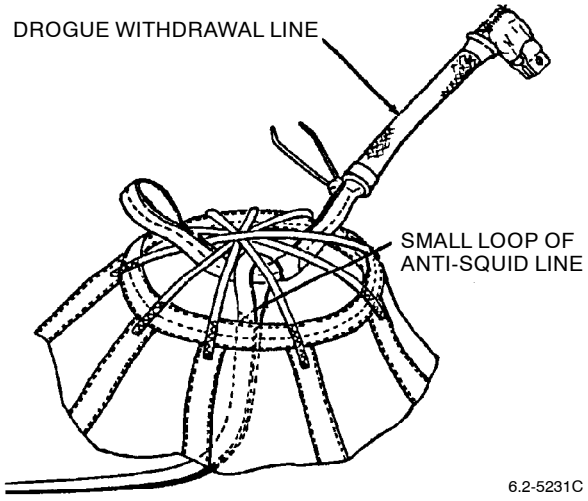

Figure 18. Holding Five Controller Drogue Apex Lines

d. Pass spool/shackle end of withdrawal line over outside of apex lines and thru loop at opposite end of withdrawal line (Figure 19). Pull tight to form Lark's head knot. Tack with one turn of size 6 thread, doubled and waxed; tie off. (QA)

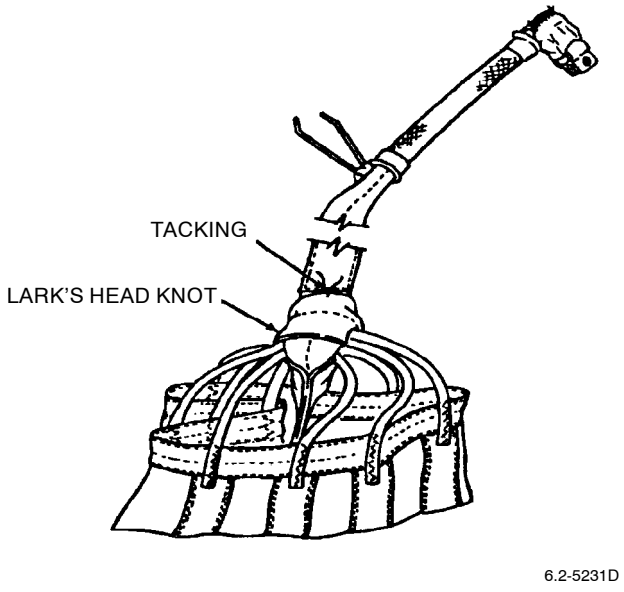

Figure 19. Pass Spool/Shackle End of Line Over Apex Lines

15. LAYOUT OF RIGGED ASSEMBLY.

a. Open and spread four flaps of drogue parachute container; pull up inner protective sleeve and roll it inside out or pull down over container edge (Figure 20).

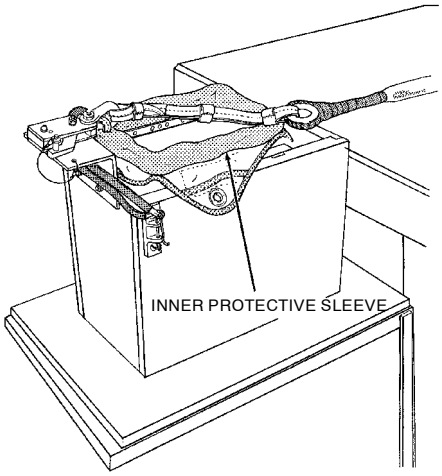

Figure 20. Open and Spread Four Flaps

b. Lay out drogue assembly on a clean packing table, securing link line, drogue shackle, and scissor shackle to packing stand (Figure 21).

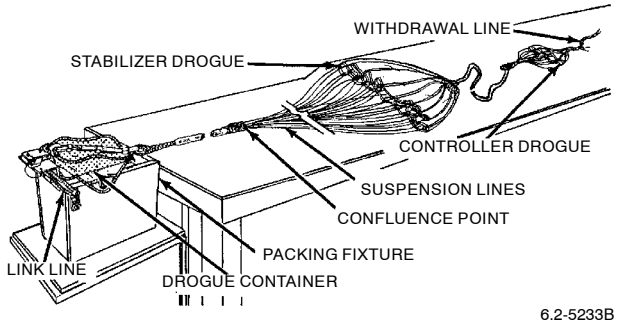

Figure 21. Lay Out Drogue Assembly

c. Spread stabilizer drogue out drawing suspension lines taut, and position anti-squid line tunnel upward (Figure 22).

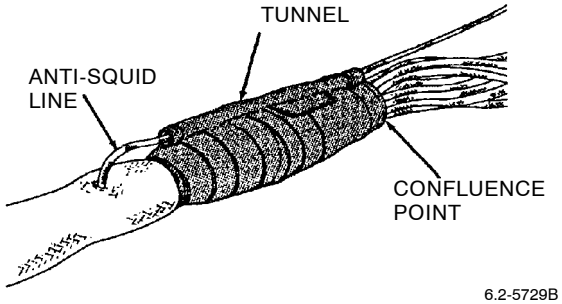

Figure 22. Positioning of Anti-Squid Line Tunnel

16. PACKING.

17. FOLDING OF STABILIZER DROGUE.

a. Pair off suspension lines and align V-tabs. There shall be six pairs on each side of anti-squid line (Figure 23).

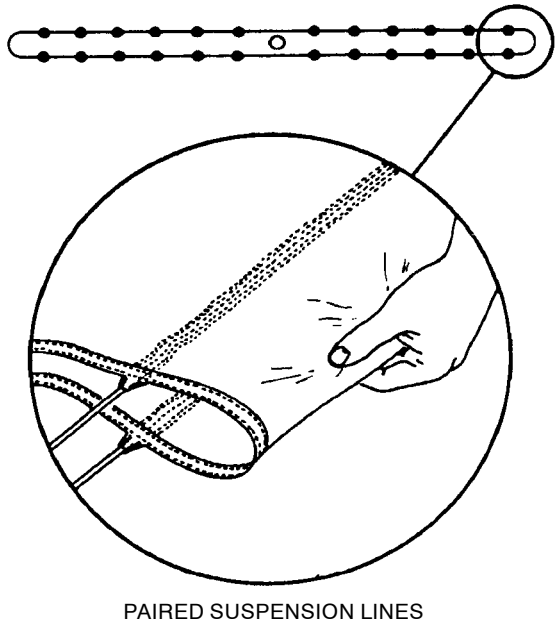

Figure 23. Pair Off Suspension Lines

b. S-fold packer's side of canopy maintaining alignment of V-tabs (Figure 24).

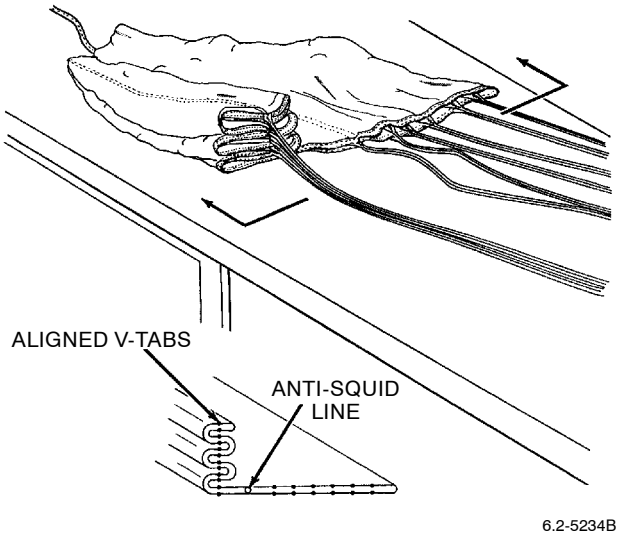

Figure 24. S-Fold Packer's Side of Canopy

c. Repeat same operation for helper's side. Ensure that anti-squid line is positioned between two groups of folds and suspension lines. Check that anti-squid lines are properly routed between two groups of suspension lines (Figure 25). (QA)

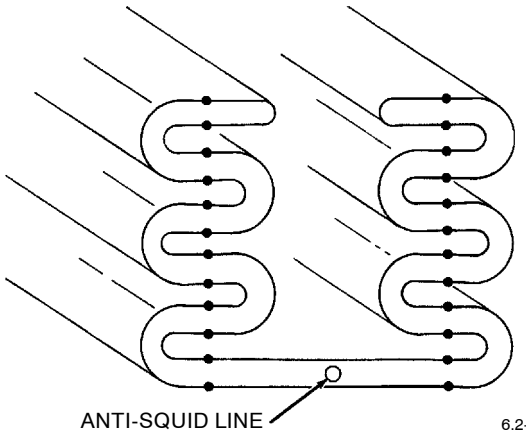

Figure 25. S-Fold Helper's Side of Canopy

d. Grasp two sets of folds at skirt hem and rotate group of folds on helper's side under group of folds on the packer's side (Figure 26).

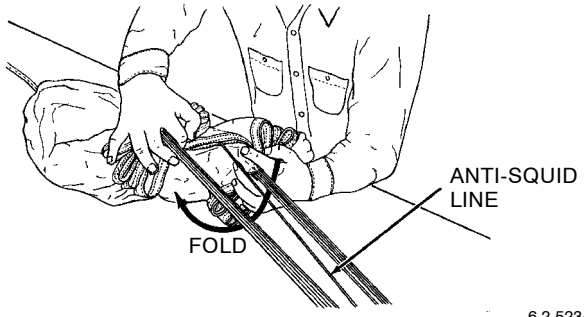

Figure 23. Grasping Two Sets of Folds

e. Straighten folds and fold canopy together; align V-tabs and ensure that anti-squid line is free to confluence point (Figure 27).

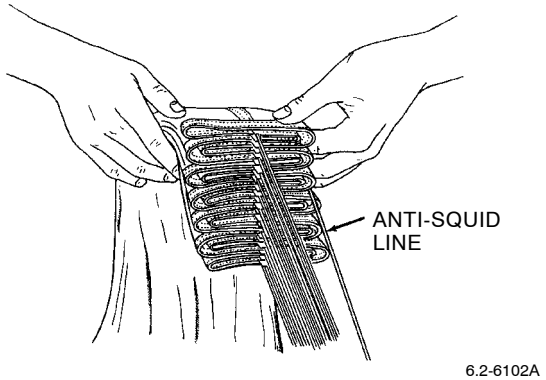

Figure 24. Straighten Folds

f. Place shot bags on folded stabilizer drogue canopy (Figure 28).

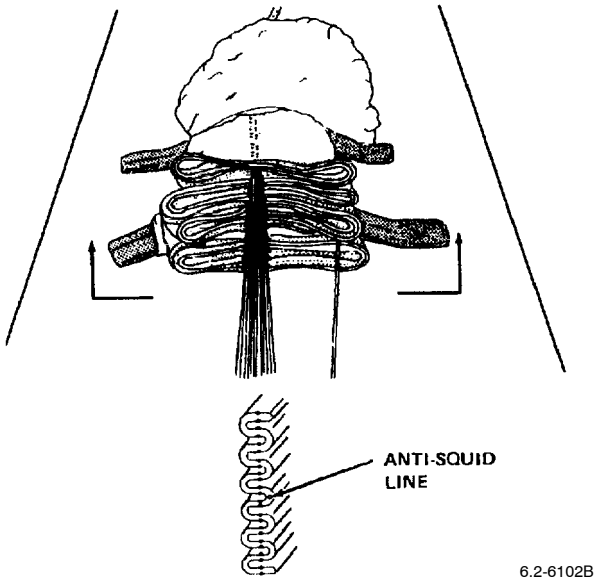

Figure 28. Placement of Shot Bags

18. STOWING OF STABILIZER DROGUE AND SUSPENSION LINES.

NOTE

Direction of flight will determine front, rear, right, and left reference points.

a. Route drogue extender strap down along inside left rear corner of container. Pack sleeve-protected suspension lines in bottom of container from left to right along rear container edge (Figure 29). (QA)

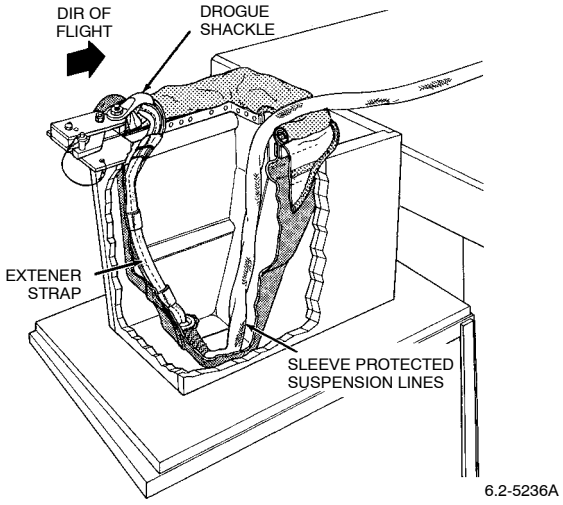

Figure 29. Route Drogue Extender Strap

NOTE

Pack line well into all corners, do not waste any space.

b. Route drogue sleeve-protected suspension lines in four tightly packed rows in bottom of container running from left to right while working toward container front (Figure 30).

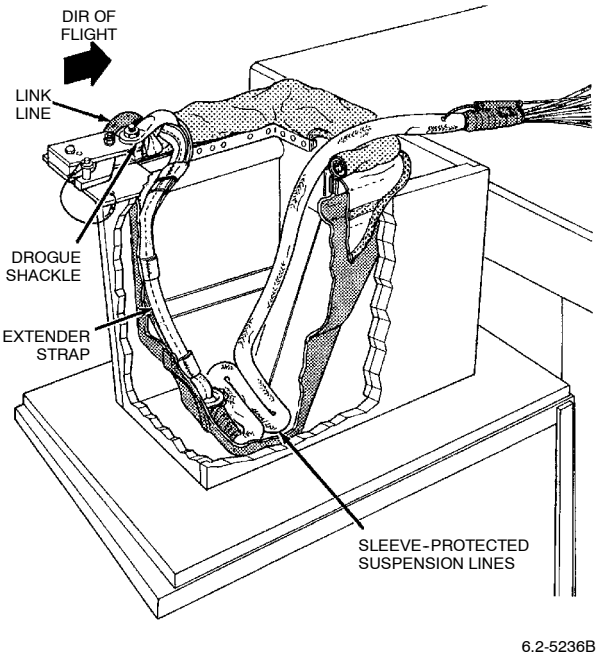

Figure 30. Route Drogue Sleeve-Protected Suspension Lines

c. Continue routing drogue sleeve protected suspension lines tightly on top of first layer in same manner, working toward rear of container. Pack wrapped confluence point with tunnel between sleeve protected suspension lines and suspension lines. (QA)

NOTE

Pack suspension lines on top of drogue sleeve protected suspension lines as tightly as possible. Do not waste any space.

d. Pack stabilizer drogue suspension lines on top of packed drogue sleeve protected suspension lines, routing them from left to right of container. Ensure that drogue suspension lines are properly routed and free of entanglements. (QA)

e. Remove shot bags from folded stabilizer drogue. Grasp folded stabilizer drogue canopy at lower edge. Insert canopy into container on top of packed suspension lines, butting canopy skirt hem against rear of container. Continue stowing canopy into container using accordion folds from front to rear, packing each fold as tightly as possible and finally opening out apex of drogue to lie flat on top (Figure 31).

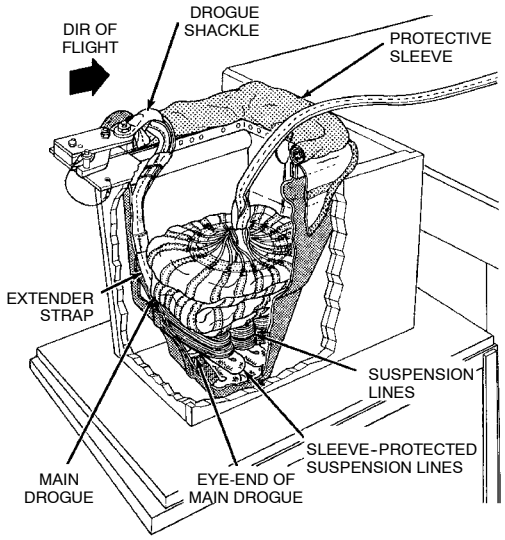

Figure 31. Removal of Shot Bags

f. Pack connecting line directly on top of packed canopy by standing connecting line on its edge. Route connecting line along front of container, tightly running it from side to side, working toward rear of container. Pack entire connecting line in this manner until a length of 12 to 14-in. remains (Figure 32). (QA)

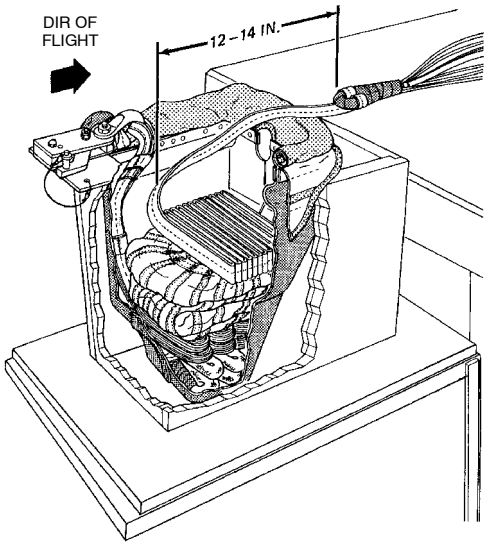

Figure 32. Pack Connecting Line on Top

g. Place remaining length of connecting line over left rear corner of container (Figure 33).

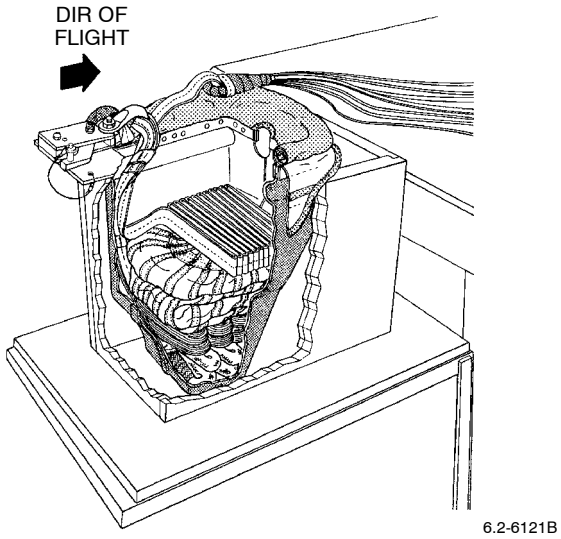

Figure 33. Placement of Remaining Length

h. Pull up protective sleeve. Fold rear, left, front, and right sides of sleeve down in that order. Ensure that drogue parachute assembly is firmly packed. Adjustment of internal mass by external hand pressure is permissible (Figure 34).

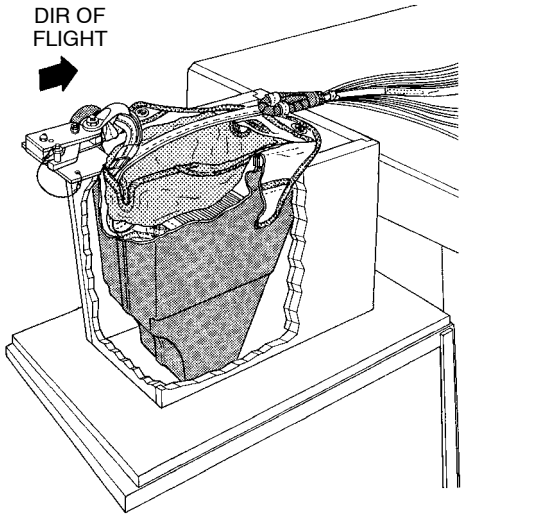

Figure 34. Pull Up Protective Sleeve

WARNING

Packing fixture shall be utilized to prevent passing the stabilizer connecting line outboard of shackle.

i. Route remaining length of stabilizer drogue connecting line forward on top of folded sleeve. Position terminal eye of controller drogue in left rear corner of container (Figure 35).

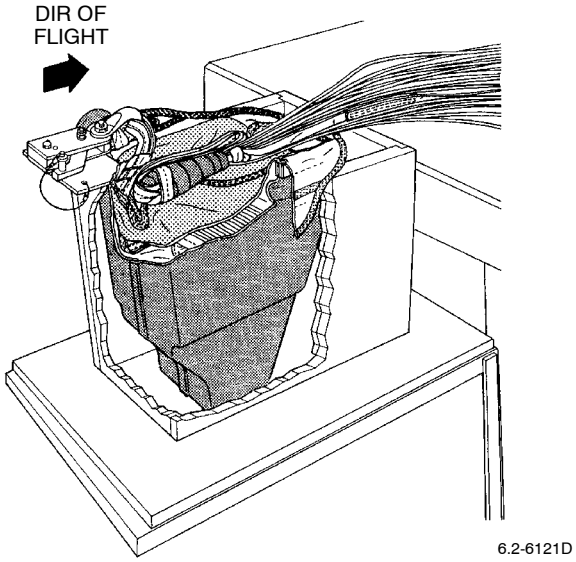

Figure 35. Route the Remaining Length

19. FOLDING AND STOWING OF CONTROLLER DROGUE.

a. Stretch controller drogue parachute taut and ensure that anti-squid lines are not entangled with suspension lines. Pair off suspension lines and straighten canopy (Figure 36).

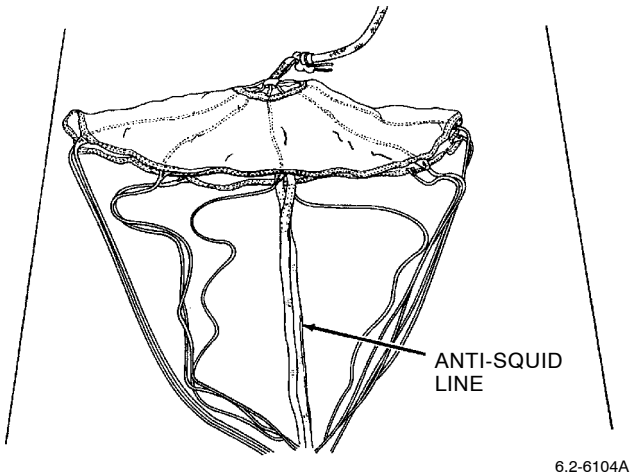

Figure 36. Stretch Controller Drogue Taut

b. Fold drogue into four folds, adjust to stagger suspension lines and reduce bulk in center (Figure 37). (QA)

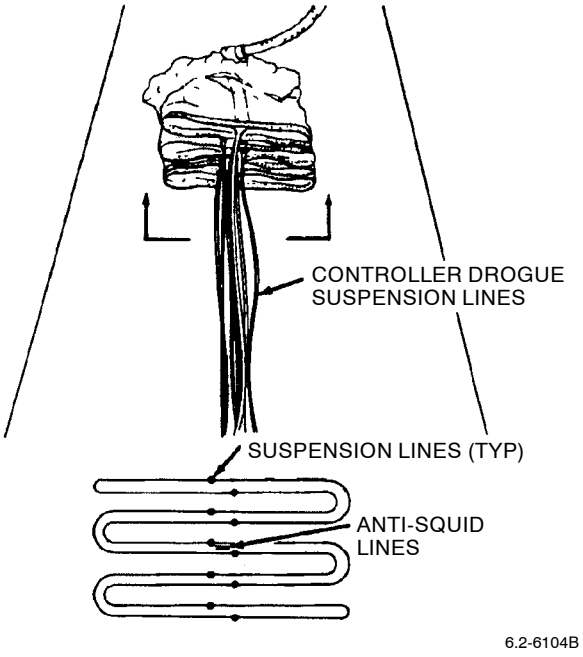

Figure 37. Fold Drogue Into Four Folds

c. Stow controller drogue suspension lines on top of folded sleeve, from front to rear of container. Pack drogue by stowing skirt hem into rear of container, lay to front, fold back, and open out apex so that it lies flat (Figure 38). (QA)

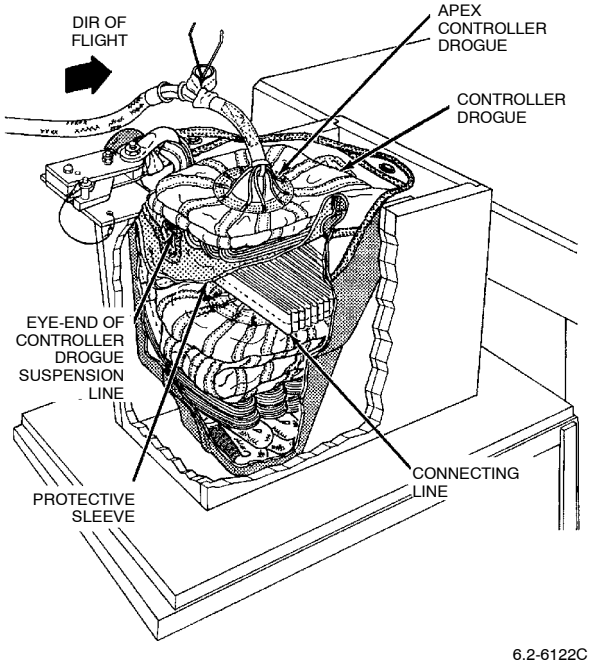

Figure 38. Store Controller Drogue Suspension Lines

WARNING

Drogue withdrawal line must be forward of extender strap, and both must emerge from left rear corner between the left and rear securing flaps.

d. Install the protective cover with the radius cover at the controller drogue withdrawal line.

e. Using packing fid, tuck each side of protective cover into container between container and the 22-in. drogue canopy.

f. Pull container flaps up; withdrawal line and extender strap shall remain between rear and left flaps.

20. CLOSING OF CONTAINER.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Close rear, right, left, and front securing flaps, passing wire loop on rear flap thru eyelets of other flaps. (QA)

WARNING

Controller drogue withdrawal line must be routed over all other lines so that drogues may be withdrawn without any danger of entanglement.

b. Insert securing pin attached to drogue withdrawal line thru wire loop and into fabric pocket on front flap (Figure 39).

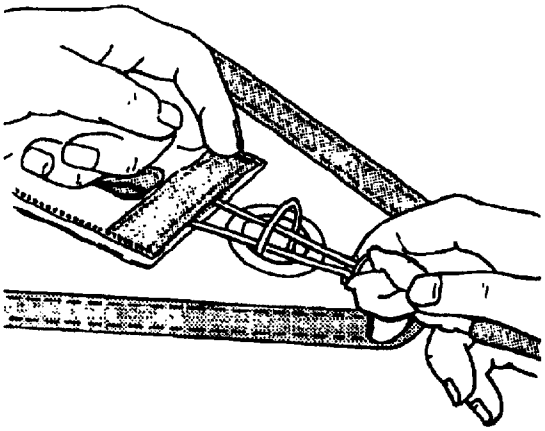

Figure 39. Insert Securing Pin

c. Pass length of size 6 thread, waxed and single, thru flap securing pin, then thru fabric loop on pocket; tie off. Cut off excess cord (Figure 40). (QA)

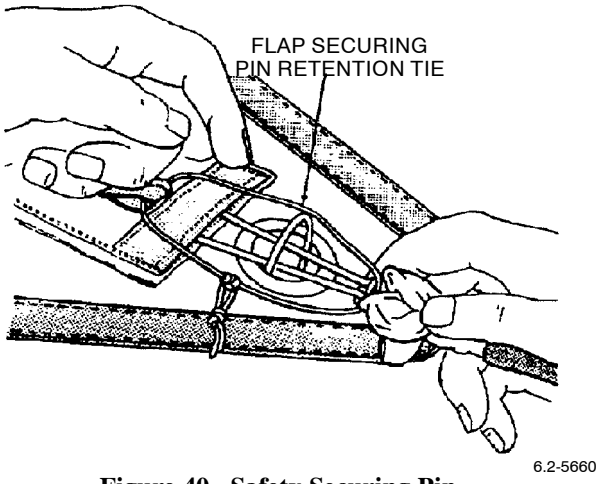

Figure 40. Safety Securing Pin

d. Retention-tie drogue shackle with one turn of size 6 thread, waxed and single, routed thru loop of extender strap, thru shackle, and around both legs of securing pin forward of wire loop; tie off (Figure 41). (QA)

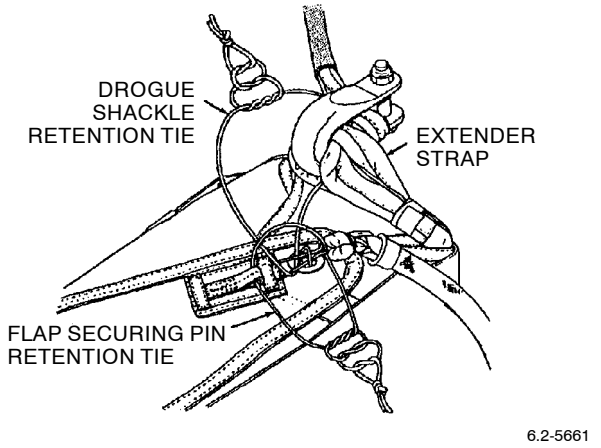

Figure 41. Retention-Tie Drogue Shackle

e. Disconnect link line from packing fixture, open scissor shackle, and remove drogue shackle. Remove drogue container from packing stand.

21. FINAL CHECKOUT.

a. Account for all packing tools.

b. Examine packed drogue parachute for general condition.

c. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA)

d. QA inspector shall examine completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

e. QA inspector shall sign Parachute Record (OPNAV 4790/101).

f. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

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INTERMEDIATE AND DEPOT MAINTENANCE

REPAIR PROCEDURES

MK-GRU7/MK-GRU7A/MK-GRUEA7 DROGUE PARACHUTE SYSTEM

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

Intermediate and Depot Maintenance, Common Repairs ..... WP 004 00
Intermediate and Depot Maintenance, Packing Procedures,
MK-GRU7/MK-GRU7A/ MK-GRUEA7 Drogue Parachute System ..... WP 017 01
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdowns,
Emergency Personnel and Drogue Parachute Systems ..... WP 002 00
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration ..... WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment ..... WP 005 00

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Replacement of Protective Cover Assembly	7
Repair of Holes, Tears or Snags Drogue Canopy (Depot Only)	6
Replacement of Stabilizer Drogue	2
Introduction	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains instructions for maintenance, repair, replacement, and fabrication of various drogue parachute parts or subassemblies to ensure that proper items of equipment remain in a Ready-For-Issue (RFI) status. For common repairs refer to WP 004 00.

2. DROGUE PARACHUTE ASSEMBLY REPAIRS.

a. Repair of drogue parachute is limited to the following:

(1) Cleaning of contaminated areas.

(2) Replacement of stabilizer drogue, controller drogue, connecting line, extender strap and shackle, link line, and withdrawal line.

(3) Repair of holes, tears or snags in canopy 1/4-in. in diameter or 1/2-in. in length.

3. REPLACEMENT OF EXTENDER STRAP AND SHACKLE.

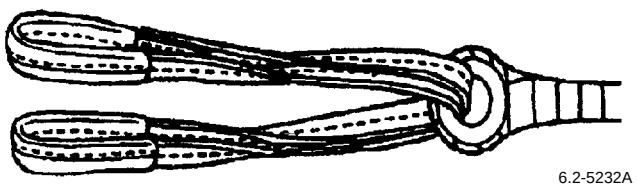
Materials Required

Specification or Part Number	Nomenclature
MIL-I-19166	Insulation Tape, Electrical 3/4-in. Wide

a. Cut tape and remove extender strap and shackle from stabilizer drogue.

b. Inspect replacement extender strap and/or shackle per WP 017 01.

c. Pass extender strap thru eye end of main drogue suspension lines (Figure 1).



6.2-5232A

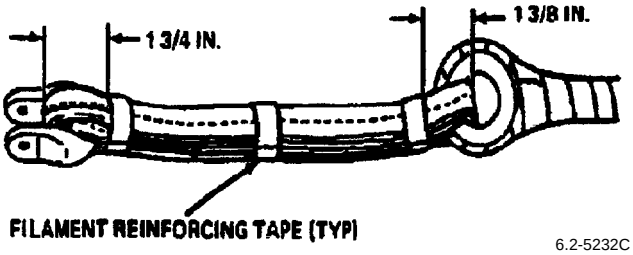
Figure 1. Pass Extender Strap thru Eye

d. Position end loops of straps on shackle (Figure 2).

6.2-5232B

Figure 2. Positioning of End Loops

e. Wrap with four turns of electrical insulation tape in three places (Figure 3). (QA)



6.2-5232C

Figure 3. Wrap with Electrical Insulation Tape

f. Mark date placed in service on extender strap. (QA)

g. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

4. REPLACEMENT OF STABILIZER DROGUE.

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Cut tape and remove extender strap and shackle from stabilizer drogue.

b. Cut tacking on connecting line at apex of stabilizer drogue.

c. Route complete controller drogue thru loop of connecting line at apex of stabilizer drogue.

d. Dispose of stabilizer drogue per supply directives.

e. Inspect replacement stabilizer drogue per WP 017 01.

f. Pass free end loop of connecting line around apex suspension lines of replacement stabilizer drogue (Figure 4). Route complete controller drogue thru loop of connecting line and pull tight. Tack loop with one turn of size 6 thread, double and waxed; tie off. (QA)

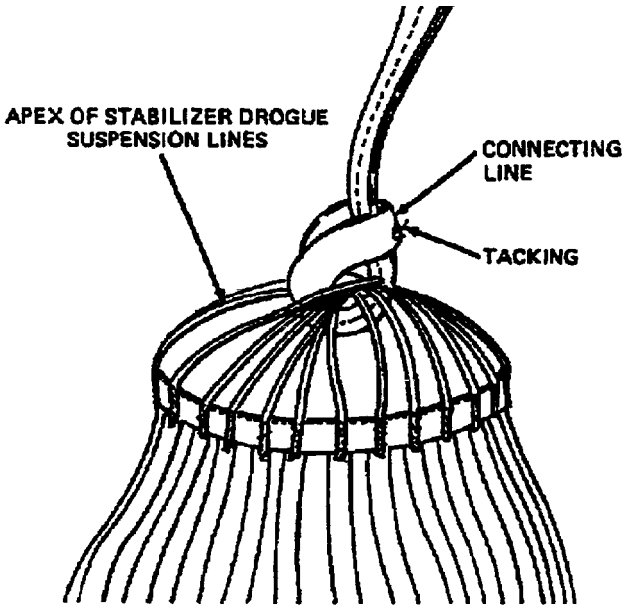


Figure 4. Replacement of Stabilizer Drogue

g. Mark date placed in service on stabilizer drogue.

h. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

5. REPLACEMENT OF DROGUE SLEEVE ASSEMBLY FOR MK-GRU7/MK-GRUEA7 (EA-6B).

Materials Required

Specification or Part Number	Nomenclature
MB300-335	Sleeve Assembly, Drogue
MS35206-242	Screw
MBEU12140	Nut

a. Remove 28 screws and nuts securing drogue sleeve to drogue container. Retain screws and nuts. Discard removed sleeve assembly.

b. Install new drogue sleeve. Ensure that sleeve assembly is installed correctly. Install screws and nuts securing sleeve to drogue container (Figure 5).

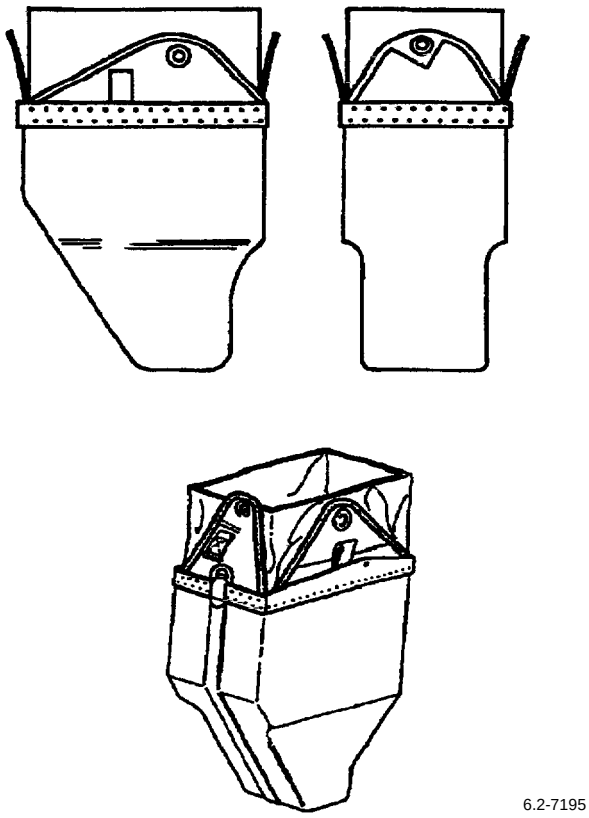


Figure 5. Replacement of Drogue Sleeve Assembly

6. REPLACEMENT OF CONNECTING LINE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Cut tacking on connecting line at apex of stabilizer drogue.

b. Route complete controller drogue thru loop of connecting line at apex of stabilizer drogue.

c. Cut tacking on connecting line at base loop of controller drogue and remove connecting line.

d. Inspect replacement connecting line per WP 017 01.

e. Pass one looped end of replacement connecting line thru base loop of controller drogue (Figure 6). Route opposite end of line thru loop and pull tight. Tack loop with one turn of size 6 thread, doubled and waxed; tie off.

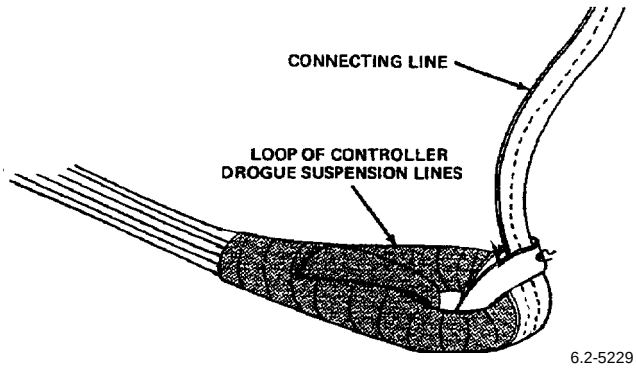


Figure 6. Replacement of Controller Drogue

f. Pass free end loop of connecting line around apex suspension lines of stabilizer drogue (Figure 4). Route complete controller drogue thru loop of connecting line and pull tight. Tack loop with one turn of size 6 thread, double, and waxed; tie off. (QA)

g. Mark date placed in service on connecting line.

h. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

7. REPLACEMENT OF CONTROLLER DROGUE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Cut withdrawal line tacking at apex of controller drogue and remove withdrawal line.

b. Cut tacking on connecting line at apex of stabilizer drogue.

c. Route controller drogue thru loop of connecting line at apex of stabilizer drogue.

d. Cut tacking on connecting line at base loop of controller drogue and remove connecting line.

e. Dispose of controller drogue per current supply directives.

f. Inspect replacement controller drogue per WP 017 01.

g. Pass one looped end of connecting line thru base loop of replacement controller drogue (Figure 6). Route opposite end of line thru loop and pull tight. Tack loop with one turn of size 6 thread, double and waxed; tie off. (QA)

h. Pass free end loop of connecting line around apex suspension lines of stabilizer drogue (Figure 4). Route complete controller drogue thru loop of connecting line and pull tight. Tack loop with one turn of size 6 thread, double and waxed; tie off.

i. Reinstall controller drogue withdrawal line per Paragraph 8.

j. Mark date placed in service on controller drogue.

k. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

8. REPLACEMENT OF CONTROLLER DROGUE WITHDRAWAL LINE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I and II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Cut withdrawal line tacking at apex of controller drogue and remove withdrawal line.

b. Inspect replacement withdrawal line per WP 017 01.

c. Draw edges of withdrawal line upward to butt at centerline of shackle (Figure 7).

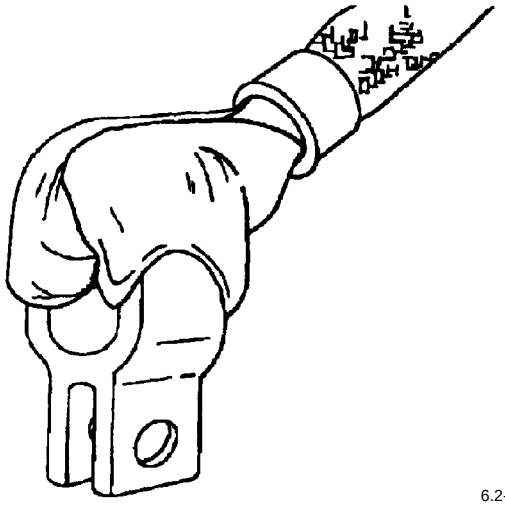


Figure 7. Draw Up Edges to Shackle

d. Using a length of size FF thread, doubled and waxed. Baseball stitch edges together. Stitches to be about 1/4-in. apart and 1/4-in. from edges of withdrawal line. Start and finish stitch at armored cover end, alternating stitches from one edge of withdrawal line. Start and finish stitch at armored cover end, alternating stitches from one edge of withdrawal line to the opposite edge about 6 stitches, tie off (Figure 8). (QA)

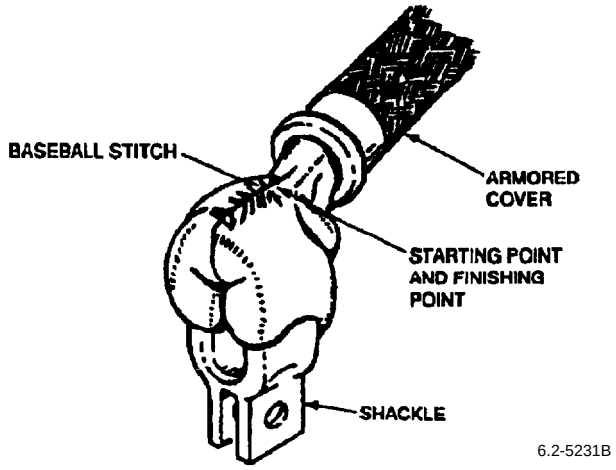


Figure 8. Whipstitch Edges Together

e. Hold five controller drogue apex lines centrally to form two clear diametrically opposite openings. Pass loop end of drogue withdrawal line in one side of centrally held apex lines, thru small loop of anti-squid line and out other side of apex lines (Figure 9).

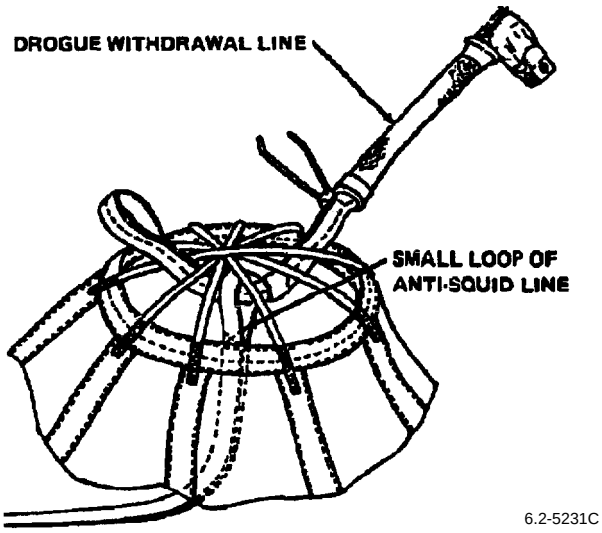


Figure 9. Holding Five Controller Drogue Apex Lines

f. Pass spool/shackle end of withdrawal line over outside of apex lines and thru loop at opposite end of withdrawal line (Figure 10). Pull tight to form Lark's head knot. Tack with one turn of size 6 thread, doubled and waxed; tie off. (QA)

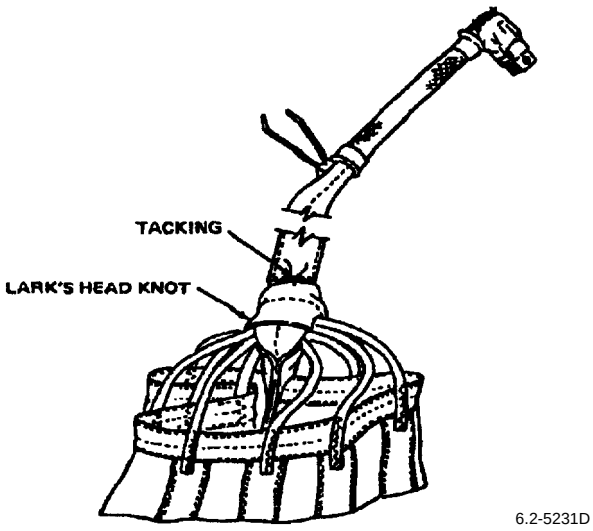


Figure 10. Pass Spool/Shackle End of Line Over Apex Lines

9. REPLACEMENT OF LINK LINE.

a. Remove link line from drogue shackle.

b. Inspect replacement link line per WP 017 01.

c. Install replacement link line on drogue shackle and tighten shackle bolt until one thread is visible. (QA)

d. Mark date placed in service on link line.

e. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

10. REPLACEMENT OF DROGUE CONTAINER GROMMETS ON FLAP ASSEMBLY.

Support Equipment

Part Number	Nomenclature
9765	Chuck, Washer 7/16-in.
9764	Die, Grommet 7/16-in.

Materials Required

Specification or Part Number	Nomenclature
MS20230B3	Grommet, Metallic, Size 3, Plain
MIL-C-7219	Cloth, Nylon, Class 3
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Cut a 2 1/4-in. square patch. Place over hole. Turn raw edges under 1/4-in. Stitch in placed on all four sides with two rows of stitching using size E thread. Back stitch 1/2-in. (Figure 11).

b. Cut a 7/16-in. diameter hole center of patch.

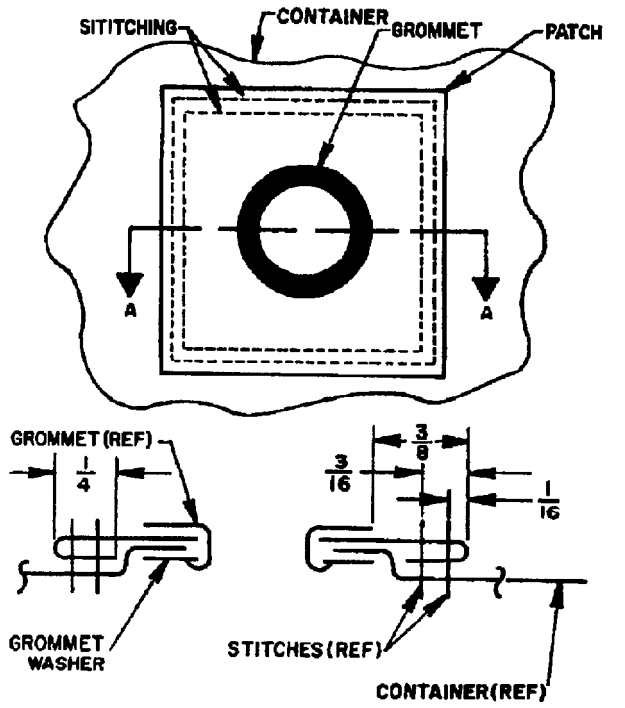
NOTE

Flat side of replacement grommet shall face release pin.

c. Place grommet washer on underside of flap. Place grommet on topside of patch.

d. Lock grommet and grommet washer in place with correct size chuck and die (Figure 11).

e. If crimped edge of the grommet has any sharp edged, remove two rows of stitches around patch and repeat steps a thru d.



6.2-604

Figure 11. Replacement of Grommets

11. REPAIR OF HOLES, TEARS OR SNAGS DROGUE CANOPY (DEPOT ONLY).

Materials Required

Specification or Part Number	Nomenclature
V-T-276	Thread, Cotton, Type 1C1

a. If a thread separation is not severe and no threads are broken, threads can be pressed into place using a soft brush or a pencil eraser. If damaged area is brushed in wrong direction, separation will increase.

b. Darn holes or tears that do not exceed 1/2-in. in length or (1/4-in. x 1/4-in. if circular, a diameter of 5/16-in.).

12. REPLACEMENT OF PROTECTIVE COVER ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MIL-C-7219	Cloth, Nylon, Type III, Class 3, Sage Green

NOTE

For all machine stitching, use stitch type 301, ASTM-D-6193, 7 to 11 stitches per inch. Back stitch 1/2-in.

a. Mark and cut one piece of nylon cloth 10-in. by 12-in.

b. Mark per Figure 12.

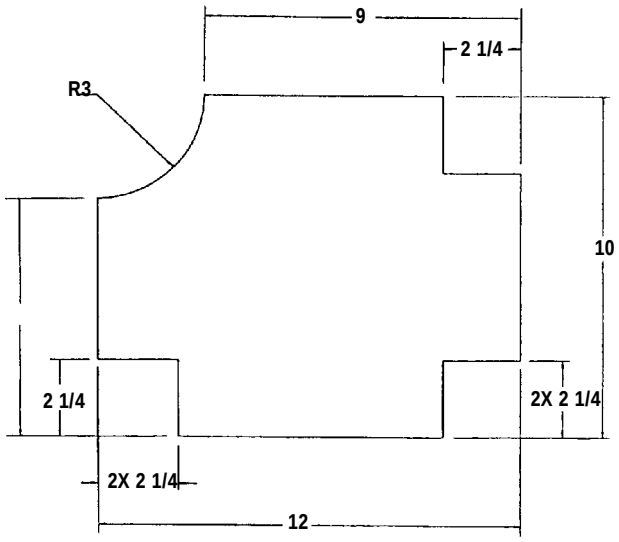


Figure 12. Fabric Marking

c. Sew curved area per Figure 13.

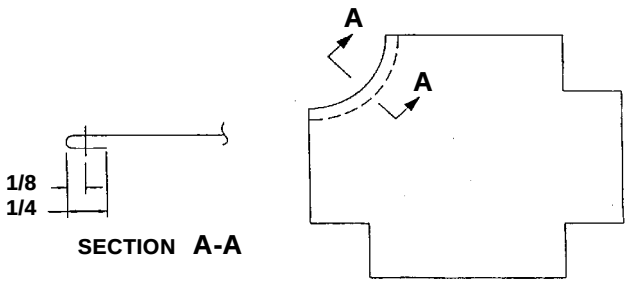


Figure 13. Sew Curved Area

d. Sew remaining edges per Figure 14.

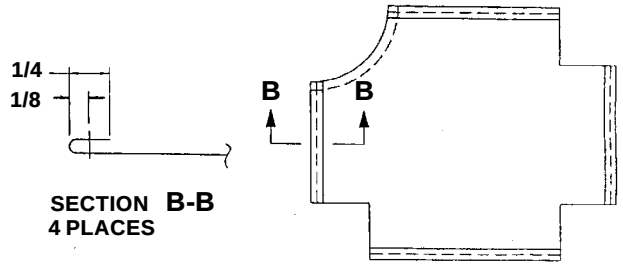


Figure 14. Sew Remaining Edges

e. Fold edges and sew per Figure 15.

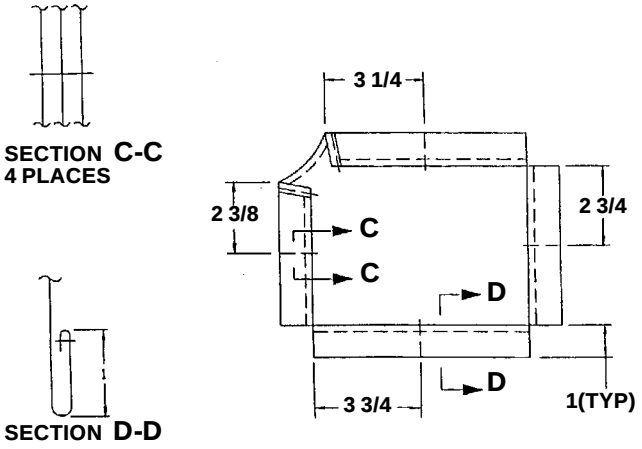


Figure 15. Fold Edges and Sew

f. Sew corners of protective cover per Figure 16. Finished protective cover should look like Figure 16.

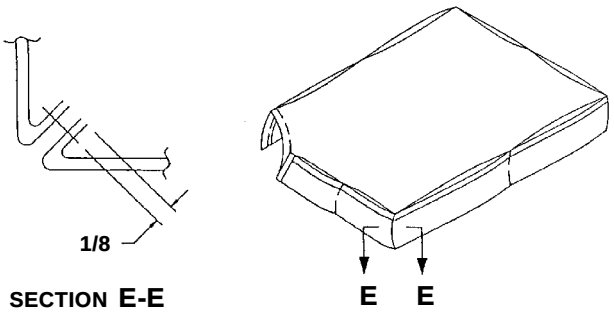


Figure 16. Finished Protective Cover

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ORGANIZATIONAL, INTERMEDIATE AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

MK-GRU7/MK-GRU7A/MK-GRUEA7 DROGUE PARACHUTE SYSTEM

List of Effective Work Package Pages

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Intermediate and Depot Maintenance, Packing Procedures,
MK-GRU7/MK-GRU7A/MK-GRUEA7 Drogue Parachute System ..... WP 017 01

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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
None				

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the MK-GRU7/MK-GRU7A/MK-GRUEA7 Drogue Parachute System (Figure 1).

2. USABLE ON CODES.

a. The usable on codes in this WP refer to the aircraft applications for the MK-GRU7/MK-GRU7A/MK-GRUEA7 Drogue Parachute System.

b. The following usable on codes apply to this WP:

A - EA-6B

B - F-14

3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in WP 017 01.

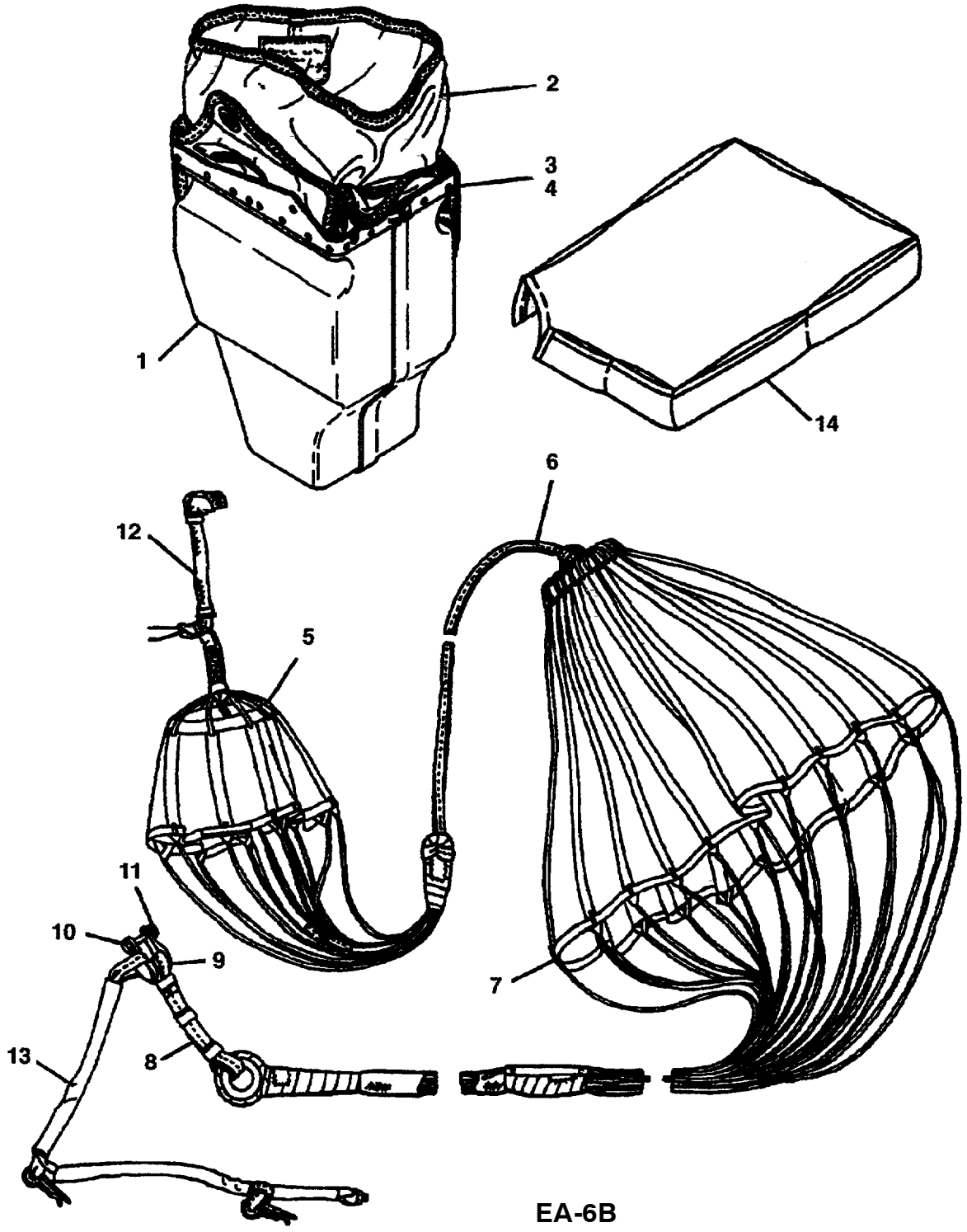

Figure 1. MK-GRU7/MK-GRU7A/MK-GRUEA7 Drogue Parachute System (Sheet 1 of 2)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	607AS142-1	DROGUE PARACHUTE SYSTEM, MK-GRU7/MK-GRUEA7	REF	A	AGOGG
	MB200-441	DROGUE PARACHUTE SYSTEM, MK-GRU7/MK-GRUEA7	REF	A	AGOGG
1	MBEU1593GRU5	. CONTAINER ASSEMBLY	1		PAGGG
2	MB300-335	. . DROGUE SLEEVE ASSEMBLY	1		PCGGD
3	MS35206-242	. . SCREW	28		PAGZZ
4	MBEU12140	. . NUT	28		PAGZZ
5	MBEU34505	. . CONTROLLER DROGUE	1	*	PCGGG
	MBEU65690	. . CONTROLLER DROGUE	1	*	PCGGG
6	MBEU34010	. . CONNECTING LINE	1		PCGZZ
7	MBEU38271	. . STABILIZER DROGUE	1		PCGZZ
8	MBEU38119	. . EXTENDER STRAP	1		PCGZZ
9	MBEU5940	. . DROGUE SHACKLE /ATTACHING PARTS/	1		PAGZZ
10	MBEU12064	. . BOLT	1		PAGZZ
11	A126G	. . NUT ---*---	1		PAGZZ
12	MBEU23177	. WITHDRAWAL LINE, CONTROLLER DROGUE	1		PCGZZ
13	MB300-682	. LINK LINE	1		PAGZZ
14	607AS141-1	. PROTECTIVE COVER	1		MGGZZ

Figure 1. MK-GRU7/MK-GRU7A/MK-GRUEA7 Drogue Parachute System (Sheet 2 of 2)

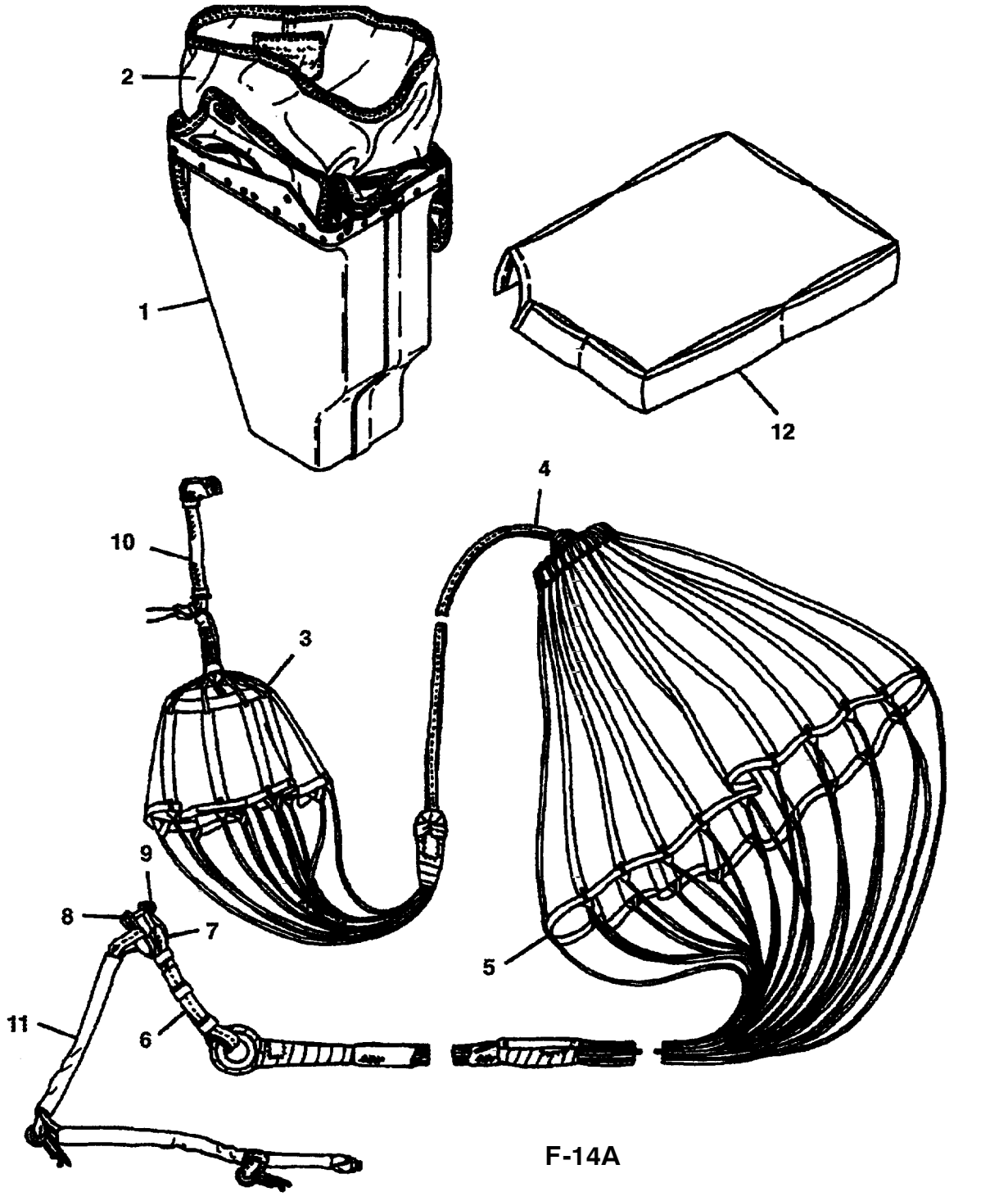

Figure 2. MK-GRU7/MK-GRU7A/MK-GRUEA-7 Drogue Parachute System (Sheet 1 of 2)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	607AS142-2	DROGUE PARACHUTE SYSTEM, MK-GRU7A	REF	B	AGOGG
	MB300-811	DROGUE PARACHUTE SYSTEM, MK-GRU7A	REF	B	AGOGG
1	MB300-809	. CONTAINER ASSEMBLY	1		PAGGG
2	MB300-335	. . DROGUE SLEEVE ASSEMBLY	1		PCGGD
3	MBEU34505	. . CONTROLLER DROGUE	1		PCGGG
	MBEU65690	. . CONTROLLER DROGUE	1		PCGGG
4	MBEU34010	. . CONNECTING LINE	1		PCGZZ
5	MBEU38271	. . STABILIZER DROGUE	1		PCGGG
6	MBEU38119	. . EXTENDER STRAP	1		PCGZZ
7	MBEU5940	. . DROGUE SHACKLE /ATTACHING PARTS/	1		PAGZZ
8	MBEU12064	. . BOLT	1		PAGZZ
9	A126G	. . NUT ---*---	1		PAGZZ
10	MBEU23177	. WITHDRAWAL LINE, CONTROLLER DROGUE	1		PCGZZ
11	MB300-684	. LINK LINE	1		PAGZZ
12	607AS141-1	. PROTECTIVE COVER	1		MGGZZ

Figure 2. MK-GRU7/MK-GRU7A/MK-GRUEA-7 Drogue Parachute System (Sheet 2 of 2)

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ORGANIZATIONAL, INTERMEDIATE AND DEPOT MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

A/P28S-24 PERSONNEL PARACHUTE ASSEMBLY

PART NO. MBEU10030PA-4

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Illustrated Parts Breakdown . . . . . WP 018 04

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Record of Applicable Technical Directives

None

1. DESCRIPTION.

2. GENERAL.

a. The A/P28S-24 Personnel Maneuverable, Recovery Parachute Assembly is integral to the SJU-5/A and SJU-6/A Aircrew Automated Ejection Seat Escape System. The SJU-5/A is installed in the F/A-18A aircraft and both the SJU-5/A and SJU-6/A are installed in the F/A-18B, (C and D lot twelve only) aircraft. The A/P28S-24 is an aircraft inventory item.

b. The A/P28S-24 parachute assembly contains a 17 ft. inflated diameter, multicolored (white, olive green, international orange and sand shade) aeroconical canopy, type 1000. It is constructed with 20 gores, the canopy is modified with water deflation pockets on alternate gores. The duplex drogue parachute assembly is attached to and packed with the aeroconical canopy.

c. The canopy has two orifices in the rear to provide forward thrust/horizontal velocity. The orifices are located 90-degrees apart in gores numbered 4 and 18, and are covered with terylene netting.

d. Two steering lines provide directional control during descent. These steering lines are permanently attached to suspension lines numbered 4 and 17, opposite the orifices and about 24-in. above the connector links. Lower ends of steering lines, which have hand loops, are temporarily attached to the rear risers.

e. The drogue parachute assembly consists of a 5 ft. diameter cotton stabilizer drogue and a 22-in. diameter cotton controller drogue.

f. The aeroconical canopy and the duplex drogue parachute assemblies are packed in a rigid container which is also the headrest for the ejection seat. The parachute container is constructed of light alloy metal and has two sets of fabric closure flaps.

g. The outer set of flaps are attached to the top edge of the container; the inner set of flaps are located 4-in. below the outer set. The suspension lines and canopy are packed below the inner set of flaps. The drogue parachute assemblies are packed below the outer flaps.

h. The PCU-33/P or PCU-56/P parachute restraint harness assembly integrates the aircrew's parachute restraint harness, lapbelt assembly, shoulder restraint harness and survival vest.

i. While seated in the ejection seat, the aircrewmember connects the canopy releases on the risers to the adapters on PCU-33/P or PCU-56/P parachute restraint harness assembly. The lapbelt release assembly on rigid seat survival kit SKU-3/A is connected to the lapbelt quick-release adapter on the PCU-33/P or PCU-56/P parachute restraint harness.

3. CONFIGURATION.

a. The only authorized configuration of the A/P28S-24 assembly is shown in (Figure 1). Refer to Illustrated Parts Breakdown (WP 018 04) for detailed information on configurations.

NOTE

The US Navy Blue Angels Flight Demonstration Team Aircraft are not required to have the Parachute Harness Sensing Release Units (PHSRU) installed.

4. SUBASSEMBLY CONFIGURATIONS.

a. The subassemblies listed below make up the A/P28S-24 and are shown in (Figure 2). Refer to (WP 018 04) for detailed information on subassemblies.

22-in. Drogue Parachute Assembly

5 ft. Drogue Parachute Assembly

Parachute Withdrawal Line Assembly

Riser Assembly and Cross-Connector Straps

Canopy Assembly and Vent Control Lines

Headrest Box/Personnel Parachute Container

Suspension Line Stowage Tray

Parachute Harness Sensing Release Units (PHSRU)

5. PRINCIPLES OF OPERATION.

6. AUTOMATIC OPERATION ABOVE 13,000 FT. ALTITUDE.

a. When an aircrew ejects from aircraft above the ejection seat predetermined aircrew/seat separation altitude, the following functions take place:

(1) The ejection seat drogue gun fires a piston deploying a 22-in. controller drogue. The controller drogue parachute in turn, deploys a 5 ft. stabilizer drogue. The 5 ft. drogue parachute assembly decelerates and stabilizes the seat during descent.

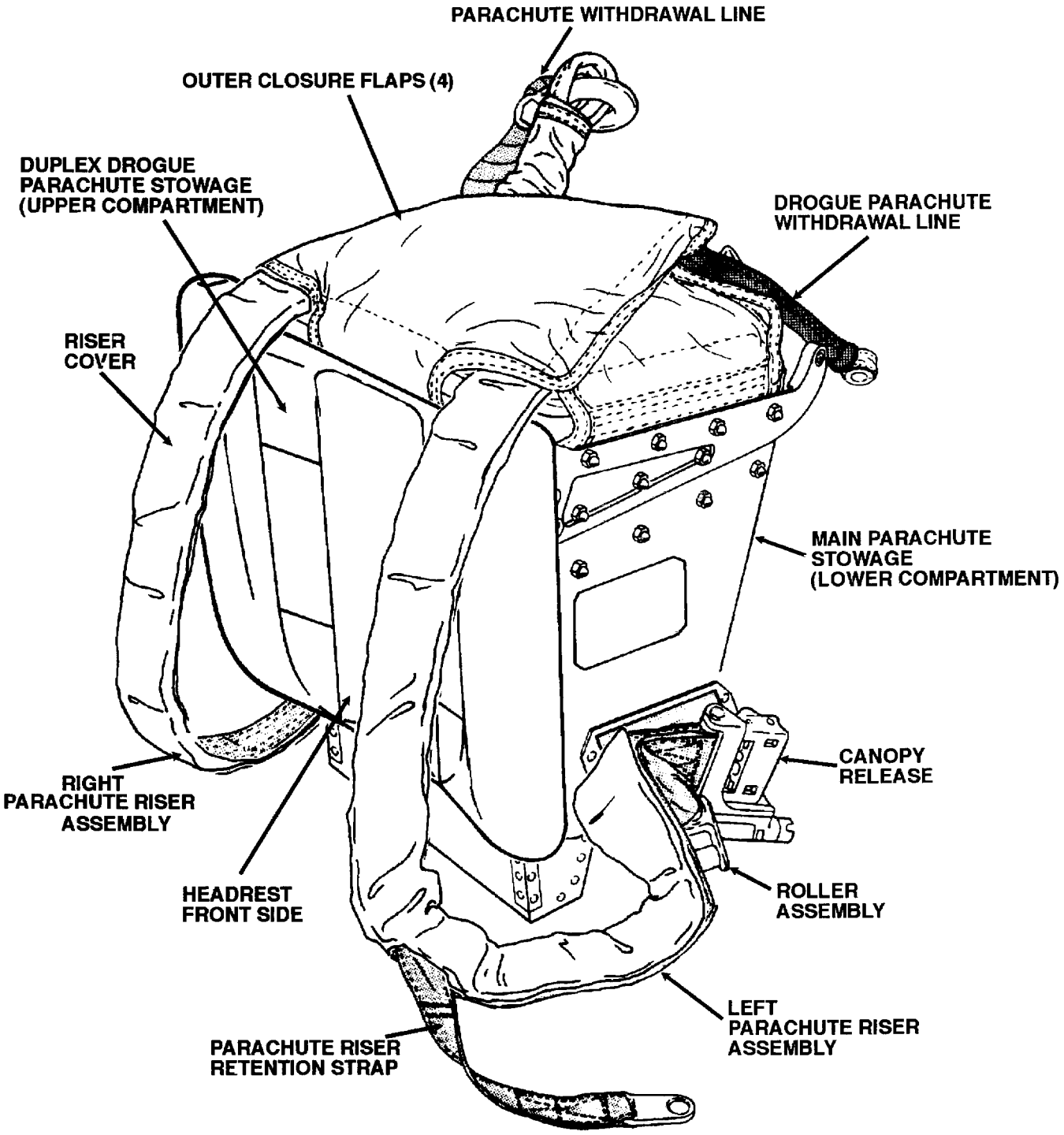
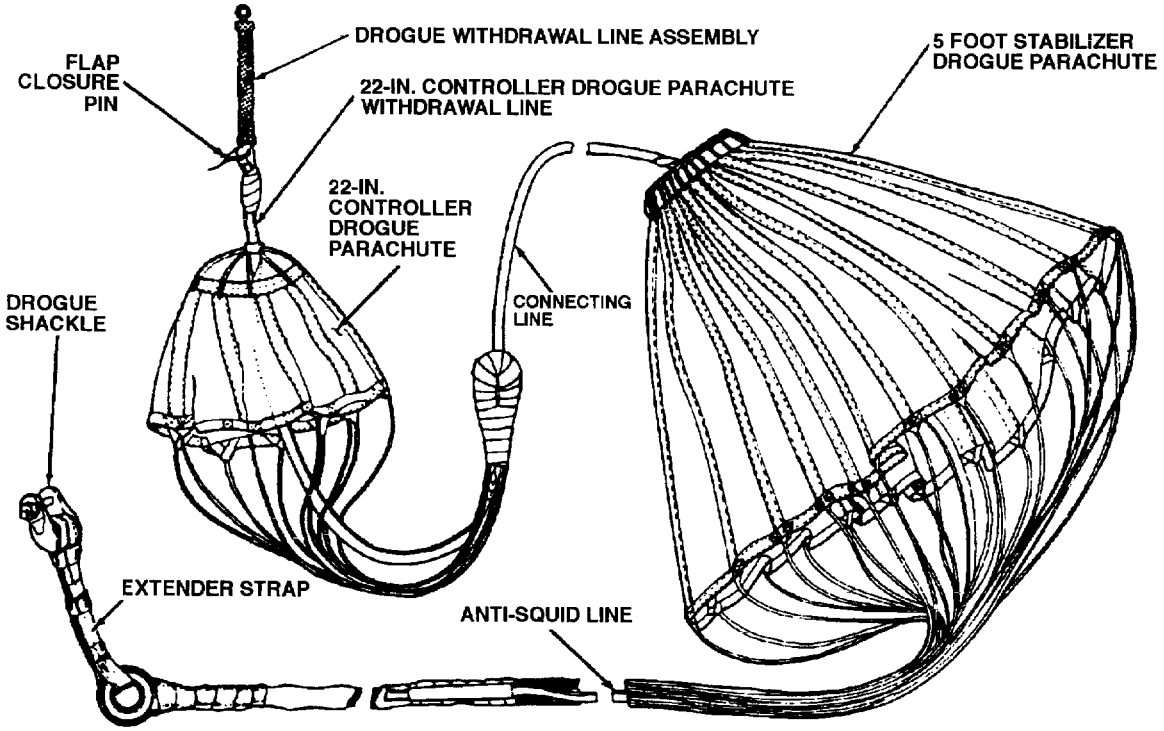
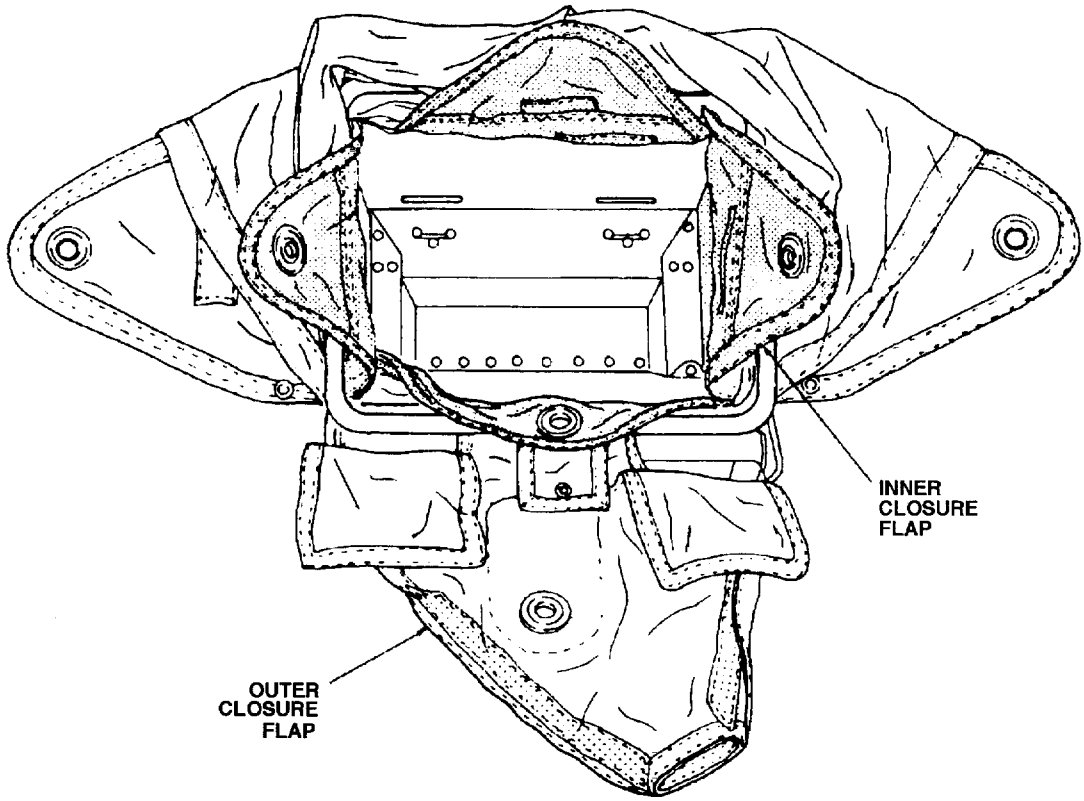


Figure 1. Personnel Parachute Assembly, A/P28S-24

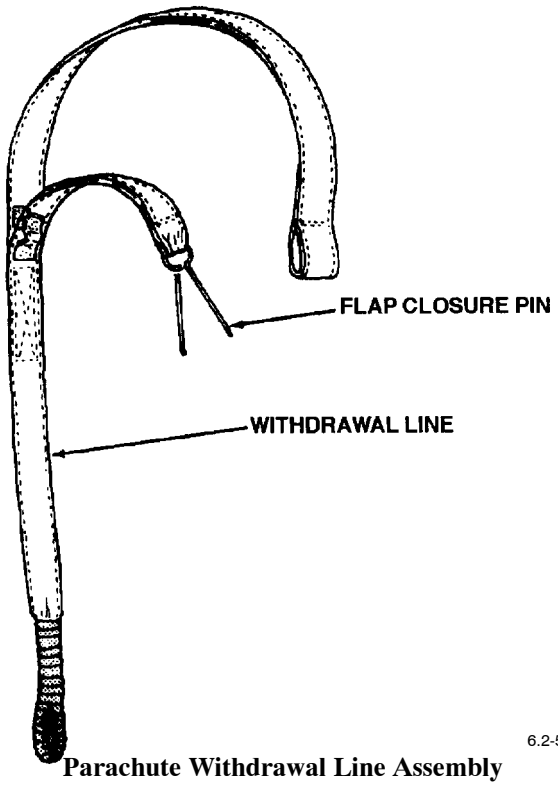


22-in. and 5 Ft. Drogue Parachute Assemblies

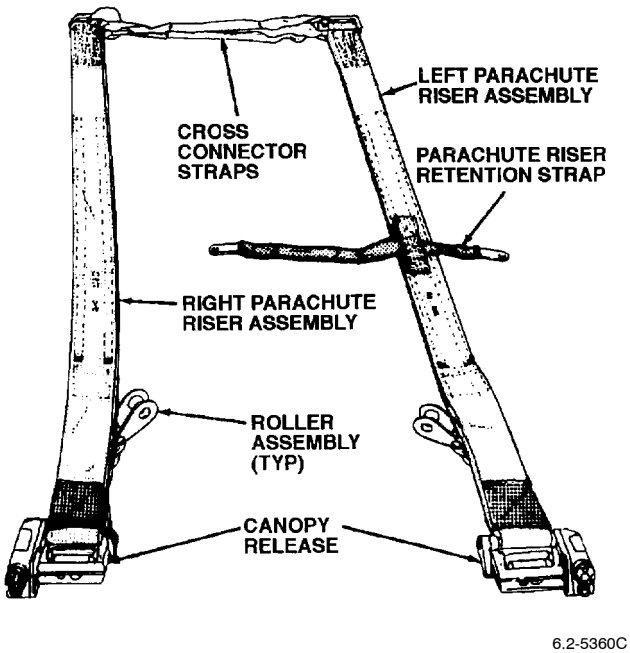


Personnel Parachute Container (OPEN)

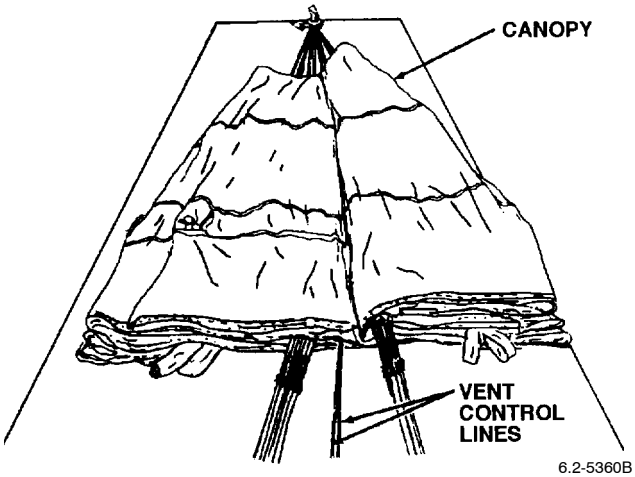
Figure 2. Subassemblies, A/P28S-24 (Sheet 1 of 2)



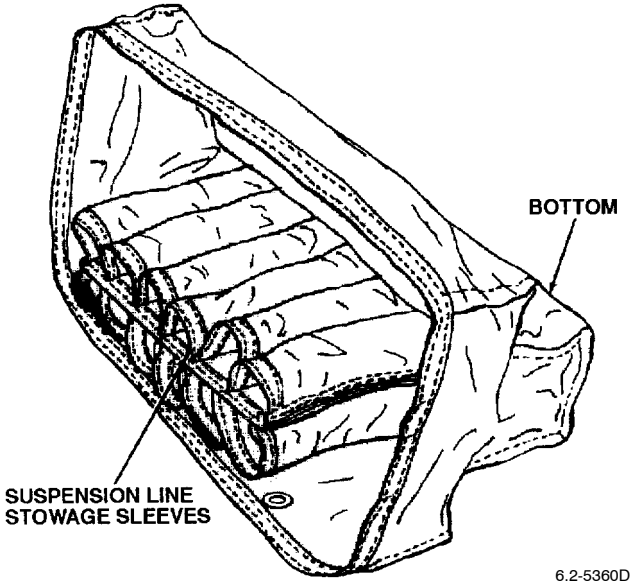
Parachute Withdrawal Line Assembly



Riser Assembly and Cross Connector Straps



Canopy Assembly and Vent Control Lines



Suspension Line Stowage Tray

Figure 2. Subassemblies, A/P28S-24 (Sheet 2 of 2)

(2) The aircrew continues to free fall still restrained in the seat. The stabilizer drogue remains attached to the seat by a scissor shackle. As the preset altitude is reached (13,000 ±1500 ft.), and after a 1.50 sec. time delay, the barostat allows the time release mechanism to operate which, in turn, opens the scissor shackle. At the same time, the harness restraints, lapbelt, leg restraints and survival kit disconnect.

(3) The drogue parachutes, now free from the seat, pull the parachute withdrawal line from the parachute container. As the withdrawal line reaches full stretch, the closure pin is removed from the closure pin loop, releasing the inner container flaps and exposing the canopy.

(4) The drogue parachute assembly, still attached to the withdrawal line which is attached to the canopy apex, extracts the canopy followed by the suspension lines.

(5) As load is applied, the risers and cross-connector straps are pulled from the container. The connector link ties break and the canopy fully opens, separating the aircrew from the seat.

(6) The aircrew descends suspended from the canopy release fittings on the PCU-33/P or PCU-56/P parachute restraint harness.

(7) During descent, the aircrew may maneuver the parachute by using two steering lines provided.

(8) Upon landing, the aircrew disengages the parachute assembly from the PCU-33/P or PCU-56/P parachute restraint harness by actuating the canopy release assembly.

(9) The parachute harness sensing release units provide an automatic backup method of releasing the risers after the aircrew makes a sea water entry.

7. AUTOMATIC OPERATION BELOW 13,000 FT. ALTITUDE.

a. When an aircrew ejects from the aircraft below the ejection seat predetermined aircrew/seat separation altitude, the following functions take place:

(1) The ejection seat drogue gun fires a piston deploying a 22-in. controller drogue. The controller drogue parachute, in turn, deploys a 5 ft. stabilizer drogue. The 5 ft. drogue parachute assembly decelerates and stabilizes the seat during descent.

(2) After a 1.50 sec. time delay, the time release mechanism operates which, in turn, opens the scissor shackle. At the same time, the harness restraints, lapbelt, leg restraints, and survival kit disconnect. At altitudes between 7,500 and 11,500 ft. the 1.50 sec. time delay is blocked by a g limiter which interrupts the timing sequence until deceleration force is less that 2.5 g's. At altitudes below 7,500 ft. the 1.50 sec. timer starts without interruption.

(3) The drogue parachutes, now free from the seat, pull the parachute withdrawal line from the parachute container. As the withdrawal line reaches full stretch, the closure pin is removed from the closure pin loop, releasing the inner container flaps and exposing the canopy.

(4) The drogue parachute assembly, still attached to the withdrawal line which is attached to the canopy apex, extracts the canopy followed by the suspension lines.

(5) As load is applied, the risers and cross-connector straps are pulled from container. Connector link ties break and the canopy fully opens, separating the aircrew from the seat.

(6) The aircrew descends suspended from the canopy release adapters on the PCU-33/P or PCU-56/P parachute restraint harness.

(7) During descent, the aircrew may maneuver the parachute by using the two steering lines provided.

(8) Upon landing, the aircrew disengages the parachute assembly from the PCU-33/P or PCU-56/P parachute restraint harness by actuating the canopy release fittings.

(9) The parachute harness sensing release units provide an automatic backup method of releasing the risers after the aircrew makes a sea water entry.

8. MANUAL OVERRIDE SYSTEM.

a. If, after ejection, the time release mechanism on the drogue gun fails, the operation of the manual override system will deploy the parachute. Operation of the manual override handle allows the following functions to take place:

(1) Pulling the manual override handle fires a manual override initiator. Gas pressure from the manual override cartridge passes to the drogue gun and fires a secondary cartridge and at the same time, operates the time release mechanism.

(2) The drogue gun fires a piston deploying a 22-in. controller drogue. The controller drogue parachute, in turn, deploys a 5 ft. stabilizer drogue. The 5 ft. drogue parachute assembly decelerates and stabilizes the seat during descent.

(3) Simultaneously with the firing of the drogue gun the time release mechanism releases the harness restraints, lapbelt, leg restraints and survival kit disconnect.

(4) The drogue parachutes, now free from the seat, pull the parachute withdrawal line from the parachute container. As the withdrawal line reaches full stretch, the closure pin is removed from the closure pin loop, releasing the inner container flaps and exposing the canopy.

(5) Drogue parachute assembly, still attached to the withdrawal line which is attached to the canopy apex, extracts the canopy followed by the suspension lines.

(6) As load is applied, the risers and cross-connector straps are pulled from the container. The connector link ties break the canopy fully open, separating the aircrew from the seat.

(7) The aircrew descends suspended from the canopy release adapters on the PCU-33/P or PCU-56/P parachute restraint harness.

(8) During descent, the aircrew may maneuver the parachute by using the two steering lines provided.

(9) Upon landing, the aircrew disengages the parachute assembly from the PCU-33/P or PCU-56/P parachute restraint harness by actuating the canopy release assembly

(10) The parachute harness sensing release units provide an automatic backup method of releasing the risers after the aircrew makes a sea water entry.

9. MANUAL BAILOUT.

a. In the event of ejection seat failure there are no provisions for manual bailout.

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ORGANIZATIONAL MAINTENANCE

REPAIR PROCEDURES

A/P28S-24 PERSONNEL PARACHUTE ASSEMBLY

PART NO. MBEU 10030PA-4

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

Intermediate and Depot Maintenance, Maintenance Procedures, Parachute Harness Sensing Release Units (PHSRU), MXU-746/P and MXU-747/P ..... WP 024 02
Introduction ..... WP 002 00

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PHSRU Batttery and Sensor Plug Replacement	2
PHSRU Torque Seal Replacement	2
Riser Assembly	3
Steering Line Lanyard Pull Loop Tackings Replacement	3

Record of Applicable Technical Directives

None

1. INTRODUCTION.

2. This work package (WP) contains instructions for organizational level repair to ensure that the parachute assembly remains in ready-for-issue (RFI) status.

3. When performing repairs detailed in this WP, follow these guidelines:

a. Review all applicable instructions prior to starting repair.

b. Ensure that all necessary support equipment and materials required are available prior to starting repair.

c. When required, remove enough material from its source for immediate use only. Ensure that the material identification ticket remains with the source material at all times. Material that cannot be identified will not be used.

d. To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

e. A quality assurance (QA) inspector shall examine the finished work.

4. PARACHUTE HARNESS SENSING RELEASE UNIT (PHSRU).

5. PHSRU TORQUE SEAL REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Torque loose screws to a value of 11 to 13 in-lbs.

b. Apply torque seal to the plug assembly, sensor plug and electronics package assembly attaching screws (Figure 1).

5A. PHSRU BATTERY AND SENSOR PLUG REPLACEMENT.

Support Equipment Required

Specification or Part Number	Nomenclature
FLUKE-77	Multimeter
SA852AS112	Torque Driver
SA852AS113	Torque Tool, Sensor Plug
GGG-W-641	Socket Handle, 1/4-in. Drive
3405AS101-2	Socket, Special 7/16 x 1/4-in. Drive

a. Perform PHSRU Organizational Level Maintenance in accordance with WP 024 02 for the following tasks:

(1) Removal of battery.

(2) Installation of battery.

(a) Conduct the following:

1) Battery voltage check.

2) Battery polarity check.

3) Battery installation.

4) Final check.

(3) Removal of sensor plug.

(4) Installation of sensor plug.

(a) Conduct the following:

1) Sensor plug resistance check.

2) Final check.

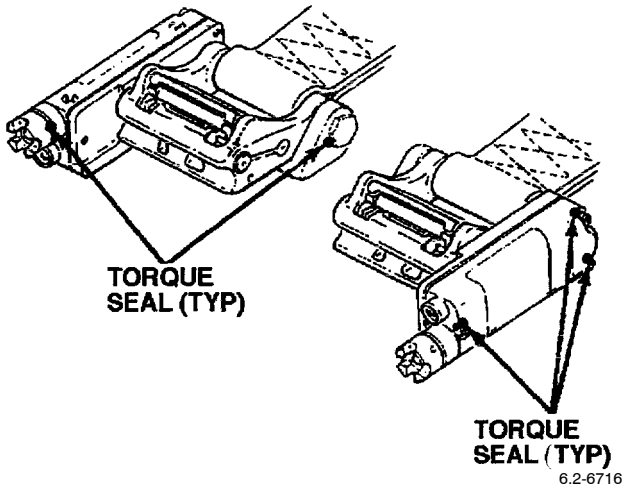


Figure 1. Replacement of Torque Seal on PHSRU

6. CONTAINER ASSEMBLY.

7. CORNER TACKINGS REPLACEMENT.

Materials Required

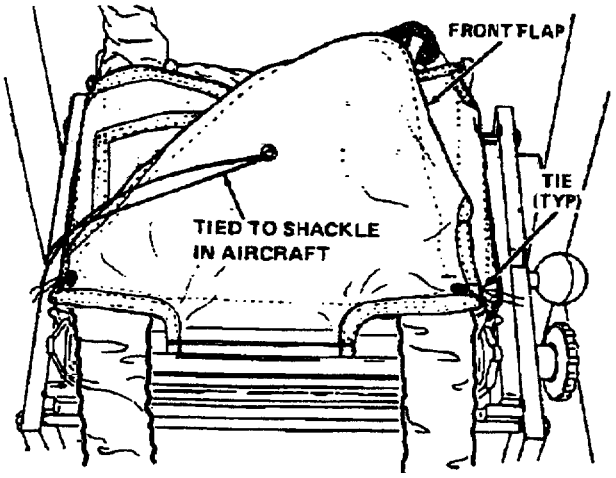
Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove broken or loose tackings.

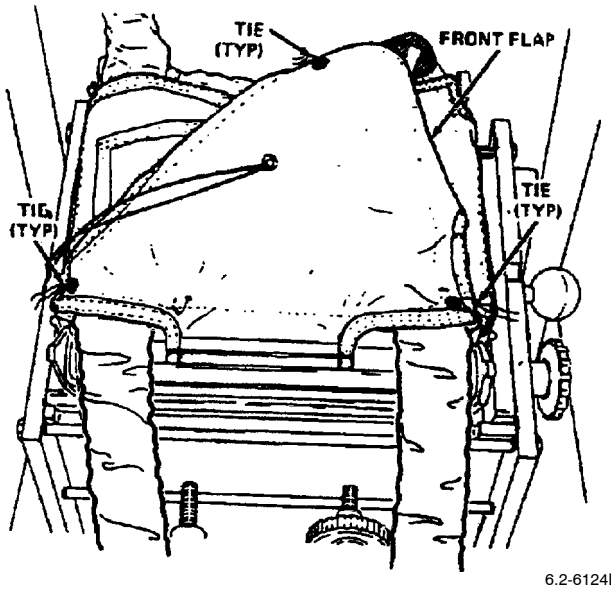
b. Pass a length of size FF thread, single and waxed, thru grommets on front and corner flaps; tie off (Figure 2).



6.2-6124A

Figure 2. Pass Thread thru Grommets on Front and Corner Flaps

c. (Parachute assembly with outer front flap P/N MBEU 69955). Tie down corners of front flap and center aft end of flap with size FF thread, single and waxed. Pass thread thru grommets on flaps and then thru loop on lower flap; tie off (Figure 3).



6.2-6124B

Figure 3. Tie Down Front and Center Aft Flaps

8. RISER ASSEMBLY.

9. STEERING LINE LANYARD PULL LOOP TACKINGS REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size A, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Fully extend pull loop and position between risers.

b. Tack at centerline of riser, 1/8 to 1/4-in. below guide ring with one turn size A thread, single and waxed; tie off (Figure 4).

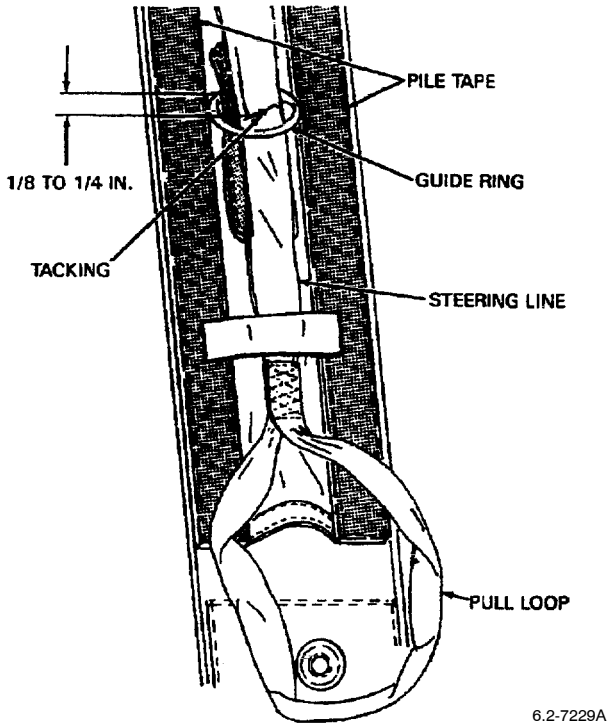


Figure 4. Replacement of Steering Line Lanyard Pull Loop Tackings

c. DELETED.

INTERMEDIATE AND DEPOT MAINTENANCE

PACKING PROCEDURES

A/P28S-24 PERSONNEL PARACHUTE ASSEMBLY

PART NO. MBEU10030PA-4

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Reference Material

Cartridge Actuated Devices (CADS) and Propellant Actuated Device (PADS) (IETM) . . . . . NAVAIR 11-100-1.1
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdowns, Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00
Organizational and Intermediate Maintenance with Illustrated Parts Breakdown, Miscellaneous Peculiar Support Equipment AG-000AC-GSE-000
Organizational, Intermediate and Depot Maintenance, Illustrated Parts Breakdown, A/P28S-24 Personnel Parachute Assembly . . . . . WP 018 04
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration . . . . . WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment . . . . . WP 005 00

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Inspection of Parachute Packing Press (MBEU68750)	3

Record of Applicable Technical Directives

None

1. GENERAL.

a. This Work Package (WP) provides packing instructions for the A/P28S-24 Personnel Parachute Assembly.

b. Packing instructions are provided with the assumption that they will be carried out under ideal conditions in a parachute loft WP 003 00. When a parachute assembly must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

c. In no case shall packing of a parachute assembly be interrupted after the packing operation has been started. If the packing operation is interrupted due to unforeseen circumstances, the parachute assembly shall be completely repacked per instructions contained in this WP.

d. Quality Assurance (QA) points have been included in the packing procedures. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Witnessing of QA steps may be delayed by QA if their satisfactory completion is verified in later steps.

e. During packing procedures, packer shall be positioned on left side of packing table, and helper on right side when viewed from harness/riser end of table.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Fid
TMA2	Hex Head Driver 1/16-in. Bit
MS33750	Hi-Torque Driver, Size HTS-2
Refer to WP 005 00	Long Bar
FLUKE 77	Multimeter
Refer to WP 005 00	Packing Hook
MBEU68049	Packing Press Block (Large)
MBEU68050	Packing Press Block (Small)
MBEU68750	Press Assembly, Parachute Packing
—	Screwdriver, Torque, 0-25 in. lb.
—	Shot Bag (3)
11-1-3512	Small Line Separator
MBEU68048	Stick, Drogue Parachute Packing
MBEU68051	Stowage Tray Locating Rod (2)
MBEU68042	Support Box Assembly Packing Press
MBEU68043	Support Box Packing Plate, (Front)
MBEU68044	Support Box Packing Plate, (Rear)
MBEU68045	Support Box Packing Plate, (Left)
MBEU68046	Support Box Packing Plate, (Right)
MBEU68047	Support Box Packing Plate, (Lower)
MBEU68053	Tensioner Locking Key
MBEU68052	Tool, Transfer, Suspension Line
TQS6	Driver, Torque, in-lbs.
—	Wrench, Socket, 1/4-in.
—	Wrench, Socket, 3/4-in.
—	Wrench, Torque, 3/8-in. Drive, 0-50 ft. lb.

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type I or IA

Specification or Part Number	Nomenclature
00311 Dry Film Vydax Sprayon Products (Open Purchase)	Release Agent
MIL-R-1832	Rubberband, Retaining Type I
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon, Size A, Type I or II, Class A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
V-T-295	Thread, Nylon, Size 3, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. Ensure that all support equipment and materials required are available prior to starting.

b. Inspect packing tools for nicks, burrs, or sharp edges which may cause damage to parachute assembly.

c. Count and record number of packing tools.

d. Clean packing table.

3. INSPECTION OF PARACHUTE PACKING PRESS (MBEU68750).

a. Inspect Parachute Packing Press in accordance with AG-000AC-GSE-000, WP 033 00, Intermediate Maintenance with Illustrated Parts Breakdown, Parachute Packing Press, P/N MBEU68750.

4. LAYOUT OF RIGGED PARACHUTE ASSEMBLY.

a. Position parachute container on packing table front side up.

b. Remove four screws which secure headrest cushion from front side of container. Remove headrest.

c. Remove two suspension line stowage tray nuts and washers from bottom of container.

d. Cut ties on outer flaps. Open flaps and remove drogue protective flap.

e. Remove both the controller and stabilizer drogue parachutes from container. Do not disassemble drogue shackle from parachute withdrawal line.

f. Lift drogue protective flap covering connecting line and eye end of controller drogue.

g. Remove protective flap.

h. Cut ties on inner flaps. Cut the Type I or IA nylon cord on parachute withdrawal line. Remove closure pin from closure loop and inner front flap.

i. Remove canopy from container until suspension lines start to pull from suspension line stowage tray.

j. Remove suspension line stowage tray from container and set container aside.

k. Pull suspension lines from suspension line stowage tray.

l. Pull apex out prior to inspection.

NOTE

Do not cut connector link ties.

m. Cut four suspension line stowage tray tackings, remove suspension line stowage tray, and set aside.

n. Connect connector links to table and crown bridle loop to tension strap. Tension canopy.

o. Ensure that suspension line connector links are tied in pairs with a single turn of waxed size FF thread at two lower corners of each pair of connector links. (QA)

NOTE

If suspension line connector link ties are broken, proceed with steps (1) thru (4).

(1) Place connector link holding suspension lines numbered 6 thru 10 on top of connector link holding suspension lines numbered 1 thru 5.

(2) Place connector link with suspension lines numbered 11 thru 15 on top of connector link with suspension lines numbered 16 thru 20.

(3) Ensure that steering lines are centered on risers between the connector links.

(4) Tie connector links in pairs with one turn of size FF thread, single and waxed, at two lower corners of each pair of connector links; tie off. (QA)

p. Fold back canopy gores numbered 10 and 11 to expose apex bridle loop and faked vent control lines restraining line.

q. Cut thread which secures vent control lines loop to apex bridle loop and release faked lines, which are secured by the rubber band. Remove rubber band and discard. (QA)

r. Reach down inside canopy from the top and pull out apex bridle loop.

s. Attach apex bridle loop to tension hook and apply tension. Lay crown bridle beside apex bridle.

t. Remove and scrap used riser covers.

5. INSPECTION (SPECIAL).

a. Maximum scheduled repack cycle is 448 days.

6. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Parachute Harness Sensing Release Unit Cartridge) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be re-based if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Components without a service/total life shall be removed from service if the components do not pass inspection, as determined by Quality Assurance Representative (QAR) or Collateral Duty Inspector (CDI).

g. Check date placed in-service and date of manufacture on each parachute part for service/total life as follows:

Nomenclature	Service Life (Yr)	Total Life (Yr)
Battery	4	4
Canopy Assembly	None	15
Cartridge MW19	Refer to NAVAIR 11-100-1.1	
Connecting Line	None	10
Controller Drogue	None	10
Controller Drogue Withdrawal Line	None	15
Cross-Connector Strap	(See Note 1)	(See Note 1)
Drogue Extender Strap	None	13
Electronics Package Assembly	None	8
Lower Steering Line	(See Note 2)	(See Note 2)
Parachute Withdrawal Line	None	10
Riser Assembly	None	13
Stabilizer Drogue	None	10

Note 1: Replace at Riser Assembly replacement.

Note 2: Replace at Canopy Assembly replacement.

(1) Markings for completeness, legibility, and agreement with information on Parachute Record (OPNAV 4790/101).

(2) Compare configuration of parachute assembly to that shown in WP 018 04 Illustrated Parts Breakdown.

7. SUSPENSION LINE CONTINUITY CHECK.

a. Grasp line 11 on left side of gore 10 and raise suspension line to height sufficient to ensure that suspension line is free of dips and twists from skirt hem to connector link, continue procedure with suspension lines 12 thru 20. (QA)

b. Use same procedure as in step a, above on right side of gore 10, except start with suspension line 10 and work thru suspension line 1. (QA)

c. Ensure that vent control line are connected at inboard end of connector links adjacent with suspension lines 1 and 20. (QA)

d. Steering lines attached to suspension lines 4 and 17 (Figure 1). (QA)

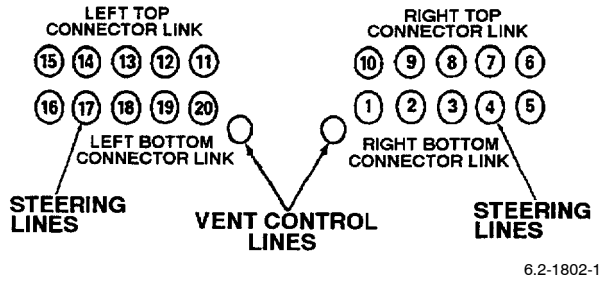


Figure 1. Suspension Line Continuity Check

8. CANOPY ASSEMBLY.

a. Canopy skirt hem, fabric surface, radial seams, vent hem, cross seams, water deflation pockets, pocket retaining tapes, netted panels, for cuts hole, ruptures, contamination, deterioration, and loose or broken stitching.

b. Suspension lines for fraying, contamination, burns, presence of twists, snags, and loops.

c. Attachment and condition of steering lines at suspension lines 4 and 17, insertion of steering line into casing, and whipstitching.

CAUTION

Ensure that vent control lines do not run under or around suspension lines. Ensure that vent control lines are attached at inner ends of bottom connector links.

d. Vent control lines for twists, fraying, snags, loops and security of attachment at the connector links. (QA)

e. Vent control restraining line for twists, fraying, snags, and loops.

f. Connector links for corrosion, distortion, bends, dents, nicks, burrs, sharp edges, breaks, broken rivet, and defective tensioner.

g. Tensioner for correct installation. There shall be no play in tensioner when rivet is installed. Ensure that the red lines on the connector link and tensioner are aligned (Figure 2). (QA)

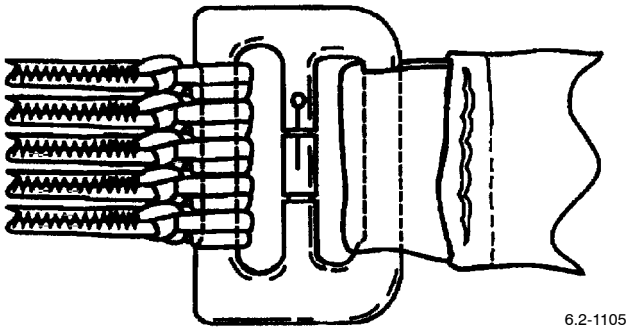


Figure 2. Alignment of Tensioner

9. CROWN AND APEX BRIDLE LINES.

a. Grasp one group (10 legs) of crown bridle lines at main seam loops and move toward crown bridle loop, allowing lines to run freely over palm of hand. Visually examine lines for fraying, friction burns, and presence of twists, snags, and loops.

b. Grasp one apex bridle line attached at vent loop, allowing line to run freely over palm of hand. Visually examine lines for frays, friction burns, and presence of snap and loops.

c. Grasp remaining groups of lines and inspect in same manner as steps a and b.

d. Security of attachment of crown bridle legs to main seam loops. Lines shall be securely attached to each loop with a Lark's head knot.

e. Crown and apex bridle whipped threads for frays and breaks.

f. Correct attachment of apex bridle legs to vent loops. Lines shall be securely attached to alternate vent loops with a Lark's head knot (Figure 3).

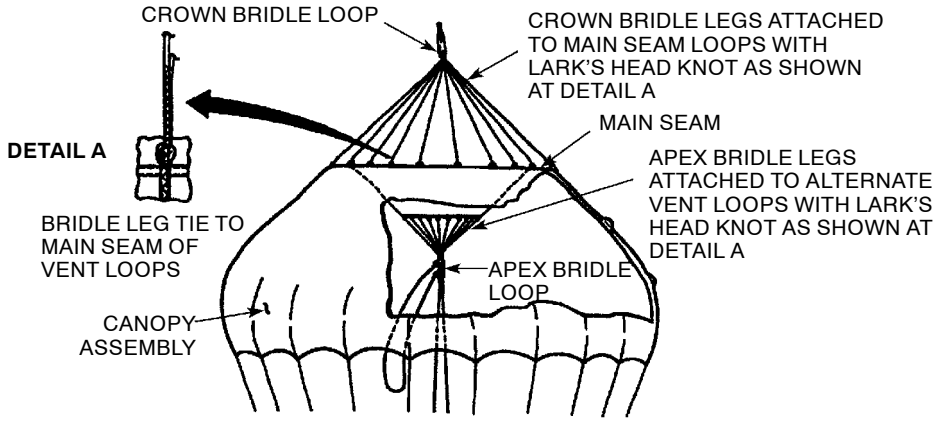


Figure 3. Correct Attachment of Apex Bridle Legs

10. WITHDRAWAL LINE.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Webbing for contamination, cuts, fraying, deterioration, loose or broken stitching.

b. Security of attachment at extender strap.

c. Flap closure pin for security of attachment, corrosion, burrs, and distortion.

d. Shackle sleeve for contamination, deterioration, security of stitching, and correct attachment.

e. Slide shackle sleeve off and check main canopy shackle for security of attachment, corrosion, burrs, and distortion (Figure 4).

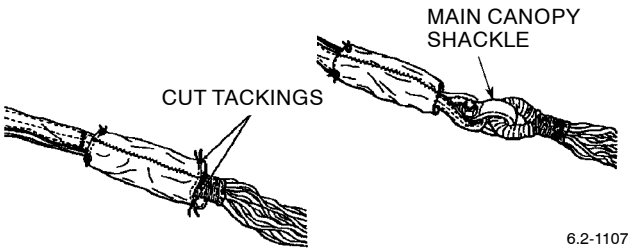


Figure 4. Main Canopy Shackle for Security of Attachment

f. Slide shackle sleeve back into position over shackle and tack open end of sleeve in two (2) places with one turn of size E thread, single and waxed; tie off.

11. CONTROLLER DROGUE.

a. Withdrawal line spool for nicks, burrs, contamination, corrosion, and proper attachment of drogue gun spool to withdrawal line. (QA)

b. Black tubing for cuts, nicks, and presence of dirt.

c. Closure securing pin for nicks, burrs, corrosion, bends, and correct attachment to withdrawal line (Figure 5).

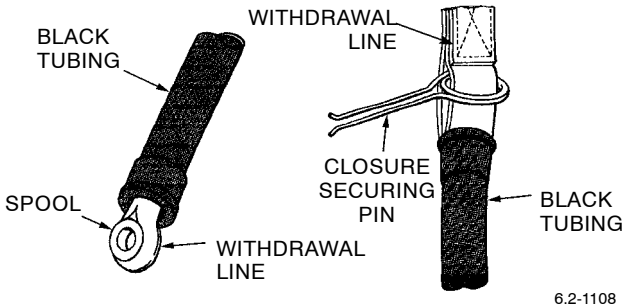


Figure 5. Closure Securing Pin

d. Withdrawal line for contamination, cuts, fraying, loose or broken stitching, and security of attachment and tacking.

e. Fabric surface, seams, and suspension lines at canopy apex for contamination, mildew, cuts, tears, fraying, and loose or missing stitches.

f. Suspension lines from skirt hem to terminal eye, for frays, contamination, presence of twists, security of attachment at skirt hem, condition of V-tabs; security and condition of wrapping at terminal eye.

g. Ensure that all apex suspension lines and anti-squid lines are encircled by withdrawal line with a Lark's head knot and tacking is properly attached and secure (Figure 6). (QA)

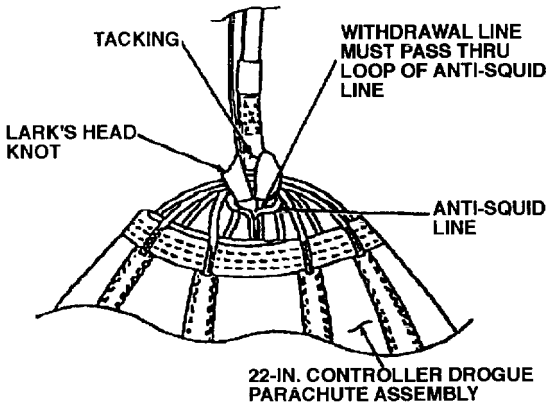


Figure 6. Ensure Apex Suspension Lines and Anti-Squid Lines are Encircled

h. Anti-squid line at canopy apex and terminal eye for contamination, cuts, fraying, loose or broken stitching, and security of attachment. (QA)

i. Connecting line for contamination, cuts, fraying, loose or broken stitching, and security of attachment to controller drogue terminal eye (Figure 7).

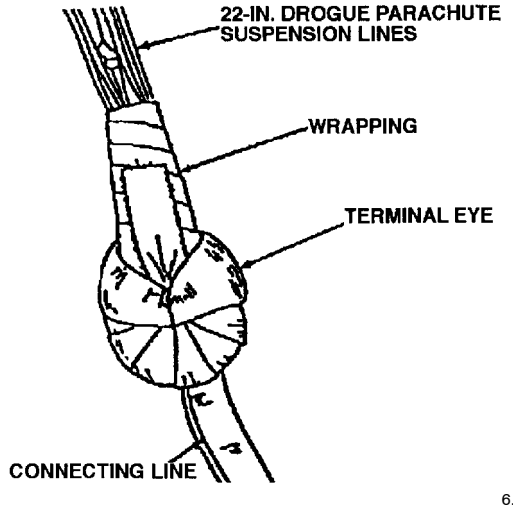


Figure 7. Connecting Line for Security of Attachment

12. STABILIZER DROGUE.

a. Fabric surface, seams, and suspension lines for contamination, cuts, tears, fraying, and loose or missing stitches.

b. Suspension lines and anti-squid line from skirt hem to confluence point for frays, presence of twists in individual lines, snags, and loops; attachment of suspension lines, V-tabs and security and condition of wrapping at confluence point.

c. Ensure that all apex suspension lines and anti-squid lines are encircled by a Lark's head knot formed by a connecting line and tacking is properly attached and secure (Figure 8).

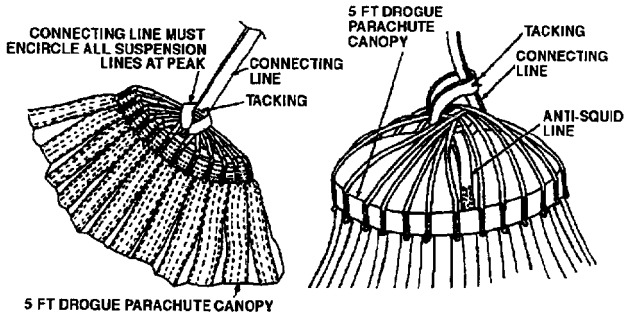


Figure 8. Connecting Line and Tacking Secure

d. Braided tubular cover for frays, ruptures, contamination, and condition of wrappings.

e. Extender strap for contamination, cuts, fraying, and loose or broken stitching.

f. Security of electrical tape (3 places).

g. Drogue shackle for nicks, burrs, and corrosion.

h. Attachment bolt and nut for nicks, burrs, corrosion, and stripped or scored threads.

13. RISER ASSEMBLY.

a. Webbing for contamination, rust at points of contact with metal parts, cuts, twists, fading, wear, fraying, abrasions, loose or broken stitching and broken tackings.

b. Steering lines for wear, broken stitches, and correct attachment to the upper steering line.

c. Hook and pile tape on left and right riser assemblies for serviceable condition and security of attachment.

d. Steering line riser tackings for security of attachment.

e. Pressure sensitive tape for condition.

f. Roller fitting assembly for corrosion, damage and security of attachment.

g. Steering line handle secured around snap assembly.

h. Parachute riser retention strap for wear, broken stitches and correct attachment to left riser.

i. Retention strap lug assembly for corrosion, distortion, sharp edges, and security of attachment.

j. Cross-connector straps for contamination, cuts, fraying, and loose or broken stitching.

k. Proper attachment of cross-connector straps to connector links.

14. CONTAINER AND STOWAGE TRAY.

a. Interior of headbox for foreign objects, corrosion, and structural integrity. Security of attachment of pressure sensitive tape, over internal strip assembly.

b. Inner and outer closure flaps for wear, loose or missing eyelets, grommets, damaged hook and pile fastener tape, frayed or broken stitching, contamination. Ensure that all closure flaps are securely attached to container.

c. Wire and webbing loops on inner and outer flaps for damage and security of attachment.

d. Inner and outer protective flaps for wear, fraying or broken stitching, and contamination.

e. Mechanical lock housing for dents, wear, contamination, security of attachment.

f. Bottom mounting brackets for dents, wear, contamination, and security of attachment.

g. Container headpad for cracks, cuts, wear, contamination; hook and pile fastener tape for presence and security of attachment.

h. Container metal base for cracks, chips, and deterioration.

i. Stowage tray assembly for wear, frayed or broken stitching, contamination, security of attachment of stowage sleeves to stowage tray, locating studs, mounting plate assembly, and grommets for damage and retention.

j. Drogue protector flap for wear, fraying, broken stitches and contamination; hook and pile fastener tape for presence and security of attachment.

k. Protection flap for wear, fraying, broken stitches and security of attachment.

l. Decals and labels for presence and security of attachment.

m. Riser stowage hook and pile fastener tape for presence and security of attachment.

15. PACKING.

16. WHIPPING AND FOLDING CANOPY.

NOTE

Tie off all tacking with a surgeon's topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Packer shall hold crown bridle loop while helper pulls apex down into canopy using vent control lines.

b. Packer and helper shall lift gore number 11 at skirt hem and draw it up to the center of the canopy exposing apex bridle loop.

c. Attach new rubber band to apex bridle loop with a Lark's head knot.

d. Secure vent control lines loop to apex bridle loop with three turns of size FF thread, single and waxed; tie off (Figure 9). (QA)

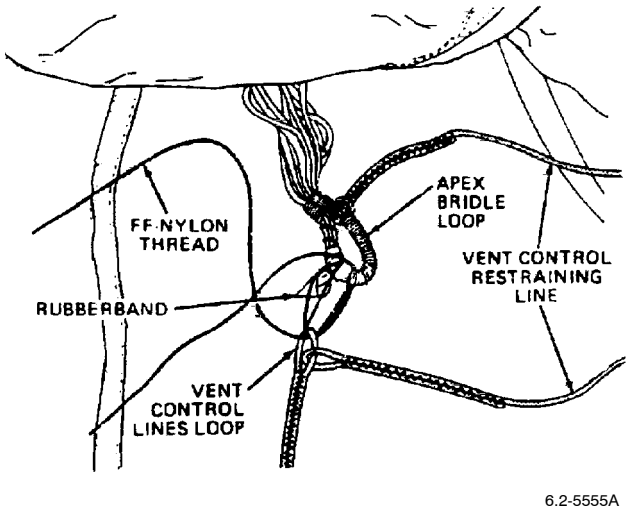


Figure 9. Secure Vent Control Lines

e. Fake vent control restraining line into 5-in. bights and secure with a doubled rubber band which is attached to apex bridle loop (Figure 10).

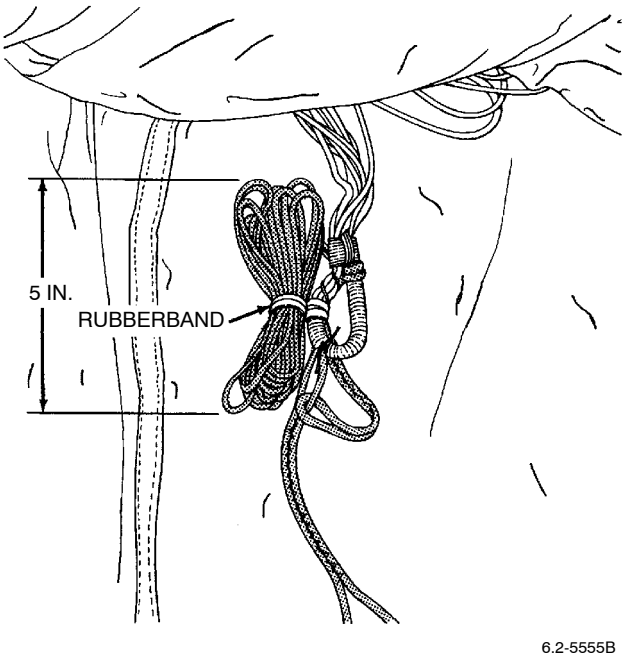


Figure 10. Fake Vent Control Restaining Line

f. Apply tension to canopy.

g. Packer and helper shall lift suspension lines numbered 11 and 10 up and outward. Skirt hem between lines shall be taut so that canopy apex can be seen from inside. While holding suspension lines up, packer and helper shall whip gore hanging from line outward (Figure 11).

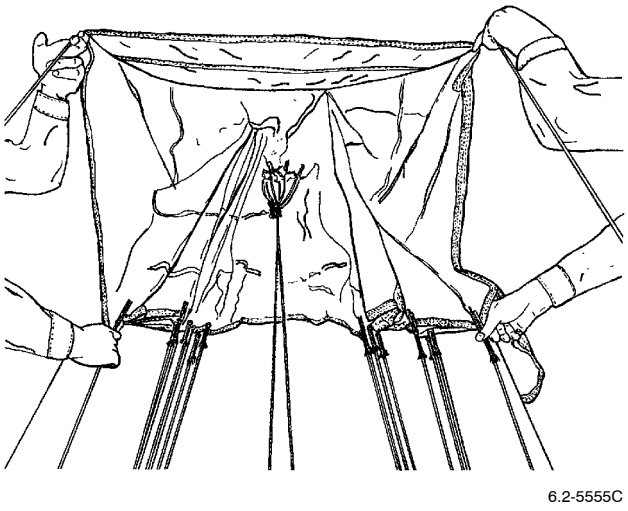


Figure 11. Packer and Helper Lift Suspension Lines Numbered 11 and 10

h. Raise next suspension line upward toward line previously held in hand. Use a rapid circular motion (Figure 12).

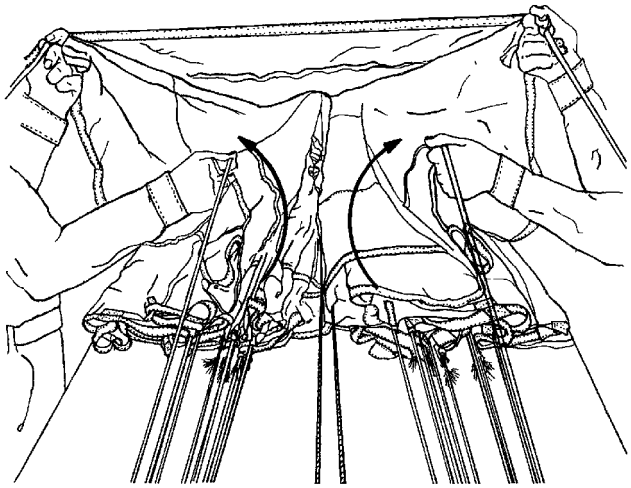


Figure 12. Raise Next Suspension Line Upward

i. Continue whipping operation for all gores. Move whipped gores rapidly back and forth across table. Ensure that radial seams are not overlapped by gore material (Figure 13).

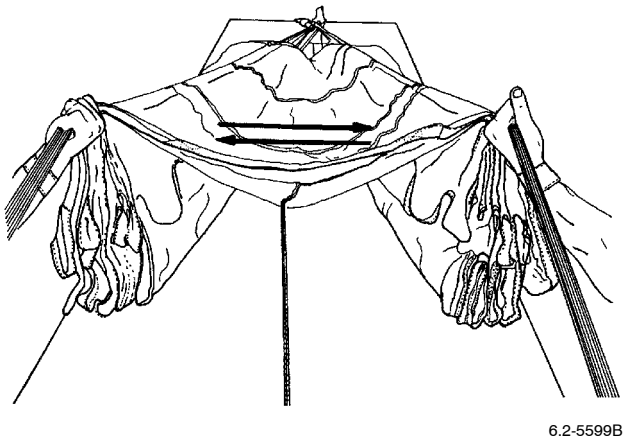


Figure 13. Continue Whipping and Folding

j. Stretch the two groups of suspension lines to edges of packing table with gores hanging over sides. Packer and helper, while holding suspension line groups at edges of packing table, shall simultaneously flap hanging gores rapidly up and down, in a whipping motion, to end wrinkles (Figure 14).

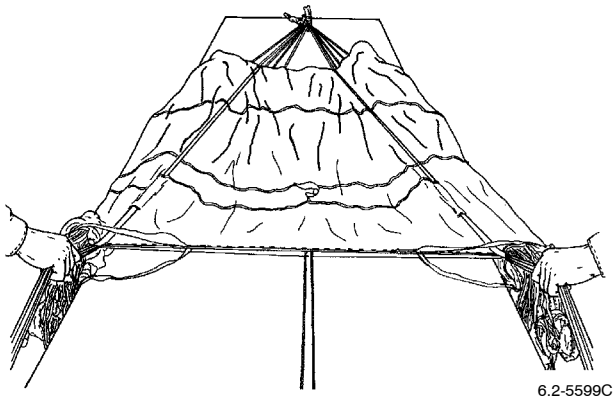


Figure 14. Stretch The Two Groups

k. Packer shall flap top gore up and down at skirt hem center while helper holds bottom gore at skirt hem center (Figure 15).

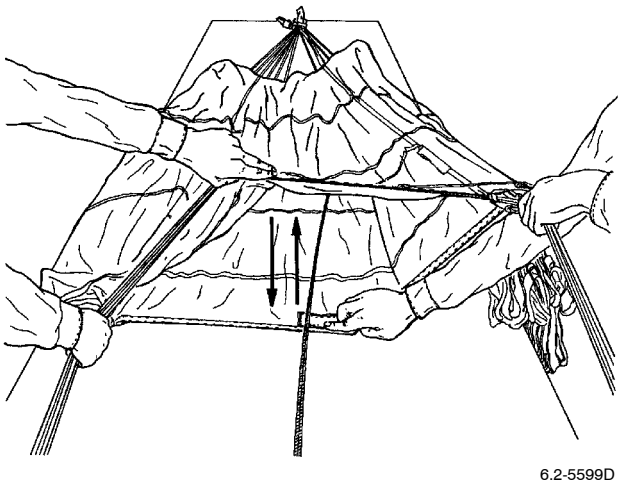


Figure 15. Packer Shall Flap Top Gore

l. On signal, packer and helper shall pull their respective gores at skirt hem centers toward table edges and at the same time, bring suspension line groups to center of packing table (Figure 16).

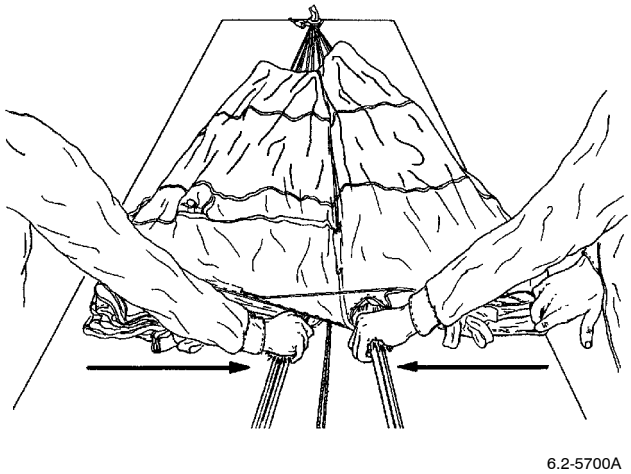


Figure 16. On Signal Packer and Helper Shall Pull Their Respective Gores to Center of Table

m. Place vent control lines under line separator. Packer and helper shall insert suspension line groups into their respective slots in line separator. Packer and helper shall place shot bag across lines. Packer shall place another shot bag across skirt hem on packer's side of suspension lines.

n. Helper shall rotate all gores as a group, except bottom gore, from helper's side to packer's side of table (Figure 17).

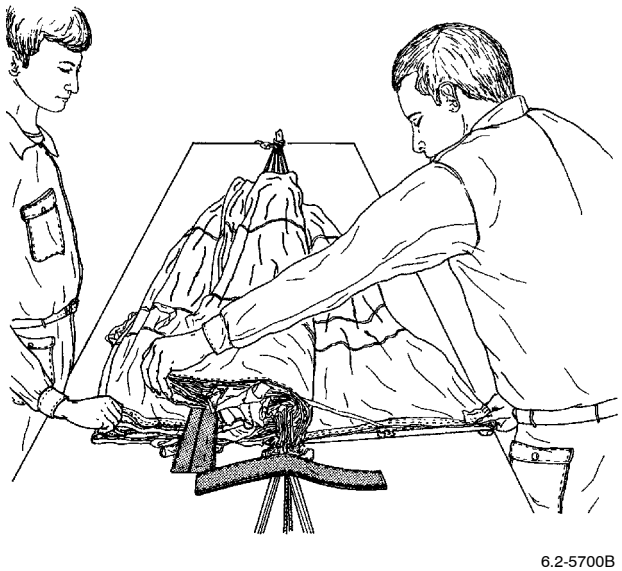


Figure 17. Helper Shall Rotate All Gores to Packer's Side

o. Helper shall straighten and smooth bottom gore on helper's side throughout its length from skirt to crown (Figure 18).

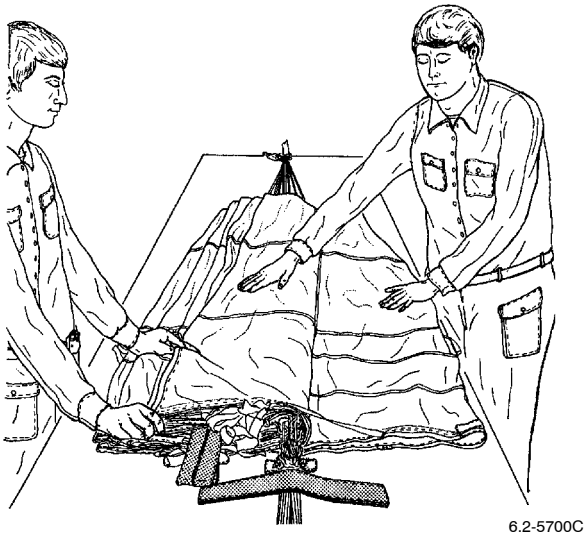


Figure 18. Helper Shall Straighten And Smooth Gores

p. Packer shall return and smooth folded gores on top of shot bag, one at a time, to helper's side of packing table. Helper shall reach down inside canopy from crown and smooth each gore to apex (Figure 19).

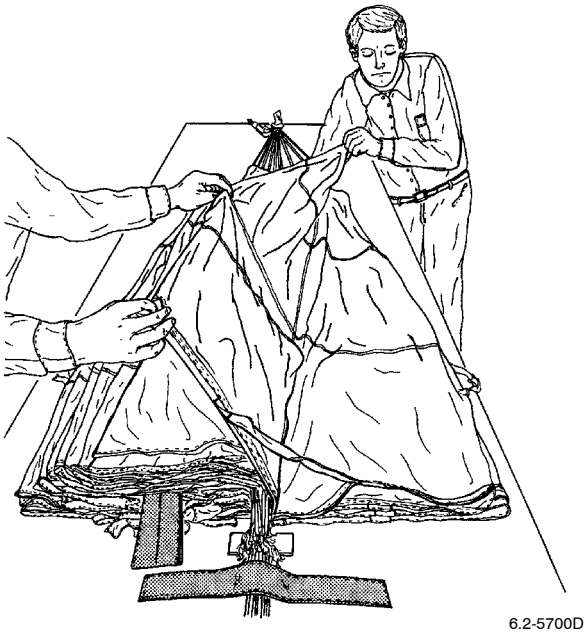


Figure 19. Packer Shall Return and Smooth Gores

q. Place shot bag across skirt hem on helper's side of packing table.

r. Packer shall rotate all folded gores as a group, except bottom gore, from packer's side to helper's side of packing table (Figure 20).

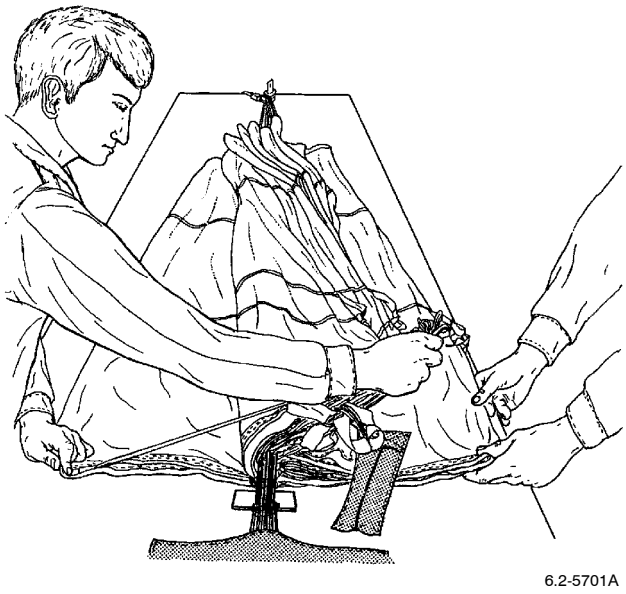


Figure 20. Packer Shall Rotate Folded Gores To Helper's Side

s. Packer shall straighten and smooth bottom gore on packer's side throughout its length from skirt to crown (Figure 21).

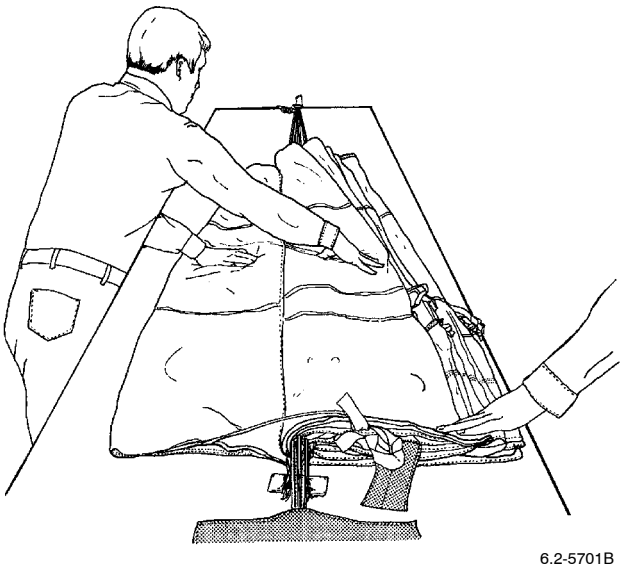


Figure 21. Packer Shall Straighten and Smooth Gores on Packer's Side

t. Helper shall return and smooth folded gores on top of shot bag, one at a time, to packer's side of packing table. Packer shall reach down inside canopy from crown and smooth each gore to apex (Figure 22).

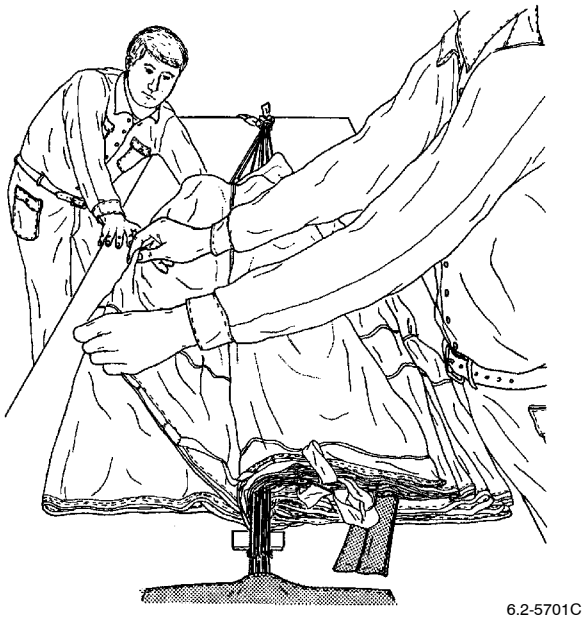


Figure 22. Helper Shall Return and Smooth Gores to Packer's Side

u. Remove shot bag from gores. Packer and helper shall grasp skirt hem at gore midsections and rotate toward suspension lines (Figure 23).

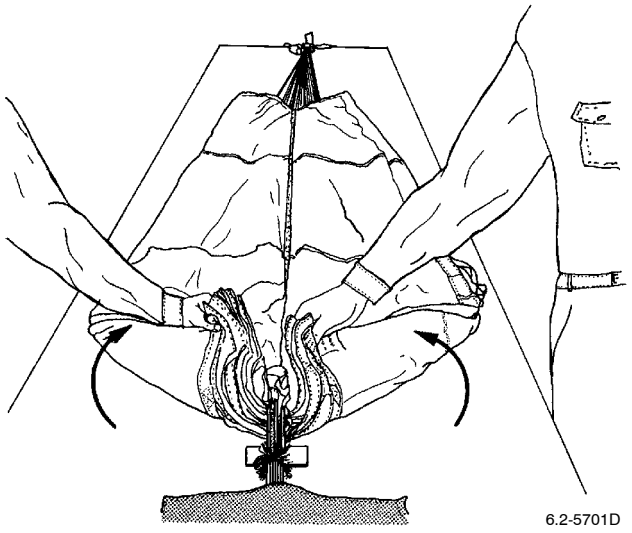


Figure 23. Remove Shot Bag

v. Packer and helper shall align and count each fold when placing folds back on table. Skirt shall be made neat by having pocket bands aligned in same direction inward on top of each other. Each group of folds shall contain 10 gores (Figure 24).

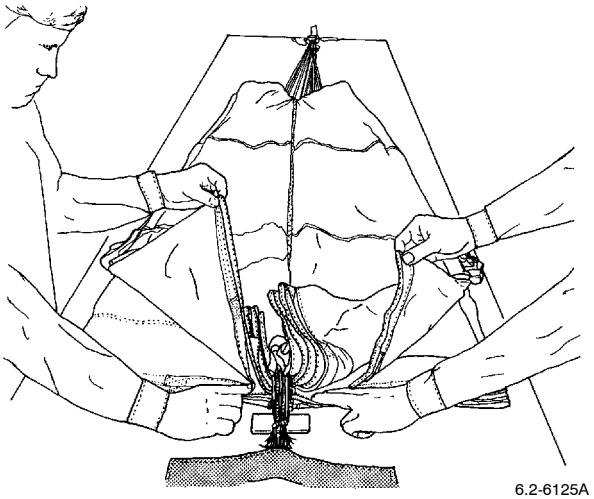


Figure 24. Packer and Helper Shall Align and Count Each Fold

w. Packer and helper shall smooth gores from crown to skirt hem.

x. Packer and helper shall grasp skirt hem and folded gores and S-fold gores toward center. Butt S-folds together. Place shot bags at skirt hem, center and top of S-folded parachute (Figure 25).

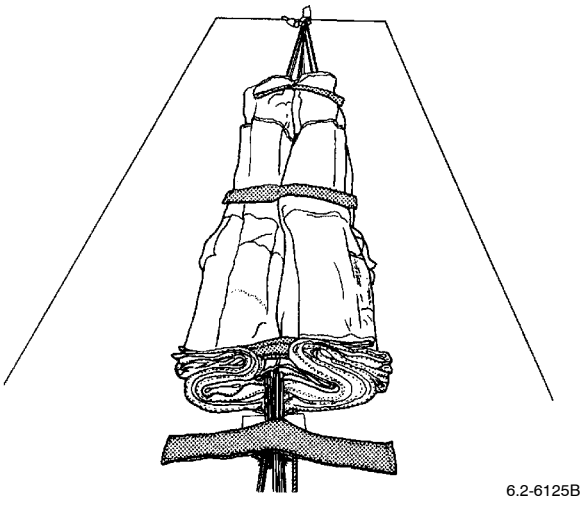


Figure 25. Packer and Helper Shall Grasp Hem and Folded Gores

y. Remove small line separator.

17. STOWAGE OF SUSPENSION LINES AND VENT CONTROL LINES.

NOTE

Tie off all tackings with a surgeon's topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Release tension from canopy and remove crown bridle from tension hook. Remove tension hooks from connector links. Install new riser covers.

b. Position stowage tray under cross-connector straps and between risers with tray cover grommets and stowage sleeves 1 thru 6 up. Ensure that stowage sleeve top is facing toward canopy.

c. Attach both sets of connector links to suspension line stowage tray. Pass a length of size FF thread, single thru stowage tray grommet and thru lower section of each connector link; tie off (Figure 26). (QA)

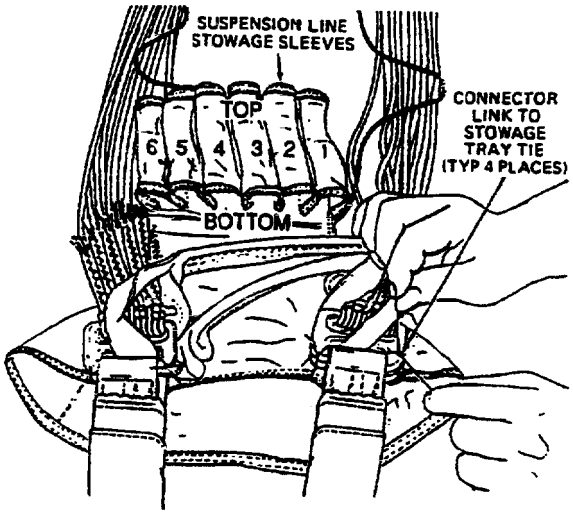


Figure 26. Attach Both Sets of Connector Links

d. Form a bight in suspension lines about 20-in. from top of connector links. Route suspension and vent control lines around helper's side of suspension line stowage tray (Figure 27).

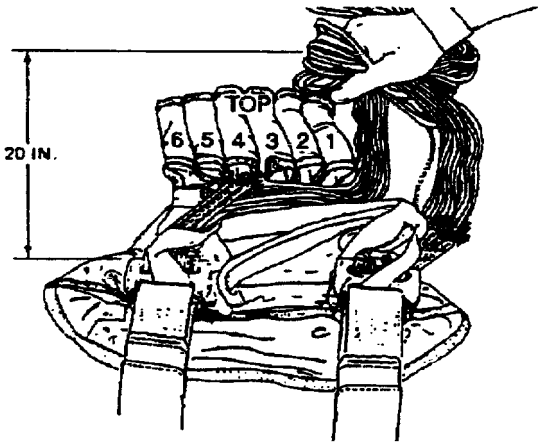


Figure 27. Form a Bight in Suspension Lines

CAUTION

To prevent damage to suspension line stowage tray sleeves ensure that size of parachute packing hook end does not exceed diameter of stowage tray sleeves and is long enough to hold suspension lines. Ensure that suspension lines are stowed in sleeve ends facing toward parachute and lines are maintained in proper alignment. Lines shall not be twisted or crossed over each other.

e. Separate right-hand group of lines from left-hand group. This separation must be maintained during remainder of packing procedure.

f. Stow first bight of suspension lines in sleeve 1 starting at top of sleeve and pulling towards bottom on helper's side with a parachute packing hook. Ensure that all bights protrude 1/2 to 3/4-in. from ends of sleeve. Ensure that suspension lines are stowed into sleeve top end facing toward canopy and suspension lines are maintained in proper alignment (Figure 28). (QA)

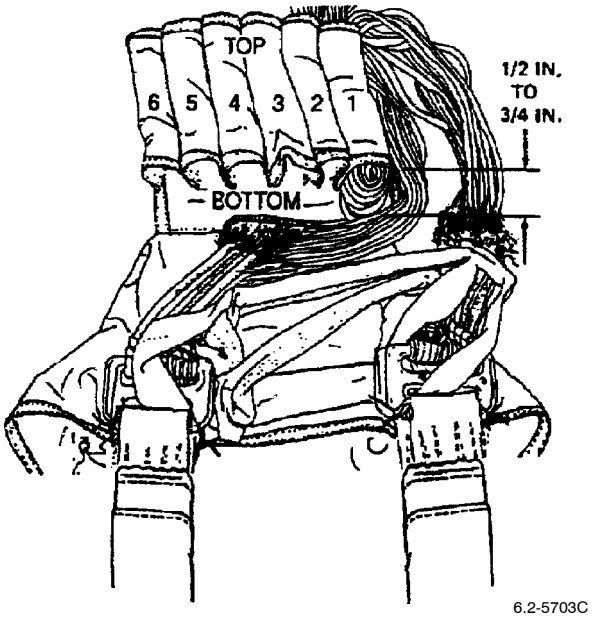


Figure 28. Stow First Bight

g. Continue stowing lines into sleeves 2 thru 6. Ensure that lines passing from one sleeve to next are pulled taut (Figure 29).

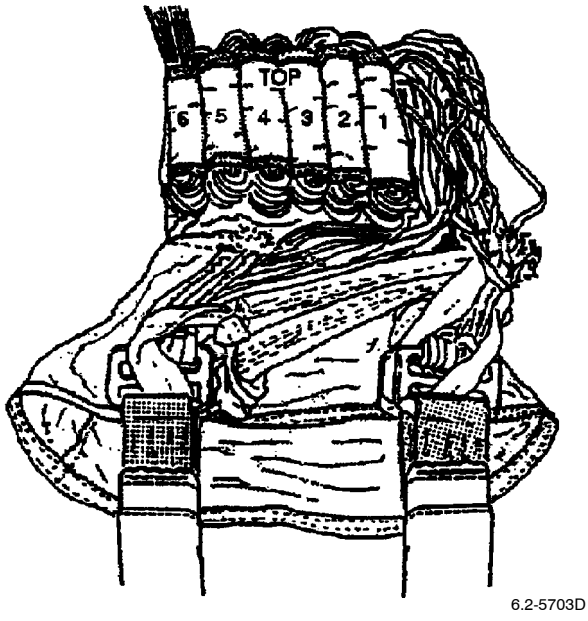


Figure 29. Continue Stowing Lines

h. Roll suspension line stowage tray from packers side to helpers side (Figure 30). (QA)

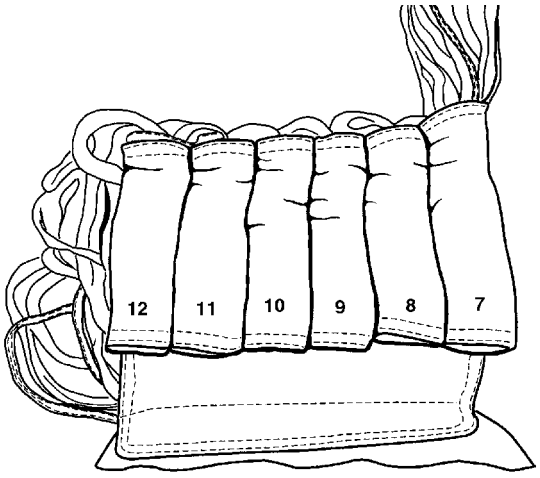


Figure 30. Fold Suspension Line Stowage Tray

i. Place group of lines nearest packer to opposite side of other group.

j. Grasp lines at bottom of sleeve and at a point about 7-in. down the lines toward canopy.

k. Fold lines back over stowage tray to form a bight.

l. Grasp bight and stow it into sleeve top end with a packing hook.

m. Continue stowing lines in same manner until all sleeves are filled. Lines will emerge from last stow in a side-by-side position (Figure 31). (QA)

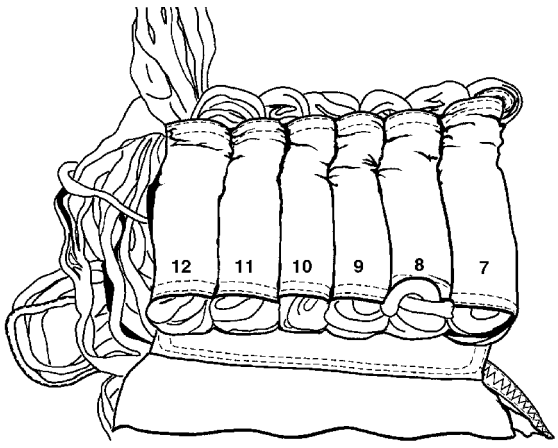


Figure 31. Continue Stowing Lines Until all Sleeves are Filled

NOTE

There is no specific dimension for length of suspension line remaining between last stow and canopy skirt.

n. Roll suspension line stowage tray from helpers side to packers side (Figure 32). (QA)

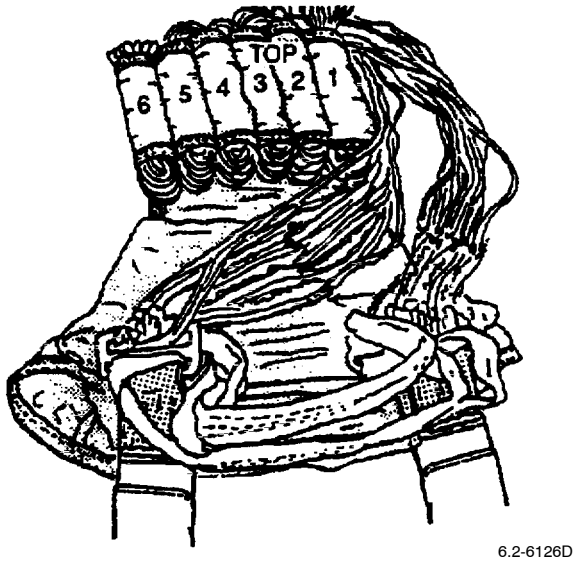


Figure 32. Carefully Fold Back Stowage Tray Towards Canopy

o. Carefully fold stowage tray toward risers and pull protective cover over and around stowage tray. Ensure that protective cover encloses stowage tray sleeves (Figure 33).

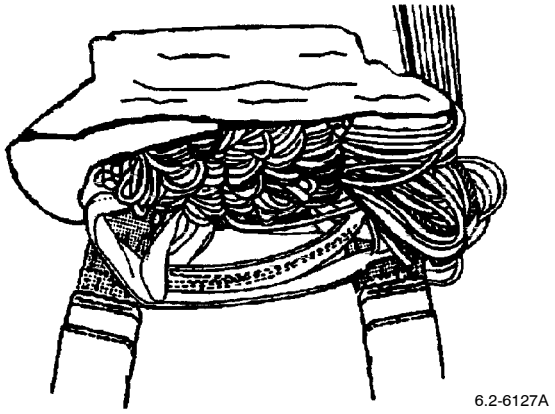


Figure 33. Carefully Fold Back Stowage Tray Towards Risers

p. Separate each pair of risers. Ensure that tackings, that secure steering lines to risers are intact. (QA) If broken, center steering lines on risers and tack to risers with waxed size A thread; tie off. Tacking should be located 1/8 to 1/4-in. below guide ring. Tack thru steering line and thru free end of bowline knot; tie off. Ensure that each steering line is correctly routed and centered between each pair of risers. Pass end loop around socket fastener. Secure loop by closing stud fastener into socket fastener. Secure fastener tape on steering line to tape on riser, install riser covers and secure (Figure 34). (QA)

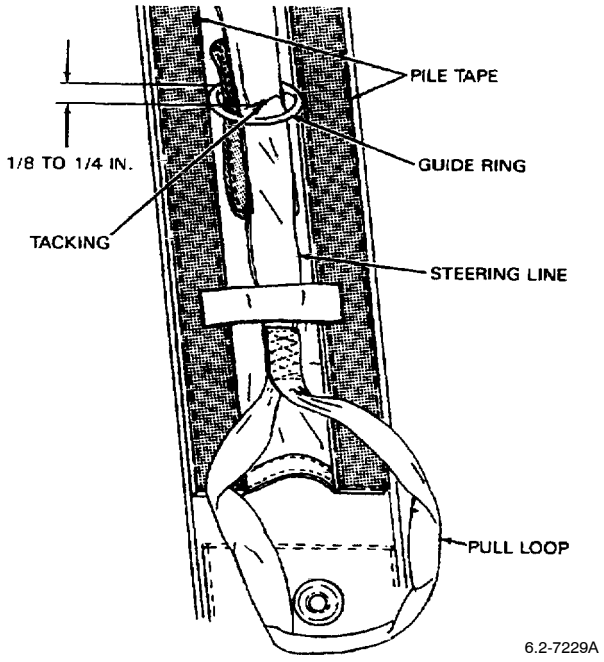
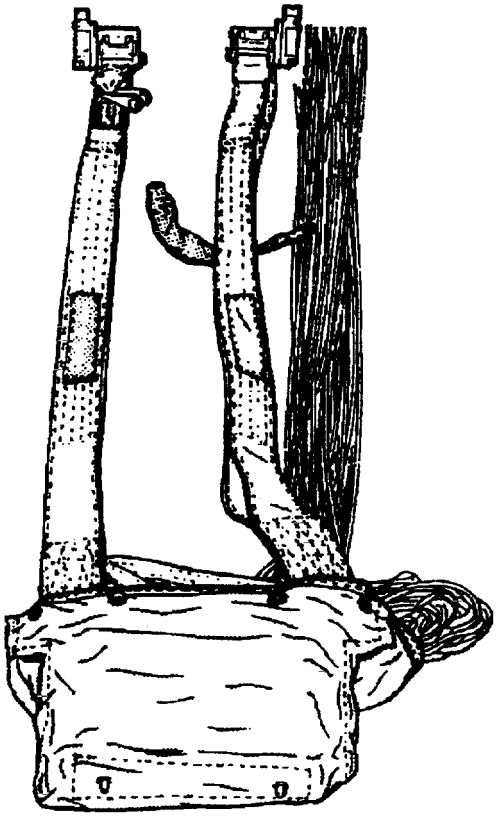


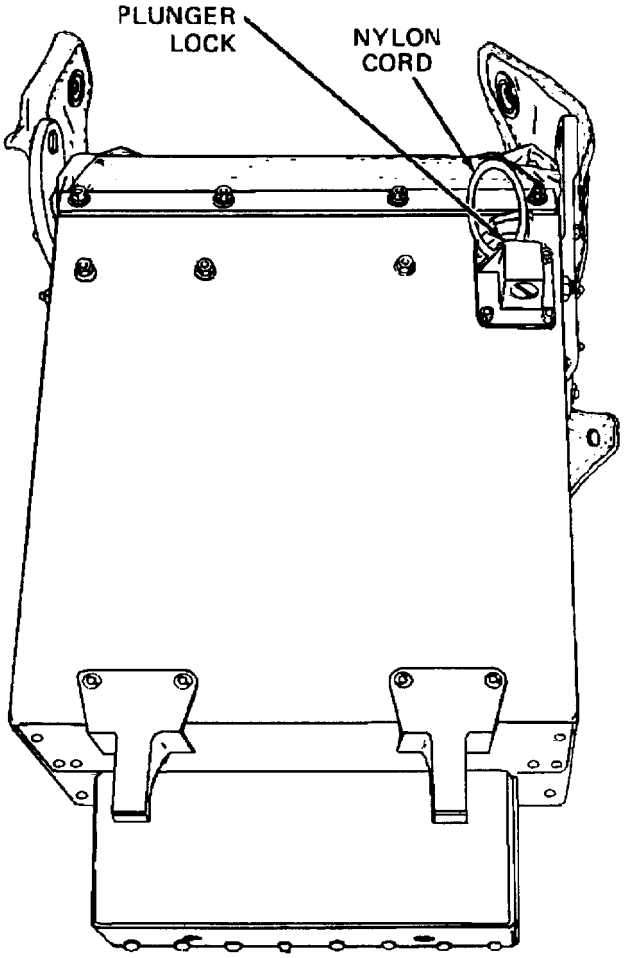
Figure 34. Separate Each Pair of Risers

q. Turn suspension line stowage tray and riser towards canopy with suspension line stowage tray studs facing away from canopy (Figure 35).



6.2-6127C

Figure 35. Turn Stowage Tray



6.2-5707A

Figure 36. Pass 2 Ft. Length of Cord Around Plunger

18. ATTACHMENT OF SUSPENSION LINE STOWAGE TRAY TO CONTAINER.

a. Ensure that container is empty and clean. Spray only containers with inside painted surfaces with release agent. Set container on packing table with rear side up.

b. Pass a 2 ft. length of Type I or IA nylon cord around plunger lock which is located at upper side of container. Pass ends of cord thru hole in container (Figure 36).

c. Pull cord tight and route ends out top of container. Tie temporarily to rear attachment lug (Figure 37).

NOTE

Nylon cord will be attached to parachute withdrawal line later in packing procedure.

d. Turn container and position so that open end faces toward canopy with front side of container up.

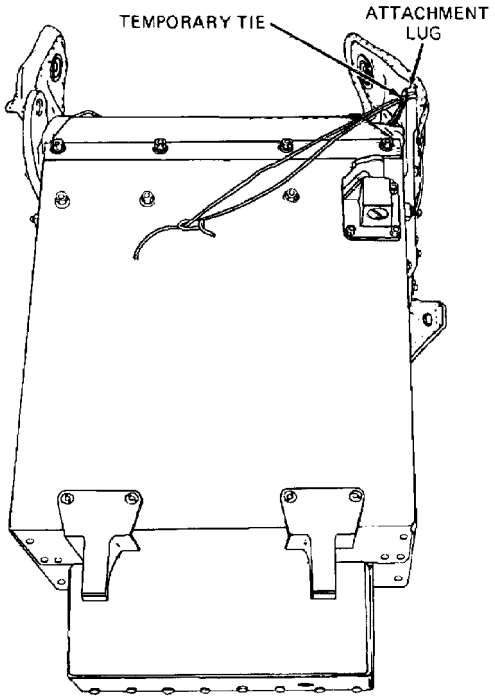


Figure 37. Pull Cord Tight

e. Pass two stowage tray locating rods thru stud holes in bottom of container. Attach locating rods to studs on bottom of stowage tray (Figure 38).

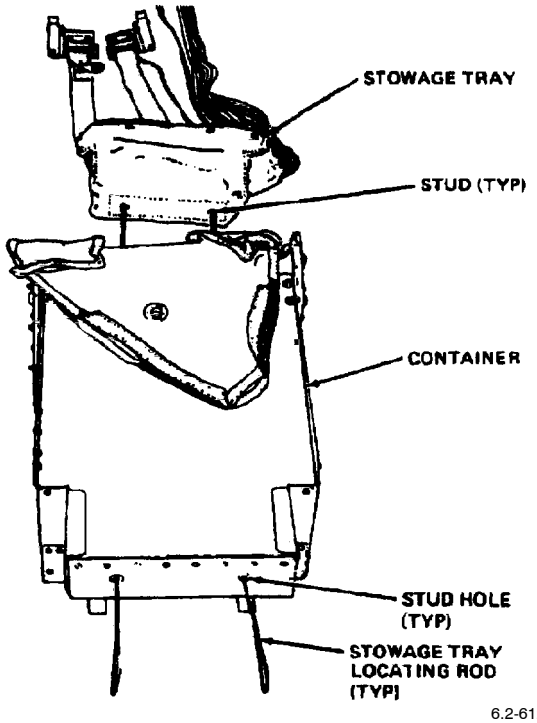


Figure 38. Insert Tray Locating Rods

f. Using locating rods, pull stowage tray into bottom of container. Ensure that stowage tray studs protrude thru hole in bottom of container and no suspension lines are trapped between stowage tray and container. (QA)

g. Remove stowage tray locating rods.

h. Attach two washers and nuts to studs on container bottom and tighten to 20 in-lbs. (QA)

i. Apply torque seal to nuts on forward portion of container.

j. Place risers on front face of container (Figure 39).

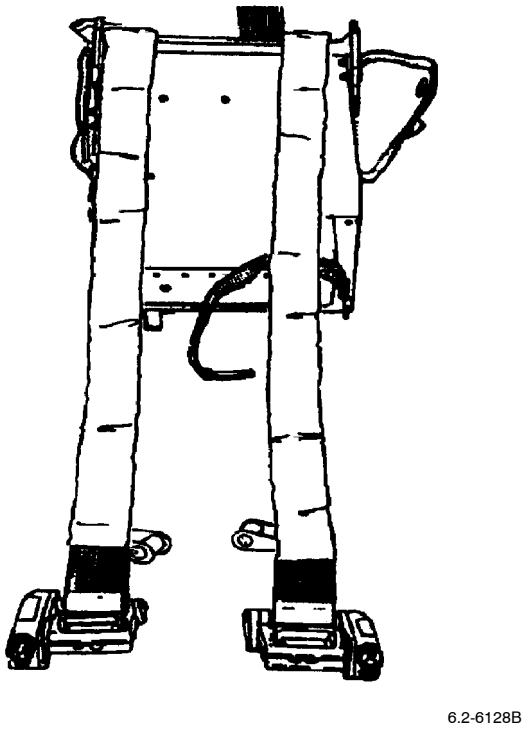


Figure 39. Place Risers on Container

19. STOWAGE OF CANOPY.

a. Canopy shall be S-folded into container from rear to front. Use following illustration as a guide while stowing canopy (Figure 40).

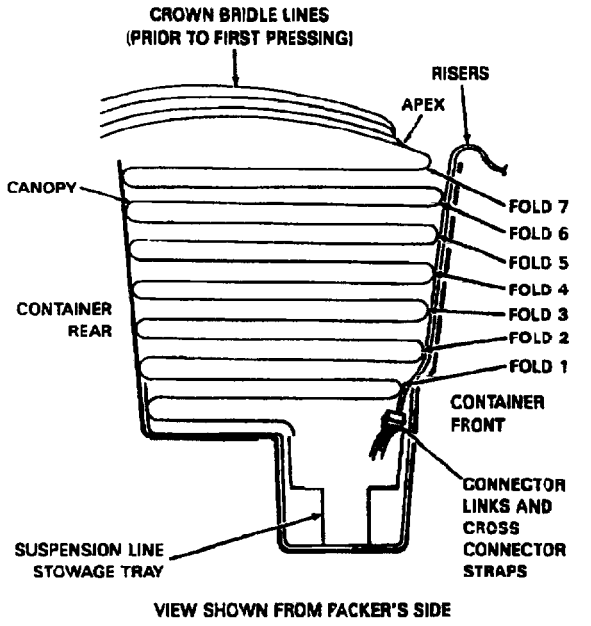


Figure 40. Canopy Shall Be S-Folded

b. Place support box with packing plates at front edge of packing press platform. The vertical distance from platform to bottom of top beam shall be 28-in. Remove support box side plate with handle and loosen three handwheels (Figure 41).

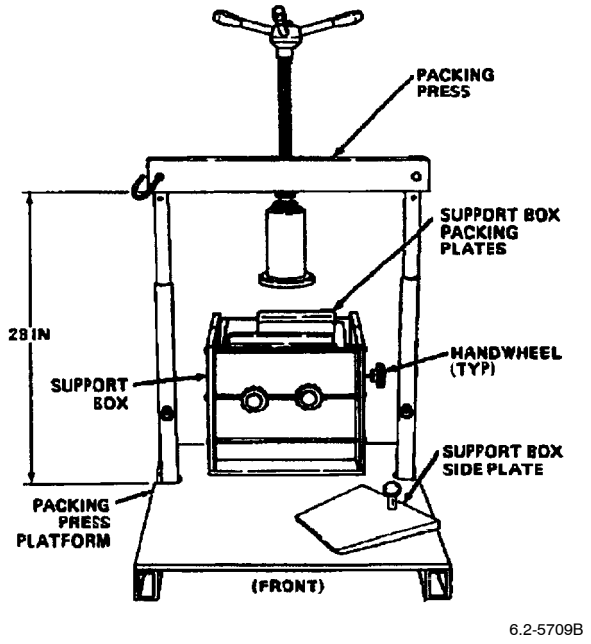


Figure 41. Placement of Support Box

CAUTION

To preclude any damage to canopy, a packing stick should not be used to pack canopy down. Use hand pressure only.

Do not lubricate packing press bearing.

Ensure that handwheels on support box are tightened finger tight only.

c. With front of container facing toward front of packing press, place container and support box side plate in support box. Lift rear and front packing plates and ensure grooves in plates fit over nuts on rear and front of container. Center container in support box and extend closure flaps outward. Route risers out front of container. Tighten three handwheels finger tight only (Figure 42).

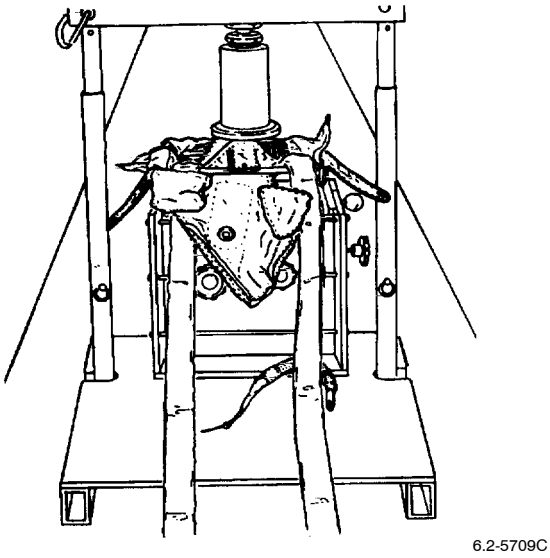


Figure 42. Placement of Side Plate

d. Remove shot bag from canopy skirt.

NOTE

Ensure that flaps remain outside container when stowing canopy.

e. Ensure that shape of stowage tray protective cover conforms to bottom of container base. With stowage tray located upright in container, ensure that suspension lines emerge from helper's side rear corner. Stow remaining suspension lines across interior of container by faking them back and forth from helper's to packer's side. Position lines between stowage tray sleeves and protective cover (Figure 43). (QA)

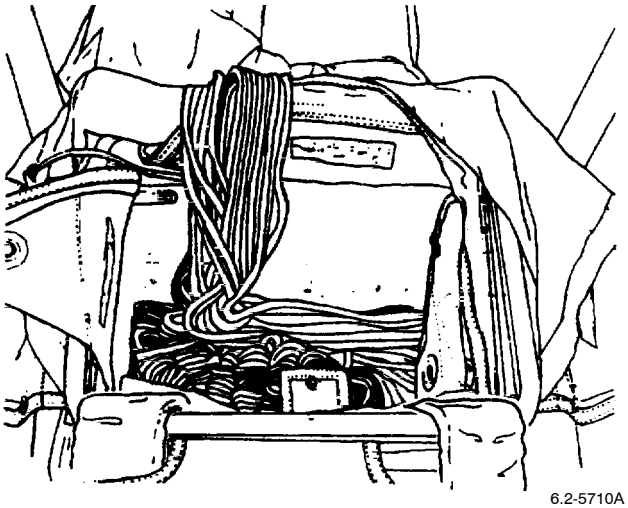


Figure 43. Ensure Shape of Stowage Tray Protective Cover Conforms To Container Base

f. Grasp cross-connector straps and place them below connector links across front surface and near bottom of container. Press suspension lines in stowage tray against front surface of container between risers. Fold skirt of canopy under and place in back of stowage tray so that skirt is against stowage tray. S-fold canopy from rear to front into container (Figure 40). Remove shot bags as canopy is stowed. (QA)

g. Pack canopy down into container with last fold toward front and with crown bridle lines facing packing table (Figure 44).

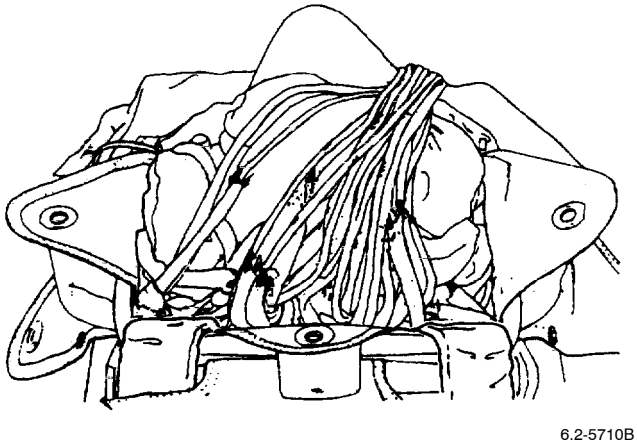


Figure 44. Pack Canopy Down into Container

h. Place small packing press block, cushioned side down with angled corner at packer's corner of container, on top of canopy.

i. Align support box under packing press so that packing press block does not touch container during compression (Figure 45).

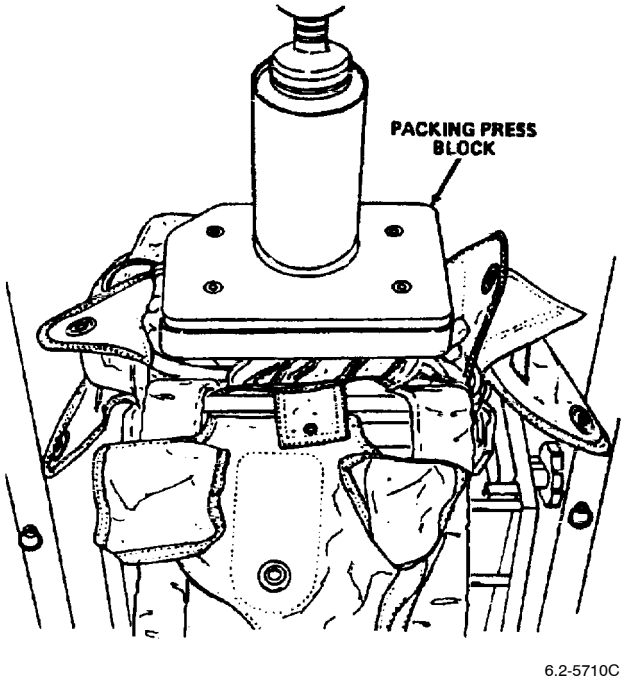


Figure 45. Align Support Box Under Packing Press

CAUTION

To prevent damage to container or packing press during compression, ensure that packing press block remains at center of container.

j. Manually turn three-pronged handle on packing press, compressing canopy with a moderate force. Using a torque wrench, increase compressive force by applying 50 ft. lbs. to hex nut on top of handle or until handle bottoms out. Keep canopy under compression for about 5 min. Canopy shall be compressed below inner closure flaps. (QA)

k. Release compression and remove packing press block.

l. Fake crown bridle lines across container from packer's to helper's side, front to rear.

m. Stow sleeve-protected shackle into packer's rear corner of container with parachute withdrawal line located across rear inside edge of container. The withdrawal line should emerge from container at packer's rear corner with withdrawal line facing up (Figure 46). (QA)

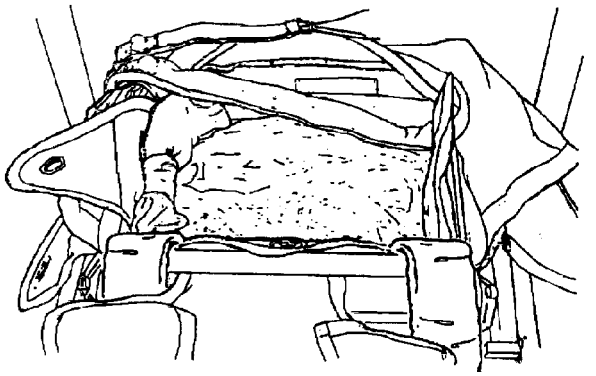


Figure 46. Stow Sleeve-Protected Shackle into Packer's Rear Corner of Container

n. Center support box with container under packing press plate. Place small packing press block, cushioned side down with angled corner at packer's rear corner of container, on top of lines. Ensure that packing block does not contact container during compression. (QA)

o. Manually turn three-pronged handle on packing press, compressing lines with a moderate force. Using a torque wrench, increase the compressive force until pack pressing block is even with bottom flap attachments, but do not exceed 50 ft. lbs. Keep under compression for 1 hr. minimum (Figure 47). (QA)

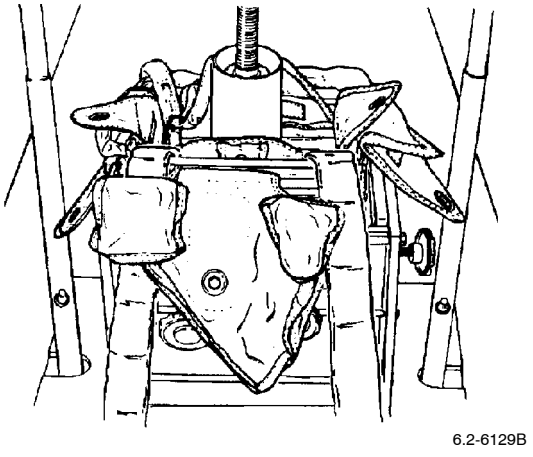


Figure 47. Manually Turn Three-Pronged Handle on Packing Press

p. Untie Type I or IA nylon cord from rear container lugs.

NOTE

Do not cut ends of Type I or IA nylon cord.

q. Pass one end of Type I or IA nylon cord thru loop in parachute withdrawal line. Pass other end of cord around parachute withdrawal line. Tie to other end of cord with a surgeon's knot followed by a square knot (Figure 48 and 49). (QA)

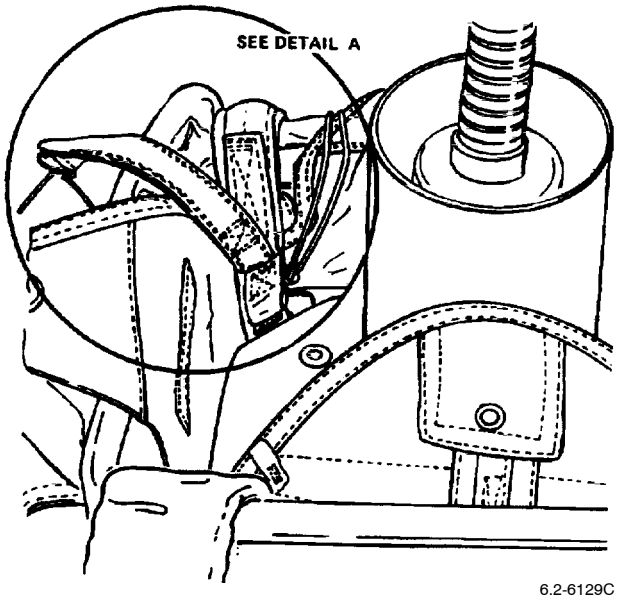


Figure 48. Pass One End of Nylon Cord thru Loop

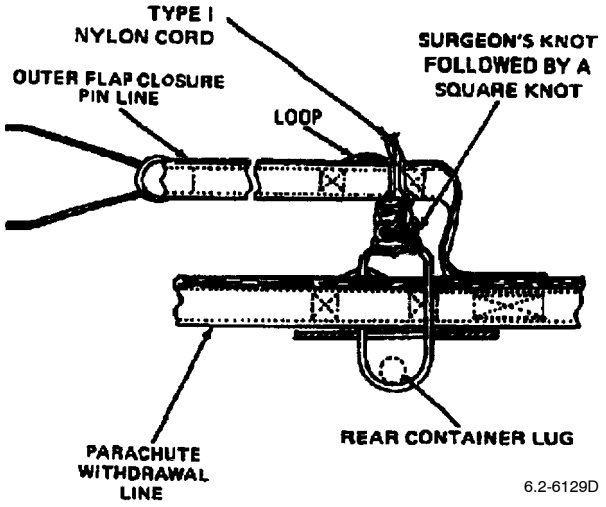


Figure 49. Tie Off Cord

20. FOLDING OF STABILIZER DROGUE PARACHUTE.

a. Spread out stabilizer drogue by drawing suspension lines taut.

b. Position sleeve-protected lines so that anti-squid line tunnel is at top (Figure 50).

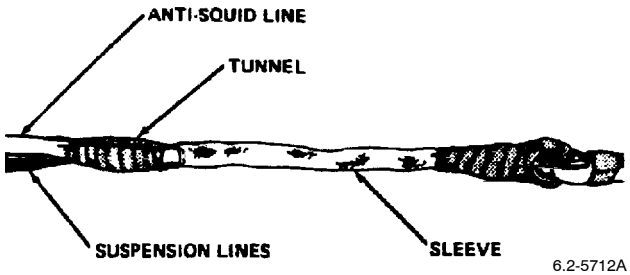


Figure 50. Positioning of Sleeve-Protected Lines

c. Hold anti-squid line, which extends from tunnel to skirt hem, at skirt. Suspension lines will become untangled and will fall to either side of anti-squid line (Figure 51). (QA)

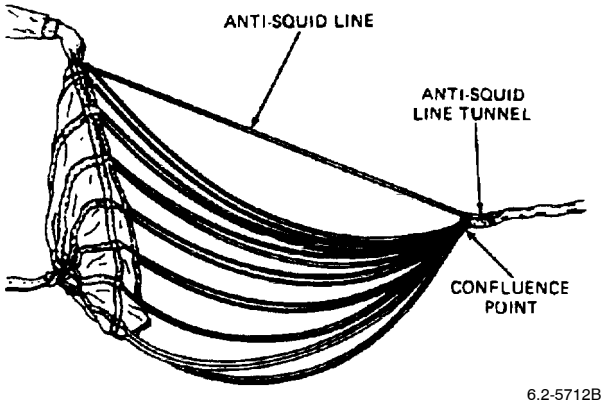


Figure 51. Hold Anti-Squid Line

d. Form two groups of 12 lines each and position each group to either side of anti-squid line. Ensure that anti-squid line remains in center (Figure 52).

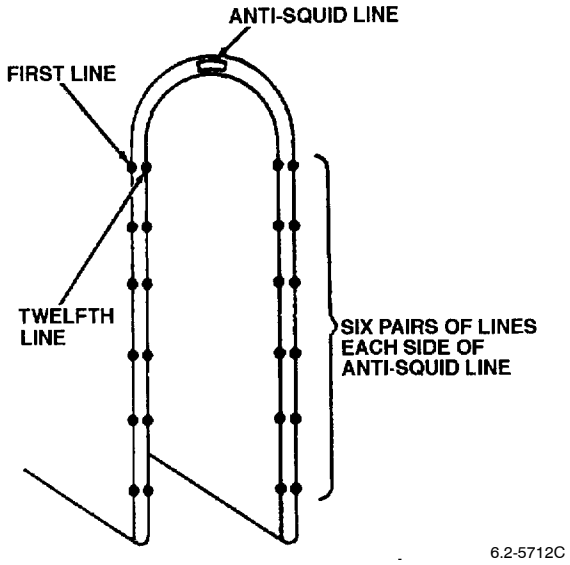


Figure 52. Form Two Groups of Twelve Lines

e. Pair off suspension lines so there are six pairs on each side of anti-squid line. Align V-tabs at skirt (Figure 53).

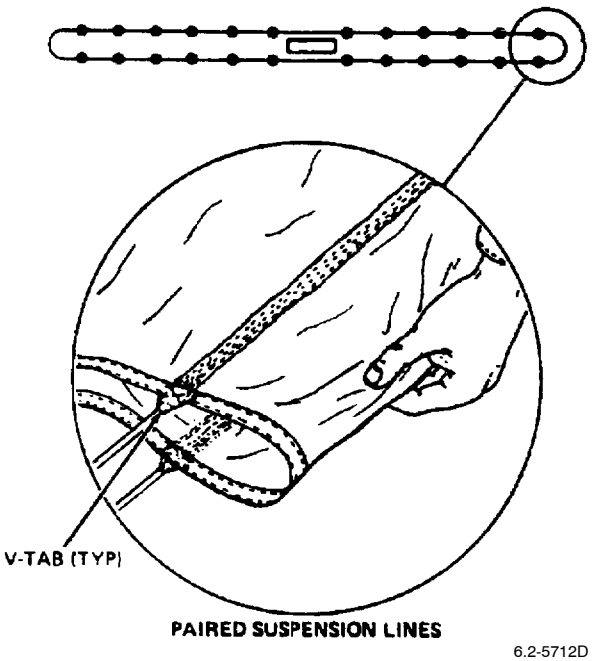


Figure 53. Pair Off Suspension Lines

f. S-fold packer's side of parachute while maintaining alignment of V-tabs (Figure 54).

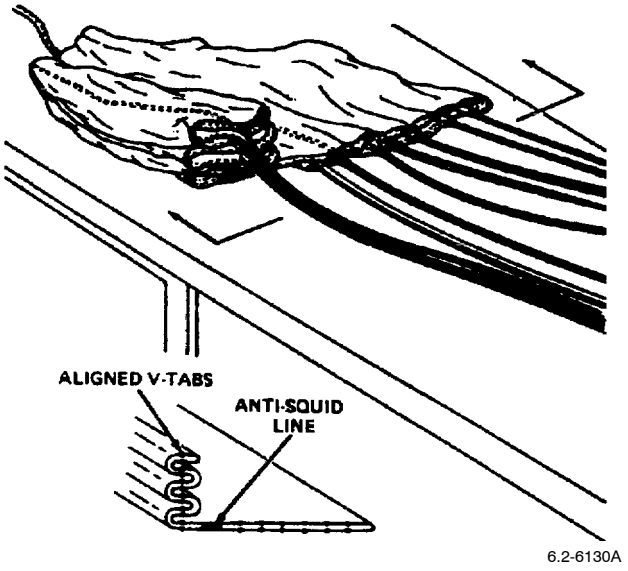


Figure 54. S-Fold Packer's Side of Parachute

g. S-fold helper's side of parachute while maintaining alignment of V-tabs. Ensure anti-squid line is positioned between two groups of folds and suspension lines (Figure 55). (QA)

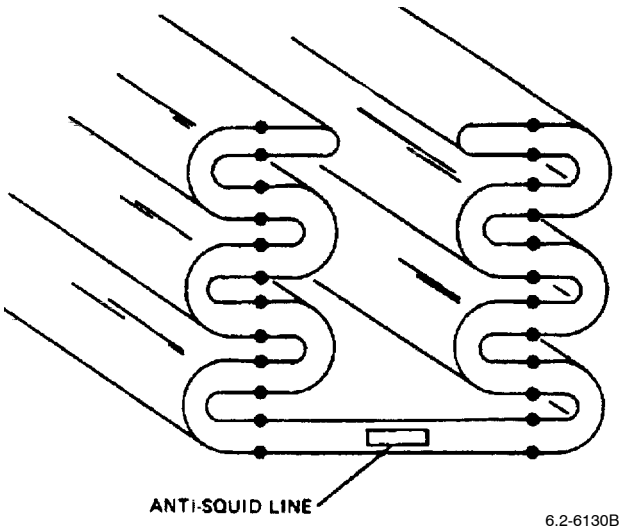


Figure 55. S-Fold Helper's Side of Parachute

h. Grasp the two sets of folds at skirt and rotate group of folds on helper's side under group of folds at packer's side (Figure 56).

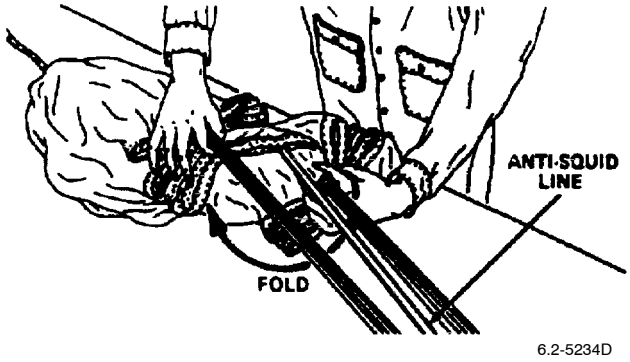


Figure 56. Grasp Two Sets of Folds at Skirt

i. Straighten folds, align V-tabs and ensure anti-squid line is free to confluence point (Figure 57). (QA)

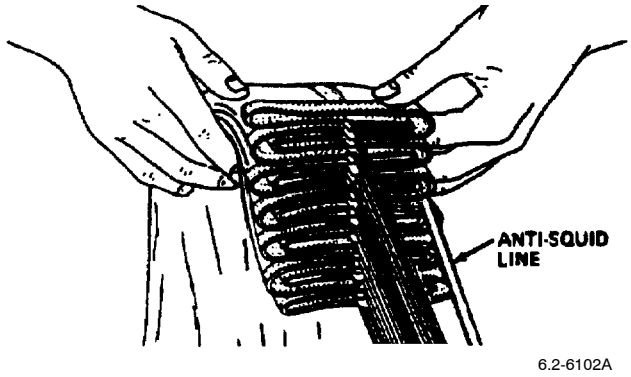


Figure 57. Straighten Folds and Align V-Tabs

j. Place shot bag on folded drogue parachute at skirt hem (Figure 58).

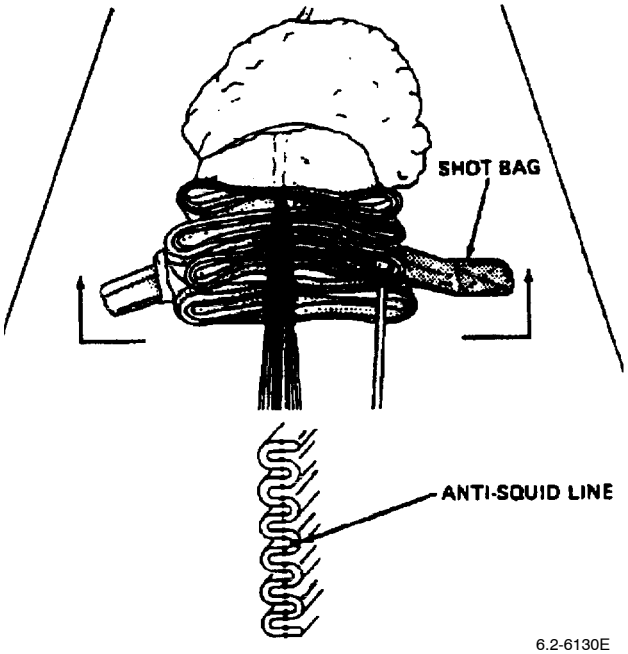


Figure 58. Placement of Shot Bag

21. CLOSING CONTAINER INNER FLAPS.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

NOTE

Parachute assembly should be compressed enough to permit closure of flaps

a. Release compression and remove packing press block.

NOTE

If parachute assembly rises when compression is released so that flaps cannot be closed, repeat Paragraph 19.n thru 19.o in stowage of canopy.

b. Move support box forward to clear packing press.

c. Close inner flaps in the following sequence: rear, helper's, packer's and front, insert a temporary pin thru wire loop (Figure 59).

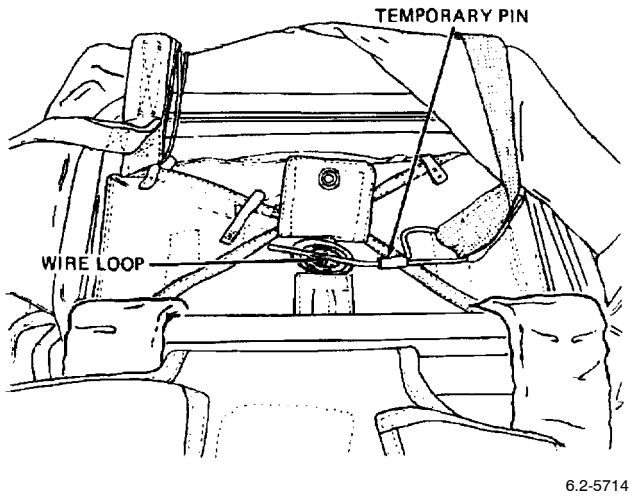


Figure 59. Close Inner Flaps

d. Cut four lengths of size FF thread waxed. Pass a single length thru loops at packer's front, helper's front and rear corners of inner closure flap. Tie off; trim ends (Figure 60).

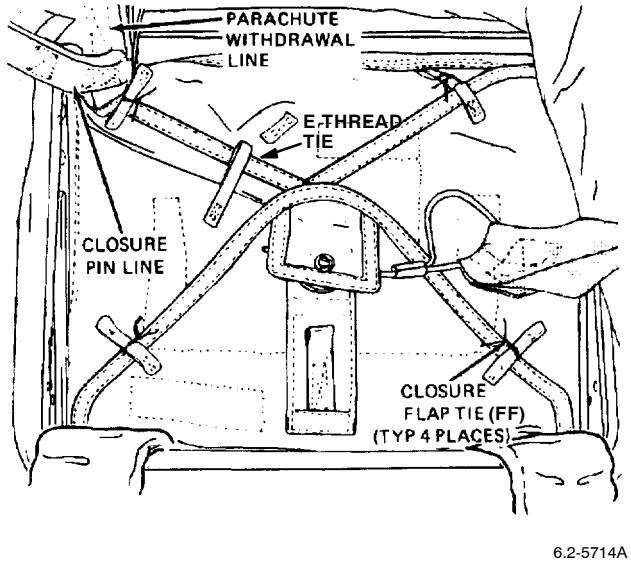


Figure 60. Cut Three Lengths of Thread

e. Cut a length of size E thread waxed, ensure that loop at packer's rear corner lies on top of parachute withdrawal line and not over closure pin line. Ensure that closure pin line is free of twists. Remove temporary pin and insert closure pin thru wire loop and into front flap pocket.

f. Pass a single length thru packer's rear corner loop, thru loop on main section of canopy withdrawal line and thru packer's corner front loop. Ensure that both free ends are under closure pin line; tie off. Trim ends (Figure 61).

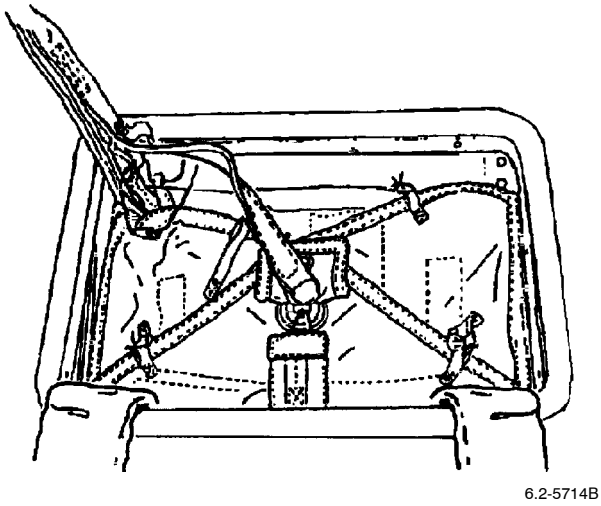


Figure 61. Pass a Length thru Packer's Rear Corner Loop

g. Cut a length size 3 thread waxed, and pass a single turn thru closure pin ring and fabric loop on front flap. Tie off; trim ends (Figure 62).

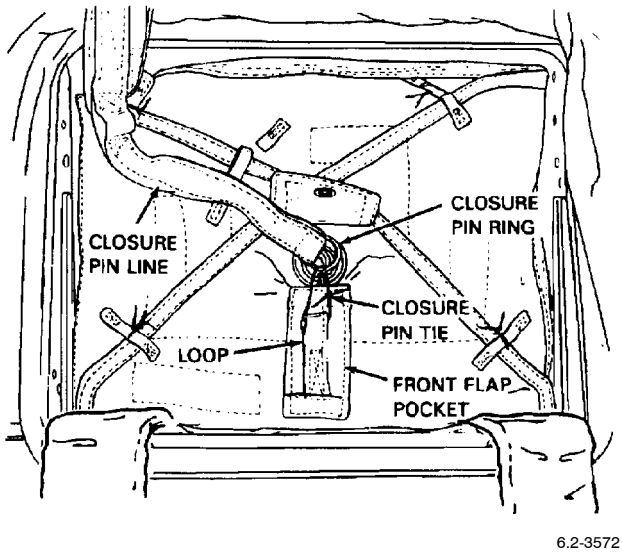


Figure 62. Pass a Single Turn thru Closure Pin

h. Cut a length of size A thread waxed. Fold closure pin protective flap and pass a single turn thru grommet on front flap and webbing loop on pocket. Tie off; trim ends (Figure 63).

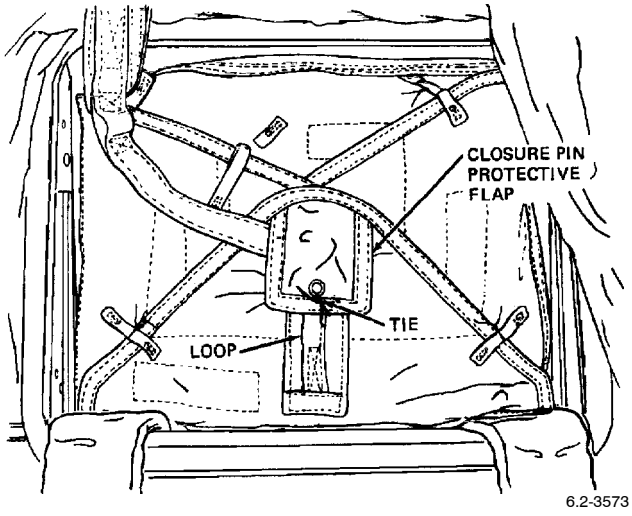


Figure 63. Fold Closure Pin Protective Flap

i. Pass one end of Type I or IA nylon cord, which is tied to withdrawal line, thru loop on closure pin line. Pass other end around closure pin line and tie off; trim ends (Figure 64). (QA)

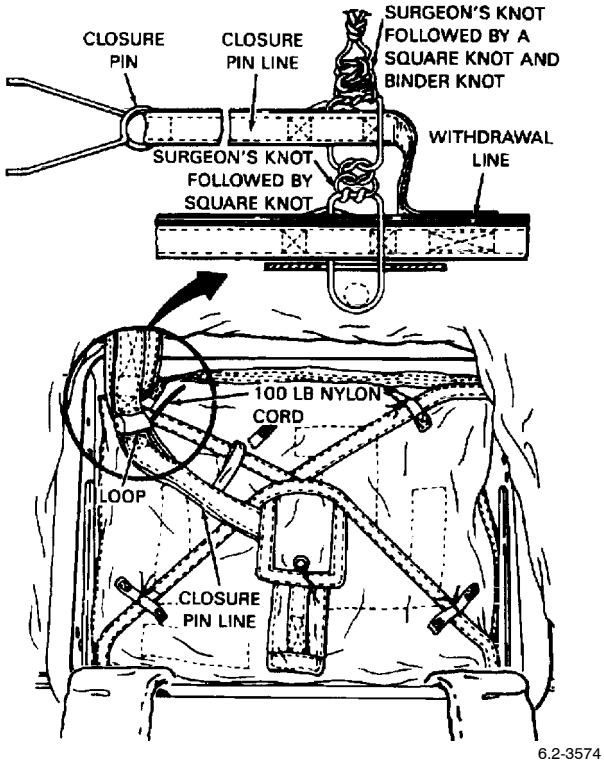


Figure 64. Pass a Length of Nylon Cord thru Loop Closure Pin

j. Cut a length of size E thread waxed, and pass thru remaining inboard loop. Ensure that long loop passes over closure pin line; tie off; trim ends (Figure 65).

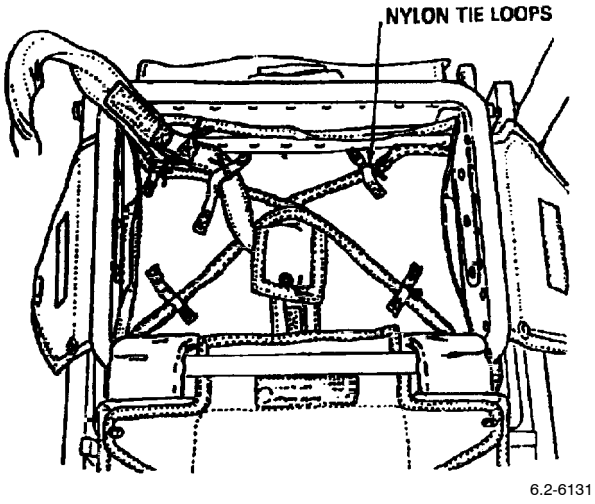


Figure 65. Pass a Length of Thread thru Remaining Inboard Loops

22. STOWAGE OF DUPLEX DROGUE PARACHUTE ASSEMBLY.

a. Place protective flap over canopy closure flaps (Figure 66).

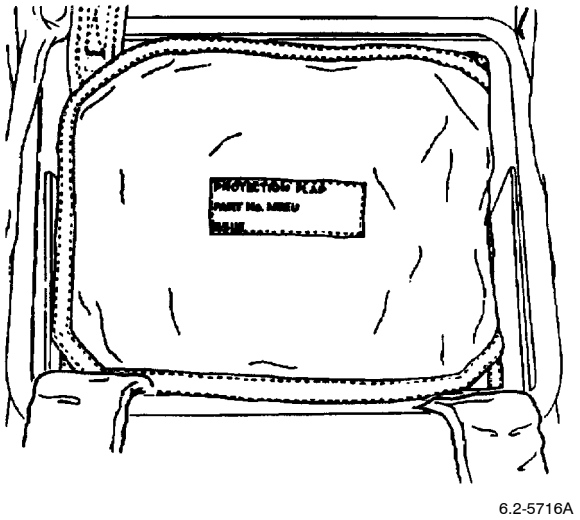


Figure 66. Placement of Protective Flap

b. Place eye end of stabilizer drogue at packer's front corner of container and route sleeve-protected portion of suspension lines toward helper's side of container. Route extender strap, which is attached to eye end along packer's side of container, toward rear corner. Nut on bolt securing shackle must face packer's side. Extender strap shall emerge from container on outboard side of parachute withdrawal line. Excess portion of withdrawal line shall be stowed along rear inside edge of container (Figure 67). (QA)

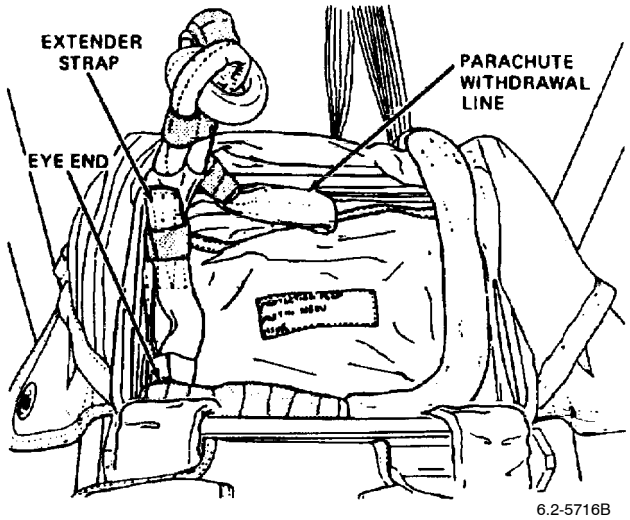


Figure 67. Place Eye End of Stabilizer Drogue at Packer's Front Corner

c. Stow sleeve-protected suspension lines around container with tunnel portion laid in helper's rear corner of container. Place excess suspension lines next to tunnel.

d. Continue stowing anti-squid line and suspension lines in a counterclockwise direction, leaving the center void. Helper shall hold parachute withdrawal line and assist in stowing suspension lines (Figure 68).

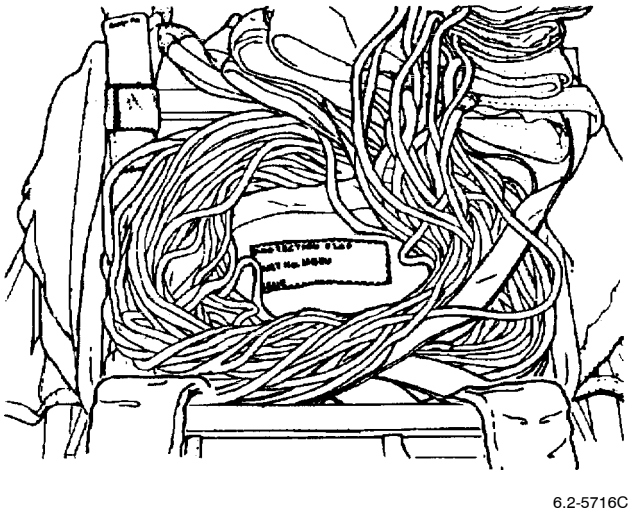


Figure 68. Continue Stowing Anti-Squid Line

e. Pack parachute skirt into void area and S-fold remainder from front to rear of container.

f. Spread out parachute apex in center of container (Figure 69).

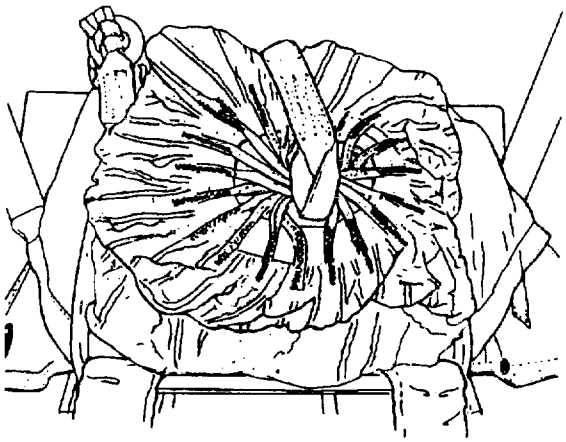


Figure 69. Spread Out Parachute Apex

g. Center container under press.

h. Place large packing press block, cushioned side down with angled corner at packer's rear corner of container, on top of stabilizer drogue. Align support box under packing press so that packing block does not touch container during compression (Figure 70).

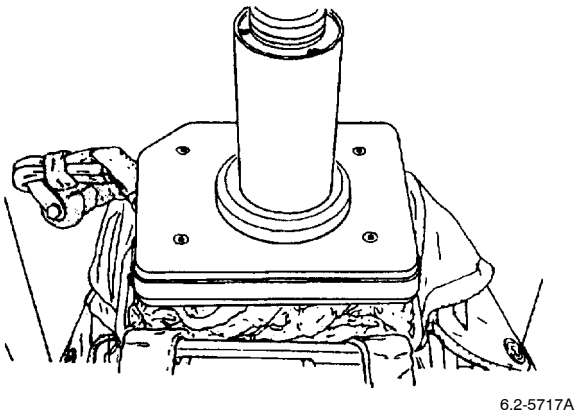


Figure 70. Placement of Large Packing Press Block

CAUTION

To prevent damage to container and packing press, ensure that packing block remains at center of container. Do not exceed 30 ft. lbs.

i. Manually turn three-pronged handle on packing press until a moderate amount of compressive force is applied. Tuck drogue parachute material into sides of container as pressure is applied. Using a torque wrench on nut atop handle, increase compressive force until top surface of packing block is 1/4 to 1/2-in. above front edge of container. Do not exceed 30 ft. lbs. Keep drogue under compression for 30 min. minimum (Figure 71).

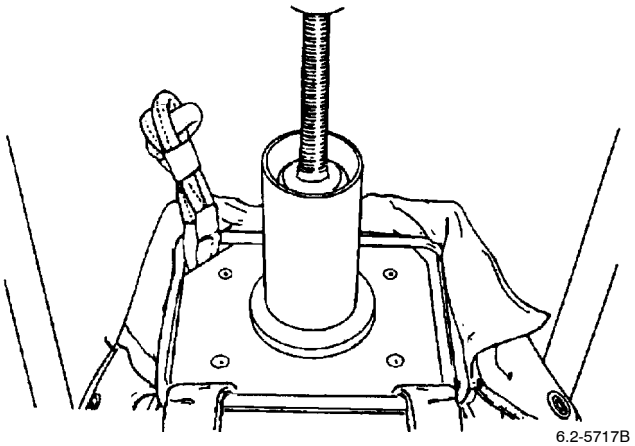


Figure 71. Apply a Moderate Amount of Compressed Force

j. After 30 min. release compression and remove packing press block.

k. Fake drogue connector line from rear to front going from packer's to helper's side across top of stabilizer drogue apex. Pack connector line into container with packing fid (Figure 72). (QA)

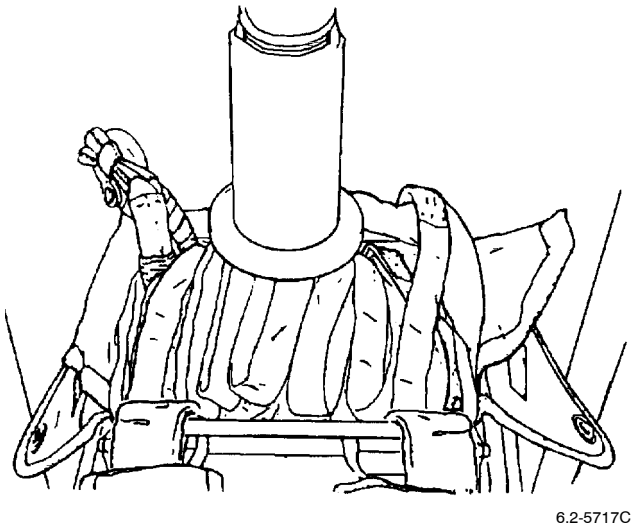


Figure 72. Fake Drogue Connecting Line from Rear to Front

l. Continue stowing and packing connector line until eye end of controller drogue is positioned at helper's rear corner of container. Controller drogue suspension lines shall emerge at helper's front corner of container. Tuck riser protective flaps down inside front edge of container (Figure 73). (QA)

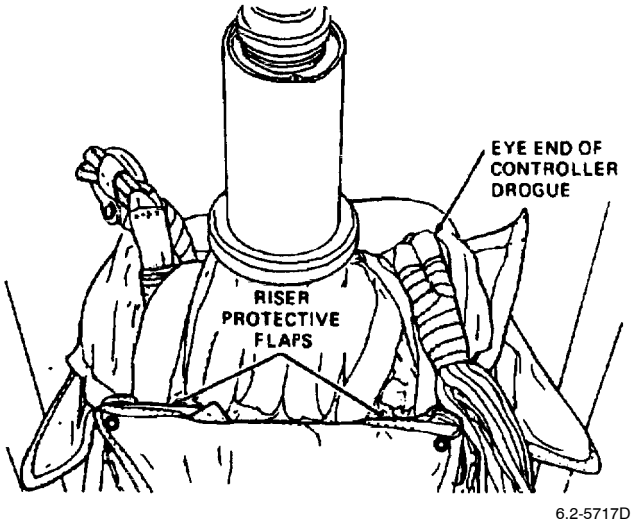


Figure 73. Continue Stowing and Packing Connector Line

m. Spread and pack protective flap to cover connector line and eye end of controller drogue parachute. Tuck cover along two sides and rear. Place controller drogue parachute suspension lines on protective flap. Spread out controller drogue parachute with apex at center of container and with drogue withdrawal line emerging at helper's rear corner with closure pin facing up (Figure 74). (QA)

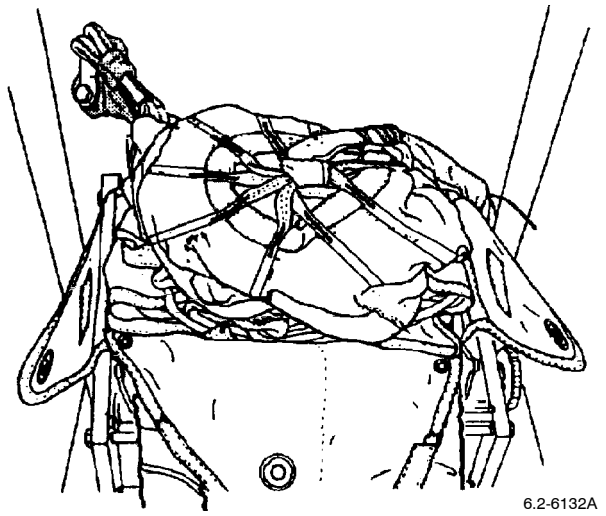


Figure 74. Spread and Pack Protective Flap

n. Place drogue protective flap over controller drogue parachute. Wrap hook and pile fastener around extender strap and parachute withdrawal line. Ensure that drogue withdrawal line emerges from opening at helper's side of protective flap (Figure 75).

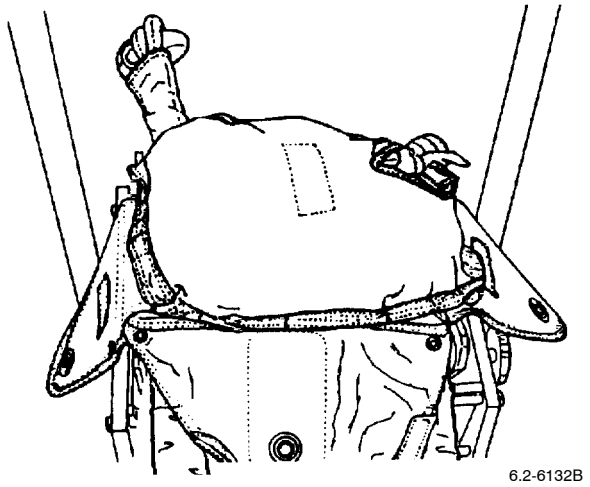


Figure 75. Place Drogue Protective Flap Over Controller Drogue

o. Place large packing press block, cushioned side down with angled corner at packer's rear corner of container, on top of drogue protective flap. Align support box under packing press so that packing block does not touch container during compression (Figure 76).

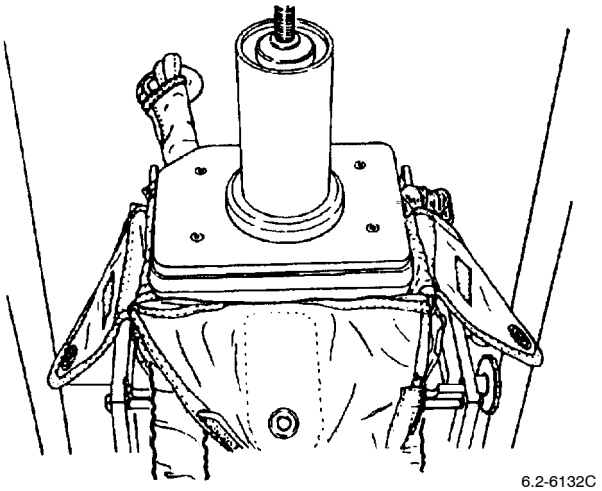


Figure 76. Place Large Packing Press Block on Top of Drogue Protective Flap

CAUTION

To prevent damage to container and packing press, ensure that packing block remains at center of container.

p. Manually turn three-pronged handle until a moderate amount of compressive force has been applied.

CAUTION

Do not exceed 30 ft. lbs. force

q. Using a torque wrench, increase compressive force until top surface of packing block is 1/2 to 3/4-in. above top edge of container. Do not exceed 30 ft. lbs. Pack edges of protective flap down while increasing compression. Keep parachutes under compression for a minimum of 1 hr.

23. CLOSING OUTER FLAPS.

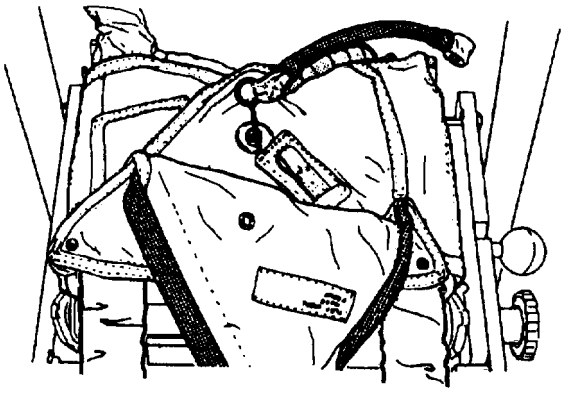
NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Release compression and remove packing press block. Move support box forward to clear packing press.

b. Close outer flaps in following sequence: rear, helper's side, packer's side, front. Use a length of cord to pull closure pin loop on inner rear flap thru grommets in outer flaps. (QA)

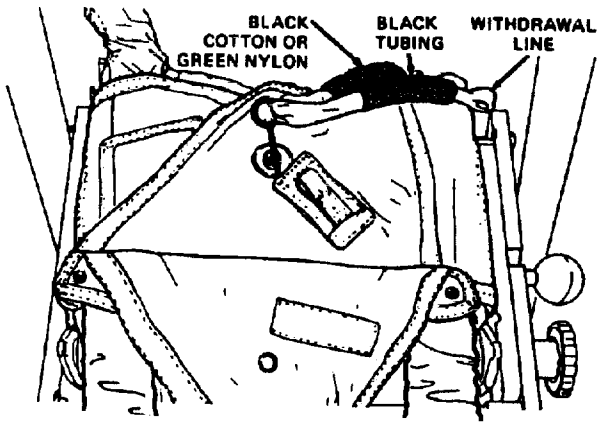
c. Insert closure pin attached to controller drogue parachute withdrawal line thru closure pin loop and into fabric pocket on front flap. Remove pull-up cord from closure pin loop (Figure 77).



6.2-6133A

Figure 77. Insert Closure Pin

d. (Parachute assembly with drogue withdrawal line assembly P/N MBEU69922). Insert closure pin attached to controller drogue withdrawal line thru wire loop and into fabric pocket on front flap. Ensure that cord from wire loop is removed. Route drogue withdrawal line (black tubing section-spool end) aft towards helper's side and forward along side of drogue withdrawal line (black cotton or green nylon section from drogue parachute) (Figure 78).



6.2-6133B

Figure 78. Insert Closure Pin

e. Secure closure pin in position by passing a length of size 6 thread, single and waxed, thru flap closure pin and thru loop on pocket; tie off (Figure 79). (QA)

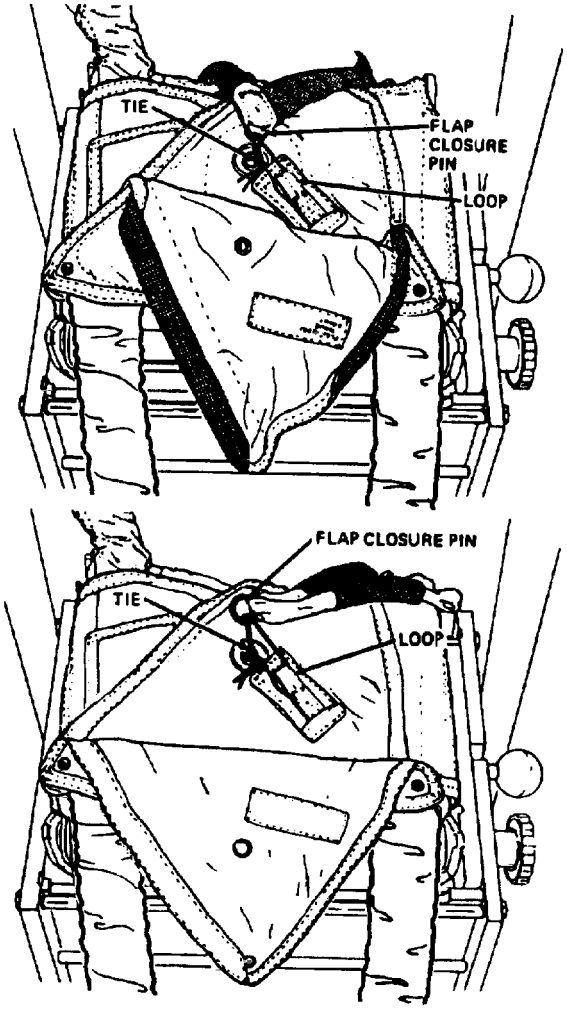


Figure 79. Secure Closure Pin

f. Using a 24-in. length size 6 thread, single and waxed, pass it around legs of closure pin, forward of closure pin loop and then both ends thru top of front flap grommet (Figure 80).

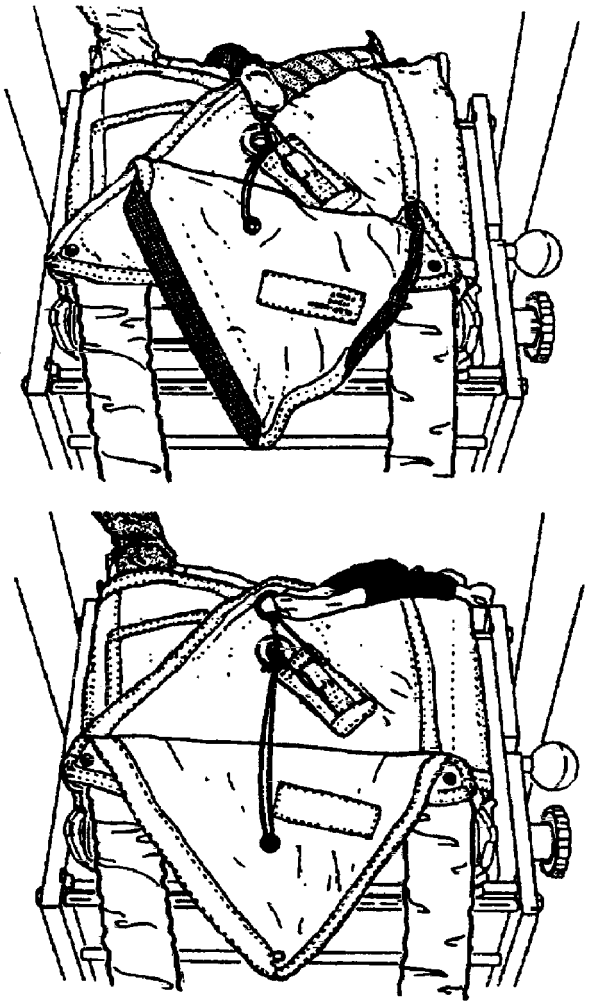


Figure 80. Secure Closure Pin

NOTE

The 24-in. length of size 6 thread extending thru grommet is tied to scissor shackle release when parachute container is installed in ejection seat.

g. Tie down corners of front flap on helper's and packer's side with one turn of size FF thread, single and waxed, thru grommets on flaps; tie off. Close flap over closure pin.

h. (Parachute assembly with outer front flap installed). Close flaps over closure pin by affixing hook and pile fasteners. Tie down corners of front flap and center aft end of flap with size FF thread, single and waxed. Pass thread thru grommets on flaps and then thru loop on lower flap; tie off (Figure 81).

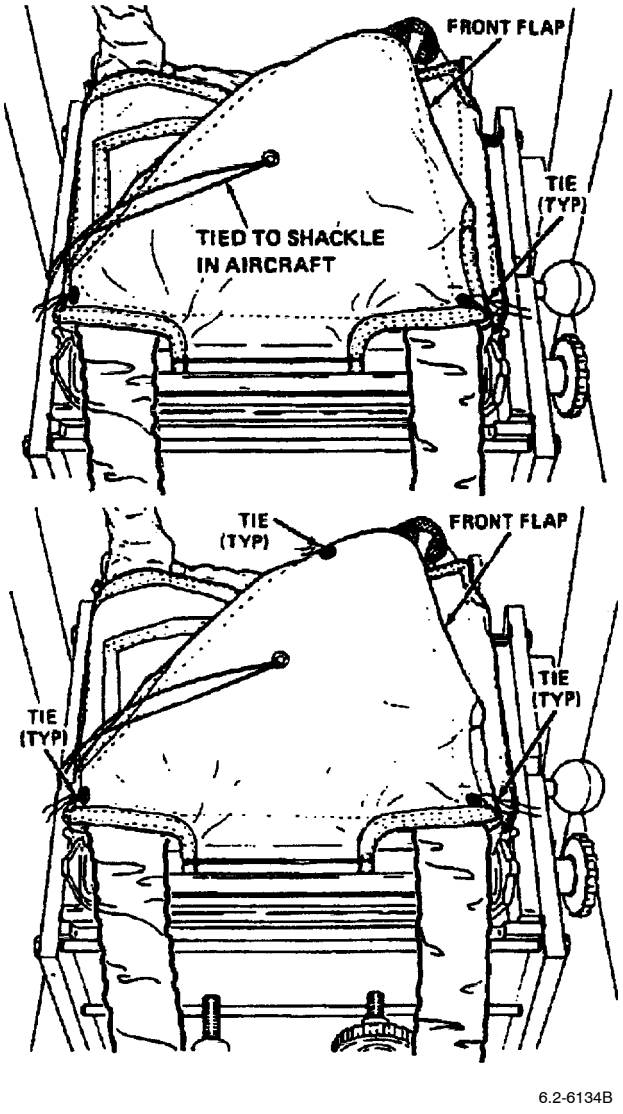


Figure 81. Close Flaps Over Closure Pin

24. PARACHUTE HARNESS SENSING RELEASE UNIT (PHSRU), MXU-746/P AND MXU-747/P.

a. Measure the knurled actuating lever torque as follows:

(1) Hold locking lever in the open position and insert the torque meter with 1/16-in. hex head driver into actuating lever cavity.

(2) Rotate actuating lever to just prior to contact with body. Acceptable torque values are 28 to 50 in.-oz. (Figure 82). (QA)

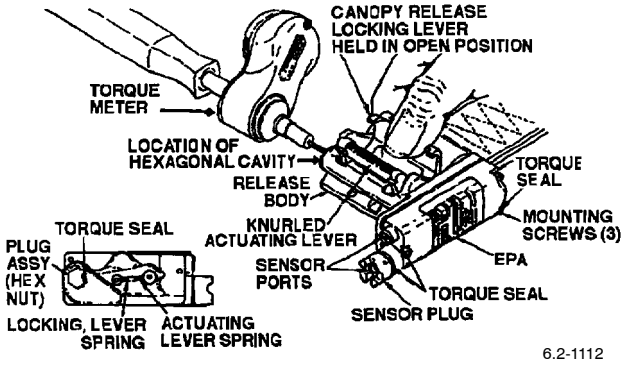


Figure 82. Rotate Actuating Lever

b. Check battery voltage as follows:

(1) Install test leads in multimeter observing proper polarity.

(2) Select VDC and scale exceeding 26 VDC.

CAUTION

Avoid touching the meter probes together when making this test. Firing of the PHSRU may result.

(3) Contact negative (black) probe to sensor plug assembly center conductor. Contact positive (red) probe to EPA sensor center conductor.

(4) Reading of +22.5 volts DC or greater indicates PHSRU is serviceable. (QA)

c. If plug assembly was removed, perform the following:

(1) Forward complete packed parachute assembly to either non-destructive inspection lab or medical facility for X-ray.

(2) From review of X-ray (Figure 83), if plug assembly is suspected or known to be partially or fully recessed, the unit shall have a shear pin integrity check per WP 024 02.

(3) Record inspection on Parachute Record (OPNAV 4790/101).

(4) Attach X-rays to the Parachute Record (OPNAV 4790/101).

(5) If voltage is below +22.5 volts DC, replace battery per WP 024 02.

(6) Record voltage for each EPA in the Local Use Block on the Parachute Record (OPNAV 4790/101).

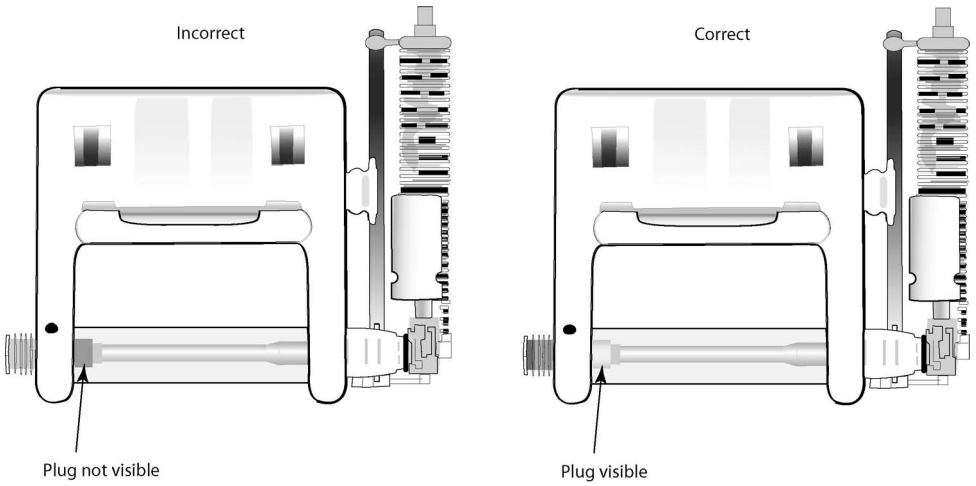


Figure 83. PHSRU X-Ray

25. FINAL CHECKOUT.

a. Loosen three handwheels on support box. Remove side support plate and container.

b. Replace/install headrest cushion on front of container. Reinstall four mushroom head bolts. Torque to 25 in-lbs. (QA)

c. Route risers down front of container and affix riser ends to hook and pile fasteners on each side of container.

d. Check height of packed parachute 12 hrs after completion of packing and no pressure. Height of packed parachute shall not exceed 14 1/2-in. (Figure 84). (QA)

e. Account for all packing tools.

f. Examine packed parachute for general condition. (QA)

g. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA)

h. QA inspector shall examine completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

i. QA inspector shall sign Parachute Record (OPNAV 4790/101).

j. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

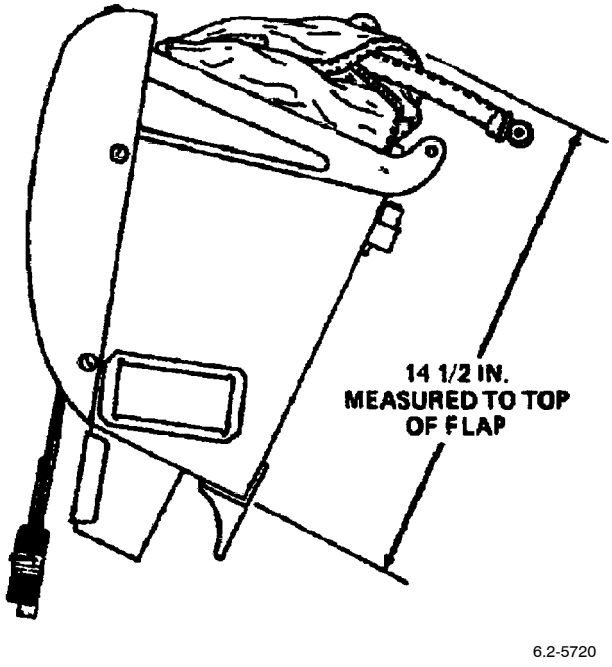


Figure 84. A/P28S-24 Dimensional Check

INTERMEDIATE AND DEPOT MAINTENANCE

REPAIR PROCEDURES

A/P28S-24 PERSONNEL PARACHUTE ASSEMBLY

PART NO. MBEU10030PA-4

List of Effective Work Package Pages

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2 thru 13	9	16 thru 18	9				

Reference Material

Common Repairs . . . . . WP 004 00
Intermediate and Depot Maintenance, Maintenance Procedures, Parachute Harness Sensing Release Units (PHSRU), MXU-746/P and MXU-747/P . . . . . WP 024 02
Intermediate and Depot Maintenance, Original Issue Rigging Procedures, Parachute Harness Sensing Release Units (PHSRU), MXU-746/P and MXU-747/P . . . . . WP 024 01
Intermediate and Depot Maintenance, Packing Procedures, A/P28S-24 Personnel Parachute Assembly . . . . . WP 018 02
Introduction . . . . . WP 002 00
Parachute Loft Requirements/Administration . . . . . WP 003 00
Support Equipment . . . . . WP 005 00

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Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This work package (WP) contains instructions for maintenance, repair, replacement and fabrication of various parachute parts or subassemblies to ensure that proper items of equipment remain in a ready-for-issue (RFI) status. Selected repairs shall be documented on the Parachute Record. For common repairs refer to WP 004 00.

2. DROGUE PARACHUTE AND DROGUE WITHDRAWAL LINE REPAIRS.

a. Repair of the drogue parachute and/or withdrawal line is limited to the following:

(1) Cleaning of contaminated areas.

(2) Replacement of loose or broken tacking.

b. Replace drogue parachute and/or withdrawal line for any of the following:

(1) Service/total life has expired per WP 018 02.

(2) Holes, tears, seam separations and loose or broken stitching (yarn separation is acceptable) that may affect the safe operation of the parachute assembly.

3. REPLACEMENT OF DROGUE CONNECTING LINE AND ANTI-SQUID LINE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Inspect replacement connecting line per WP 018 02.

b. Pass one looped end of connecting line thru base loop of controller drogue. Route opposite end of line thru loop and pull tight (Figure 1).

c. Pass free end loop of connecting line around apex suspension lines of the 5 ft. drogue and thru anti-squid line. Route complete controller drogue thru loop of connecting line and pull tight (Figure 1).

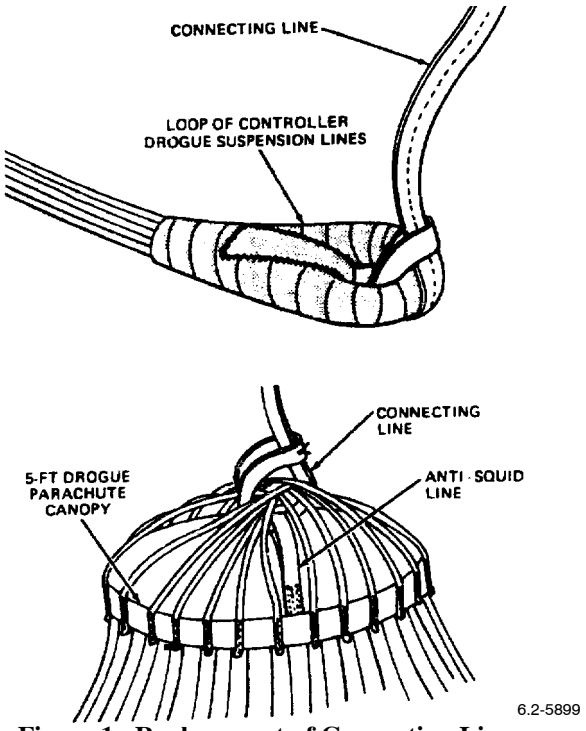


Figure 1. Replacement of Connecting Line

d. Tack connecting line at stabilizer drogue apex with one turn of size 6 thread, doubled and waxed; tie off.

e. Mark date placed in service on connecting line. (QA)

f. Inspect replacement anti-squid line per WP 018 02.

g. To replace anti-squid line, pass large loop end thru loop inside drogue suspension line union. Pass small loop end of anti-squid line thru large loop and pull tight to form a knot (Figure 2).

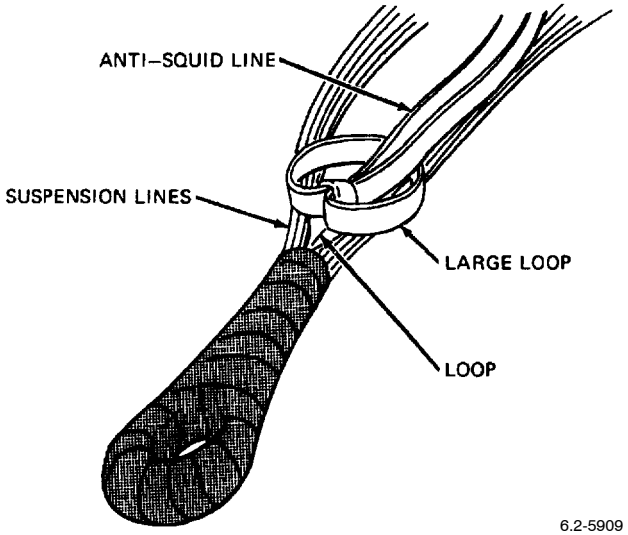


Figure 2. Replacement of Anti-Squid Line

4. REPLACEMENT OF STABILIZER DROGUE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove extender strap and shackle from stabilizer drogue, and retain for reinstallation Paragraph 7.

b. Remove connecting line tacking.

c. Route complete controller drogue thru loop of connecting line at apex of stabilizer drogue.

d. Dispose of stabilizer drogue per current supply directives.

e. Inspect replacement stabilizer drogue per WP 018 02.

f. Pass free end loop of connecting line around apex suspension lines of replacement stabilizer drogue and thru anti-squid line. Route complete controller drogue thru loop of connecting line and pull tight.

g. Tack connecting line at apex with one turn of size 6 thread, doubled and waxed; tie off.

h. Mark date placed in service on stabilizer drogue. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

i. Reinstall extender strap and shackle per Paragraph 7.

5. REPLACEMENT OF CONTROLLER DROGUE.

a. Cut withdrawal line tacking at apex of controller drogue and remove withdrawal line.

b. Route controller drogue thru loop of controller drogue.

c. Remove connecting line from loop of controller drogue.

d. Dispose of controller drogue per current supply directives.

e. Inspect replacement controller drogue per WP 018 02.

f. Pass one looped end of connecting line thru base loop of replacement controller drogue (Figure 1). Route end of line thru loop and pull tight.

g. Pass free end loop of connecting line around apex suspension lines of stabilizer drogue and thru anti-squid line (Figure 2). Route complete controller drogue thru loop of connecting line and pull tight.

h. Reinstall controller drogue withdrawal line per Paragraph 6.

i. Mark date placed in service on controller drogue. (QA)

6. REPLACEMENT OF DROGUE WITHDRAWAL LINE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Inspect drogue withdrawal line per WP 018 02.

b. Replace drogue withdrawal line as described below.

c. Hold five controller drogue apex lines centrally to form two clear diametrically opposite openings. Pass loop end of drogue withdrawal line in one side of centrally held apex lines, thru small loop of anti-squid line and out other side of apex lines (Figure 3).

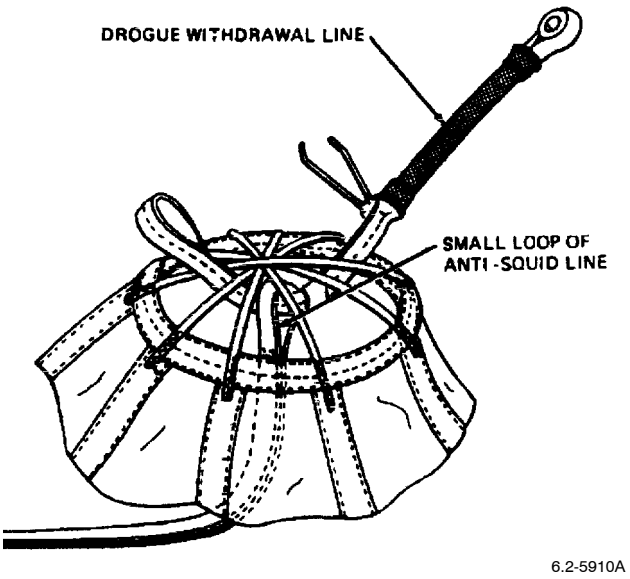


Figure 3. Form Two Clear Diametrically Opposite Openings

d. Pass spool end of withdrawal line over outside of apex lines and thru loop at opposite end of withdrawal line. Pull tight to form lark's head knot. Tack with three turns of size FF thread, single; tie off (Figure 4).

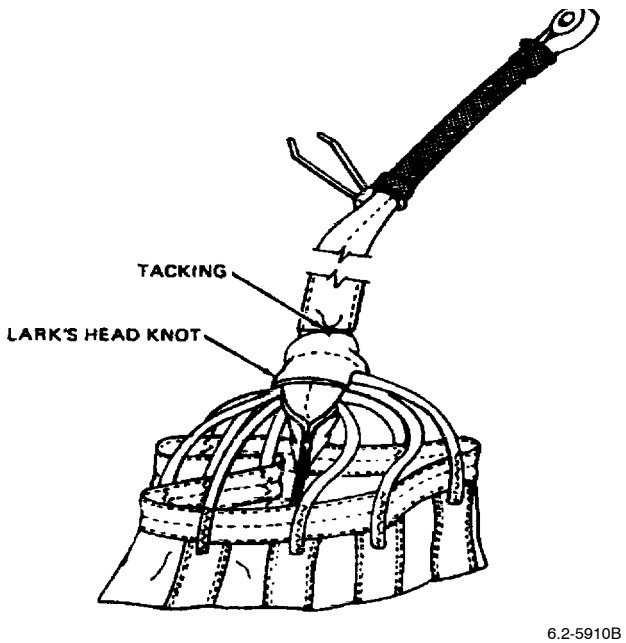


Figure 4. Form a Lark's Head Knot

e. Mark date placed in service on drogue withdrawal line. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

7. REPLACEMENT OF STABILIZER DROGUE EXTENDER STRAP AND SHACKLE.

Materials Required

Specification or Part Number	Nomenclature
MIL-I-19166	Tape, Electrical, Insulation, 3/4-in. Wide

a. Inspect extender strap and shackle per WP 018 02.

b. Replace extender strap and shackle as described below.

c. Pass extender strap thru eye end of main drogue suspension lines (Figure 5).

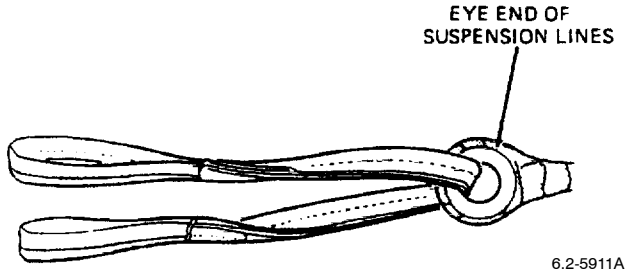


Figure 5. Pass Extender Strap thru Eye

d. Position end loops of straps on shackle (Figure 6).

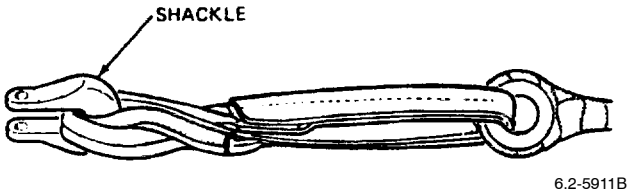


Figure 6. Position End Loops

e. Wrap with four turns of 3/4-in. wide electrical insulation tape in three places as shown (Figure 7).

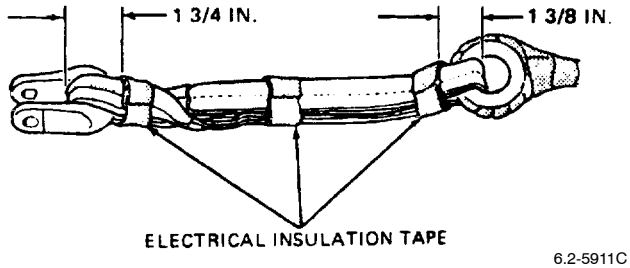


Figure 7. Wrap With Four Turns of Tape

f. Mark date placed in service on extender strap. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

8. CANOPY ASSEMBLY REPAIRS.

a. Repair of the canopy, suspension lines, steering line release lanyards and connector links is limited to the following:

(1) Do not repair holes 1-in. or less, mark location on canopy damage chart.

(2) Repair of any canopy hole or tear larger than 1-in. and less than 8-in. long with a double patch.

(3) Cleaning of contaminated areas.

(4) Repair of suspension lines and steering line release lanyards is limited to criteria standards per WP 004 00.

(5) Removal of dips and twists.

(6) Removal and reinstallation of suspension lines for proper sequencing.

b. Replace canopy assembly for any of the following:

(1) One or more complete gores are torn.

(2) Holes or tears 8-in. in length in one or more sections.

(3) Any one canopy section requires more than two double patches.

(4) Damaged suspension lines per WP 004 00.

(5) Service/total life has expired per WP 018 02.

c. Replace connector links for any of the following: Corrosion, distortion, bends, nicks, burrs, sharp edges, dents, breaks, broken rivet, defective tensioner and any damage that may affect the safe operation of the parachute assembly.

9. REPLACEMENT OF CONNECTOR LINK.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Temporary Locking Pin
MBEU68053	Tensioner Locking Key

Materials Required

Specification or Part Number	Nomenclature
MS20470B2-8	Rivet, Universal Head, 0.0625-in. Diameter

a. Inspect replacement connector link for proper part number, corrosion, distortion, bends, dents, nicks, burrs, sharp edges, broken rivet and defective tensioner

b. Remove rivet from damaged connector link.

c. Using tensioner locking key, turn tensioner to allow separation and rotation of both halves of connector link (Figure 8).

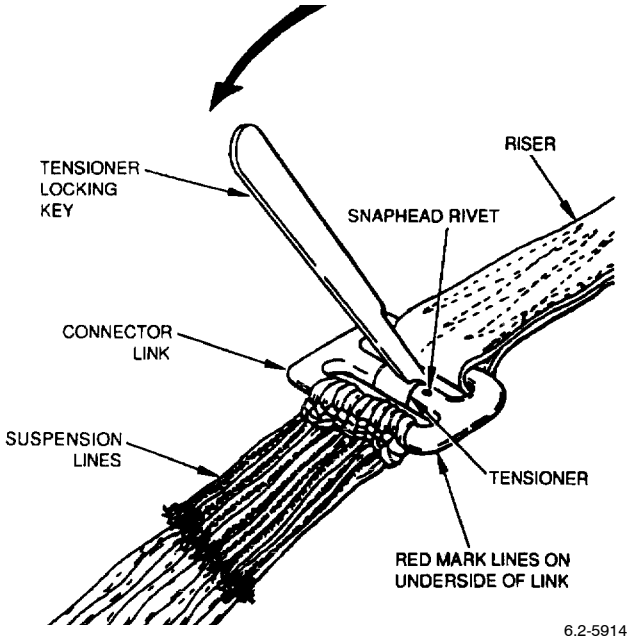


Figure 8. Connector Link Removal

d. Slide suspension links off link and onto a temporary holder.

e. Remove connector link from riser and scrap.

f. Position riser on new connector link.

g. Slide suspension lines onto new connector link.

h. Ensure that suspension lines are free from twists and reengage connector link.

i. Tighten tensioner using tensioner locking key, align red lines on connector link and tensioner, and install new 0.0625-in. diameter rivet. Peen rivet (Figure 8). (QA)

j. Check suspension line continuity (Figure 9).

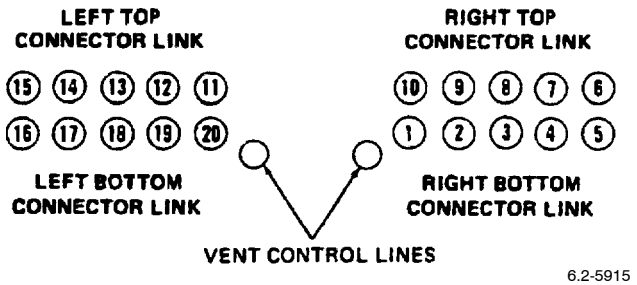


Figure 9. Arrangement and Orientation of Suspension Lines on Connector Links

10. REPLACEMENT OF CANOPY ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
MBEU68053	Tensioner Locking Key

Materials Required

Specification or Part Number	Nomenclature
MS20470B2-8	Rivet, Universal Head 0.0625-in. Diameter

a. Remove shackle sleeve from parachute withdrawal line at crown bridle loop per Paragraph 17.

b. Remove shackle securing parachute withdrawal line to crown bridle loop.

NOTE

Connector links shall be disengaged one at a time.

c. Remove rivet from connector link.

CAUTION

Do not separate tensioner from connector link completely.

CAUTION

Arrangement of suspension lines on connector links shall not be changed and loops on ends of suspension lines shall not be pulled apart during handling.

d. Using tensioner locking key, turn tensioner to allow separation and rotation of both halves of connector link (Figure 8).

e. Remove steering lines from risers and canopy.

f. Remove suspension lines and vent control lines from connector links.

g. Dispose of canopy assembly per current supply directives.

h. Lay out replacement canopy assembly full length on clean packing table.

i. Attach tension strap hook to canopy vent lines.

j. Locate gore number 1 (nameplate) and place bottom-most in center of packing table.

k. At skirt hem, separate suspension lines into two equal groups with lines 11 thru 20 on packer's side and lines 1 thru 10 on helper's side.

l. Install suspension lines and vent control lines per Figure 9.

m. Grasping each group of lines, walk from skirt hem to connector links removing any dips and twists between two groups.

n. Place connector link with lines 11 thru 15 on top of connector link with lines 16 thru 20. Place connector link with lines 6 thru 10 on top of connector link with lines 1 thru 5. Insert tension hooks into connector links and into packing table. Ensure that steering lines are attached to suspension lines 4 and 17.

o. Pull suspension lines taut and adjust vent hem.

p. Check suspension line continuity on left side of gore 10. Packer shall grasp line 11 at skirt hem and raise to enough height to ensure line is free of dips and twists. Continue procedure with lines 12 thru 20 (Figure 9). Helper shall be positioned at connector links to check lines selected by packer.

q. Check suspension line continuity on right side of gore 10. Packer shall grasp line 10 at skirt hem and raise to enough height to ensure line is free of dips and twists. Continue procedure with lines 9 thru 1 (Figure 9). Helper shall be positioned at connector links to check lines selected by the packer. Ensure that vent control lines are connected at inboard end of connector links adjacent to lines number 1 and 20. (QA)

r. Continue to inspect canopy assembly per WP 018 02.

s. Tighten tensioner using tensioner locking key, align red lines on connector link and tensioner, and install new 0.0625-in. diameter rivet. Peen rivet (Figure 8). (QA)

t. Repeat step s for each connector link.

u. Mark date placed in service on canopy assembly, per WP 004 00. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

v. Reattach steering line to risers and canopy.

w. Reattach parachute withdrawal line to crown bridle loop, and replace shackle sleeve per Paragraph 15.

11. REMOVAL AND REINSTALLATION OF SUSPENSION LINES FOR PROPER SEQUENCING.

Support Equipment Required

Part Number	Nomenclature
MBEU68053	Tensioner Locking Key

Materials Required

Specification or Part Number	Nomenclature
MS20470B2-8	Rivet, Universal Head 0.0625-in. Diameter

a. Remove rivet from connector link.

b. Using tensioner locking key, turn tensioner to allow separation and rotation of both halves of connector link (Figure 8).

CAUTION

Ensure clove-hitch and half-hitch at ends of suspension lines do not separate during handling.

c. Slide suspension lines off link and onto a temporary holder.

d. Sequence lines on connector link bar per Figure 9.

e. Ensure that suspension lines are free from twists and then reengage connector link.

f. Check suspension line continuity (Figure 9).

g. Tighten tensioner using tensioner locking key, align red lines on connector link and tensioner and install new 0.0625-in. diameter rivet. Peen rivet (Figure 8). (QA)

12. PARACHUTE WITHDRAWAL LINE REPAIRS.

13. GENERAL.

a. Repair of parachute withdrawal line is limited to replacement of parachute withdrawal line.

14. REPLACEMENT OF PARACHUTE WITHDRAWAL LINE.

a. Remove stitches securing shackle sleeve to parachute withdrawal line and crown bridle loop.

b. Remove nuts and bolts securing drogue and parachute shackles to parachute withdrawal line. Remove and scrap damaged parachute withdrawal line. Scrap shackle nuts.

c. Position new parachute withdrawal line between arms of shackle. Insert bolt in shackle, passing thru loop of withdrawal line. Secure bolt with new shackle nut.

d. Position opposite end loop of parachute withdrawal line between arms of drogue shackle. Insert bolt in shackle, passing thru loop of parachute withdrawal line. Secure bolt with new nut.

e. Replace shackle sleeve per Paragraph 15.

15. SHACKLE SLEEVE REPAIRS.

16. GENERAL.

a. Replace the shackle sleeve when any of the following conditions exist: contamination, deterioration, or rupture.

17. REPLACEMENT OF SHACKLE SLEEVE.

Materials Required

Specification or Part Number	Nomenclature
MIL-C-5646	Cloth, Cotton, Type A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove stitches securing shackle sleeve to parachute withdrawal line and crown bridle loop.

b. Ensure that crown bridle loop and withdrawal line are securely attached to parachute shackle.

c. Cut out a new 9 x 5-in. shackle sleeve and replace shackle sleeve.

d. Place shackle sleeve on packing table and position shackle centrally (Figure 10).

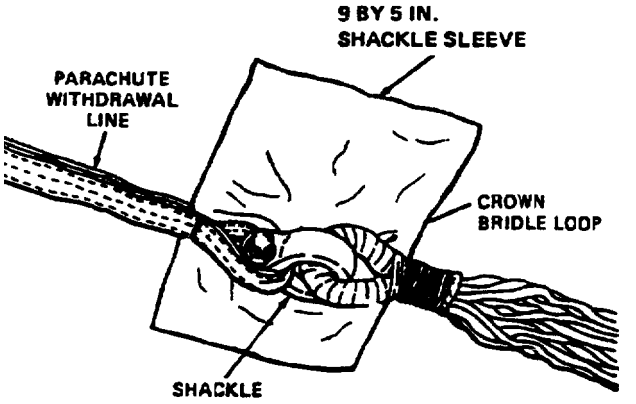


Figure 10. Place Shackle Sleeve on Packing Table

e. Fold one end of sleeve over shackle and tuck edge of sleeve under shackle (Figure 11).

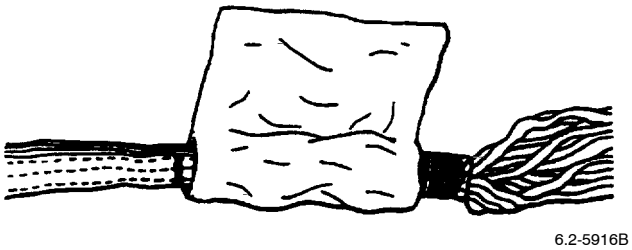


Figure 11. Fold One End of Sleeve Over Shackle

f. Fold other end of sleeve over and turn edge under 1/2-in. Handstitch length of sleeve using size E thread (Figure 12).

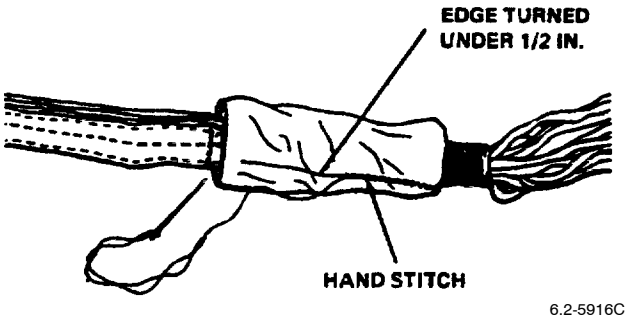


Figure 12. Fold Other End of Sleeve Over

g. Secure shackle sleeve into position by tacking open ends of stitched sleeve with one turn of size E thread, single and waxed; tie off. Tack in four places, two at each end of sleeve (Figure 13).

Figure 13. Secure Shackle Sleeve

18. RISER ASSEMBLY REPAIRS.

a. Repair of the riser assembly is limited to the following:

(1) Cleaning of contaminated areas.

(2) Removal and replacement of riser assembly.

(3) Removal and replacement of cross connector strap

(4) Replacement of steering lanyard pull loop tackings.

b. Replace the riser assembly for any of the following:

(1) Cuts, tears, or holes.

(2) Loose or broken stitching excess of 3 stitches.

(3) Twists, fading wear, fusing, fraying, burns, contamination, or abrasion.

19. REPLACEMENT OF RISER ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
MBEU68053	Tensioner Locking Key
MS20470B2-8	Rivet, Universal Head 0.0625-in. Diameter

a. Remove steering lines from riser.

NOTE

Connector links shall be disengaged one at a time.

b. Remove rivet from connector link.

CAUTION

Do not separate tensioner from connector link completely.

Arrangement of suspension lines on connector links shall not be changed and loops on ends of suspension lines shall not be pulled apart during handling.

c. Using tensioner locking key, turn tensioner to allow separation and rotation of both halves of connector link (Figure 8).

d. Remove damaged riser and slide corresponding new riser onto connector link.

e. Tighten tensioner using tensioner locking key, align red lines on connector link and tensioner and install new 0.0625-in. diameter rivet. Peen rivet (Figure 8). (QA)

f. Repeat steps c thru e for each connector link. Scrap damaged riser assembly.

g. Check suspension line continuity (Figure 9).

h. Install steering lines on riser (Figure 14).

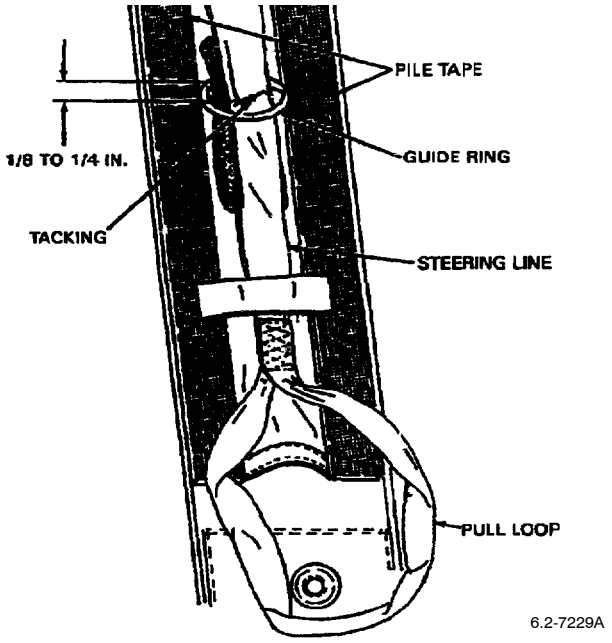


Figure 14. Steering Line Release Lanyard Pull Loop Tacking

20. FABRICATION OF RISER COVER (RIGHT SIDE).

Support Equipment Required

Part Number	Nomenclature
—	Hot Knife
—	Shears
—	Square

Materials Required

Specification or Part Number	Nomenclature
MIL-C-7219	Cloth, Duck, Nylon, Type III, Class 1, Sage Green
MIL-F-21840	Fastener Tape, Hook, 5/8-in. Wide, Type II, Class 1, Sage Green
MIL-F-21840	Fastener Tape, Pile, 5/8-in. Wide, Type II, Class 1, Sage Green
V-T-295	Thread, Nylon, Size E, Type I or II, Class A, Sage Green

NOTE

If several riser covers are to be manufactured, it is recommended that a flat pattern (template) be fabricated to ensure consistency.

a. Lay out a 42 1/4 x 5-in. piece of nylon cloth (Figure 15).

NOTE

During Fabrication, the left side refers to the shorter end of the riser cover.

b. On the bottom left side, measure and mark in 4 3/8-in. Repeat procedure on the top line.

c. Using square and starting on the bottom line, at the 4 3/8-in. mark, measure and draw line up 3/8-in.

d. Using square, on the top line, at the 4 3/8-in. mark, measure and draw line down 3/8-in.

e. On the bottom right side, measure and mark in 11 3/8-in. Repeat procedure on the top line.

f. Using square and starting on the bottom line, at the 11 3/8-in. mark, measure and draw line up 3/8-in.

g. Using square, on the top line, at the 11 3/8-in. mark, measure and draw line down 3/8-in.

h. Using straight edge, connect the top 3/8-in. marks.

i. Using straight edge, connect the bottom 3/8-in. marks.

j. Using hot knife and straight edge, sear cut on lines measured and drawn in steps a, h and i.

k. At the 4 3/8-in. mark, sear cut a slit an additional 3/8-in. down from top and up from bottom. This is to allow the outside edges to be folded.

l. At the 11 3/8-in. mark, sear cut a slit an additional 3/8-in. down from top and up from bottom. This is to allow the outside edges to be folded.

m. Fold all edges over 3/8-in. and sew 1/16-in. from seared edge.

n. Cut 1 piece of 5/8-in. hook fastener tape 2-in. long. With folded side up, center hook fastener tape on left edge. Sew in place with a box stitch.

o. Cut two pieces of 5/8-in. hook fastener tape 26-in. long. With folded side up, starting at either 3/8-in. slit, place fastener tape 1/16-in. from top edge and sew in place with a box stitch. Box stitch should be 1/16-in. inboard of fastener tape.

p. Repeat step o for bottom edge.

q. Cut two pieces of 5/8-in. pile fastener tape 26-in. long. With folded side down, starting at the 3/8-in. slit, place fastener tape 1/16-in. from top edge and sew in place with a box stitch. Box stitch should be 1/16-in. inboard of fastener tape.

r. Repeat step q for bottom edge.

s. Cut a 4-in. piece of pile fastener tape. Place fastener tape 1/16-in. from top left edge and sew in place with "E" thread. Box stitch should be 1/16-in. inboard of fastener tape.

t. Cut a 4-in. piece of hook fastener tape. Place the top edge of fastener tape, hook side facing fold, 1/8-in. from bottom left edge. Sew in place with single stitch, backstitch 1/2-in. each end.

u. Cut a 11-in. piece of pile fastener tape. Place fastener tape 1/16-in. from top left edge and sew in place with "E" thread. Box stitch should be 1/16-in. inboard of fastener tape.

v. Cut a 11-in. piece of hook fastener tape. Place the top edge of fastener tape, hook side facing fold, 1/18-in. from bottom left edge. Sew in place with single stitch. Backstitch 1/2-in. each end.

21. FABRICATION OF RISER COVER (LEFT SIDE).

Support Equipment Required

Part Number	Nomenclature
—	Hot Knife
—	Shears
—	Square

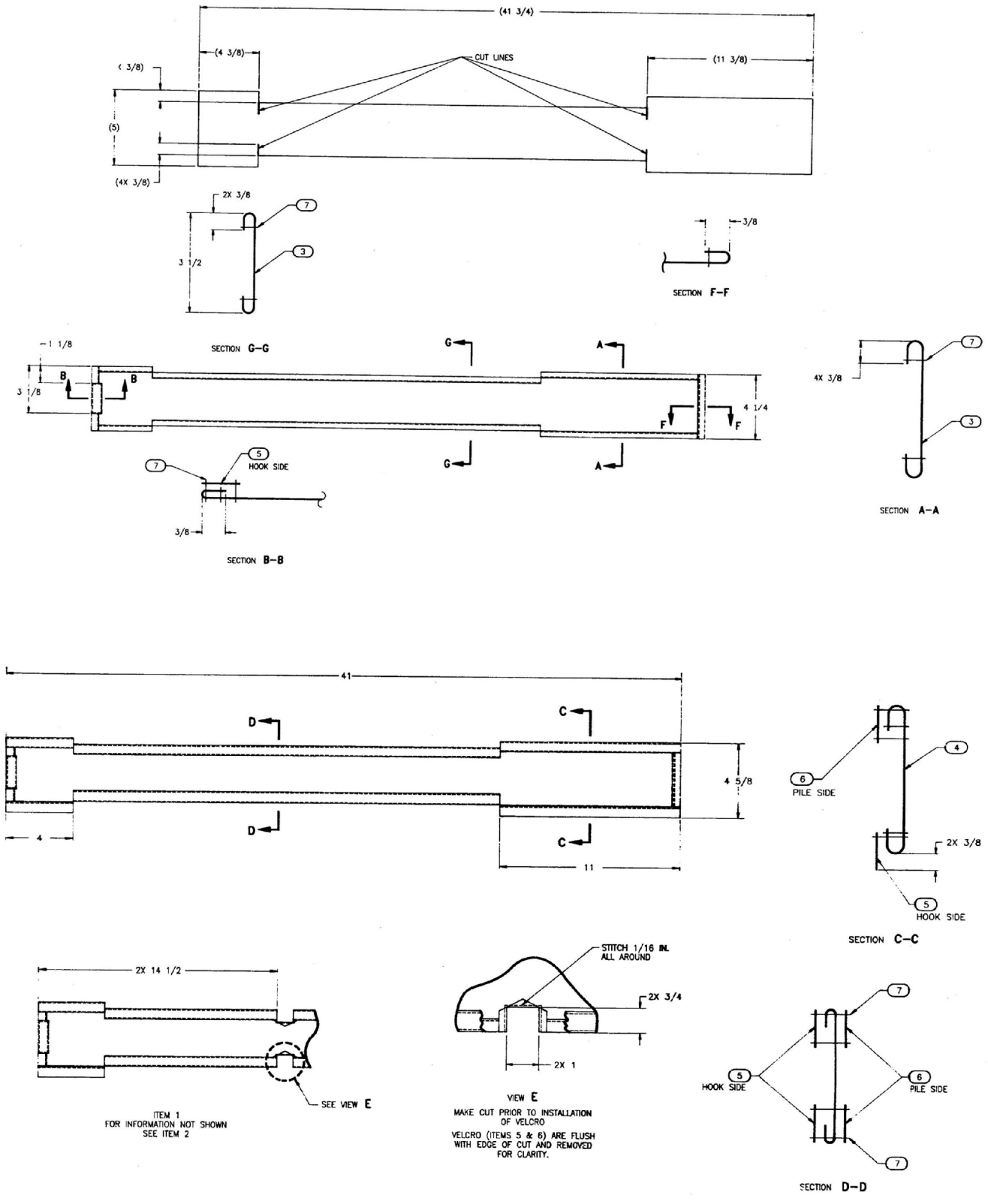


Figure 15. Riser Cover Fabrication

Materials Required

Specification or Part Number	Nomenclature
MIL-C-7219	Cloth, Duck, Nylon, Type III, Class 1, Sage Green
MIL-F-21840	Fastener Tape, Hook, 5/8-in. Wide, Type II, Class 1, Sage Green
MIL-F-21840	Fastener Tape, Pile, 5/8-in. Wide, Type II, Class 1, Sage Green
V-T-295	Thread, Nylon, Size E, Type I or II, Class A, Sage Green

NOTE

If several riser covers are to be manufactured, it is recommended that a flat pattern (template) be fabricated to ensure consistency.

a. Lay out a 42 1/4 x 5-in. piece of nylon cloth (Figure 15).

NOTE

During Fabrication, the left side refers to the shorter end of the riser cover.

b. On the bottom left side, measure and mark in 4 3/8-in. Repeat procedure on the top line.

c. Using square and starting on the bottom line, at the 4 3/8-in. mark, measure and draw line up 3/8-in.

d. Using square, on the top line, at the 4 3/8-in. mark, measure and draw line down 3/8-in.

e. On the bottom right side, measure and mark in 11 3/8-in. Repeat procedure on the top line.

f. Using square and starting on the bottom line, at the 11 3/8-in. mark, measure and draw line up 3/8-in.

g. Using square, on the top line, at the 11 3/8-in. mark, measure and draw line down 3/8-in.

h. Using straight edge, connect the top 3/8-in. marks.

i. Using straight edge, connect the bottom 3/8-in. marks.

j. Using hot knife and straight edge, sear cut on lines measured and drawn in steps a, h and i.

k. At the 4 3/8-in. mark, sear cut a slit an additional 3/8-in. down from top and up from bottom. This is to allow the outside edges to be folded.

l. At the 11 3/8-in. mark, sear cut a slit an additional 3/8-in. down from top and up from bottom. This is to allow the outside edges to be folded.

m. Fold all edges over 3/8-in. and sew 1/16-in. from seared edge.

n. From the left side bottom, measure in 14 1/2-in. and mark.

o. From the 14 1/2-in. mark, lay out a 1-in. wide x 3/4-in. high cutout.

p. Using a hot knife, inside the 1-in. x 3/4-in., cut out a 3/8-in. x 3/8-in. piece of material.

q. From the corner of the cutout, using hot knife, sear cut a slit, approximately 45 degrees, from the 3/8-in. corner of the seared edge to the inside of the drawn corner. Repeat on other corner. This is done to allow for folding and to achieve the finished dimension of 1-in. x 3/4-in.

r. Repeat steps n through q for the top.

s. Cut 1 piece of 5/8-in. hook fastener tape 2-in. long. With folded side up, center hook fastener tape on left edge. Sew in place with a box stitch.

t. Cut two pieces of 5/8-in. hook fastener tape 26-in. long. With folded side up, starting at either 3/8-in. slit, place fastener tape 1/16-in. from top edge and sew in place with a box stitch. Box stitch should be 1/16-in. inboard of fastener tape.

u. Repeat step t for bottom edge.

v. Cut two pieces of 5/8-in. pile fastener tape 26-in. long. With folded side down, starting at the 3/8-in. slit, place fastener tape 1/16-in. from top edge and sew in place with a box stitch. Box stitch should be 1/16-in. inboard of fastener tape.

w. Repeat step v for bottom edge.

x. Cut a 4-in. piece of pile fastener tape. Place fastener tape 1/16-in. from top left edge and sew in place with “E” thread. Box stitch should be 1/16-in. inboard of fastener tape.

y. Cut a 4-in. piece of hook fastener tape. Place the top edge of fastener tape, hook side facing fold, 1/8-in. from bottom left edge. Sew in place with single stitch, backstitch 1/2-in. each end.

z. Cut a 11-in. piece of pile fastener tape. Place fastener tape 1/16-in. from top left edge and sew in place with "E" thread. Box stitch should be 1/16-in. inboard of fastener tape.

aa. Cut a 11-in. piece of hook fastener tape. Place the top edge of fastener tape, hook side facing fold, 1/18-in. from bottom left edge. Sew in place with single stitch. Backstitch 1/2-in. each end.

22. REPLACEMENT OF CROSS-CONNECTOR STRAP.

Support Equipment Required

Part Number	Nomenclature
MBEU68053	Tensioner Locking Key
MS20470B2-8	Rivet, Universal Head, 0.0625-in. Diameter

NOTE

Connector lines shall be disengaged one at a time.

a. Remove steering lines from risers.

b. Remove snaphead rivet from connector link.

CAUTION

Do not separate tensioner from connector link completely.

c. Using tensioner locking key, turn tensioner to allow separation and rotation of both halves of connector link (Figure 8).

d. Remove damaged cross-connector strap from connector link. Position new cross-connector strap on connector link.

e. Ensure that suspension lines are free from twists and reengage connector link.

f. Tighten tensioner using tensioner locking key, align red lines on connector link and tensioner and install new 0.0625-in. diameter snaphead rivet. Peen rivet (Figure 8). (QA)

g. Repeat steps a thru f for each connector link.

h. Check suspension line continuity (Figure 9).

23. REPLACEMENT OF STEERING LINE RELEASE LANYARD PULL LOOP TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size A, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Fully extend pull loop and position between risers.

b. Tack at center line of riser 1/8 to 1/4-in. below guide ring with one turn of size A thread, single and waxed; tie off (Figure 14).

24. REPLACEMENT OF LOWER STEERING LINE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size A, Type I or II, Class A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MIL-F-21840	Fastener Tape, Hook Type II, Class I 1/4-in., Sage Green

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Separate the front and rear riser hook and pile fasteners and snap fasteners.

b. Measure 6-in. from end of cord and mark. Fold back on mark, forming a handle and stitch for 1-in. (Figure 16).

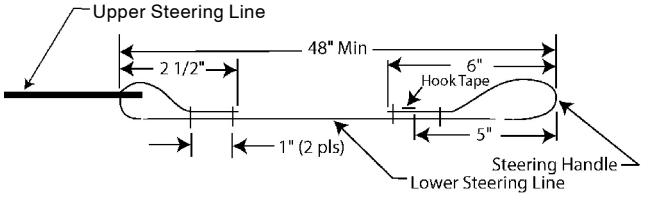


Figure 16. Fabrication of Lower Steering Line

c. Measure from end of handle 5-in. and mark.

d. Attach 1 1/2-in. x 1/2-in. hook fastener tape with 3 rows of "E" thread.

e. Cautiously, remove the stitching from the lower steering line loop.

f. Remove the tacking securing the lower steering line to the riser below the guide ring. Discard the removed steering line.

g. On the replacement lower steering line, measure 2 1/2-in. from end, and mark.

h. Route marked free end thru the upper steering line loop. Fold on mark and sew per WP 004 00 (Figure 16). (QA)

i. Pass the hand steering line loop thru the guide ring. Ensure that the steering line is not twisted. Place the hand steering loop around the snap fastener, and secure riser snap fastener.

j. Tack the steering line to the riser below the guide ring with one turn of size A thread, single and waxed; tie off.

k. Center the steering line between the hook and pile fasteners, then secure the risers. (QA)

25. FABRICATION OF LOWER STEERING LINE.

Materials Required

Specification or Part Number	Nomenclature
MIL-C-5040	Cord, Nylon, Type III
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

For all stitching use either Type 301 Lock stitch, two rows, size E nylon thread, or Type 304, single-throw zigzag, or 308 double-throw, zigzag, one row, size E nylon thread. Backstitch 1/2-in.

a. Cut a 56 3/4-in. length of Type III nylon cord. Remove inner core. Sear ends.

b. Measure 6 inches from end of cord and mark. Fold back on mark and stitch for 1-in. (Figure 16).

c. On the opposite end of cord, measure 2 1/2-in. and mark (Figure 16).

d. Route the marked free end thru the upper steering line loop. Fold to mark and stitch for 1-in.

e. Finished length should not exceed 50 3/4-in. (Figure 16).

26. CONTAINER ASSEMBLY REPAIRS.

a. Repair of container assembly is limited to the following:

(1) Replacement of Corner Tackings.

(2) Replacement of Headpad.

(3) Replacement of Pressure Sensitive Tape Over Internal Assembly.

(4) Replacement of Grommets on Flap Assembly.

(5) Replacement of Outer Flap Assemblies.

(6) Replacement of Protection Flap.

(7) Replacement of Inner Flaps.

(8) Repair of Inner Flaps Broken Stitching.

(9) Repair of Interior Painted Surfaces.

(10) Replacement of Labels and Decals.

(11) Replacement of Riser Hook Fastener Tape.

27. REPLACEMENT OF CORNER TACKINGS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove broken or loose tacking.

b. Pass a length size FF thread, single and waxed, thru grommets on front and corner flaps; tie off (Figure 17).

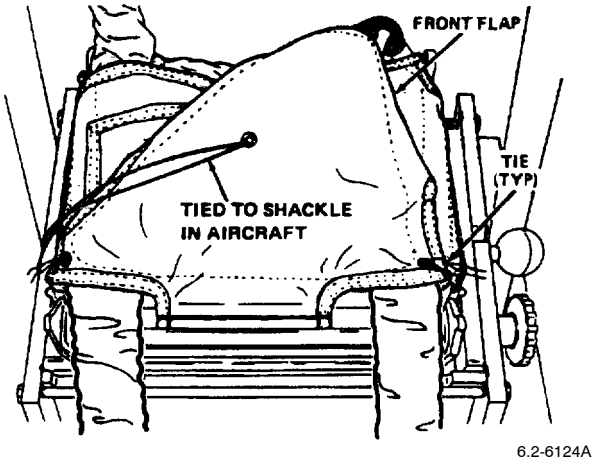


Figure 17. Pass a Length of Thread thru Grommets on Flaps

c. (Parachute assembly with outer front flap P/N MBEU69955). Tie down corners of front flap and center aft end of flap with size FF thread, single and waxed. Pass thread thru grommets on flaps and then thru loop on lower flap; tie off (Figure 18).

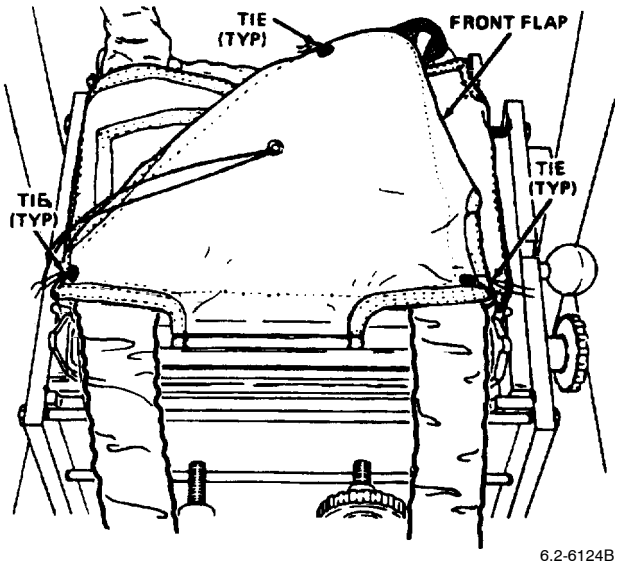


Figure 18. Tie Down Corners

28. REPLACEMENT OF HEADPAD.

a. Remove four mushroom headbolts and retain.

b. Remove damaged headpad.

c. Inspect replacement headpad per WP 018 02.

d. Position new headpad on container.

e. Reinstall four mushroom head bolts. Torque to 25 in-lbs. (QA)

29. CONTAINER ASSEMBLY REPLACEMENT OF PRESSURE SENSITIVE TAPE OVER INTERNAL STRIP ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
MIL-I-19166	Tape, Electrical, 3/4-in. Wide

a. Cut two strips of tape 1 1/2-in.

b. Apply tape vertical over the strip assembly located below the rear inner flap assembly, right side of the parachute container. Position upper ends of tape as far under the inner flap edge as possible. Apply the tape vertical, side-by-side, centered over the strip assembly. Ensure that the ends of the tapes have adhered to the container surface so as to avoid peeling during parachute packing (Figure 19).

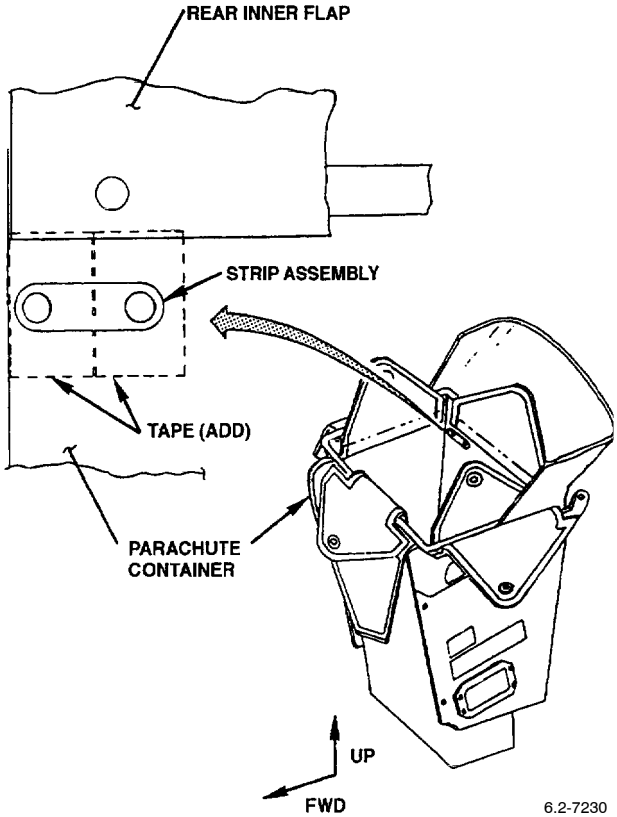


Figure 19. Replacement of Tape

30. REPLACEMENT OF GROMMETS ON FLAP ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
MIL-C-7219	Cloth, Nylon
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MS20230-GB20	Grommet, Metallic
MS20230-WB20	Washer, Metallic

a. Cover hole on flap assembly with square patch. Cut a 1 1/4-in. square patch, turn raw edges under 1/4-in. Stitch patch on all four sides with two rows of stitching per WP 004 00, using size E thread. Backstitch 1/2-in. (Figure 20).

b. Cut a 5/32-in. diameter hole in center of patch.

c. Place grommet washer on underside of flap. Place grommet on topside of patch.

d. Lock grommet and grommet washer in place with correct size chuck and die (Figure 20).

e. If crimped edge of grommet has any sharp edges, remove two rows of stitches around patch and repeat steps a thru d.

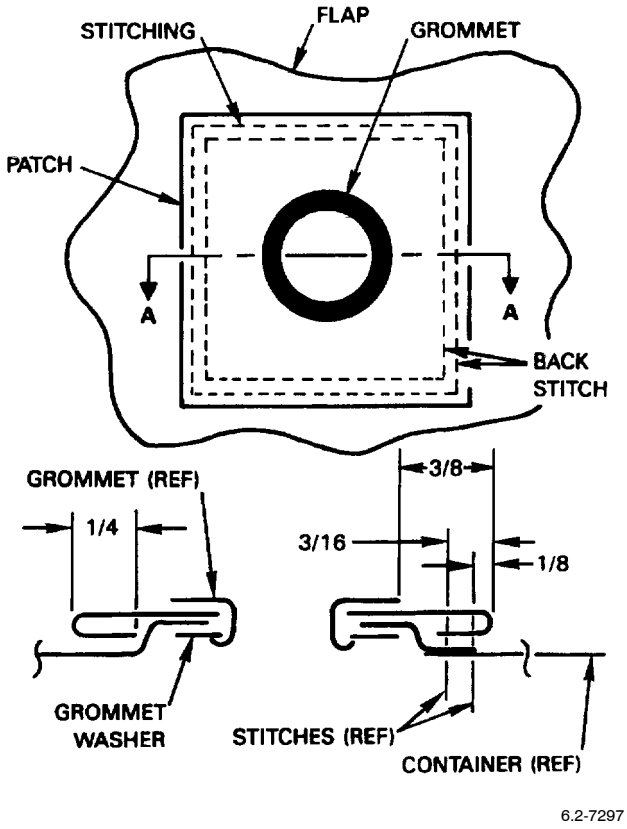


Figure 20. Replacement of Grommets

31. REPLACEMENT OF OUTER FLAP ASSEMBLIES.

Materials Required

Specification or Part Number	Nomenclature
NAS1291-C08M	Locknut

a. Port or Starboard Flap:

(1) Remove locknuts with flat washers and bolts with nuts securing canopy breaker, side drogue flap inner strip, and penetrator backing strip to container. Scrap locknuts.

(2) Remove bolt securing canopy breaker to crossbar.

(3) Remove canopy breaker to remove flap. Scrap damaged flap.

(4) Mark position of bolts on new flap from side drogue flap inner strip. Punch four 3/16-in. diameter holes; seal holes with hot iron.

(5) Position new flap on container. Assemble canopy breaker on container. Secure with flat washers and locknuts, torque locknuts to 25 in-lbs. Torque the two bolts with nuts to 115 in-lbs; torque the bolt securing canopy breaker to crossbar to 50 in-lbs.

b. Rear Flap:

(1) Remove locknuts with flat washers securing rear top flap securing strip and rear drogue flap inner strip to container. Scrap locknuts.

(2) Remove rear top flap securing strip to remove flap. Scrap damaged flap.

(3) Mark position of bolts on new flap from rear drogue flap inner strip. Punch four 3/16-in. diameter holes; seal holes with hot iron.

(4) Position new flap on container. Assemble rear outer flap securing strip to container. Secure with washers and locknuts. Torque locknuts to 25 in-lbs.

c. Front Flap:

(1) Remove bolts securing canopy breakers to crossbar.

NOTE

The front flap is held between the crossbar and surround tube on the container.

(2) Remove crossbar to remove front flap. Scrap damaged flap.

(3) Position new flap on container. Assemble crossbar on container. Secure canopy breakers to crossbar with the bolts. Torque bolts to 50 in-lbs.

d. Close flaps to make sure closure pin loop on rear flap passes easily thru grommets of outer flaps. Flaps shall overlap when secured by closure pin loop.

e. Remove closure pin loop on rear flap if damaged. Closure pin loop is removed and replaced thru an access hole on inside of rear flap. The access hole is closed by a flap with hook and pile tape.

32. REPLACEMENT OF PROTECTION FLAP.

Materials Required

Specification or Part Number	Nomenclature
NAS1291-C08M	Locknut

a. Remove locknuts with flat washers and bolts with nuts securing canopy breaker, inner side drogue flap strip and penetrator backing strip on both the port and starboard sides of container. Scrap locknuts.

b. Remove bolts securing canopy breakers to crossbar.

c. Remove canopy breakers, starboard flap, and port flap from container.

d. Remove locknuts with flat washers securing rear top flap securing strip and rear drogue flap inner strip to container. Scrap locknuts.

e. Remove rear top flap securing strip, rear flap and protection flap from container. Scrap damaged protection flap.

f. Position new protection flap and rear flap on container. Secure strip on container with flat washers and locknuts. Torque locknuts to 25 in-lbs. (QA)

g. Position protection flap and starboard flap on container. Secure breaker on container with flat washers and locknuts. Install bolts on container with nuts. Torque the bolts with nuts to 115 in-lbs; torque bolts securing canopy breaker to crossbar to 50 in-lbs. (QA)

h. Repeat step g on port side of container.

33. REPLACEMENT OF INNER FLAPS.

Materials Required

Specification or Part Number	Nomenclature
NAS1291-C08M	Locknut

a. Port or Starboard Flap:

(1) Remove locknuts and flat washers securing flap to container. Scrap locknuts and damaged flap.

(2) Position new flap on container and secure with washers and new locknuts.

b. Rear Flap:

(1) Remove locknuts and flat washers securing starboard flap to container. Remove starboard flap and keep for reassembly. Scrap locknuts.

(2) Remove locknuts securing mechanical lock housing and rear flap to container. Remove locknuts securing mechanical lock housing and mechanical lock backing strip to container. Remove and keep mechanical lock housing for reassembly. Scrap locknuts.

(3) Remove locknuts and flat washers securing rear flap to container. Scrap locknuts and damaged rear flap.

(4) Position new rear flap on container. Secure with flat washers and new locknuts.

(5) Position housing on container and secure with locknuts. Torque locknuts to 25 in-lbs.

(6) Position starboard flap on container and secure with washers and locknuts.

c. Front Flap:

(1) Remove headpad per Paragraph 28.

(2) Remove locknuts and flat washers securing front flap to container. Scrap locknuts and damaged flap.

(3) Position new front flap on container and secure with washers and locknuts.

(4) Replace headpad per Paragraph 28.

34. REPAIR OF INNER FLAPS BROKEN STITCHING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
NAS1291-C08M	Locknut

a. Remove locknuts and flat washers securing the flap strip and flap to the container. Scrap locknuts.

b. Remove flap securing strip and flap.

c. Make the repair per WP 004 00. Backstitch no less than 1/2-in.

d. Position repaired flap on container, assemble flap securing strip to container. Secure with washers and locknuts. Torque to 25 in-lbs.

e. Close flaps to make sure closure pin loop on rear flap passes easily thru grommets of outer flaps. Flaps shall overlap when secured by closure pin loop.

f. Remove closure pin loop on rear flap if damaged. Closure pin loop is removed and replaced thru an access hole on inside of rear flap. The access hole is closed by a flap with hook and pile tape.

35. REPAIR OF INTERIOR PAINTED SURFACES.

Materials Required

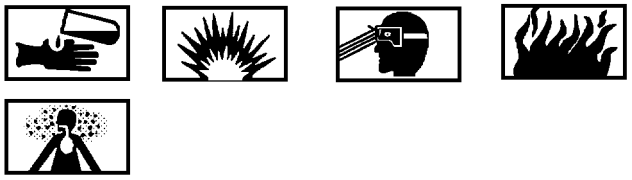
Specification or Part Number	Nomenclature
CCC-C-440	Cheesecloth
TT-I-735	Isopropyl Alcohol
BEHR-TEX	Abrasive Material Type S
MIL-P-23377	Primer Coating, Epoxy, Class 2
MIL-T-81772	Thinner, Aliphatic
HB643	Brush, Non-Metallic
00311 Dry Film Vydax Sprayon Products (Open Purchase)	Release Agent

a. Inspect interior of container for any painted surfaces.

b. Wipe the painted surface of the container with cheesecloth, if the cloth snags or catches, even slightly, it must be polished.

c. Polish the painted surfaces with scotchbrite until the cheesecloth no longer catches or snags, take caution not to rub thru the paint to the bare metal.

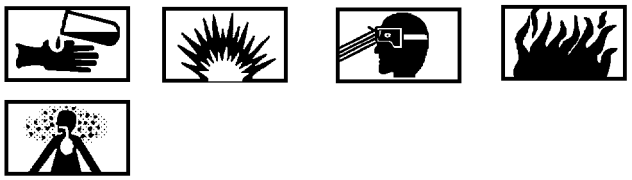
Epoxy Primer, MIL-P-23377 **5**



Aliphatic Thinner, MIL-T-81772 **8**

NOTE

If paint is removed to bare metal, refinish affected area with epoxy primer. Mix primer to following ratio: three parts base with one part during solution and one part solvent thinner. Apply one coat, with brush, over affected area. Allow a 20 min. air dry period. Then force dry for 10 to 15 min. at 200-250°F. Then repeat steps b and c if required.



Isopropyl Alcohol, TT-I-735 **11**

WARNING

Isopropyl alcohol is highly flammable.

CAUTION

Isopropyl alcohol can remove lubricants and preservatives and may soften plastics. Use only as directed.

d. After polishing, wipe clean with cheesecloth moistened with isopropyl alcohol. Wipe with clean dry cheesecloth before alcohol evaporates.

e. Prior to parachute packing and each subsequent packing, spray the entire interior painted surfaces, below the inner flaps with a thin coat of release compound agent. Spray with short bursts, assure no runs occur. Release compound dries instantly.

f. Prior to each repack the interior of the headbox shall be cleaned to remove any residual release agent from previous repacks. Wipe clean per step d.

36. REPLACEMENT OF LABELS AND DECALS.

a. Remove old labels and decals.

b. Install new labels and decals in proper locations on container.

37. REPLACEMENT OF RISER HOOK FASTENER TAPE.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener, Tape, Hook, 1 1/2-in. Wide, Type II, Class 1
O-A-51	Technical Acetone
MIL-A-5540	Adhesive (Polychloroprene)

a. Remove old hook fastener tape from sides of container.

Technical Acetone, O-A-51	**1**

b. Clean off area of container where new hook fastener tape is to be installed with technical acetone.

c. Cut two 3-in. pieces of hook fastener tape.

d. Apply adhesive to both sides of container and underside of hook tape.

e. Allow adhesive to become tacky and press hook tape firmly onto prepared areas on sides of container.

38. REPAIR OF DROGUE CANOPY HOLES, TEARS OR SNAGS.

Materials Required

Specification or Part Number	Nomenclature
V-T-276	Thread, Cotton, Size 30/3, Red
	-or-
A-A-52094	Thread, Cotton, Size 30/3, Red

a. If a thread separation is not severe and no threads are broken, threads can be pressed into place using a soft brush or a pencil eraser. If damaged area is brushed in wrong direction, separation will increase.

b. Darn holes or tears that do not exceed 1/2-in. in length or (1/4-in. x 1/4-in. if circular, a diameter of 5/16-in.).

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ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

A/P28S-24 PERSONNEL PARACHUTE ASSEMBLY

PART NO. MBEU10030PA-4

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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2 thru 6	9						

Reference Material

Intermediate and Depot Maintenance, Packing Procedures, A/P28S-24 Personnel Parachute Assembly ..... WP 018 02

Alphabetical Index

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Introduction	1
Service/Total Life	1
Usable on Codes	1

List of Figures

Title	Page
A/P28S-24 Personnel Parachute Assembly	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the A/P28S-24 Personnel Parachute Assembly (Figure 1).

2. USABLE ON CODES.

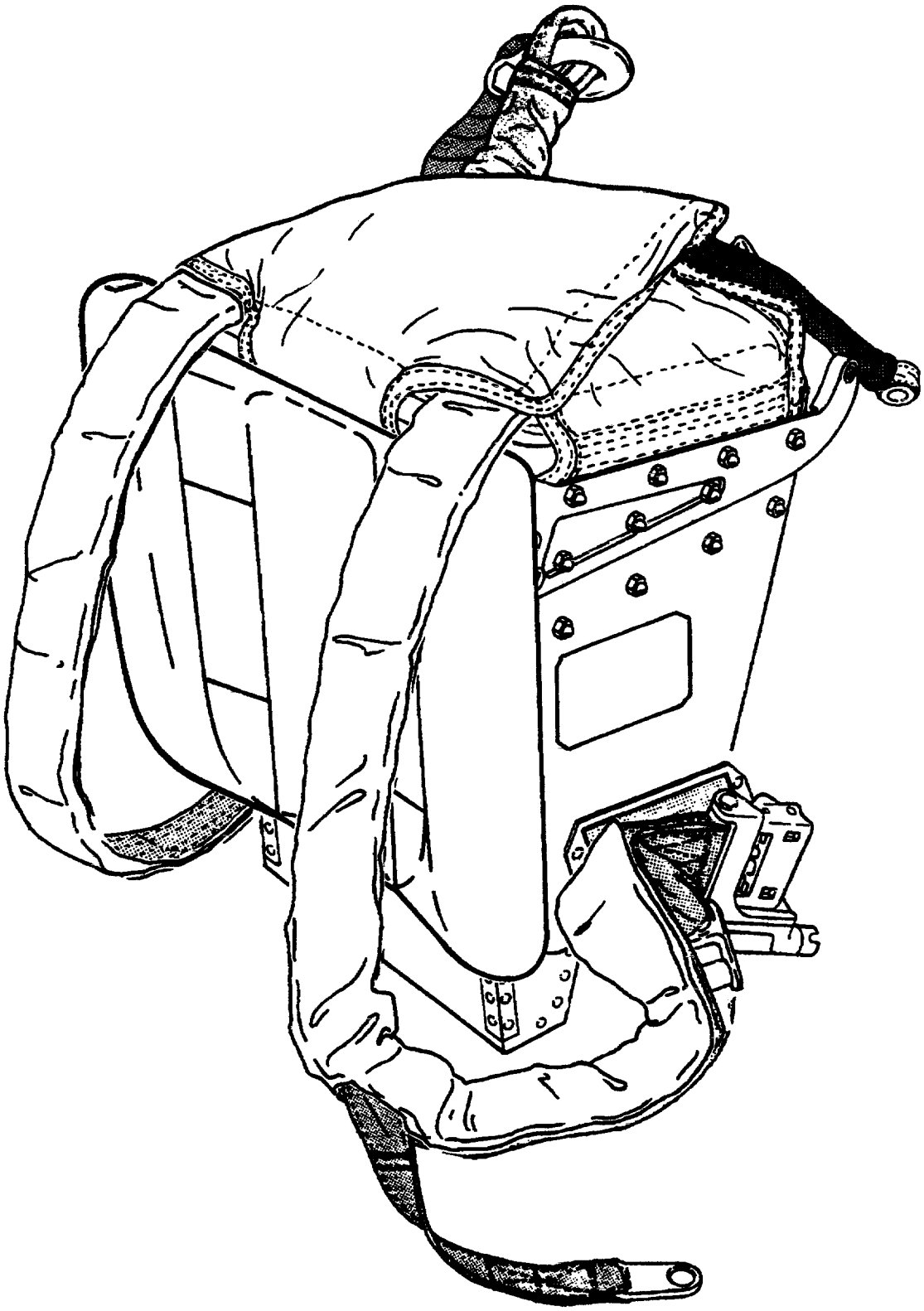
a. The usable on codes in this WP refer to the aircraft applications for the A/P28S-24 Personnel Parachute Assembly.

b. Following usable on codes apply to this WP:

A – F-18/A, B, C, D

3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in WP 018 02.



6.2-5948A

Figure 1. A/P28S-24 Personnel Parachute Assembly (Sheet 1 of 8)

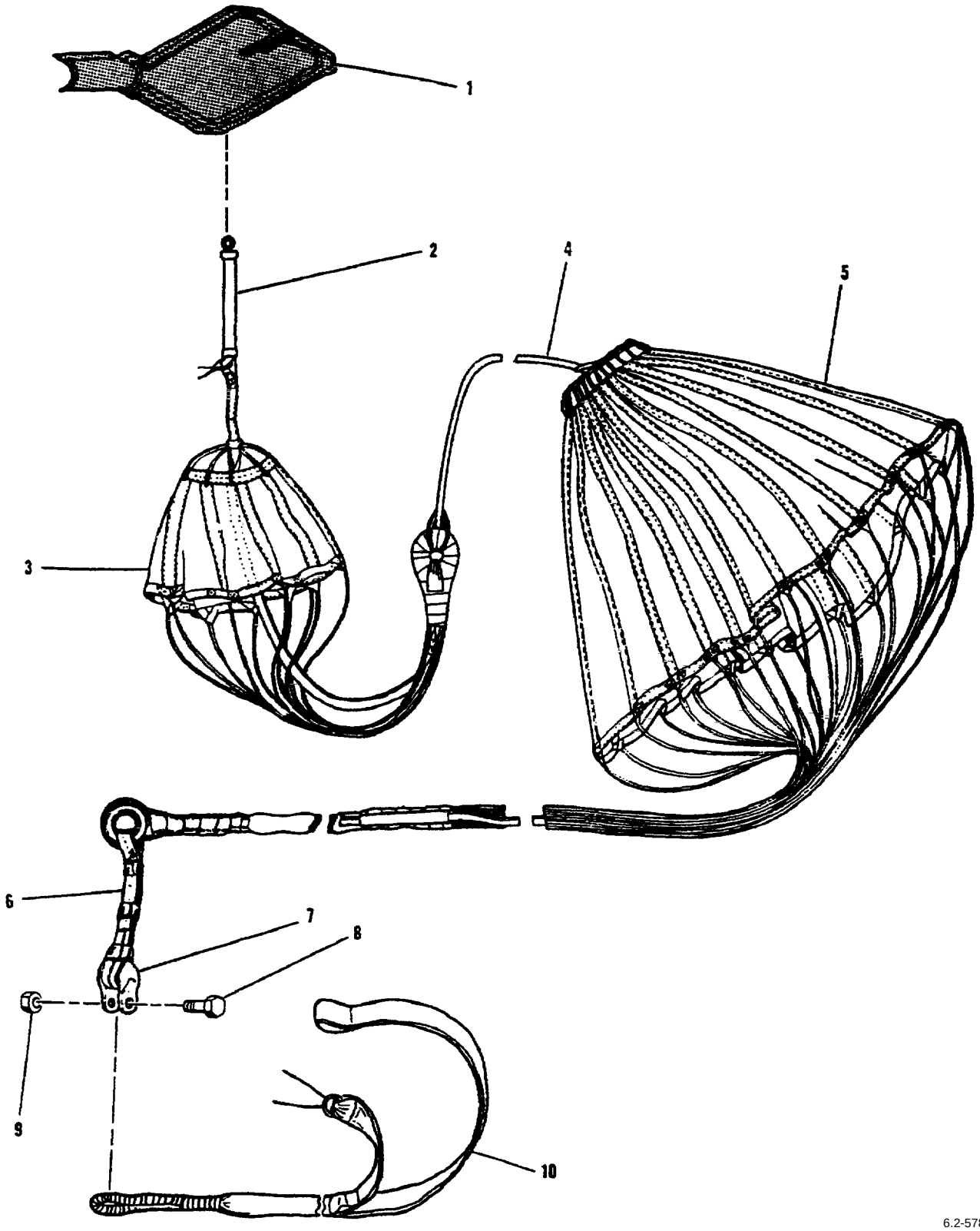


Figure 1. A/P28S-24 Personnel Parachute Assembly (Sheet 2 of 8)

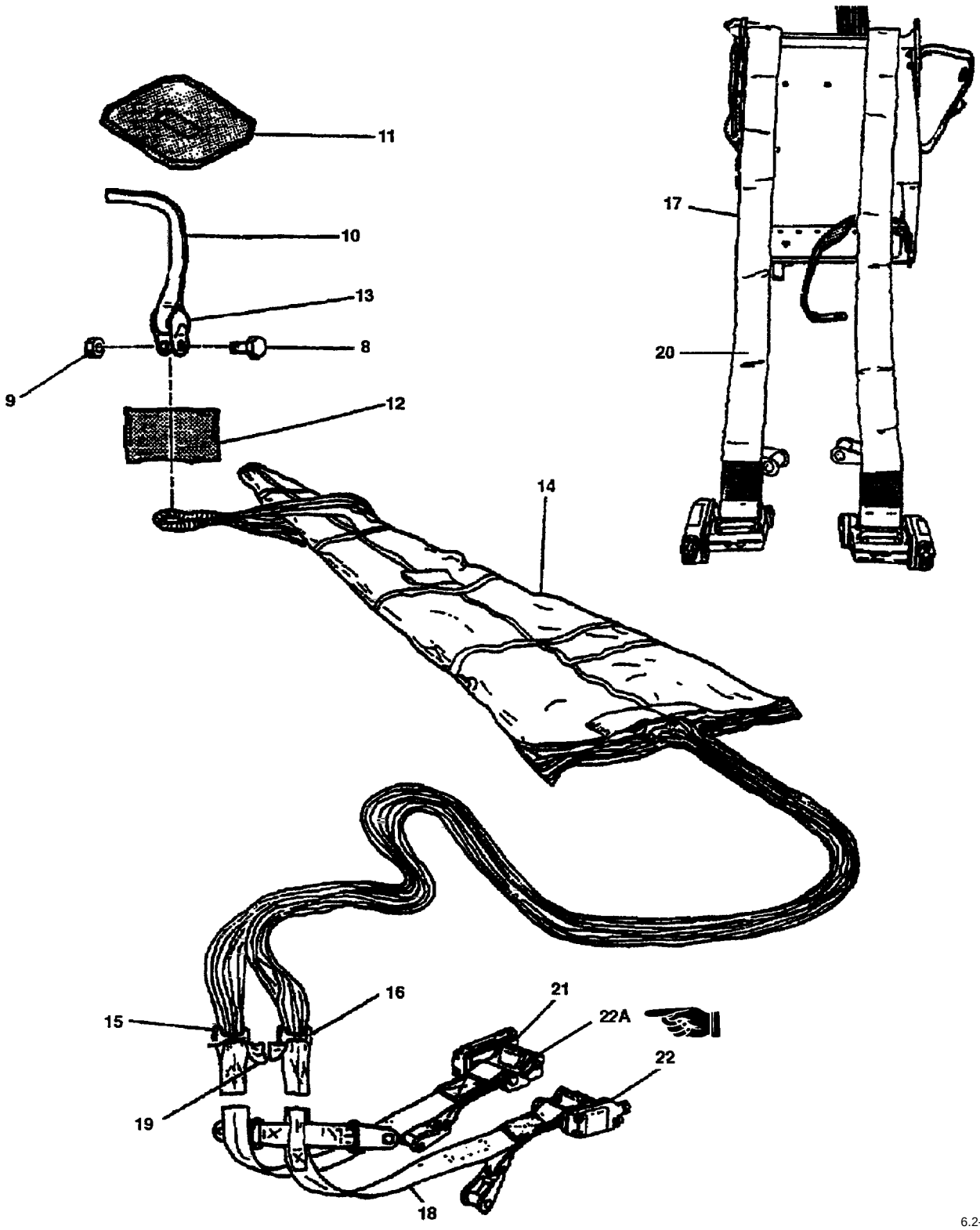


Figure 1. A/P28S-24 Personnel Parachute Assembly (Sheet 3 of 8)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	MBEU10030PA-4	PERSONNEL PARACHUTE ASSEMBLY A/P28S-24	1	A	AGOGG
1	MBEU10935PA	. FLAP, DROGUE PROTECTIVE	1		PAGZZ
2	MBEU69922-1	. DROGUE WITHDRAWAL LINE	1		PCGZZ
3	MBEU65690	. . DROGUE PARACHUTE ASSEMBLY ..... 22 IN.	1	*	PCGGG
	MBEU34505	. . DROGUE PARACHUTE ASSEMBLY ..... 22 IN.	1	*	PCGGG
4	MBEU65685	. . LINE, DROGUE CONNECTING, 12 FT	1		PCGZZ
5	MBEU65691	. . DROGUE PARACHUTE ASSEMBLY, ... 5 FT	1		PCGGG
6	MBEU65699	. . STRAP ASSEMBLY, EXTENDER	1		PCGZZ
7	MBEU65702	. SHACKLE, DROGUE ..... /ATTACHING PARTS/	1		PAOZZ
8	MBEU11135PA	. BOLT, SPECIAL	2		PAOZZ
9	MS21083C5	. NUT ..... ---*---	2		PAOZZ
10	MBEU10901PA	. PARACHUTE WITHDRAWAL LINE ..... ASSEMBLY	1		PCGZZ
11	MBEU11183PA	. FLAP, PROTECTIVE	1		PAGZZ
12	MBEU11150PA	. SLEEVE, MAIN CANOPY SHACKLE	1		PAGZZ
13	MBEU66918	. SHACKLE, MAIN CANOPY ..... /ATTACHING PARTS/ --*---	1		PAGZZ
14	MBEU11731PA	. CANOPY, GQ, D06849, AEROCONICAL, ... TYPE 1000	1		PCGGG
15	AML147	. LINK, DETACHABLE CONNECTOR	4		PAGZZ
16	MS20470B2-8	. RIVET, SNAPHEAD, 0.0625 IN. DIAMETER ...	4		PAGZZ
17	1979AS510-100	. RISER AND COVER ASSEMBLY	1		AGGGG
18	MBEU12913PA	. . RISER ASSEMBLY	1		PAGZZ
19	MBEU11232PA	. . . STRAP, CROSS CONNECTOR	2		PCGZZ
20	1979AS500-100	. . RISER COVER ASSEMBLY	1		PAGZZ
21	852AS117-3	. SENSING RELEASE UNIT, PARACHUTE ..... HARNESS MXU-746/P LEFT SIDE/NOTE 1	1		AGGGG
22	852AS117-4	. SENSING RELEASE UNIT, PARACHUTE ..... HARNESS MXU-747/P RIGHT SIDE/NOTE 1	1		AGGGG
22A	990055-1	. . RELEASE ASSEMBLY, CANOPY/99449/ ...	2	*	PAGZZ
	015-10307-5	. . RELEASE ASSEMBLY, CANOPY/99449/ ... (USE UNTIL EXHAUSTED)	2	*	PAGZZ
23	MBEU75039	. HEADPAD ..... /ATTACHING PARTS/	1		PAOZZ

Figure 1. A/P28S-24 Personnel Parachute Assembly (Sheet 4 of 8)

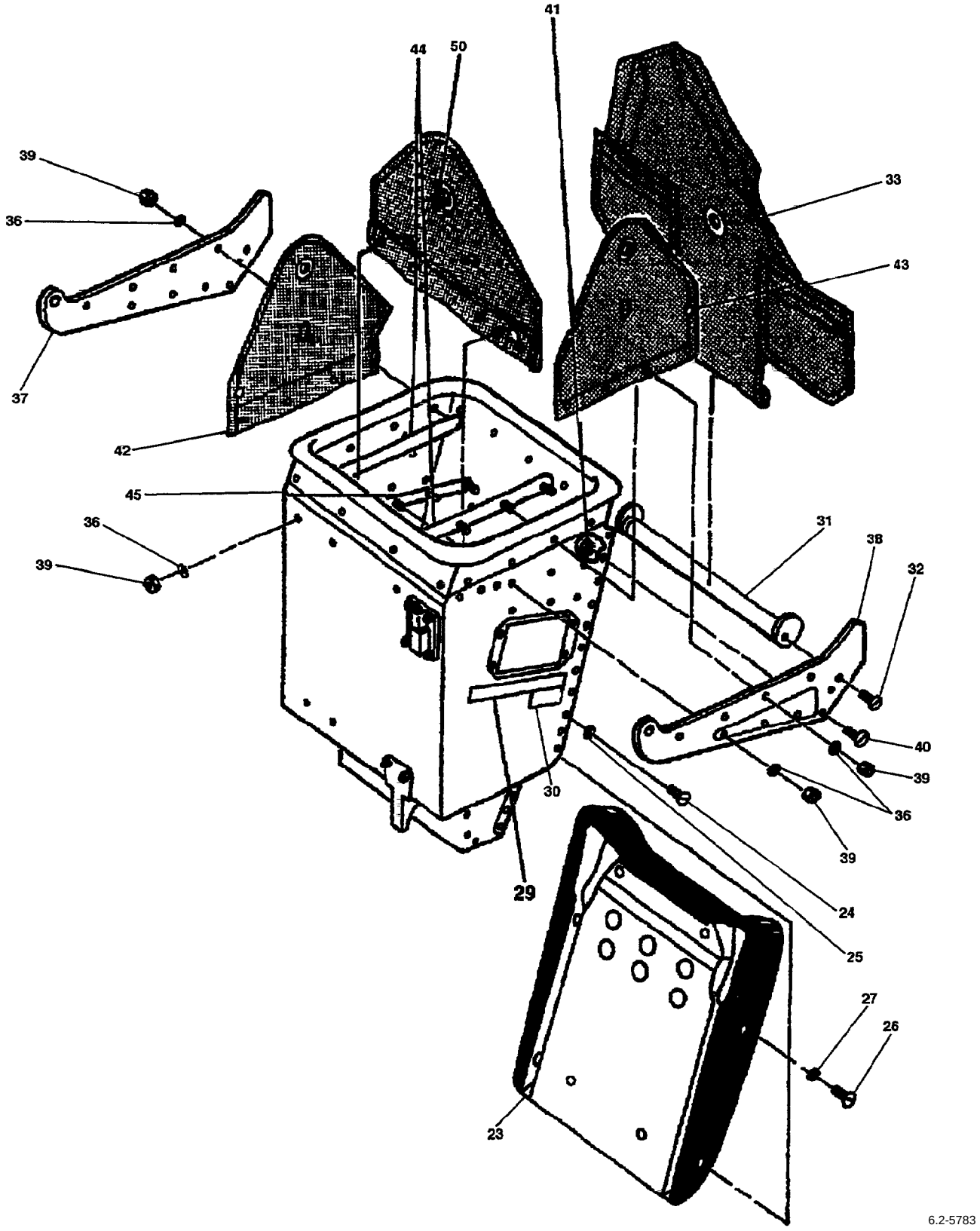


Figure 1. A/P28S-24 Personnel Parachute Assembly (Sheet 5 of 8)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
24	NAS1218-08E11	. BOLT	2		PAGZZ
25	MBEU75133	. WASHER, SPACING, HEADPAD UPPER	2		PAGZZ
26	NAS1218-08E15	. SCREW, MACHINE	2		PAGZZ
27	MBEU75133	. WASHER, SPACING, TOP	2		PAGZZ
		---*---			
28	MBEU75020	. PACK ASSEMBLY	1		PAGGG
	MBEU12081PA	. PACK ASSEMBLY	1		PAGGG
29	MBEU66473	. . LABEL, WARNING	2		PAGZZ
30	MBEU66468	. . LABEL, ACTUATOR INSTRUCTION	2		MDGZZ
		---*---			
31	MBEU69719	. . CROSSBAR	1		PAGZZ
		/ATTACHING PARTS/			
32	NAS1218-4E3	. . BOLT	2		PAGZZ
		---*---			
33	MBEU69955	. . FLAP, FRONT, OUTER	1		PAGZZ
	MBEU10744PA	. . FLAP, FRONT, OUTER/NOTE 2	1		PAGZZ
34	MBEU11047PA-2	. . FLAP, FRONT, INNER	1		PAGZZ
		/ATTACHING PARTS/			
35	NAS1291-C08M	. . LOCKNUT	13		PAGZZ
36	AN960-8L	. . WASHER	32		PAGZZ
		---*---			
37	MBEU66097	. . CANOPY BREAKER, LEFT	1		XBGZZ
38	MBEU66098	. . CANOPY BREAKER, RIGHT	1		XBGZZ
		/ATTACHING PARTS FOR INDEX NO. 36 AND 37/			
39	F22NKM82	. . LOCKNUT, NYLON CAP	25	*	PAGZZ
	F22NKTM-82	. . LOCKNUT, NYLON CAP	25	*	PAGZZ
		(USE UNTIL EXHAUSTED)			
	MBEU69733	. . LOCKNUT, NYLON CAP	25	*	PAGZZ
40	NAS1218-4E4	. . BOLT	4		PAGZZ
41	NAS1291-C4M	. . NUT	4		PAGZZ
		---*---			
42	MBEU11072PA	. . FLAP, PORT, OUTER	1		PAGZZ
43	MBEU12872PA	. . FLAP, STARBOARD, OUTER	1	*	PAGZZ
	MBEU11079PA	. . FLAP, STARBOARD, OUTER	1	*	PAGZZ
44	MBEU10775PA-2	. . STRIP, SIDE DROGUE FLAP INNER	2		PAGZZ
45	MBEU10770PA-2	. . STRIP, PENETRATOR BACKING	2		PAGZZ

Figure 1. A/P28S-24 Personnel Parachute Assembly (Sheet 6 of 8)

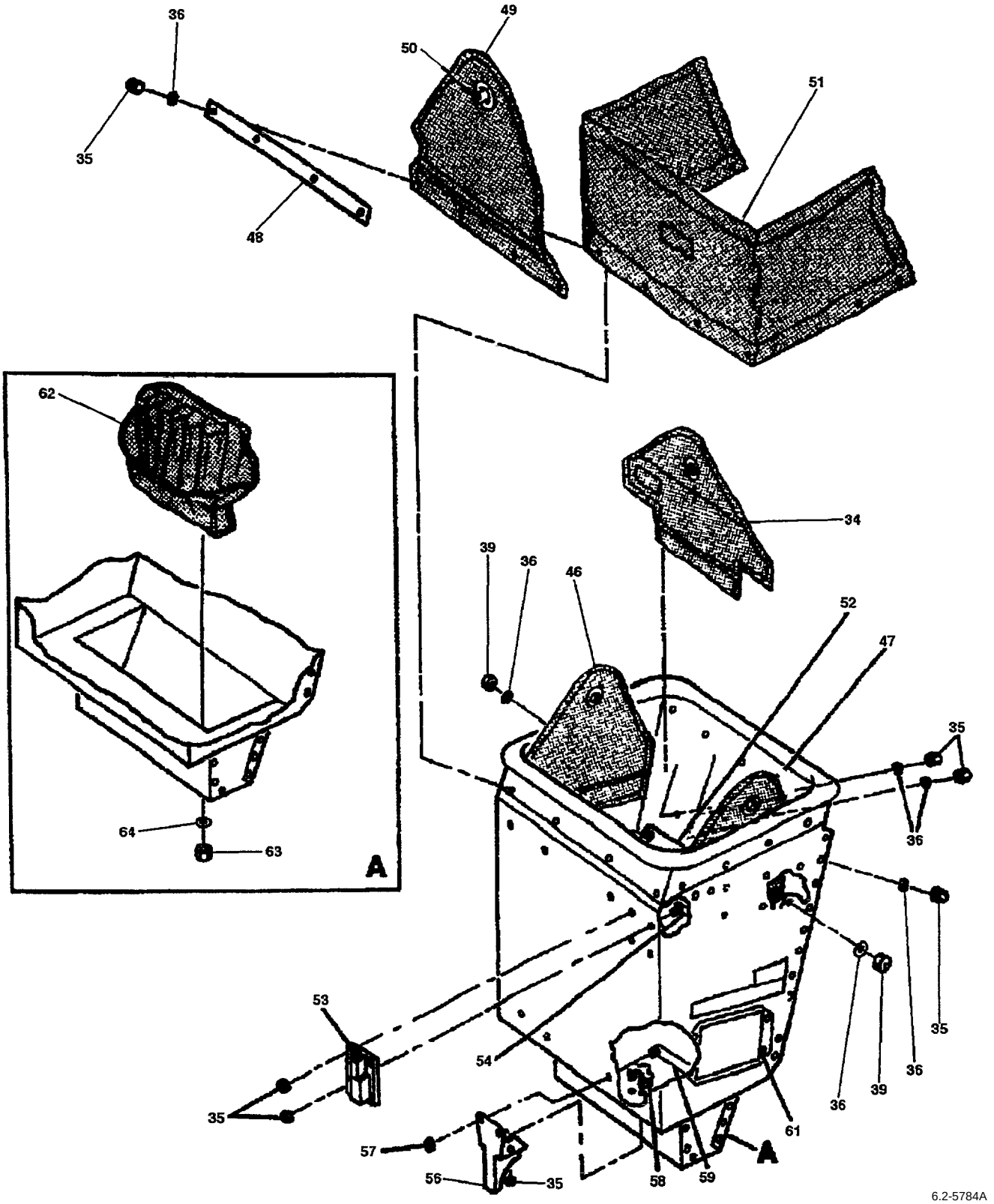


Figure 1. A/P28S-24 Personnel Parachute Assembly (Sheet 7 of 8)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
46	MBEU11090PA-2	. . FLAP, LEFT, INNER	1		PAGZZ
47	MBEU11093PA-2	. . FLAP, RIGHT, INNER /ATTACHING PARTS FOR INDEX NO. 47 AND 48/ ---*---	1		PAGZZ
48	MBEU10727PA	. . STRIP, REAR TOP FLAP SECURING /ATTACHING PARTS/ ---*---	1		MGGZZ
49	MBEU69959	. . FLAP, REAR, OUTER	1		PAGZZ
50	MBEU12358PA	. . . CLOSURE PIN LOOP	2		PAGZZ
51	MBEU11185PA-2	. . FLAP, PROTECTIVE	1		PAGZZ
52	MBEU10876PA-2	. . STRIP, REAR DROGUE FLAP INNER	1		PAGZZ
53	MBEU66100	. . MECHANICAL LOCK HOUSING /ATTACHING PARTS/	1		PBGZZ
54	MBEU11007PA-2	. . STRIP, MECHANICAL LOCK BACKING	1		PAGZZ
55	MBEU10920PA-2	. . FLAP, REAR, INNER /ATTACHING PARTS/ ---*---	1		PAGZZ
56	MBEU11214PA	. . BRACKET, BOTTOM MOUNTING /ATTACHING PARTS/	2		PAGZZ
57	MBEU10915PA	. . NUT ---*---	8		PAGZZ
58	MBEU10912PA-2	. . PLATE, BOTTOM MOUNTING BRACKET BACKING	2		PAGZZ
59	MBEU10917PA-2	. . STRIP, BOTTOM MOUNTING BRACKET BACKING	2		PAGZZ
60	**DELETED**				
61	MS20470AD4-4	. . RIVET ---*---	8		PAGZZ
62	MBEU11140PA	. STOWAGE TRAY ASSEMBLY, SUSPENSION LINE /ATTACHING PARTS/	1		PAGZZ
63	NAS1291-C3M	. NUT	2		PAGZZ
64	AN960C10L	. WASHER	2		PAGZZ

NOTES: 1. Not required for use with the Blue Angels Fight Demonstration Team.
2. Outer Flap may be used after installation of grommet (WP 018 03).

Figure 1. A/P28S-24 Personnel Parachute Assembly (Sheet 8 of 8)

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ORGANIZATIONAL, INTERMEDIATE AND DEPOT MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

NES-12 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 576AS100-37 AND 576AS100-38

List of Effective Work Package Pages

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1 thru 11	11						

Reference Material

Organizational, Intermediate and Depot Maintenance, Illustrated Parts Breakdown,
NES-12 Personnel Parachute Assembly ..... WP 019 04

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General	2
Subassembly Configurations	2
Principles of Operation	2
Automatic Operation Above 14,000-Foot Altitude	2
Automatic Operation Below 14,000-Foot Altitude	10
Manual Operation	10
Repack Schedule	11

Record of Applicable Technical Directives

None

1. DESCRIPTION.

2. GENERAL.

a. The NES-12 Personnel Parachute As-sembly is a back-type parachute used with a PCU-33/P or PCU-56/P parachute restraint harness as part of an ejection seat escape system (Figures 1 and 2).

b. The NES-12 assembly includes a multicolored (white, olive green, international orange, and sand shade), 28 ft. diameter, flat, circular nylon canopy with 28 gores modified with water deflation pockets on alternate gores and spreading gun loops. The canopy is packed in a semirigid contoured container. An automatic parachute ripcord release (APRR) is used to open the container and a ballistic spreading gun is used to rapidly extend the canopy skirt hem during deployment. A unique feature of this assembly is the use of a tristage external pilot parachute stowed in a pocket on the container flap. The riser assembly includes two roller fitting assemblies used with the ejection seat restraint system, two canopy release fittings which connect to adapters on the PCU-33/P or PCU-56/P parachute restraint harness and a ripcord assembly retained in a riser flute and a metal ripcord retainer. The container has two strap adapters for attachment of the survival kit. In S-3 aircraft applications, a lumbar pad is used to provide back support.

3. CONFIGURATIONS.

a. Two different configurations of the NES-12 parachute assembly may be used inservice. The difference is the type of cartridge and the lumbar pad. Refer to Illustrated Parts Breakdown (WP 019 04) for exact configuration requirements.

4. SUBASSEMBLY CONFIGURATIONS.

a. The subassemblies listed below and shown in Figure 3 make up the NES-12 parachute assembly. Refer to Illustrated Parts Breakdown (WP 019 04) for detailed information on subassemblies.

Tristage External Pilot Parachute

Internal Bridle Assembly

Deployment Bag

Pilot Parachute

Canopy Assembly

Ripcord Assembly

Spreading Gun Assembly

Automatic Parachute Ripcord Release

Riser Assembly

Connector Straps

Container Assembly

Parachute Harness Sensing Release Units

5. PRINCIPLES OF OPERATION.

6. AUTOMATIC OPERATION ABOVE 14,000 FT. ALTITUDE.

a. When an aircrew ejects above the ripcord release predetermined altitude, the following functions take place after aircrew/seat separation:

(1) The ripcord release arming pin is withdrawn as the aircrew separates from the seat. The release aneroid mechanism locks the firing pin and hammer preventing the release from firing.

(2) The tristage external pilot parachute is deployed during aircrew/seat separation by a static line attached between the seat and deployment bag. Full inflation of the external pilot parachute occurs at speeds from 0 to 90 KIAS. At speeds between 90 and 250 KIAS the diameter reduces to 24-in; at speeds in excess of 250 KIAS complete inversion occurs. If complete inversion occurs, the effective drag is still enough to stabilize the aircrew during free fall and aid in the extraction of the main canopy during deployment.

(3) The aircrew remains stabilized during free fall by the external pilot parachute until increasing air pressure causes the ripcord release aneroid to contract. As the preset altitude is reached (14,000 $\pm$1000 ft.), the aneroid has contracted enough to allow the firing pin and hammer to unlock.

(4) The hammer firing pin strikes the cartridge.

(5) The cartridge fires after a time delay.

(6) The piston is forced forward in the release barrel, pulling the power cable which is attached to the top ripcord pin. The ripcord pins are pulled, allowing the container grommets and locking cones to separate.

(7) The container spring opening assemblies pull the side flaps apart allowing the pilot parachute to spring from the container and inflate.

(8) The external pilot parachute release unlocks, freeing the shear link cable as the container opens. Once freed, the external pilot parachute aids in deployment of the canopy. Should the external pilot parachute release fail to release at container opening, the nylon tape securing the canopy apex to the loop on radial seam 15 will allow for an increase of canopy mass accelerated out of the parachute container. This increases the reliability of the override disconnect.

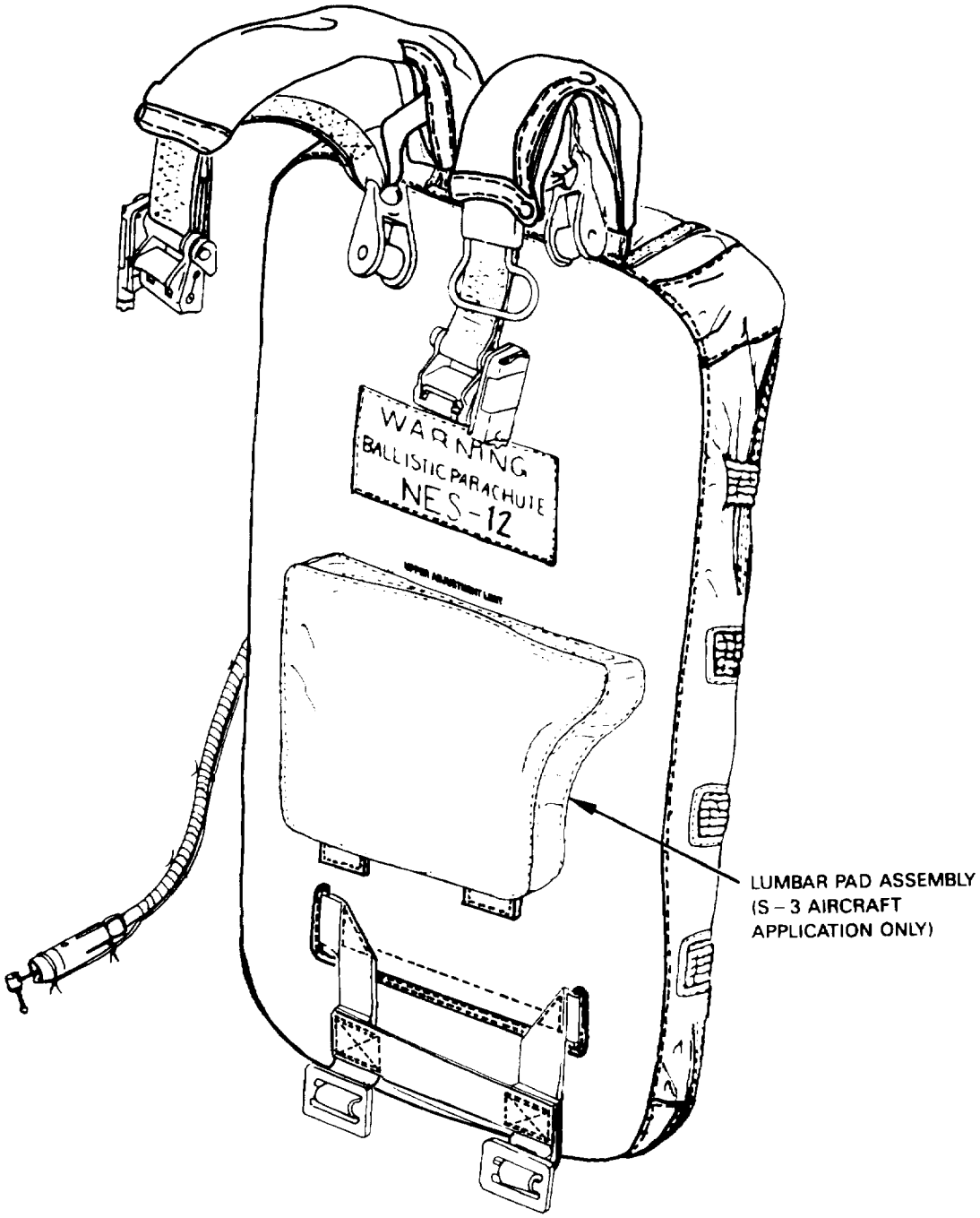


Figure 1. NES-12 Personnel Parachute Assembly

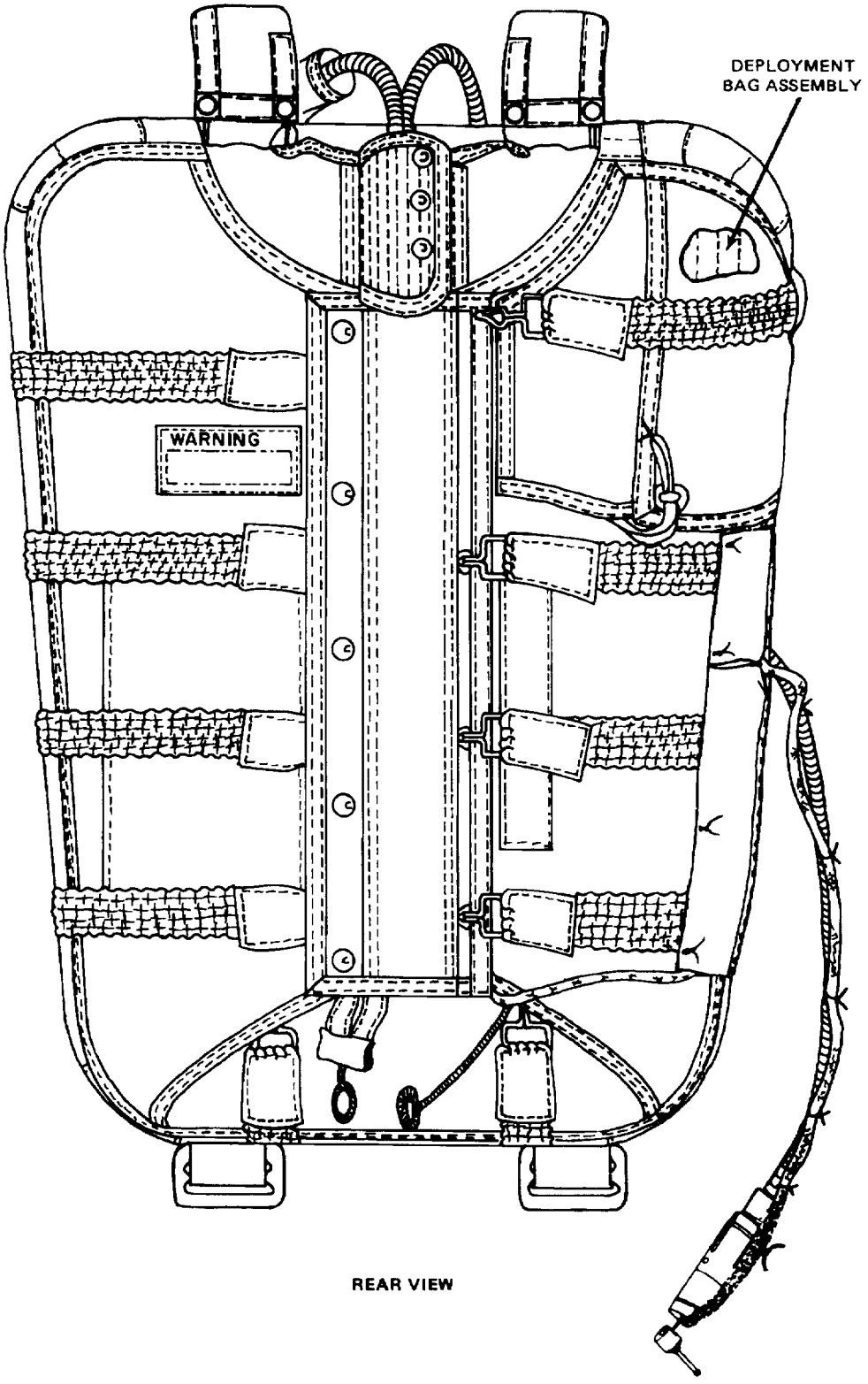


Figure 2. NES-12 Personnel Parachute Assembly

(9) The aircrew falling away from the external and internal pilot parachutes causes the canopy to be extracted from the container followed by the suspension lines. This action causes the nylon tape to break, allowing full inflation.

(10) Just prior to full canopy and suspension line deployment, the spreading gun firing lanyard pulls the firing pin from the firing mechanism. This releases the striker which, under spring pressure, strikes and initiates the cartridge.

(11) Gas pressure from the cartridge forces out the internal pistons propelling the slugs outward. The slugs simultaneously drag the attached suspension lines outward in a 360-degrees spread, allowing a more rapid opening of the canopy.

(12) In the event of a spreading gun malfunction, a failsafe backup subsystem operates. After the firing pin is withdrawn, tension on the firing lanyard is exerted on the fail-safe assembly sleeve which retracts the shear band assembly. This releases the slugs and allows the canopy to inflate aerodynamically.

(13) As load is applied, the risers rotate off the retainer supports and the connector link ties break. The releasable clamp lanyard is pulled from the base plate stud, releasing the clamp and freeing the ripcord cable housing. Full deployment of the parachute then occurs. The aircrew descends suspended in the PCU-33/P or PCU-56/P parachute restraint harness.

(14) During descent, the aircrew may manually actuate the four-line release system which will reduce oscillation and allow the aircrew to maneuver the parachute to a less hazardous landing site.

(15) Upon landing, the aircrew disengages the canopy from the PCU-33/P or PCU-56/P parachute restraint harness by actuation of the canopy release assembly.

(16) The parachute harness sensing release units provide an automatic backup method of releasing the risers after the aircrew makes a seawater entry.

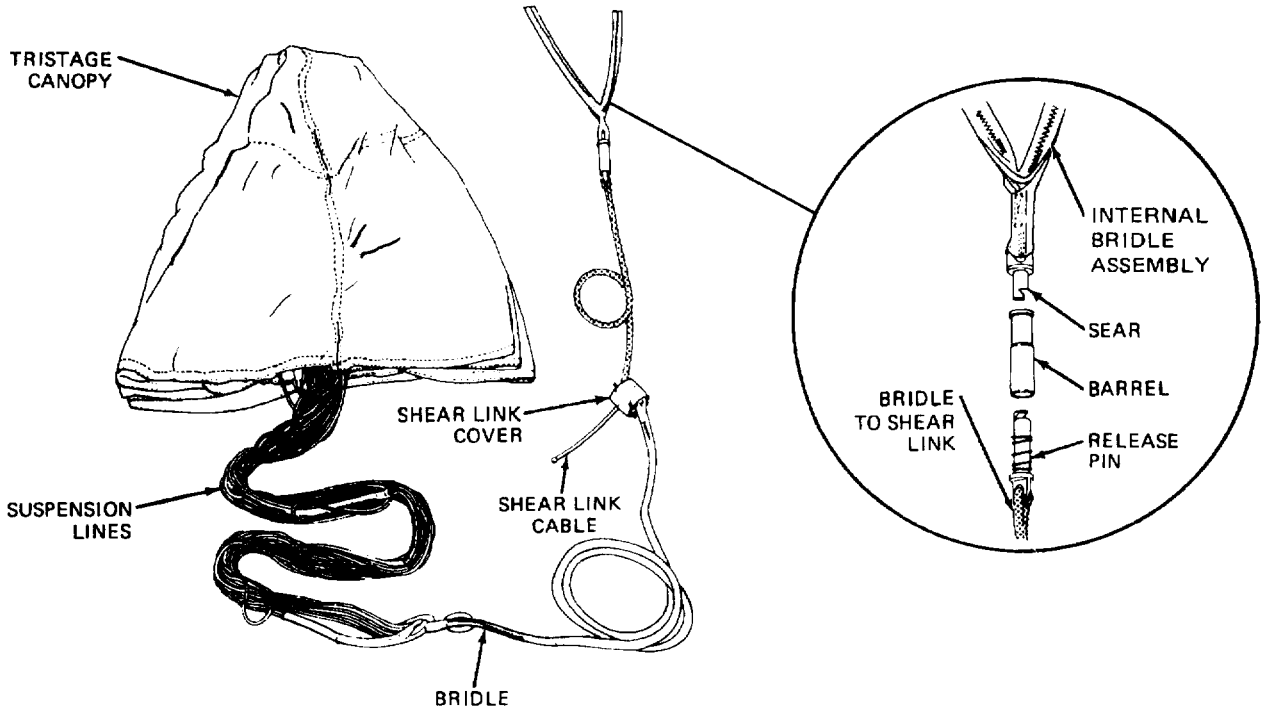
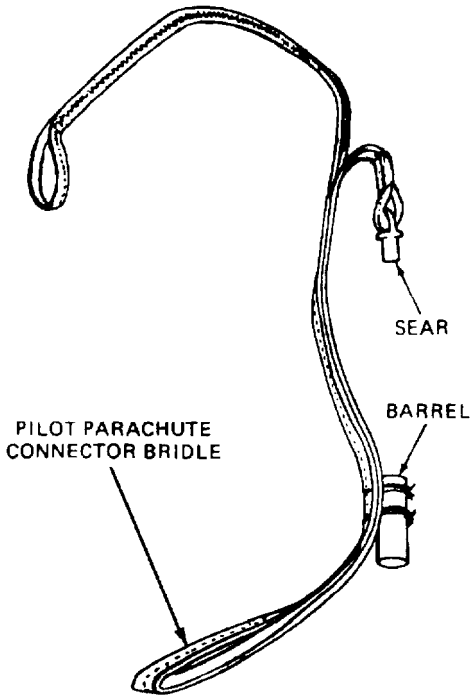
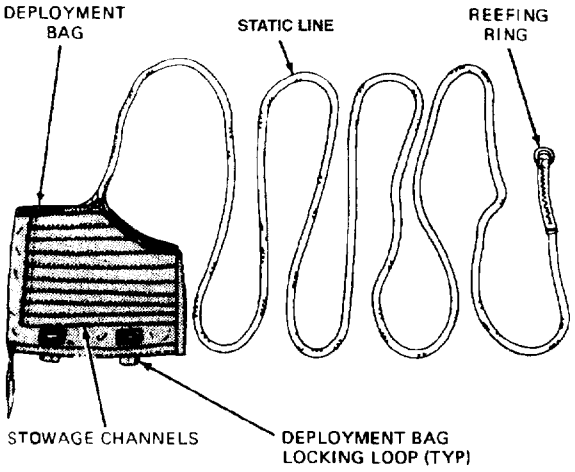


Figure 3. NES-12 Subassemblies (Sheet 1 of 5)



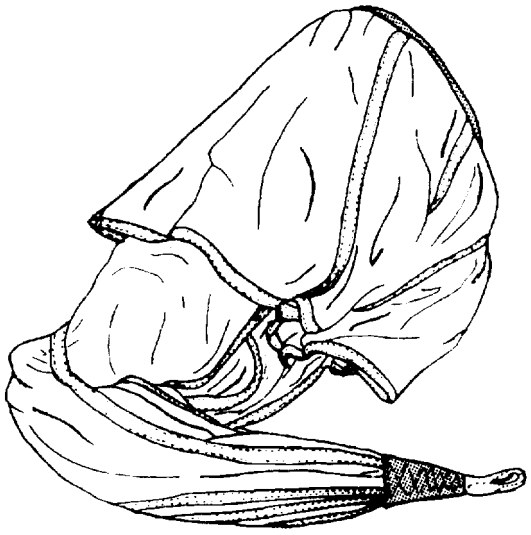
INTERNAL BRIDLE ASSEMBLY

6.2-6136A



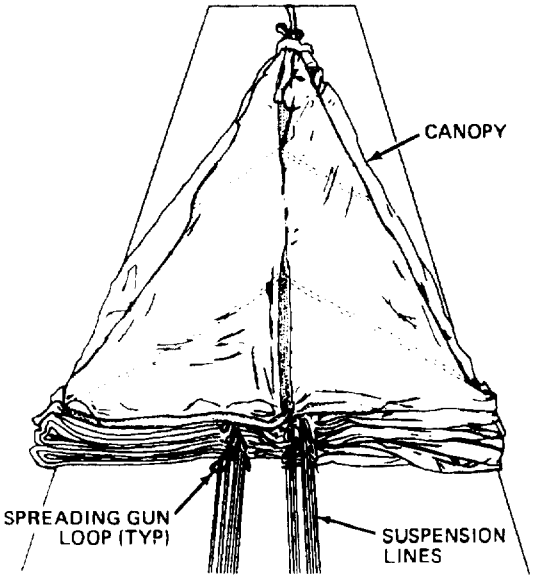
DEPLOYMENT BAG

6.2-6136C



INTERNAL PILOT PARACHUTE

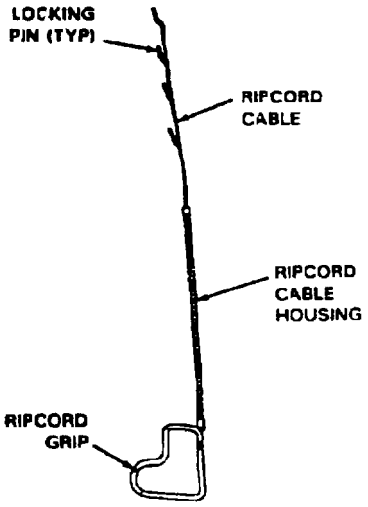
6.2-6136B



CANOPY

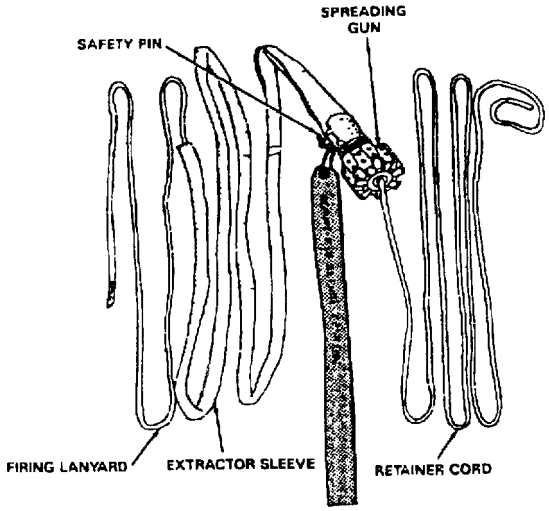
6.2-6136D

Figure 3. NES-12 Subassemblies (Sheet 2 of 5)



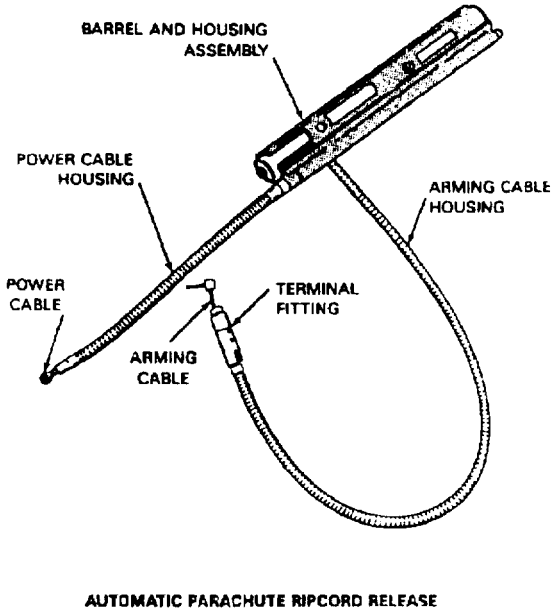
RIPCORD ASSEMBLY

6.2-5147



SPREADING GUN ASSEMBLY

6.2-5147B



AUTOMATIC PARACHUTE RIPCORD RELEASE

6.2-5147A

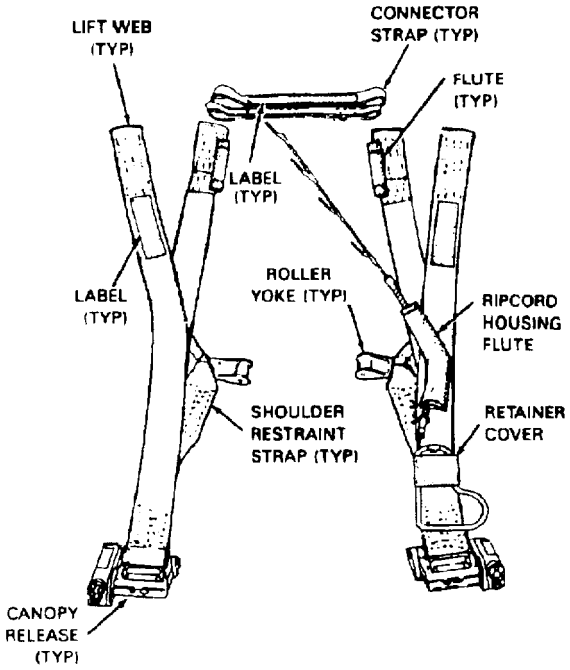


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Figure 3. NES-12 Subassemblies (Sheet 3 of 5)

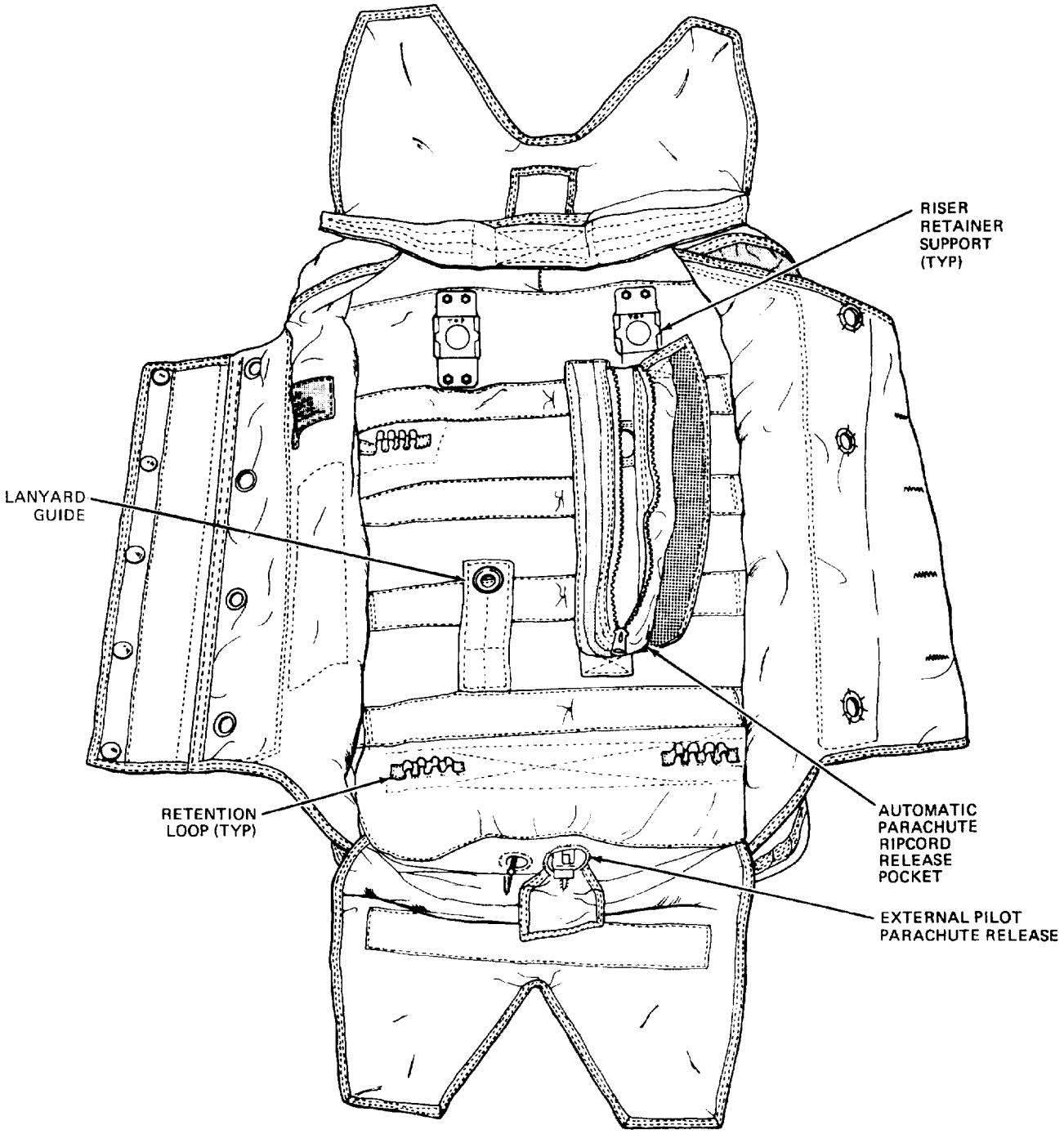

Figure 3. NES-12 Subassemblies (Sheet 4 of 5)

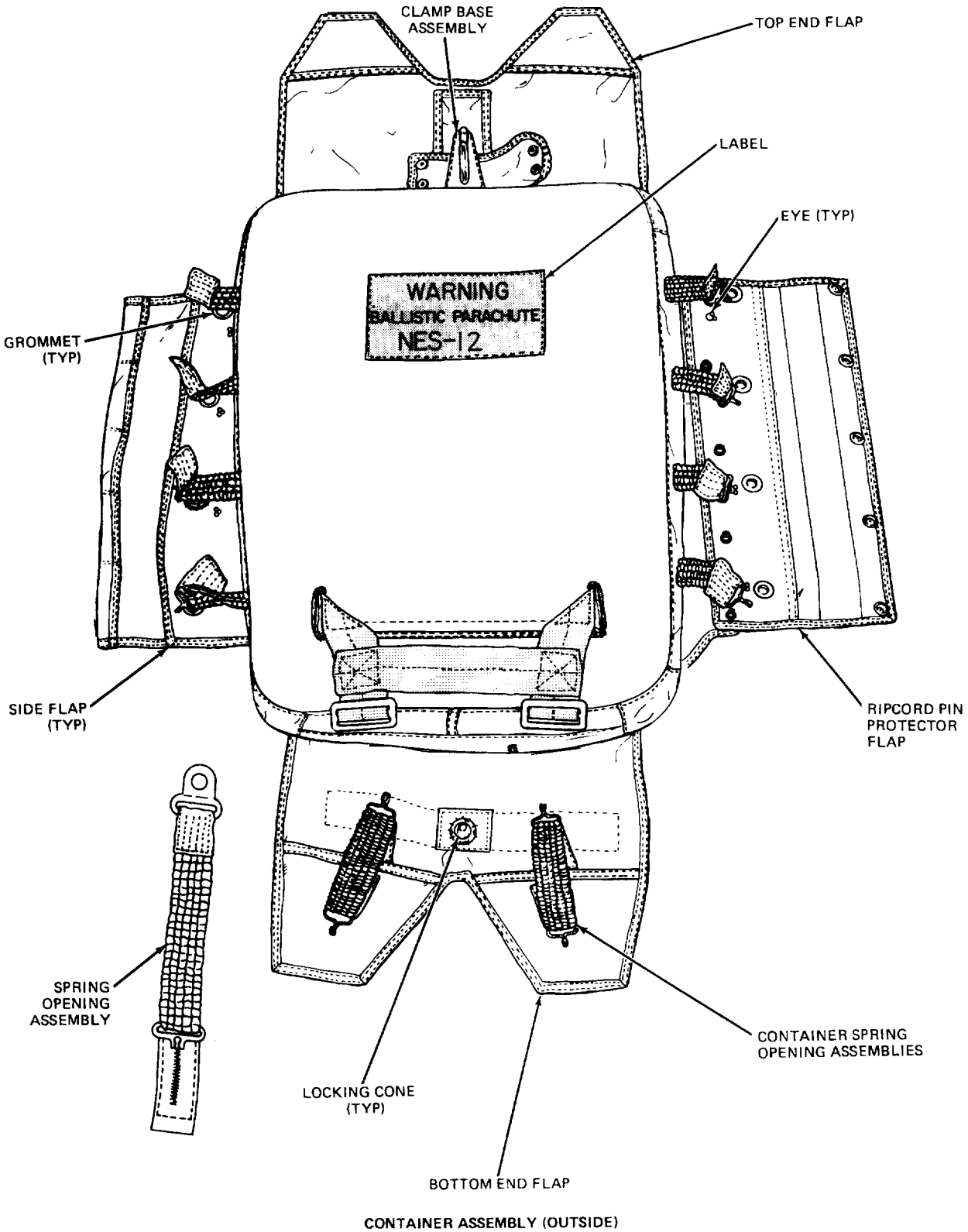

Figure 3. NES-12 Subassemblies (Sheet 5 of 5)

7. AUTOMATIC OPERATION BELOW 14,000 FT. ALTITUDE.

a. When an aircrew ejects below the ripcord release predetermined altitude, the following functions take place after aircrew/seat separation:

(1) The ripcord release arming pin is withdrawn, unlocking the release firing pin and hammer.

(2) The tristage external pilot parachute is deployed during aircrew/seat separation by a static line attached between the seat and deployment bag. Full inflation of the external pilot parachute occurs at speeds from 0 to 90 KIAS. At speeds between 90 and 250 KIAS, the diameter reduces to 24-in.; at speeds in excess of 250 KIAS, complete inversion occurs. If complete inversion occurs, the effective drag is still enough to stabilize the aircrew during free fall and also to aid in the extraction of the main canopy during deployment. The effect of the external pilot parachute as an aid in withdrawing the internal pilot parachute and main canopy is especially important at low altitude or ground level ejection.

(3) The hammer firing pin strikes the cartridge.

(4) The cartridge fires after a time delay.

(5) The piston is forced forward in the release barrel, pulling the power cable which is attached to the top ripcord pin. The ripcord pins are pulled, allowing the container grommets and locking cones to separate.

(6) The container spring opening assemblies pull the side flaps apart, allowing the internal pilot parachute to spring from the container.

(7) The external pilot parachute release unlocks, freeing the shear link cable as the container opens. Once free, the external pilot parachute aids in deployment of the canopy. Should the external pilot parachute release fail to release at container opening, the nylon tape securing the canopy apex to the loop on radial seam 14 will allow for an increase of canopy mass accelerated out of the parachute container. This increases the reliability of the override disconnect.

(8) The aircrew falling away from the external and internal pilot parachutes causes the canopy to be extracted from the container followed by the suspension lines. This action causes the nylon tape to break, allowing full inflation.

(9) Just prior to full canopy and suspension line deployment, the spreading gun firing lanyard pulls the firing pin from the firing mechanism. This releases the striker which, under spring pressure, strikes and initiates the cartridge.

(10) Gas pressure from the cartridge forces out the internal pistons propelling the slugs outward. The slugs simultaneously drag the attached suspension lines outward in a 360-degrees spread allowing a more rapid opening of the canopy.

(11) In the event of a spreading gun malfunction, a fail-safe backup subsystem operates. After the firing pin is withdrawn, tension on the firing lanyard is exerted on the failsafe assembly sleeve which retracts the shear band assembly. This releases the slugs and allows the canopy to inflate aerodynamically.

(12) As load is applied, the risers rotate off the retainer supports and the connector link ties break. The releasable clamp lanyard is pulled from the base plate stud, releasing the clamp and freeing the ripcord cable housing. Full deployment of the parachute then occurs. The aircrew descends suspended in the PCU-33/P or PCU-56/P parachute restraint harness.

(13) During descent, the aircrew may manually actuate the four-line release system which will reduce oscillation and allow the aircrew to maneuver the parachute to a less hazardous landing site.

(14) Upon landing, the aircrew disengages the parachute assembly from the PCU-33/P or PCU-56/P parachute restraint harness by actuating the canopy release assembly.

(15) The parachute harness sensing release units provide an automatic backup method of releasing the risers after the aircrew makes a seawater entry.

8. MANUAL OPERATION.

a. If the aircrew should have to manually deploy the parachute after separation from the ejection seat, the following functions take place:

(1) The aircrew pulls the ripcord grip removing the ripcord pins from the container locking cones permitting the grommets and locking cones to separate.

(2) The container spring opening assemblies pull the side flaps apart allowing the pilot parachute to spring from the container and inflate.

(3) The override disconnect assembly releases the external pilot parachute from the internal bridle, allowing the internal pilot parachute to deploy the main canopy. The external pilot parachute remains packed in the deployment bag and outer pocket.

(4) The aircrew falling away from the internal pilot parachute causes the canopy to be extracted from the container followed by the suspension lines. The action causes the nylon tape to break, allowing full inflation.

(5) Just prior to full canopy and suspension line deployment, the spreading gun firing lanyard pulls the firing pin from the firing mechanism. This releases the striker which, under spring pressure, strikes and initiates the cartridge.

(6) Gas pressure from the cartridge forces out the internal pistons propelling the slugs outward. The slugs simultaneously drag the attached suspension lines outward in a 360-degrees spread allowing a more rapid opening of the canopy.

(7) In the event of a spreading gun malfunction, a fail-safe backup subsystem operates. After the firing pin is withdrawn, tension on the firing lanyard is exerted on the fail-safe assembly sleeve which retracts the shear band assembly. This releases the slugs and allows the canopy to inflate aerodynamically.

(8) As load is applied, the risers rotate off the retainer supports and the connector link ties break. The releasable clamp lanyard is pulled from the base plate stud, releasing the clamp and freeing the ripcord cable housing. Full deployment of the parachute then occurs. The aircrew descends suspended in the PCU-33/P or PCU-56/P parachute restraint harness.

(9) During descent, the aircrew may manually actuate the four-line release system which will reduce oscillation and allow the aircrew to maneuver the parachute to a less hazardous landing site.

(10) Upon landing, the aircrew disengages the parachute assembly from the PCU-33/P or PCU-56/P parachute restraint harness by actuating the canopy release assembly.

(11) The parachute harness sensing release units provide an automatic backup method of releasing the risers after the aircrew makes a seawater entry.

9. REPACK SCHEDULE.

a. Scheduled repack cycle is 1232 days.

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ORGANIZATIONAL MAINTENANCE

REPAIR PROCEDURES

NES-12 SERIES PERSONNEL PARACHUTE ASSEMBLY

PART NO. 576AS100-37 and 576AS100-38

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1	8	2	6	3	8	4 thru 8	6

Reference Material

Intermediate and Depot Maintenance, Maintenance Procedures, Parachute Harness Sensing Release Units (PHSRU), MXU-746/P and MXU-747/P . . . . . WP 024 02
Introduction . . . . . WP 002 00
Seat Survival Kits (SKU Series Seat Kits) . . . . . NAVAIR 13-1-6.3-2

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EPC Bridle Line/Deployment Bag Tab to Protector Flap Tackings Replacement	4
EPC Static Line Loop Tacking Replacement	3
Protector Flap Tackings Replacement	4
Release Lanyard Locking Pin Safety Tie Replacement	6
Safety Tie Lumbar Pad Support Replacement	3
Shear Link Tackings Replacement	4
Spring Assembly (Container Opening) Replacement	7
Static Line to Arming Cable Housing Ties Replacement	6
Static Line to Arming Cable Retainer Clip Assembly Tacking Replacement	5
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PHSRU Batttery and Sensor Plug Replacement	7
PHSRU Torque Seal Replacement	7
Riser Assembly	2
Ripcord Housing Flute Tacking Replacement	2
Ripcord Housing Tacking Replacement	2
Ripcord Grip Retainer Cover Repair	3
Survival Kit	7
Attachment of Survival Kit Parachute Retention Straps to Parachute Harness Strap Adapters	7

Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date

None

1. INTRODUCTION.

2. This work package (WP) contains instructions for organizational level repair to ensure that the parachute assembly remains in ready-for-issue (RFI) status.

3. When performing repairs detailed in this WP, follow these guidelines:

a. Review all applicable instructions in this WP prior to starting repair.

b. Ensure that all necessary support equipment and materials required are available prior to starting repair.

c. When required, remove enough material from its source for immediate use only. Ensure that the material identification ticket remains with the source material at all times. Material that cannot be identified will not be used.

d. To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

e. A quality assurance (QA) inspector shall examine the finished work.

4. RISER ASSEMBLY.

5. RIPCORD HOUSING TACKING REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove loose or broken tacking.

b. Position ferruled end of housing 1/2-in. from ripcord grip retainer (Figure 1).

c. Tack housing to riser with three turns of size 6 thread, doubled and waxed. Tacking shall cross over grooved part of housing next to and snug against ferrule.

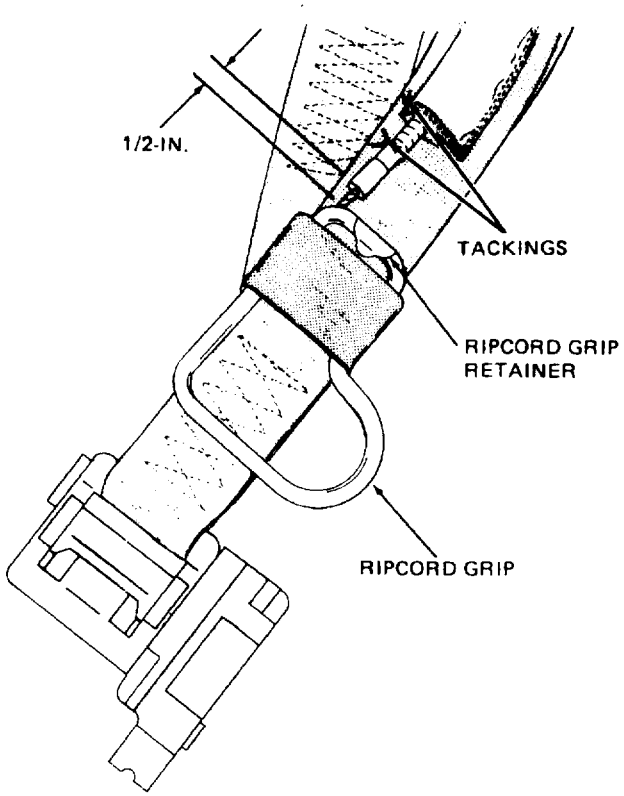

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Figure 1. Replacement of Ripcord Housing and Flute Tackings

d. Pull thread ends tight and tie off.

6. RIPCORD HOUSING FLUTE TACKING REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove loose or broken tacking.

b. Tack edge of flute hem to inboard side of riser with one turn of size FF thread, single and waxed; tie off (Figure 1).

7. RIPCORD GRIP RETAINER COVER REPAIR.

Materials Required

Specification or Part Number	Nomenclature
MIL-W-4088	Webbing, Nylon, Type XII, 1 3/4-in. Wide Class 1, 1A or 2
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove defective or loose ripcord grip retainer cover.

b. Cut a 7-in. length of webbing.

c. Sear both ends of the webbing, to prevent fraying.

d. Mark 1 3/4-in. from bitter ends.

NOTE

Do not wrap cover around harness restraint strap.

e. Wrap webbing around riser assembly overlapping the 1 3/4-in. marks (Figure 2).

f. Tack ripcord grip retainer cover to uppermost portion of riser in four places with size FF thread, doubled and waxed; tie off (Figure 2). (QA)

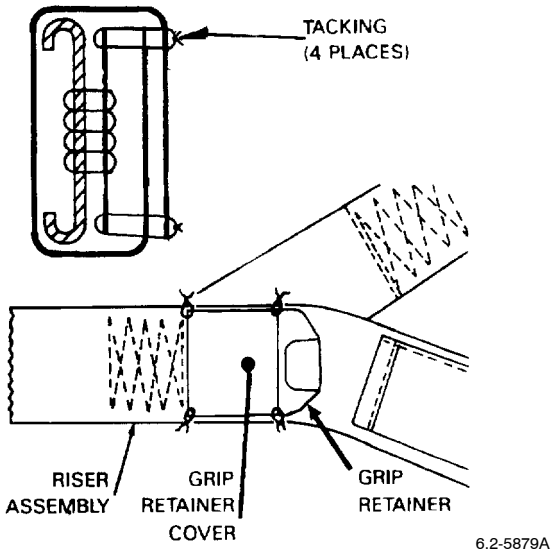

Figure 2. Ripcord Grip Retainer Cover Repair

8. CONTAINER ASSEMBLY.

9. SAFETY TIE LUMBAR PAD SUPPORT REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
MIL-C-5040	Cord, Nylon, Type I or IA

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. With a length of nylon cord, pass cord thru both grommets and tie off.

10. EPC STATIC LINE LOOP TACKING REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove loose or broken tacking.

b. Tack lanyard loop in place to pocket edge with one turn of size E thread, single and waxed; tie off (Figure 3).

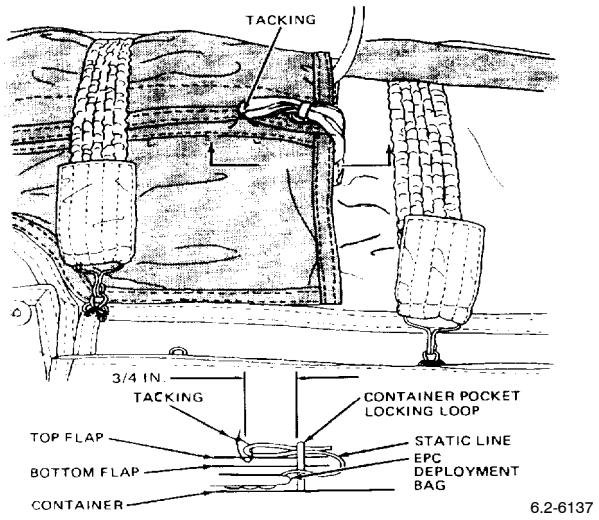

Figure 3. Replacement of EPC Static Line Loop Tacking

11. EPC BRIDLE LINE/DEPLOYMENT BAG TAB TO PROTECTOR FLAP TACKINGS REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove loose or broken tacking(s).

b. Replace tacking at top of protector tunnel by passing one turn of size E thread, single and waxed, thru bottom protector flap, deployment bag tab, and bridle in that order; tie off (Figure 4).

c. Replace tacking at bottom of protector tunnel by passing one turn of size E thread, single and waxed thru bottom protector flap and bridle tie off (Figure 4).

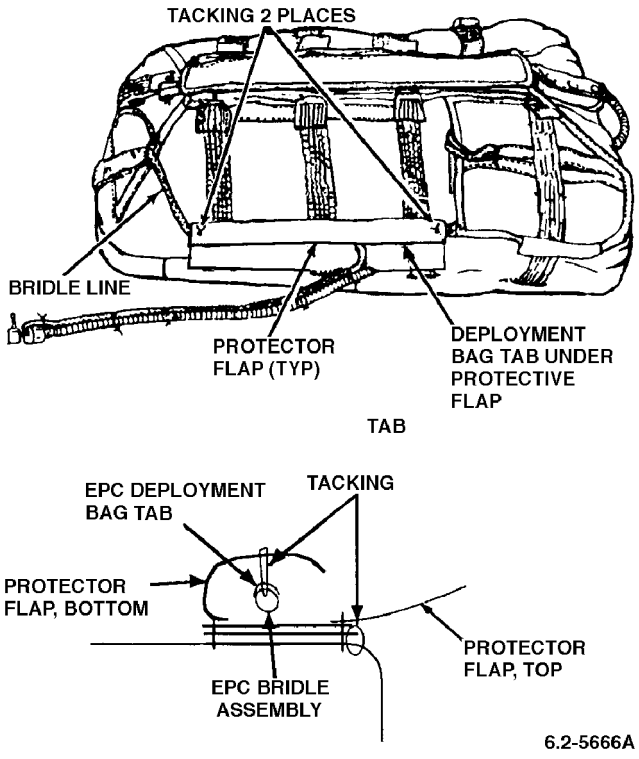

Figure 4. Replacement of EPC Bridle Line/ Deployment Bag Tab to Protector Flap Tackings.

12. PROTECTOR FLAP TACKINGS REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove loose or broken tacking.

b. Ensure top flap is positioned over bottom flap.

c. Replace top tacking by passing one turn of size E thread, single and waxed, thru top flap and bottom flap; tie off (Figure 5).

d. Replace middle tacking by passing one turn of size E thread, single and waxed, thru both slit edges of the top flap, static line and bottom flap; tie off (Figure 5).

e. Replace bottom tacking by passing one turn of size E thread, single and waxed, thru top and bottom flaps only; tie off (Figure 5).

13. SHEAR LINK TACKINGS REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove loose or broken tackings.

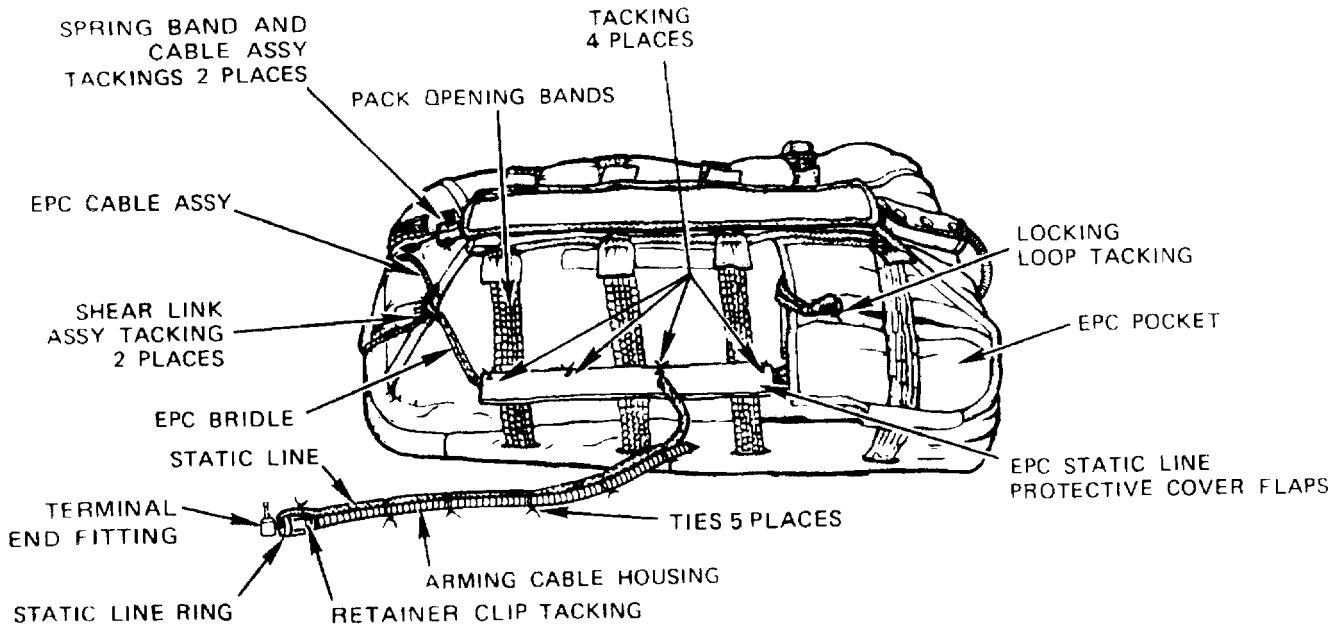

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Figure 5. Replacement of Protector Flap, Shear Link, and Static Line Tackings

b. Ensure shear link is positioned under side flap. Secure by tacking release cable to side flap, with one turn of size E thread, single and waxed; tie off.

c. Tack bridle line to side flap, with one turn of size E thread single and waxed; tie off (Figure 5).

14. STATIC LINE TO ARMING CABLE RETAINER CLIP ASSEMBLY TACKING REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Route a 12-in. length size 6 thread, single and waxed, around static line at concave groove in retainer clip (Figure 6).

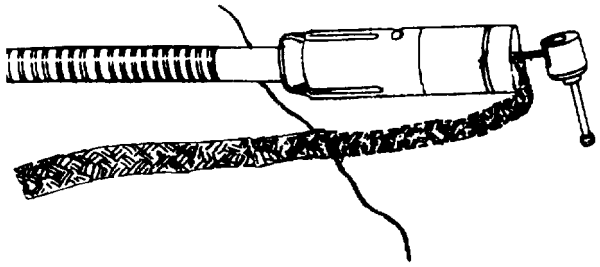

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Figure 6. Route a 12-in. Length of Thread

b. Route free ends of thread around opposite sides of retainer clip groove (Figure 7).

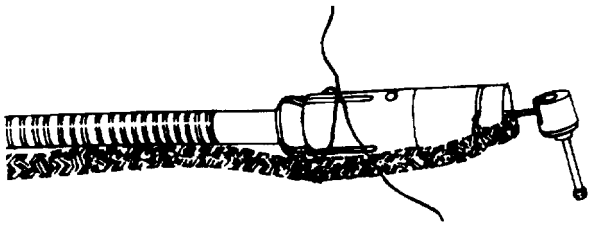

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Figure 7. Route Free Ends

c. Bring thread ends back around static line pulling the static line snug against the retainer clip (Figure 8).

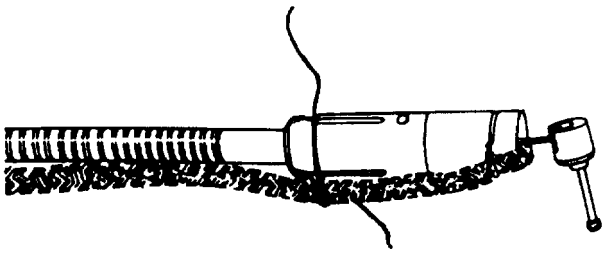

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Figure 8. Bring Thread Ends Around Static Line

d. Secure the ends, tie off. Trim excess of 1/2-in (Figure 9).

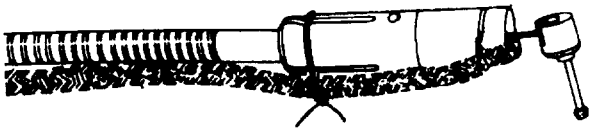

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Figure 9. Secure Ends

15. STATIC LINE TO ARMING CABLE HOUSING TIES REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 3, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove loose tie(s).

NOTE

Static line to arming cable housing ties are made at five equally spaced points between ferrule at end of housing to point where housing enters container.

b. Using one turn of size 3 thread, single and waxed, tie static line and housing together. Ties shall be made completely around static line and housing in grooves of housing; tie off (Figure 5).

16. RELEASE LANYARD LOCKING PIN SAFETY TIE REPLACEMENT.

Materials Required

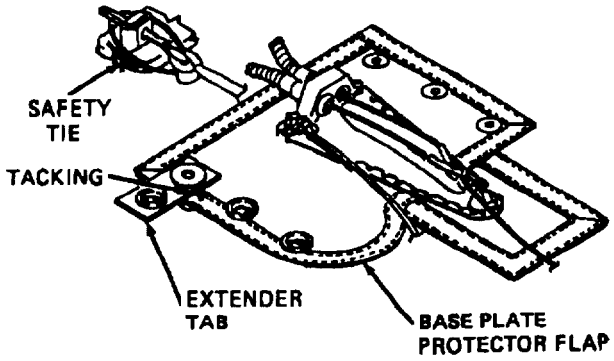
Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove loose or broken safety tie.

b. Tie locking pin to stud with one turn of size FF thread, single and waxed. Pass thread thru lanyard knot; tie off (Figure 10).



6.2-5668

Figure 10. Replacement of Release Lanyard Locking Pin Safety Tie and Tacking on Baseplate Extender Tab

17. BASEPLATE EXTENDER TAB TACKING REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove loose or broken tacking.

b. Tack extender tab to baseplate protector flap with one turn of size FF thread, doubled and waxed; tie off (Figure 10).

18. SPRING ASSEMBLY (CONTAINER OPENING) REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
60A113D11-8	Spring Assembly, Container Opening

a. Measure length of replacement spring opening assembly. Required length is 4 7/8 ± 1/8-in. when measured from end of one hook to end of other hook with no tension applied.

b. Inspect spring opening assembly for broken spring, contamination, corrosion, cuts, fraying, bent or broken hooks, elasticity and loose or broken stitching.

c. Remove defective spring assembly.

d. Attach hook of replacement spring opening assembly opposite end tab to eyelet on container frame with hook facing down. Crimp hook to eyelet.

e. Attach remaining hook to corresponding eyelet on container end flap.

19. SURVIVAL KIT.

20. ATTACHMENT OF SURVIVAL KIT PARACHUTE RETENTION STRAPS TO PARACHUTE HARNESS STRAP ADAPTERS.

NOTE

Attachment of survival kit to parachute assembly may be accomplished prior to seat installation or after seat installation.

a. Ensure that RSSK-8 survival kit has been inspected per NAVAIR 13-1-6.3-2.

b. Attach spring-loaded end fittings on RSSK-8 parachute retention straps to respective adapters on parachute assembly harness strap.

21. PARACHUTE HARNESS SENSING RELEASE UNIT (PHSRU).

22. PHSRU TORQUE SEAL REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Torque loose screws to a value of 11 to 13 in-lbs.

b. Apply torque seal to the plug assembly, sensor plug and electronics package assembly attaching screws (Figure 11).

23. PHSRU BATTERY AND SENSOR PLUG REPLACEMENT.

Support Equipment Required

Specification or Part Number	Nomenclature
FLUKE-77	Multimeter
SA852AS112	Torque Driver
SA852AS113	Torque Tool, Sensor Plug
GGG-W-641	Socket Handle, 1/4-in. Drive
3405AS101-2	Socket, Special 7/16 x 1/4-in. Drive

a. Perform PHSRU Organizational Level Maintenance in accordance with WP 024 02 for the following tasks:

(1) Removal of battery.

(2) Installation of battery.

(a) Conduct the following:

1) Battery voltage check.

2) Battery polarity check.

3) Battery installation.

4) Final check.

(3) Removal of sensor plug.

(4) Installation of sensor plug.

(a) Conduct the following:

1) Sensor plug resistance check.

2) Final check.

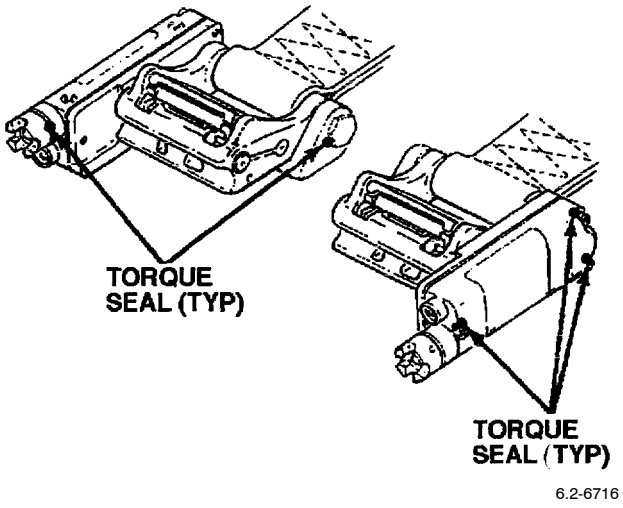


Figure 11. Replacement of Torque Seal on PHSRU

INTERMEDIATE AND DEPOT MAINTENANCE

PACKING PROCEDURES

NES-12 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 576AS100-37 and 576AS100-38

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1	11	8	11	20 thru 22	11	49 thru 50	11
2 thru 7	9	9 thru 19	9	23 thru 48	9		

Reference Material

Cartridge Actuated Devices (CADS) and Propellant Actuated Devices (PADS) (IETM) . . . . . NAVAIR 11-100-1.1
Intermediate and Depot Maintenance, Common Repair Procedures . . . . . WP 004 00
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdown, Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00
Organizational, Intermediate and Depot Maintenance, Illustrated Parts Breakdown, NES-12 Personnel Parachute Assembly . . . . . WP 019 04
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration . . . . . WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment . . . . . WP 005 00

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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
None				

1. GENERAL.

a. Packing instructions are provided with the assumption that they will be carried out under ideal conditions in a parachute loft (WP 003 00). When a parachute assembly must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

b. In no case shall the packing of a parachute assembly be interrupted after the packing operation has been started. If the packing operation is interrupted due to unforeseen circumstances, the parachute assembly shall be completely repacked per the instructions contained in this Work Package (WP).

c. Quality Assurance (QA) points have been included in the packing procedures. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Witnessing of (QA) steps may be delayed by (QA) if their satisfactory completion is verified in subsequent steps.

d. During packing procedures, packer shall be positioned on left side of packing table and helper on right side when viewed from riser end of table.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
711-07076	Altitude Chamber
Refer to WP 005 00	Bodkin
—	C-Clamp (2)
Refer to WP 005 00	Fid
Refer to WP 005 00	Guide Tube
Refer to WP 005 00	Long Bar
Refer to WP 005 00	Packing Hook
Refer to WP 005 00	Pilot Parachute Pin Plate
—	Needle
Refer to WP 005 00	Ripcord Pinlock
—	Rod, Wood or Steel, 3/8-in., Rounded End
DPP-50	Scale, Spring
DPP-100	Scale, Spring
—	Screwdriver, Torque
MS17985C310	Safety Pin
Refer to WP 005 00	Shot Bag (4)
5579245-1	Template, Go-No-Go
Refer to WP 005 00	Temporary Locking Pin (2)
TSQ-050	Torque Meter
ST86-0064-1	Test Fixture

Materials Required

Specification or Part Number	Nomenclature
O-E-760	Alcohol, Denatured
PIA-C-5040	Cord, Nylon Type I or IA
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon, Size A, Type I or II, Class A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
V-T-295	Thread, Nylon, Size 3, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
MIL-R-1832	Rubberband, Retaining, Type I
MIL-S-45180	Sealing Compound Type II

Specification or Part Number	Nomenclature
711-07077	Test Slug (3)
MIL-T-5608	Tape, Nylon, Type II, 3/8-in. Class A

a. Ensure that all support equipment and materials required are available prior to starting.

b. Inspect packing tools for nicks, burrs, or shape edges which may cause damage to the parachute assembly.

c. Count and record number of packing tools.

d. Clean packing table.

3. SPREADING GUN SAFETY PIN.

a. Ease of operation.

b. Presence of two locking balls.

c. Condition of flag and flag stowage strap.

4. LAYOUT OF RIGGED PARACHUTE ASSEMBLY.

WARNING

Use extreme caution. This parachute assembly incorporates a ballistic spreading gun.

a. Check proper operation of spreading gun safety pin by depressing button and ensuring ball bearings on tip of pin depress only while button is engaged. Check condition of flag and flag stowage strap.

WARNING

Do not remove folded canopy or suspension lines from container.

b. Completely open parachute container and detach spring opening assemblies.

c. Carefully raise folded canopy at top end of container, exposing spreading gun. Open fasteners on extractor sleeve and fully insert safety pin into spreading gun. The safety pin button must be depressed to insert pin (Figure 1). (QA)

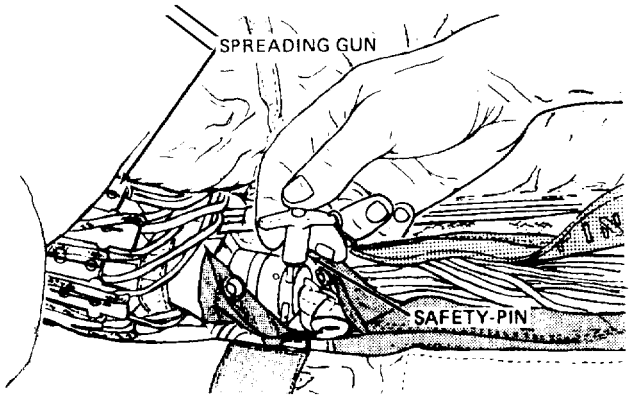

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Figure 1. Safety Pin Installation

WARNING

Do not remove the spreading gun safety pin at any time during this procedure.

d. Open extractor sleeve fasteners on each side of spreading gun safety pin.

e. Release fastener securing stowage sleeve to extractor sleeve.

f. Remove stowage sleeve from extractor sleeve.

g. Remove shear link assembly from container external pilot parachute release assembly.

h. Untie and remove the 36-in. length of nylon tape securing apex of canopy to loop on canopy radial seam.

i. Remove only folded canopy from container.

j. Remove yoke and plate assembly from top outboard connector link on helper's side and then remove spreading gun firing lanyard.

k. Reinstall yoke and plate assembly on top connector link on helper's side.

l. Remove spreading gun firing lanyard from rubber retaining bands.

m. Remove connector link ties.

n. Remove suspension lines from rubber retaining bands and then remove retaining bands from retaining band loops.

o. Remove external pilot parachute and deployment bag from external pilot parachute pocket on container.

p. Remove external pilot parachute and lines from deployment bag.

q. Remove release pin assembly from override disconnect housing.

r. Remove tackings from ripcord release lanyard and remove from connector links.

s. Remove risers from riser retaining supports.

t. Stretch canopy and suspension lines full length on packing table. Rotate spreading gun so lines 14 and 15 are facing up and lines 1 and 28 are on bottom (Figure 2).

u. Attach tension strap hook to canopy vent lines.

v. At ballistic spreading gun, separate suspension lines into two equal groups with lines 15 thru 28 on packer's side and lines 1 thru 14 on helper's side. Grasping each group of lines, walk from skirt hem to connector links, removing any dips and twists between the two groups (Figure 2).

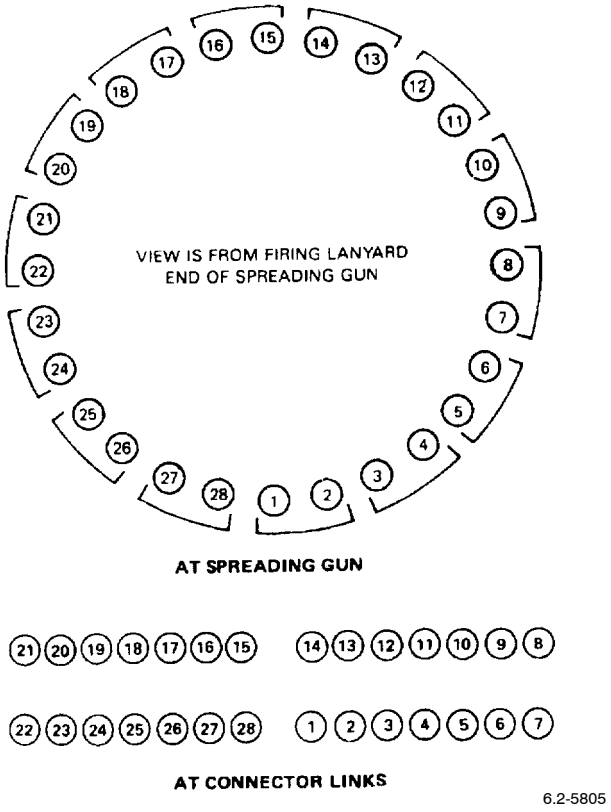

Figure 2. Arrangement and Orientation of Suspension Lines

w. Place connector link holding lines 8 thru 14 on top of connector link holding lines 1 thru 7. Place connector link holding lines 15 thru 21 on top of connector link holding lines 22 thru 28. Insert tension hooks into connector links and into packing table (Figure 2).

x. Apply slight tension using tension strap.

y. Pull vent collar toward canopy exposing vent hem.

z. Adjust vent hem.

aa. Pull vent collar back to original position.

5. AUTOMATIC PARACHUTE RIPCORD RELEASE REMOVAL/DISARMING/DISASSEMBLY.

WARNING

Do not pull arming cable from armed release assembly, as this will cause it to fire.

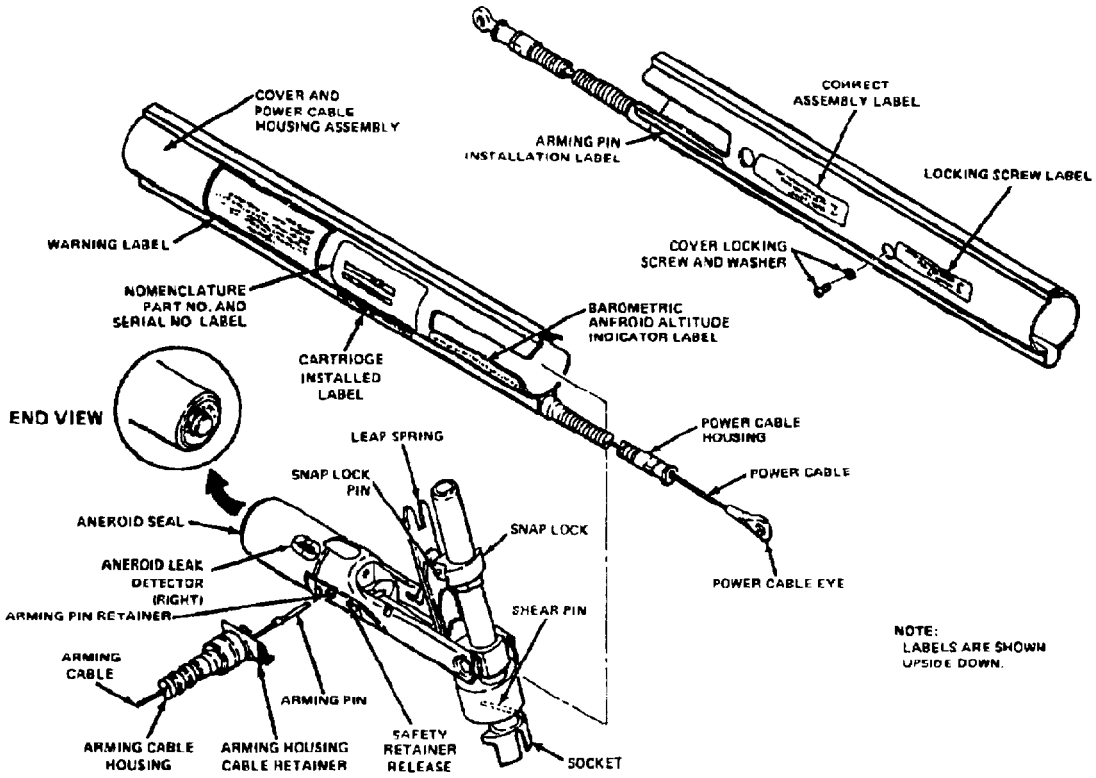

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Figure 3. Automatic Parachute Ripcord Release, Model 7000

a. Open release assembly pocket in parachute container and remove release assembly enough distance to allow disassembly.

b. Remove cover locking screw and washer (Figure 3).

NOTE

Cover and power cable assembly and receiver and barrel assembly are serialized, matched sets. Do not mix assemblies.

c. Slide cover off receiver and barrel assembly.

d. Disengage barrel by pushing down on snap-lock; slide back and release (Figure 4).

e. Remove cartridge from barrel at once after barrel is disengaged. Store cartridge per NAVAIR 11-100-1.1. (QA)

f. Remove arming cable housing from receiver and barrel by depressing retainer release. Remove arming cable housing from receiver, leaving arming cable pin installed (Figure 3).

g. Ensure that arming cable pin is positively retained by arming pin retainer (Figure 3).

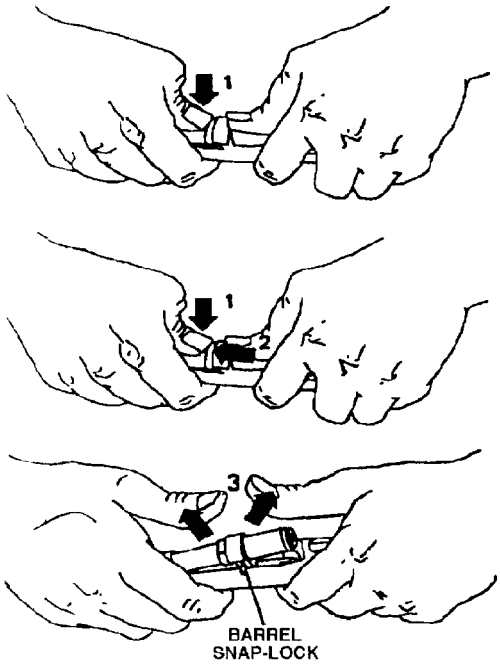

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Figure 4. Disarming Ripcord Release

h. Remove arming cable pin from receiver by grasping arming pin and pulling.

i. Remove arming cable and clip from arming cable housing.

j. Remove lanyard assembly from lanyard stowage channel and pocket.

6. SPREADING GUN CARTRIDGE REMOVAL.

WARNING

The spreading gun employs an explosive cartridge. Failure to observe procedures in this paragraph could result in serious injury. Safety pin must be installed in spreading gun.

NOTE

Use only special tools furnished for cartridge removal. A helper will assist the person doing the cartridge removal. A firing pin pull force check shall be made each time the parachute assembly is packed.

a. Ensure safety pin is installed in spreading gun. (QA)

CAUTION

Cartridge extractor wrench surface must mate with cartridge. Resurface wrench if required.

b. Helper will place spreading gun on packing table, with cartridge opening in upright position and hold (Figure 5).

c. Packer will place pins of cartridge extractor wrench in holes in cartridge. Loosen cartridge (Figure 6).

NOTE

Ensure that proper malfunction description code is recorded. If difficulty occurs in removal of cartridge using extractor wrench furnished with test fixture, request assistance of explosive ordnance disposal (EOD) personnel.

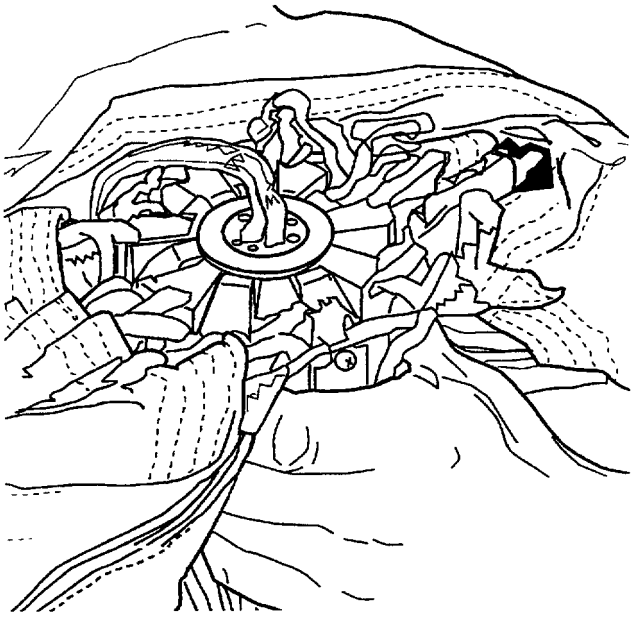

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Figure 5. Positioning of Spreading Gun

d. Manually unscrew and remove cartridge from chamber (Figure 6).

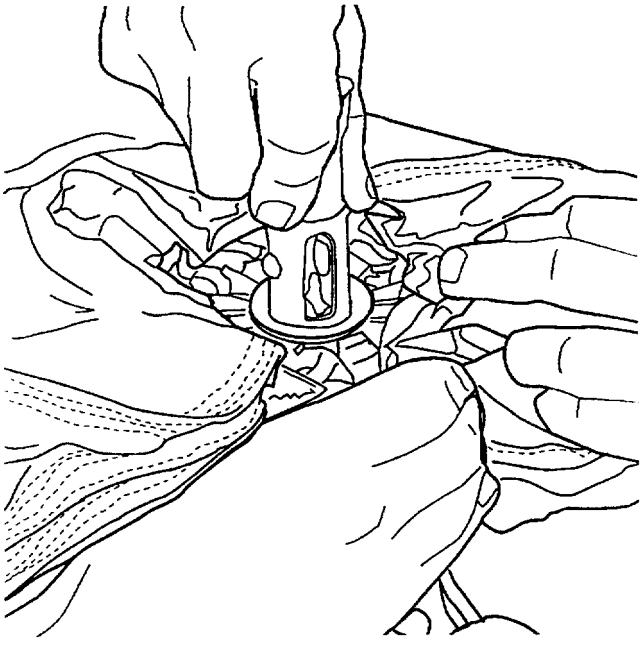

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Figure 6. Removal of Spreading Gun Cartridge

e. Remove cartridge from retainer cord by removing pin. Retain pin for reinstallation.

f. Store cartridge per NAVAIR 11-100-1.1.

7. INSPECTION (SPECIAL).

a. Maximum scheduled repack cycle is 1232 days.

8. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Parachute Harness Sensing Release Unit Cartridge) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be re-based if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Components without a service/total life shall be removed from service if the components do not pass inspection, as determined by Quality Assurance Representative (QAR) or Collateral Duty Inspector (CDI).

g. Spreading gun retainer cord is changed with the spreading gun.

h. Check date placed in-service and date of manufacture on each parachute part for service/total life as follows:

Nomenclature	Service Life (Yr)	Total Life (Yr)
Battery	4	4
Canopy Assembly	None	15
Cartridge, Impulse MF-78	Refer to NAVAIR 11-100-1.1	
Cartridge M282 (TA-4)	Refer to NAVAIR 11-100-1.1	
Cartridge MF-37 (S-3)	Refer to NAVAIR 11-100-1.1	
Cartridge MW19	Refer to NAVAIR 11-100-1.1	
Cross-Connector Strap	(See Note 1)	(See Note 1)
Deployment Bag	None	15
Electronics Package Assembly	None	8
External Tristage Pilot Parachute	None	13
Internal Bridle Assembly	None	None
Pilot Parachute		15
Riser Assembly	None	15
Spreading Gun	None	11 1/2

Note 1: Replace at Canopy Assembly replacement

(1) Markings for completeness, legibility, and agreement with information on Parachute Record (OPNAV 4790/101).

(2) Compare configuration of parachute assembly to that shown in WP 019 04 Illustrated Parts Breakdown.

9. AUTOMATIC PARACHUTE RIPCORD RELEASE.

NOTE

Do not mismatch cover and power cable housing assembly and barrel and receiver assembly.

a. Serial numbers on the cover and power cable housing and receiver and barrel assembly for matched numbers. (QA)

b. Receiver and barrel assembly for nicks, cracks, gouges, distortion, corrosion, or other damage which could cause malfunction in-service.

c. Decals and labels for legibility and security of attachment.

d. Cover and power cable housing for nicks, gouges, distortion, corrosion, and security of power cable housing.

e. Power cable for freedom of movement and secure attachment of swaged ball and power cable eye (Figure 7).

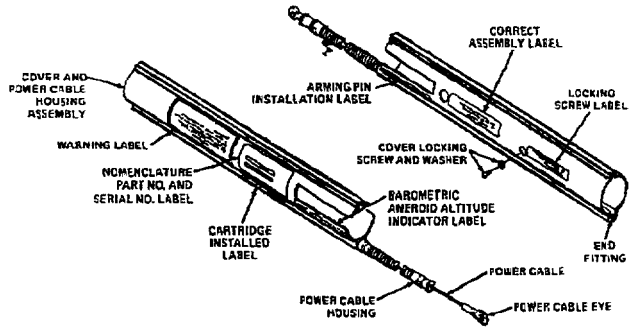


Figure 7. Attachment of Swaged Ball and Power Cable Eye

f. Arming cable for kinks, broken strands, corrosion, and security of arming pin and sqaged ball.

g. End fitting for distortion, corrosion, cracks, breaks, and security of attachment.

h. Arming cable clip retainer and retainer pin for distortion, corrosion, and other damage.

i. Arming cable housing for bends, retention or end furrel, retention of housing retainer.

j. Aneroid for evidence of expansion and correct indication.

k. Ensure proper retention of arming pin retainer by inserting arming pin in retainer while barrel is unlocked. Press pin into place firmly until locked into pin groove. Pin should now be held securely.

l. Manually pull arming cable pin from retainer, ensuring that pin was properly secured. (QA)

m. Sealing compound on aneroid; seal must be intact. Cracks due to normal aging of seal material are acceptable (Figure 8).

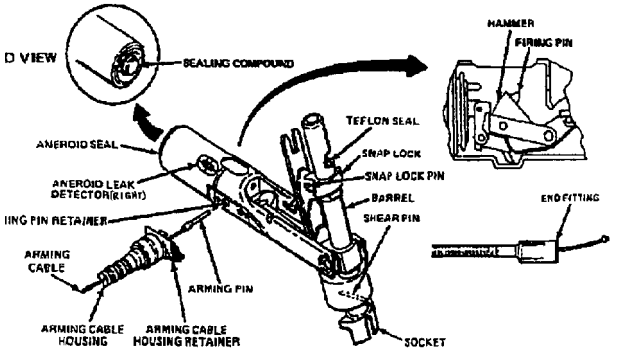


Figure 8. Sealing Compound Check

WARNING

Do not twist socket, as this will break shear pin.

n. Socket for visible damage and retention of socket and piston by shear pin.

o. Snap-lock pin for security and damage.

p. Teflon seal (inside of barrel) for placement.

q. Firing pin for flattening, gouges, and other damage.

r. Leaf springs on receiver and barrel assembly for damage; leaf spring retaining screw for condition and presence of torque seal (Figure 9).

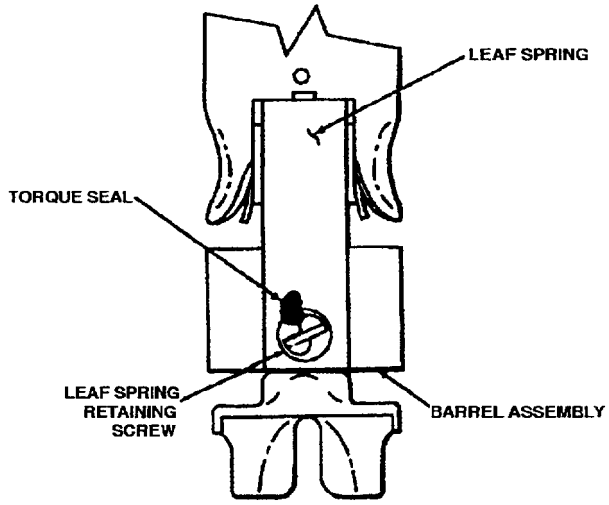


Figure 9. Presence of Torque Seal

10. RIPCORD RELEASE FIRING ALTITUDE CHECK.

a. Install test chamber substitute arming pin in ripcord release.

CAUTION

Do not release firing mechanism without test slug installed, as this will distort the firewall.

b. Install test slug.

CAUTION

At no time will a tool or other device be used to open or close the ripcord release.

c. Press barrel down into position in receiver, ensure snap-lock pins lock barrel in position.

d. Perform firing altitude check:

NOTE

The ripcord release firing check must simulate firing at between 13,000 and 15,000 ft.

(1) Install barrel and receiver in test chamber. (QA)

(2) Set altimeter to 29.92 in. Hg. (QA)

(3) Evacuate chamber to a minimum of 25, 000 ft. pressure altitude. (QA)

(4) Decrease altitude at a rate of 175 to 200 ft./ sec. (QA)

(5) Actuate arm toggle to withdraw arming pin at approximately 20,000 ft. pressure altitude. (QA)

(6) Verify altitude at which ripcord release firing pin strikes test slug. (QA)

(7) Remove test slug from barrel; check primer for indent; indent must be present and centered. (QA)

CAUTION

Test slug must be removed from barrel after each use.

(8) Repeat firing altitude check two additional times; using a new test slug each time; the ripcord release must pass all three firing altitude checks. (QA)

(9) Discard test slugs. (QA)

(10) Remove ripcord release from altitude chamber. (QA)

11. RIPCORD RELEASE END FITTING REMOVAL TEST.

NOTE

The arming cable and housing shall be removed from the automatic parachute ripcord release assembly.

a. Helper shall hold arming cable housing steady on packing table.

b. Attach gage to the swaged ball using Type I or IA nylon cord.

c. Using a straight steady pull, observe amount of pull required to remove end fitting from arming cable housing. Allowable force is 17 lbs. ± 3 lbs. (QA)

12. SPREADING GUN.

WARNING

Safety pin must be installed. Do not twist or pull on firing lanyard.

a. Extractor sleeve for contamination, fraying, loose or broken stitching, security and condition of fasteners, and security of attachment.

b. Decals and labels for presence and legibility.

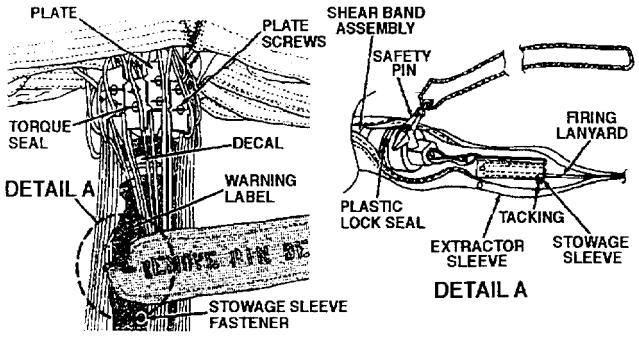
c. Firing lanyard and stowage sleeve for contamination, twists, cuts, burns, fraying, security of attachment and condition of fasteners.

d. Spreading gun for corrosion, slugs properly held by shear band assembly, security of plates, condition of unbroken lock seal, and plate screws for presence and condition of torque seal.

e. Firing pin housing for security. Grasp around housing slug/plates with left hand. With right hand grasp safety pin and top of firing mechanism. In counterclockwise direction try to rotate firing mechanism. Any rotation of the firing mechanism is cause for rejection.

f. Retaining cord for proper attachment to the apex lines and cartridge. (QA)

g. Firing lanyard for proper stowage in stowage sleeve channels and presence of tacking (Figure 10). (QA)



6.2-1136

Figure 10. Firing Lanyard Stowage

13. SUSPENSION LINE CONTINUITY.

a. Ensure spreading gun with suspension lines 14 and 15 are facing up.

b. Lines to connector links and spreading gun for correct sequencing.

c. Suspension lines shall pass thru corresponding numbered slots in spreading gun slugs. Ensure that loops attached to odd-numbered suspension lines pass thru slots in odd-numbered slugs. (QA)

d. Suspension lines shall run free from skirt hem thru corresponding numbered slots in spreading gun slugs to connector links without dips or twists (Figure 11). (QA)

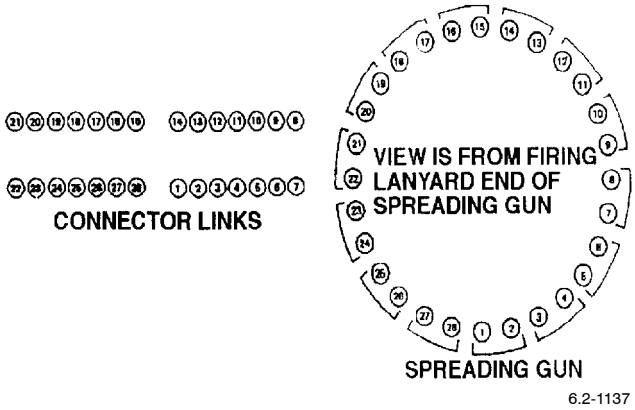


Figure 11. Suspension Lines in Numbered Slots

14. CANOPY ASSEMBLY.

a. Canopy skirt hem, fabric surface, diagonal seams, radical seams, vent hem, water deflation pockets, for cuts, holes, ruptures, contamination, deterioration, and loose or broken stitching.

b. Loop (18 lb. tape attachment) for condition and proper attachment to line 15 on radial seam.

NOTE

Loop may be located on line 14 radial seam in previously manufactured canopies and is acceptable.

c. Suspension lines and canopy apex lines for fraying, ruptures, protruding inner core lines, burns, contamination, and presence of twists.

d. Lines and spreading gun anchor loops for security of attachment to skirt hem.

e. Attachment of four-line release anchor loops to suspension lines 3 and 26.

f. Attachment of four-line release lanyards to anchor loops on suspension lines 3 and 26.

g. Activate the four-line release and retacking WP 004 00. (QA)

NOTE

For Double "L" Connector Link, refer to WP 019 03 for disassembly, assembly, and inspection instructions.

h. Connector links for corrosion, distortion, nicks, burrs, sharp edges, and cracks.

i. Connector links for defective yoke and plate assemblies. Maximum of 1/32-in. play allowable in plate.

j. Torque seal unbroken with yoke and plate assemblies installed with knurled portion facing up and screwheads facing outboard (Figure 12). (QA)

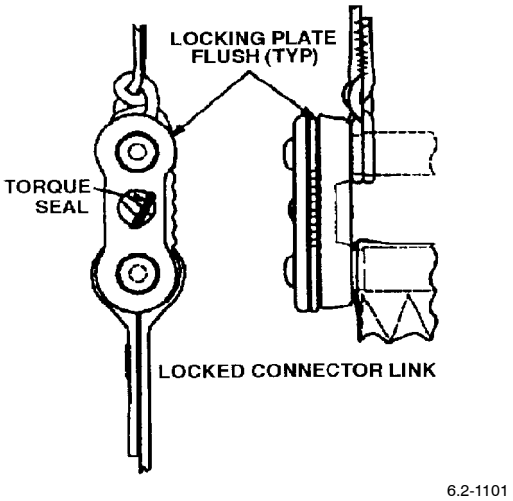


Figure 12. Torque Seal Unbroken

15. PILOT PARACHUTE AND INTERNAL BRIDLE ASSEMBLY.

a. Pilot parachute:

(1) Fabric surfaces and seams for cuts, tears, fraying, and loose or broken stitching.

(2) Seam area at crown for seam separation.

(3) Spring assembly for distortion.

(4) Loose or broken tackings (4 places each) at bottom of the coil spring.

(5) Locking cone and grommet for condition, and security of attachment.

b. Internal bridle assembly:

(1) Webbing for cuts, fraying, and loose or broken stitching.

(2) Proper attachment to apex lines and pilot parachute loop.

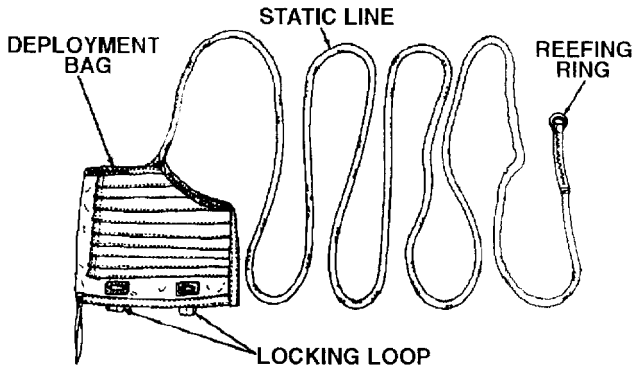
(3) Proper attachment of housing to bridle line.

16. EXTERNAL PILOT CHUTE (EPC) DEPLOYMENT BAG.

a. Reefing ring for corrosion, distortion, breaks, and security of attachment to static line.

b. Static line for contamination, cuts, tears, fraying, loose or missing stitching, and security of attachment to the bag.

c. Deployment bag and locking loops for contamination, cuts, tears, fraying, and loose or missing stitching (Figure 13).



6.2-1129

Figure 13. Deployment Bag

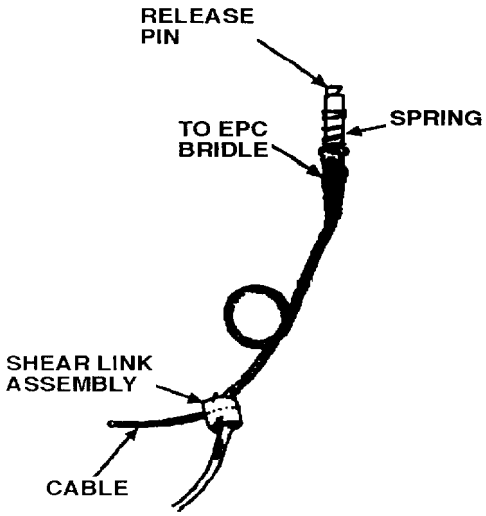
17. EXTERNAL TRISTAGE PILOT PARACHUTE.

a. Fabric surface, seams, suspension lines, center line, and lanyards for contamination, cuts, tears, fraying, and loose or broken stitching.

b. Suspension lines, center line, and lanyards for security of attachment.

c. Shear link assembly and cable for fraying, broken strands, loose swage ball, and security of attachment.

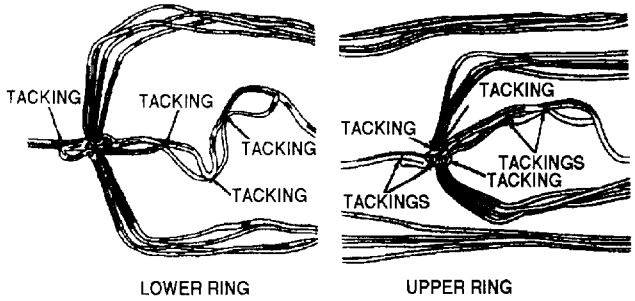
d. Release pin for dents, cracks, nicks, burrs, and broken or deformed spring (Figure 14).



6.2-1130

Figure 14. Release Pin

e. Presence and condition of all tackings (Figure 15).



6.2-1131

Figure 15. Condition of Tackings

18. EPC RELEASE ASSEMBLY.

a. Pull bottom parachute container flap back.

b. Open slide fastener that connects inside panel to expose EPC release assembly.

c. Remove nuts, washers, and screws (4) that secures EPC release assembly to container. Retain attaching hardware.

d. Remove EPC release assembly from container, and inspect outside for dirt or cracks.

NOTE

If EPC release is unserviceable, scrap.

e. Remove Phillips-head screws (2) from EPC release assembly.

f. Remove tamper dot. Loosen the roundhead screw (1) approximately 1 1/2 turns. Do not remove screw.

g. Pivot EPC release assembly cover clockwise to expose internal components (Figure 16).

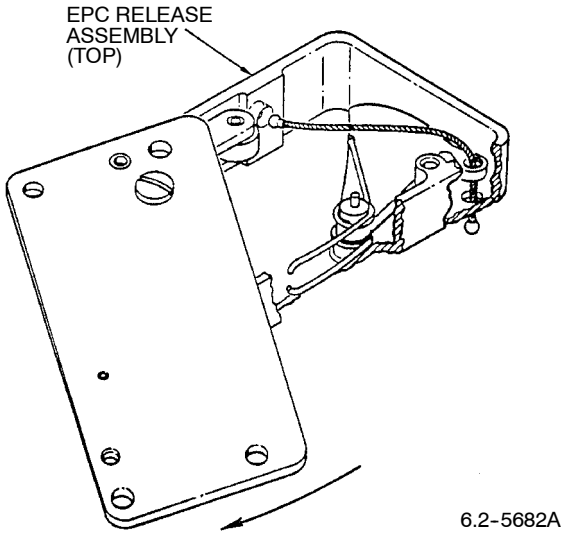


Figure 16. Open EPC Release Assembly Cover

h. Inspect cam assembly to ensure that front spring indent surface has been removed (Figures 17 and 18).

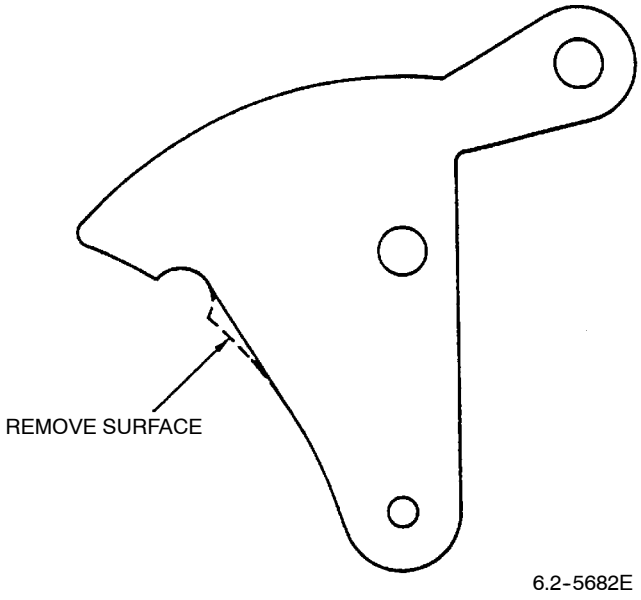


Figure 17. Cam Not Modified

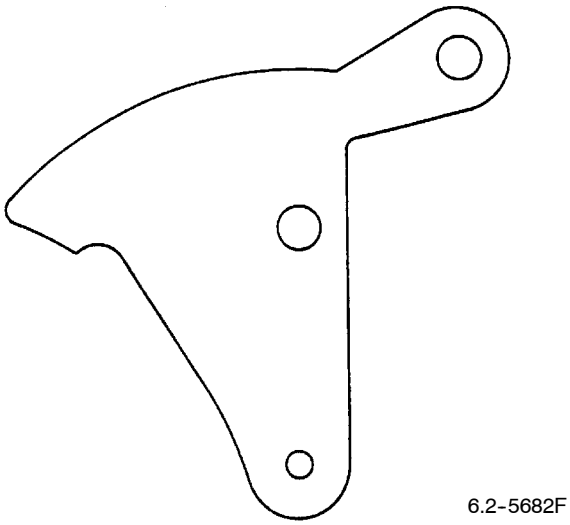


Figure 18. Modified Cam

i. Inspect EPC release mechanism cable for correct installation. The cable with large ball should enter from the rear of cam assembly, pass over the cam, and exit through top hole of EPC release assembly (Figure 19).

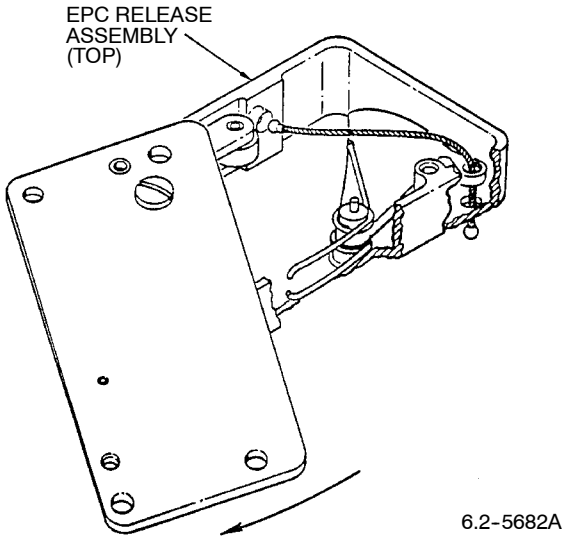


Figure 19. Cable Installation

j. Pivot EPC release assembly cover counter clockwise to closed position (Figure 20).

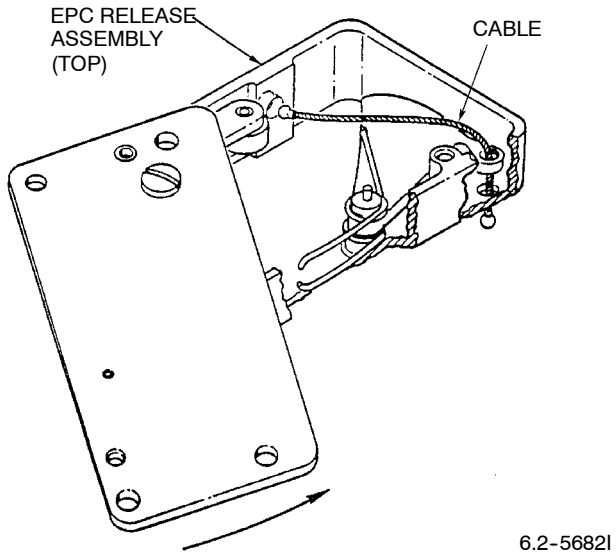


Figure 20. Close EPC Release Assembly

k. Install Phillips-head screws (2) in the EPC release assembly, and tighten.

l. Tighten round head screw (1). Torque to 8 ± 1 in-lb. (QA)

m. Apply torque seal to round-head screw.

n. Ensure part number 510AS129-2 is stamped on top portion of EPC release assembly.

o. Install nuts, washers and screws (4) to secure EPC release assembly to container.

p. Close slide fastener which connects inside panel.

19. RISERS AND CROSS-CONNECTOR STRAPS.

a. Webbing for contamination, rust at points of contact with metal parts, cuts, twists, fading, wear, burns, fraying, abrasions, and loose or broken stitching.

b. Four-line release lanyard flute and ripcord flute for wear and security of attachment.

c. Four-line release and release lanyard pull loops for loose or broken tackings.

d. Ripcord grip retainer for corrosion, damage, and security of attachment.

e. Shoulder harness roller fittings for corrosion, damage, and security of attachment.

f. Ripcord grip retainer cover for condition and security of attachment.

g. Cross-connector straps for contamination, cuts, fraying, and loose or broken stitching.

h. Cross-connector straps for proper attachment to connector links.

i. Riser protection sheath for cuts, contamination, excessive wear, abrasions, and loose or broken stitching.

j. Riser protection sheath snaps for security of attachment, ease of use, and corrosion.

20. RIPCORD ASSEMBLY.

a. Cable for corrosion, bends, broken strands, and security of swaged terminal ball.

b. Locking pins for bends, dents, cracks, corrosion, security of attachment to cable.

c. Ripcord grip for dents, cracks, and corrosion.

d. Housing for corrosion, bends, dents, loose ferrules, breaks, cracks, and security of attachment.

21. CONTAINER.

a. Grommets, cones, cracks, corrosion, nicks, gouges, and snap fasteners for security of attachment.

b. Slide fasteners for condition and proper operation.

c. Fabric areas, release lanyard, and retaining loops for seam separations, loose or broken stitching, cuts, tears, contamination, and deterioration.

d. Presence and condition of warning labels.

e. Hardware for corrosion, bends, dents, nicks, sharp edges, and security of attachment.

f. External pilot parachute pocket locking loop and stowage channel for condition and proper attachment.

g. Spring opening assemblies for broken springs, contamination, corrosion, cuts, fraying, bent or broken hooks, elasticity, and loose or broken stitching.

h. Spring opening eyes (12) for security of attachment.

22. PACKING.

23. PULL FORCE CHECK AND SPREADING GUN CARTRIDGE INSTALLATION.

a. Clamp spreading gun test fixture (Figure 21) to packing table. Use one C-clamp positioned as closely as possible to clamp assembly.

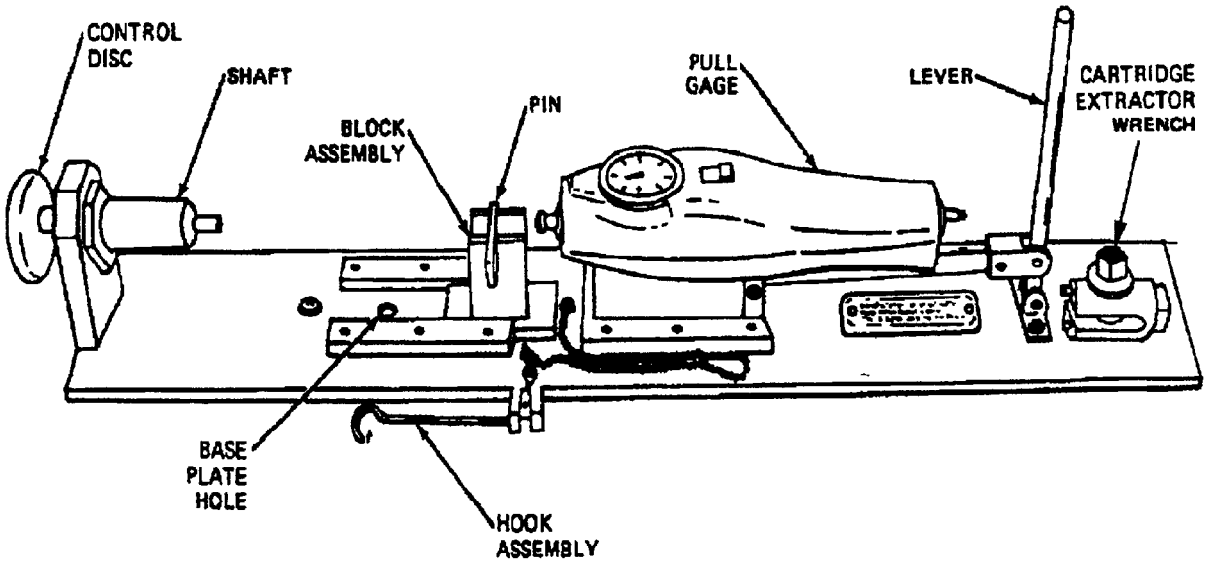


Figure 21. Spreading Gun Test Fixture

b. Examine spreading gun chamber to ensure that no pistons are protruding into chamber and that no foreign matter is present.

c. Remove safety pin from spreading gun.

d. Slide spreading gun onto test fixture so that shaft butts against bottom of cartridge chamber (Figure 22).

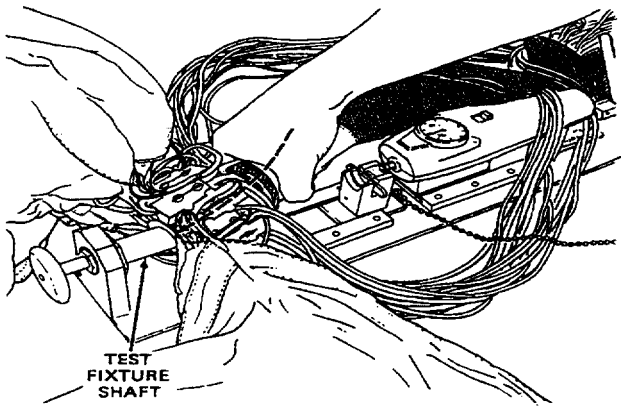


Figure 22. Installation of Spreading Gun on Test Fixture

e. Open snap fasteners on spreading gun extractor sleeve and expose firing pin housing.

f. Slide block assembly at center of test fixture under firing pin housing until block assembly pin slides into base plate hole. Align firing pin subassembly so that eye is horizontal and firing lanyard is located on top (Figure 23).

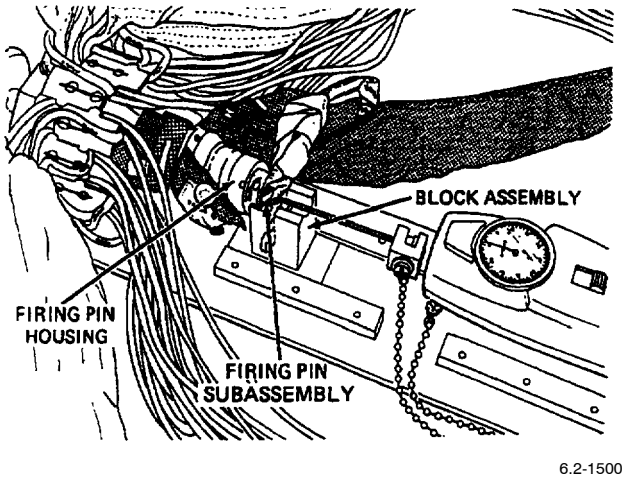


Figure 23. Alignment of Spreading Gun in Test Fixture

g. Attach hook assembly to firing pin eye and slide hook assembly block over nut attached to spring scale.

h. Move switch on spring scale to center position. Zero scale by rotating bezel. Move switch to full down position away from meter to observe pull force.

CAUTION

Do not withdraw firing pin subassembly further than distance needed for release of firing pin. Complete removal of firing pin is not required for this test. Complete removal would cause ball bearings to unseat, thus requiring depot overhaul.

i. Pull test fixture lever until firing pin subassembly releases. Verify pull force is 32 ± 6 in-lbs. If spreading gun fails first test it shall be tested twice more. Spreading gun must pass both retests. (QA)

NOTE

If spreading gun fails pull force check, do not place gun in service

j. After pull force measurement has been obtained, remove hook assembly from firing pin subassembly.

k. Push firing pin subassembly back into housing. Push control disc firmly inward, forcing firing pin subassembly out of housing. Apply inward hand pressure to firing pin subassembly as it moves out. Continue to move control disc inward, applying hand pressure to firing pin subassembly until it clicks into place. When click is heard, gun is cocked. Gently release control disc while still exerting pressure on firing pin subassembly.

l. Tug gently on firing pin subassembly until effect of spring loading is felt. If firing pin subassembly moves without spring tension, the gun is not cocked and step k must be repeated. (QA)

m. Install safety pin in spreading gun. Remove spreading gun from test fixture as follows:

(1) Release block assembly by pulling pin out of hole in base plate and sliding away from spreading gun.

(2) Remove spreading gun from test fixture. Do not remove gun by pulling on firing lanyard.

(3) Remove test fixture from packing table.

NOTE

Putting finger into cartridge chamber to check for a protruding firing pin after cocking is another check for an uncocked gun.

CAUTION

Do not allow alcohol to flow inside gun as this could damage O-rings and lubrication.

n. Clean cartridge chamber and threads with small amount of denatured alcohol. Ensure that old sealing compound and all foreign matter are removed. Gun shall be tilted to allow denatured alcohol to run out of gun. Allow a minimum 2 min. drying time for denatured alcohol to evaporate.

o. Enter Cartridge part number, Department of Defense Identification Code, lot number, container open date, service life expiration date and serial number on Parachute Record (OPNAV 4790/101). (QA)

p. Spreading gun cartridge. Mark in black ink, with characters no smaller than 1/16-in. and as large as practical, the CAGE Code, lot number, and month and year of can open/installation, on side of cartridge. On cartridge head, mark month and year of can open/installation, and service life expiration date (Figure 24).

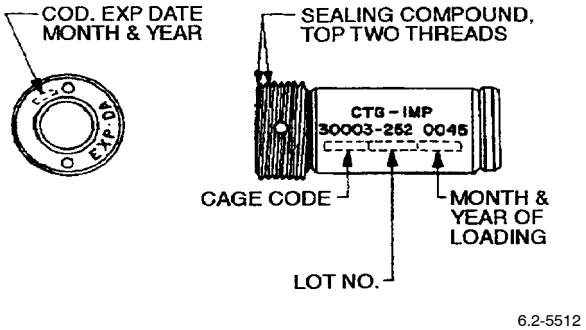
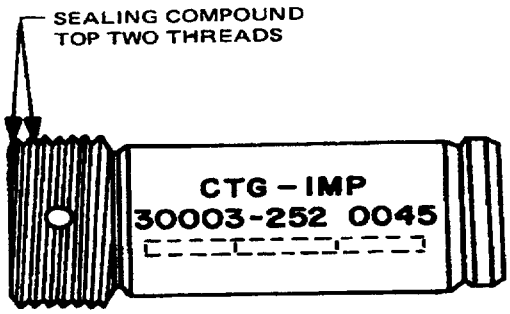


Figure 24. Spreading Gun Cartridge Marking

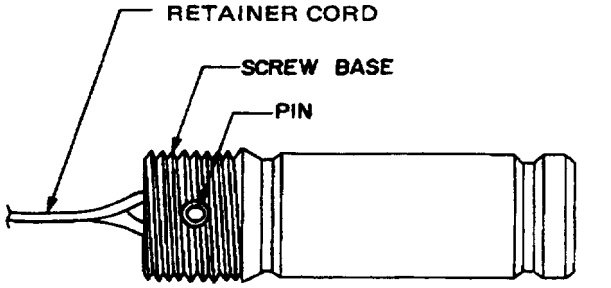
q. Apply MIL-S-45180 Type II sealing compound to top two threads of cartridge (Figure 25).



6.2-5526

Figure 25. Spreading Gun Cartridge Installation

r. Ensure there are no knots in retaining cord. Attach cartridge to retainer cord by passing pin thru screw base of cartridge and loop in end of retainer cord (Figure 26).



6.2-5498

Figure 26. Attachment of Retainer Cord to Cartridge

s. Helper will place spreading gun on packing table, with cartridge opening upright position and hold (Figure 5).

WARNING

Do not force cartridge into chamber. Safety pin must be installed.

NOTE

Use only special tools furnished for cartridge installation. It is recommended that a helper assist the person performing cartridge installation by verifying procedures as each step is accomplished.

When a cartridge is properly installed, base should be about even with top edge of chamber. If cartridge is more than one thread above edge, remove cartridge and check bottom of chamber for any obstruction, i.e., slug pistons.

t. Insert cartridge into chamber. Manually tighten cartridge into chamber. If cartridge stops before threads are engaged, remove cartridge and check for protruding slug pistons; push back as necessary.

u. Place pins of cartridge extractor wrench into holes in cartridge and torque to a value of 84 ± 12 in-lbs. (Figure 6). (QA)

24. STRAIGHTENING OF CANOPY GORES.

WARNING

Ensure that safety pin is installed in spreading gun and spreading gun firing lanyard is detached from connector link.

NOTE

Ensure attachment loop sewn to radial seam of line 15 is uppermost when canopy is folded.

Loop may be located on line 14 radial seam in previously manufactured canopies and is acceptable.

a. Arrange canopy on packing table with folded cores 15 thru 28 on packer's side and folded gores 1 thru 14 on helper's side. Ensure attachment loop is located on top uppermost radial seam of folded canopy (Figure 27).

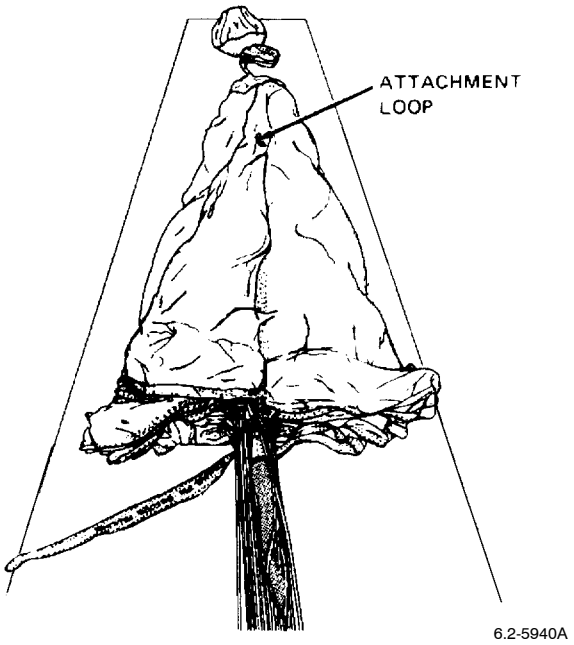


Figure 27. Arrangement of Canopy

b. Helper shall place a shot bag on helper's side of skirt hem (Figure 28).

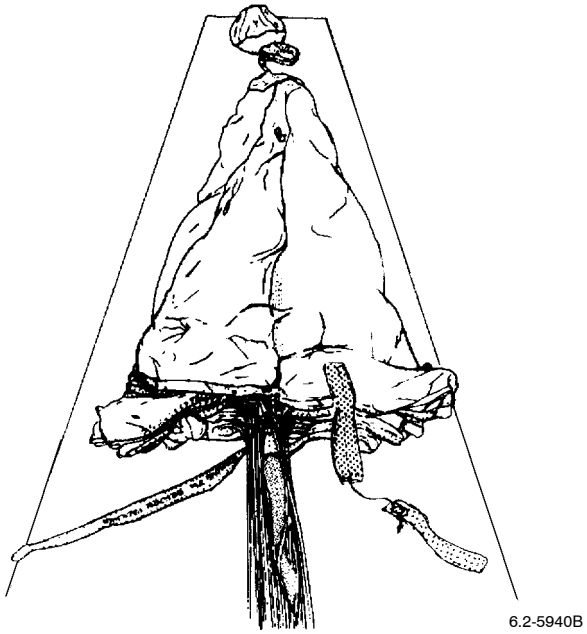


Figure 28. Placement of Shot Bag on Helper's Side

c. Packer shall rotate all gores on packer's side as a group, except bottom gore, over to helper's side of packing table. Packer shall straighten and smooth bottom gore on packer's side of table, throughout its length to apex (Figure 29).

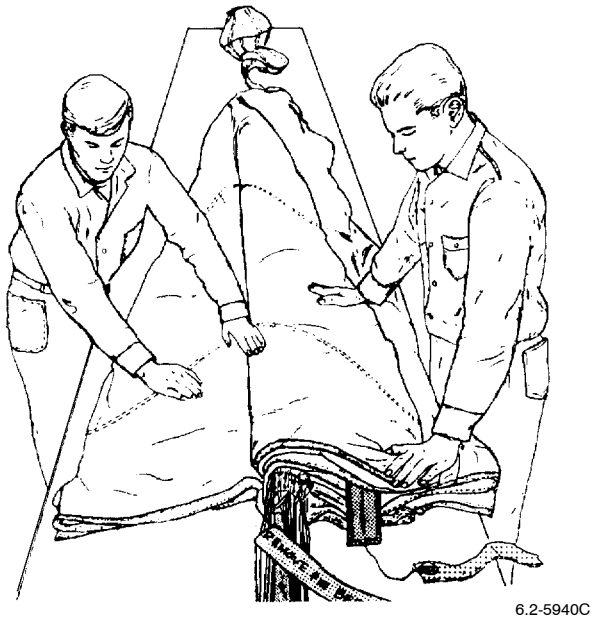


Figure 29. Packer Shall Rotate All Gores on Packer's Side

d. Packer shall return gores above shot bag on helper's side of packing table to packer's side one at a time. Each fold shall be straightened and smoothed (Figure 30).

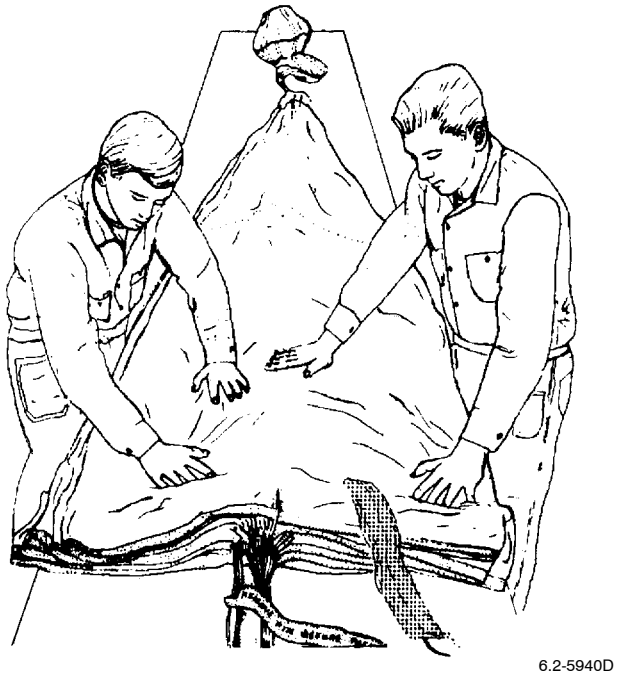
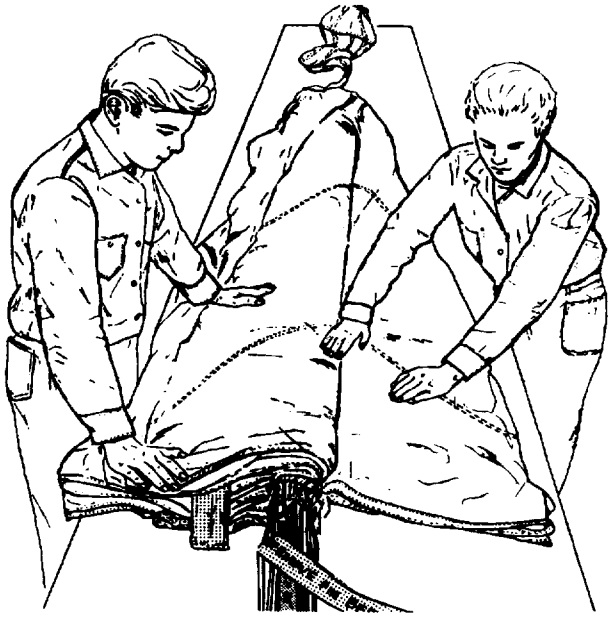


Figure 30. Packer Shall Return Gores Above Shot Bag on Helper's Side

e. Helper shall remove shot bag from canopy and place it on skirt hem of packer's side.

f. Helper shall rotate all gores on helper's side as a group; except bottom gore over to packer's side of packing table. Helper shall straighten and smooth gore on helper's side of table, throughout its length to apex (Figure 31).

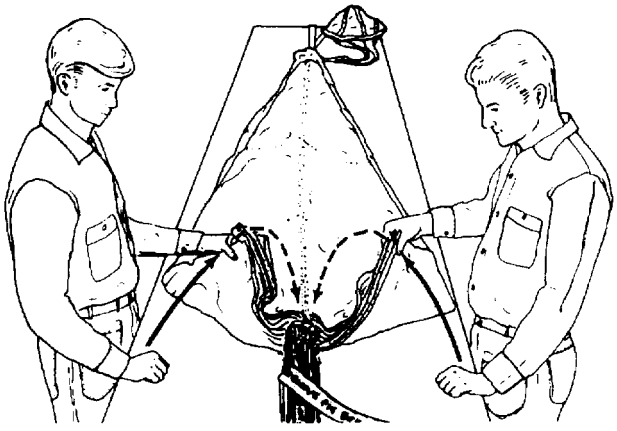


6.2-6144A

Figure 31. Helper Shall Rotate All Gores on Helper's Side

g. Helper shall return gores above shot bag on packer's side of table to helper's side one at a time. Each fold shall be straightened and smoothed. Remove shot bag on packer's side.

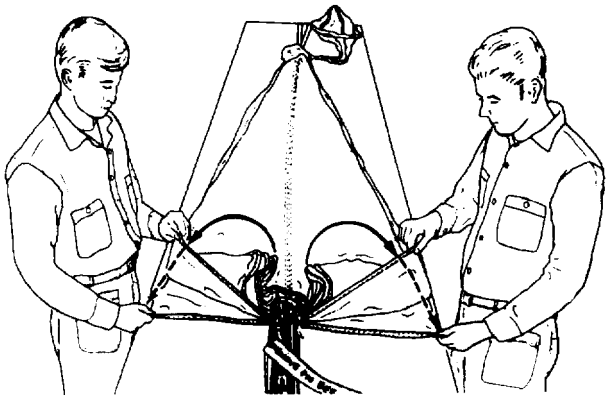
h. Packer and helper shall grasp skirt hem at mid-sections of gores and rotate toward suspension lines (Figure 32).



6.2-6144B

Figure 32. Packer and Helper Shall Grasp Skirt Hem and Rotate to Center

i. Each fold shall be aligned and counted when placed back onto table (Figure 33).



6.2-6144C

Figure 33. Each Fold Shall Be Aligned and Counted

j. Each group of folds on left and right of spreading gun shall contain 14 gores.

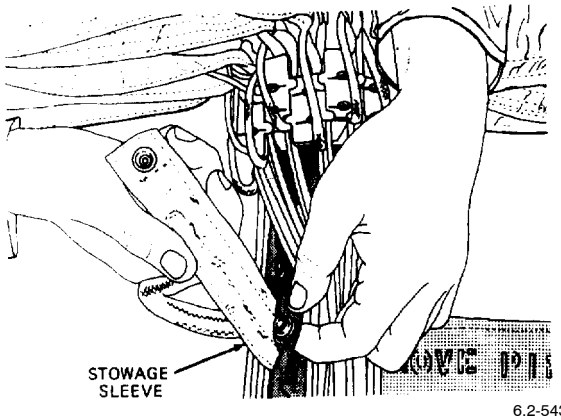
25. STOWAGE OF STOWAGE SLEEVE IN EXTRACTOR SLEEVE.

WARNING

The 1/2-in. tapes must not be twisted around firing lanyard.

a. Ensure 1/2-in. tapes are not twisted around firing lanyard.

b. Insert stowage sleeve into extractor sleeve open end first (Figure 34).



6.2-5431A

Figure 34. Insert Stowage Sleeve Into Extractor Sleeve

c. Engage fastener on stowage sleeve to fastener on extractor sleeve. Engage extractor sleeve fasteners on each side of safety pin. Pull extractor sleeve straight and gently pull slack from firing lanyard (Figure 35). (QA)

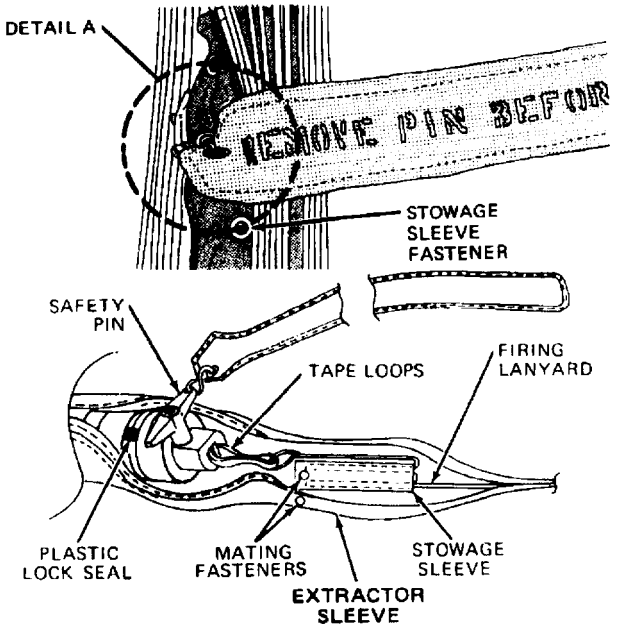


Figure 35. Engage Fastener on Stowage Sleeve

26. PREPARATION OF CONTAINER FOR PACKING.

a. Rotate risers over suspension lines. Position container on packing table so that bottom end is toward canopy and inside faces up.

CAUTION

Do not use old retaining bands. New bands shall be used each time assembly is packed.

b. Install new suspension line retaining bands (using Lark's head knot) on eight inboard retaining band loops located on helper's side of packing table, and on eight inboard retaining loops located on packer's side of table (Figure 36).

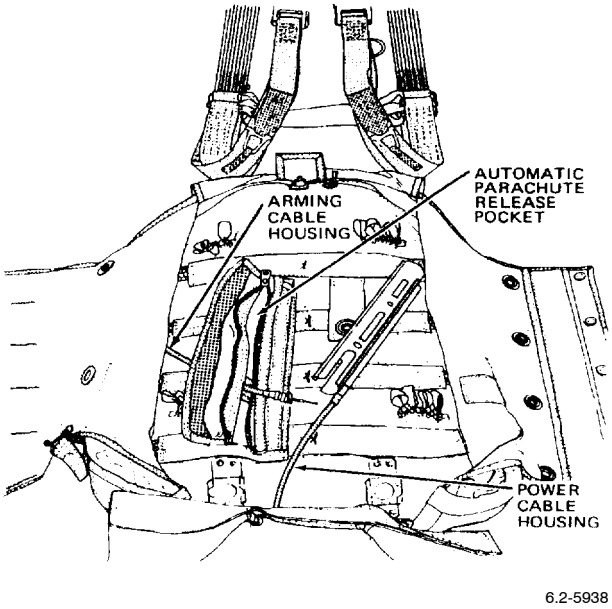


Figure 36. Preparation of Container

27. AUTOMATIC PARACHUTE RIPCORD RELEASE ASSEMBLY AND ARMING.

NOTE

Right side of release assembly contains the aneroid leak detector.

WARNING

Ripcord release with proper altitude setting, time delay cartridge, arming cable housing, and arming cable must be used.

a. Ensure ripcord release has proper altitude setting, arming cable housing, and arming cable. (QA)

b. Ensure arming cable housing is routed through hole in left side of release pocket and button hole in left side of container.

c. Insert arming cable into cable housing.

d. Attach clip retainer to cable housing.

e. With receiver and barrel assembly in the open position, install arming pin release assembly by inserting and locking (arming pin is fully seated when an audible click is heard) the arming pin into the arming pin retainer, ensuring the arming cable housing exits out the left side of container (Figure 37). (QA)

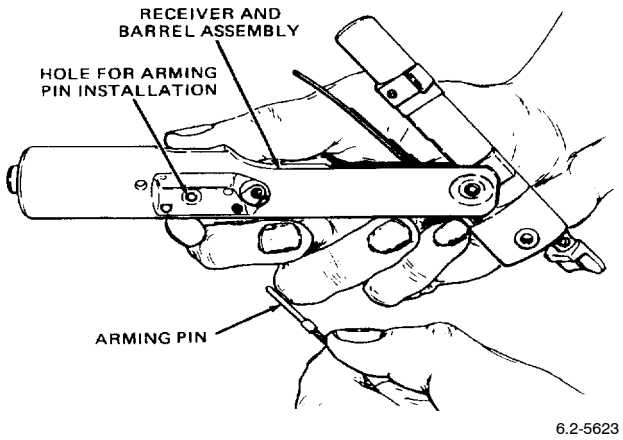


Figure 37. Installation of Arming Pin

WARNING

To ensure proper penetration of cartridge primer, firing pin/hammer assembly must be completely retracted. If edge where curved surface meets flat surface of the hammer assembly is not aligned directly above arming pin, release assembly is not properly armed.

f. Ensure that firing pin/hammer assembly is completely retracted. The firing pin/hammer is completely retracted if top edge of hammer is aligned above arming pin (Figure 38). (QA)

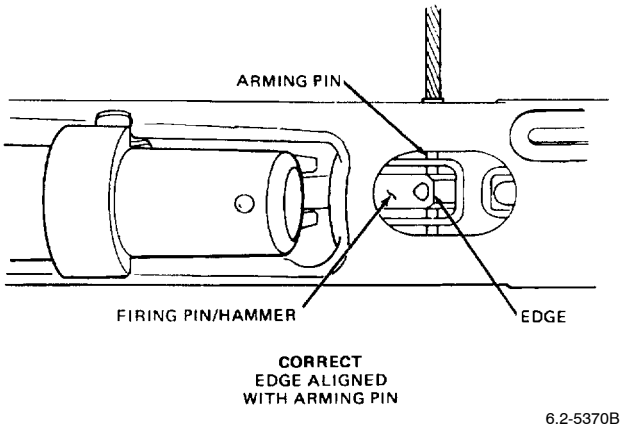


Figure 38. Verification of Firing Pin Hammer Retraction

g. Connect arming cable housing retainer to receiver and barrel assembly. Ensure that safety retainer secures housing to receiver (Figure 39).

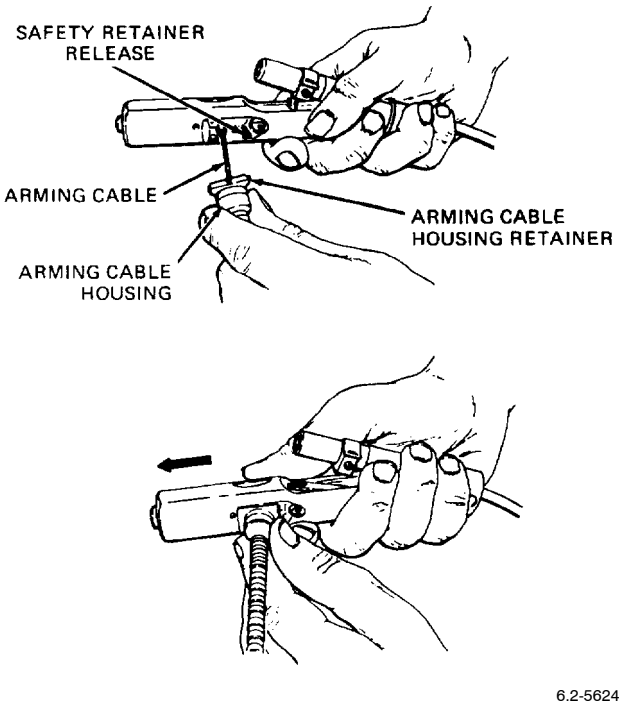


Figure 39. Attachment of Arming Cable

WARNING

Complete arming and installation is mandatory from this point as a safety measure.

h. Enter cartridge time delay, part number, type, expiration date, and load lot number on Parachute Record (OPNAV 4790/101). (QA)

WARNING

Before installing delay cartridge in automatic parachute release, be sure that arming pin has been inserted thru both the hammer and lock.

i. Insert correct cartridge in barrel. Refer to WP 019 04. (QA)

WARNING

If arming pin is improperly installed, cartridge will fire while locking barrel.

j. While pressing barrel down, look thru inspection hole in receiver and ensure that hammer assembly does not swing toward firewall. If hammer swings, arming pin is improperly installed. Do not attempt to assembly release assembly further, as this could discharge the cartridge. Disassembly improperly armed release assembly and rearm.

k. Press barrel down into position in receiver. As barrel reaches proper position, exert forward pressure on snap-lock, causing snap-lock pins to lock barrel in position. Ensure that snap-lock is aligned with alignment arrow (Figure 40). (QA)

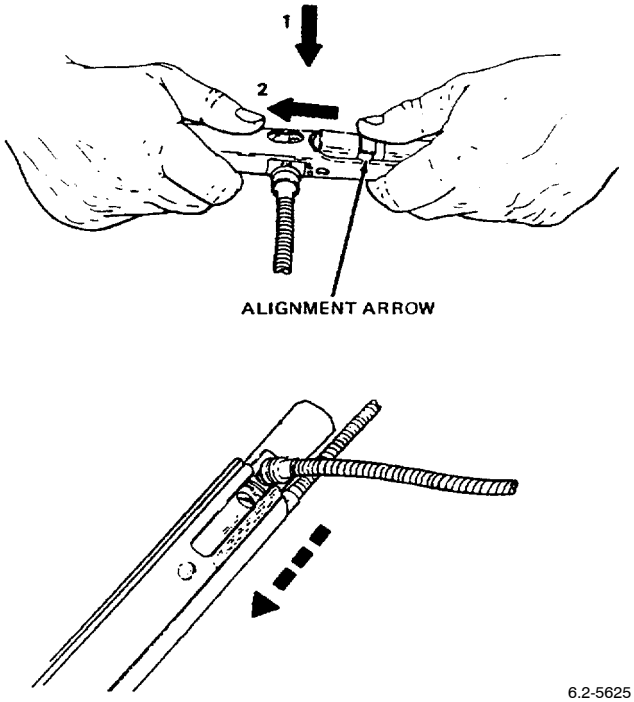


Figure 40. Locking Barrel and Installation of Cover

l. Position cover and power cable housing assembly with power cable facing container.

m. Position receiver and barrel assembly so locking screw hole aligns with locking screw hole in cover and power cable housing assembly (Figure 40).

n. Hold release assembly as shown and slide receiver and barrel assembly into cover and power cable assembly until holes for screws are aligned.

o. Install cover locking screw and lockwasher. Apply torque seal to locking screw.

WARNING

After automatic parachute release has been assembled with delay cartridge, firing pin is in a cocked position. Movement of arming cable from parachute release in excess of 0.5-in. will cause actuation of the device.

28. AUTOMATIC PARACHUTE RIPCORD RELEASE ARMED CHECKOUT AND INSTALLATION.

a. Ensure arming device pin protrudes (about 1/32-in.) from arming pin retainer (Figure 41).

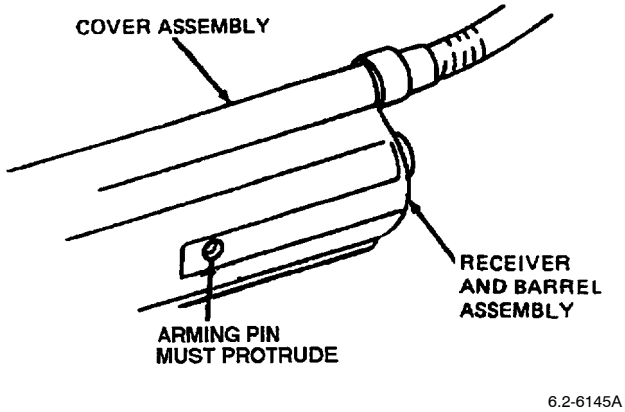


Figure 41. Ensure Arming Pin Protrudes

b. Ensure roll pin is visible and centered ±1/8-in. in viewing hole (Figure 42).

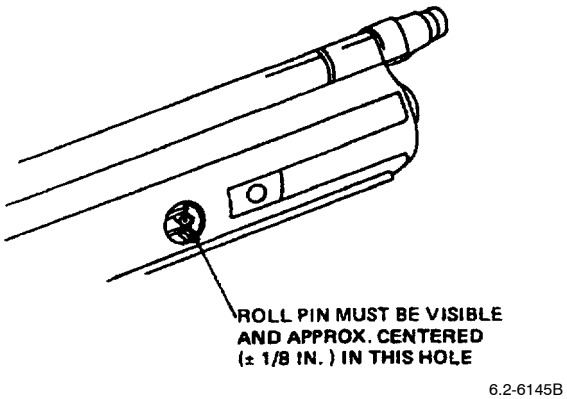


Figure 42. Ensure Pin is Visible

c. Ensure cover locking screw is installed with tamper dot applied (Figure 43).

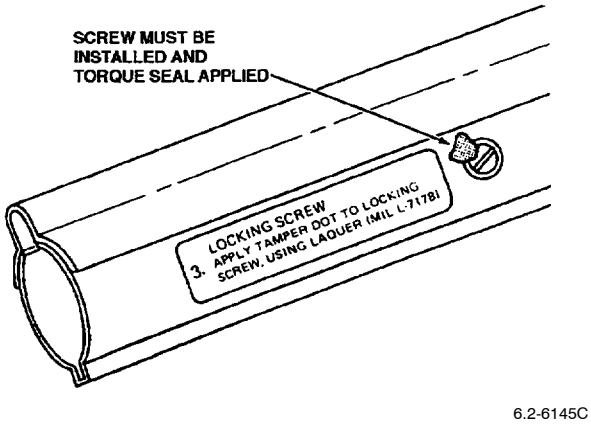


Figure 43. Ensure Cover Locking Pin Installed

d. Ensure aneroid indicator is in proper position for local elevation (Figure 44).

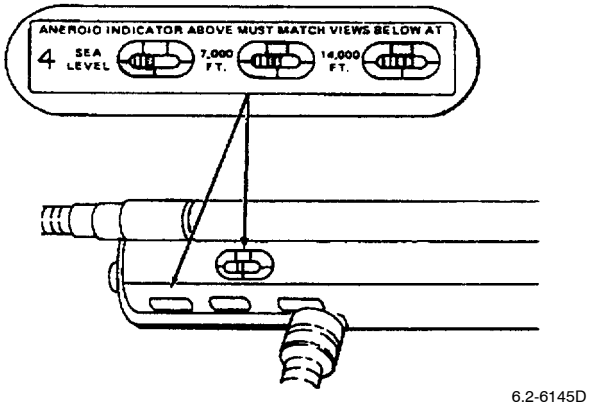


Figure 44. Ensure Aneroid Indicator in Proper Position

e. Ensure cartridge is installed. Look thru port and verify cartridge rim is visible (Figure 45). (QA)

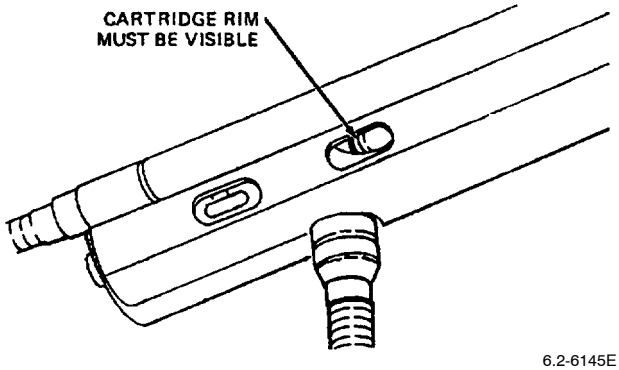


Figure 45. Ensure Cartridge is Installed

f. Install release into actuator pocket. Ensure that power cable housing is routed flush with bottom of container. Close fastener (Figure 46).

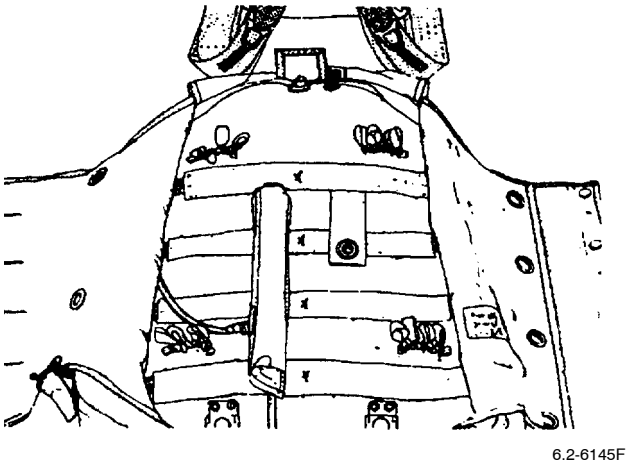


Figure 46. Install Release Into Pocket

29. ATTACHMENT OF RISERS TO CONTAINER.

a. Remove tension strap from canopy apex; then remove tension hooks from connector links and packing table.

b. Rotate risers onto container, and secure riser retainer fittings to riser retainer supports. Risers must be placed over arming cable housing (Figure 47).

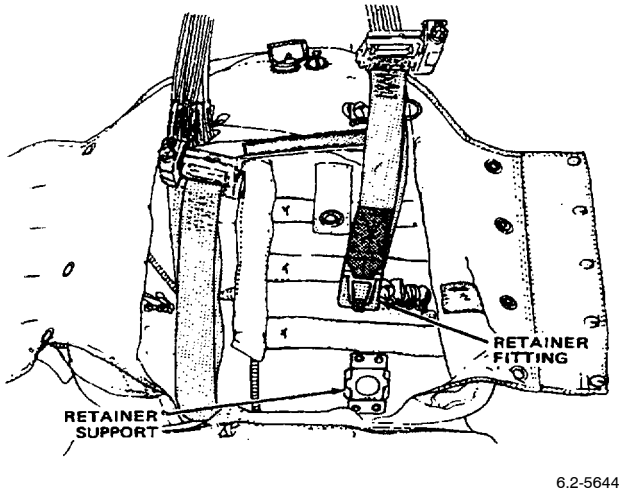


Figure 47. Attachment of Risers to Container

c. Position riser protector flaps over risers.

d. Tack each protector flap to container in two places and 2-in. apart from one another. Tack with one turn of size FF thread, doubled and waxed. Form tacking by passing thread down thru protector flap, under retainer support, thru channel, and up thru protector flap. Tie off (Figure 48).

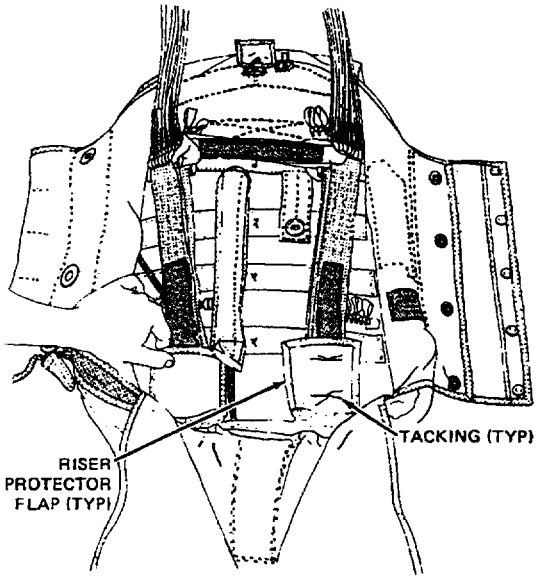


Figure 48. Tacking Riser Protector Flaps to Container

30. INSTALLATION OF CONNECTOR LINK TIES.

a. Cut two 12-in. lengths of Type I or IA nylon cord and sear ends.

b. Form a 1-in. loop in one end of each tie cord and secure with a bowline knot. Tie an overhand backup knot in end of each cord (Figure 49).

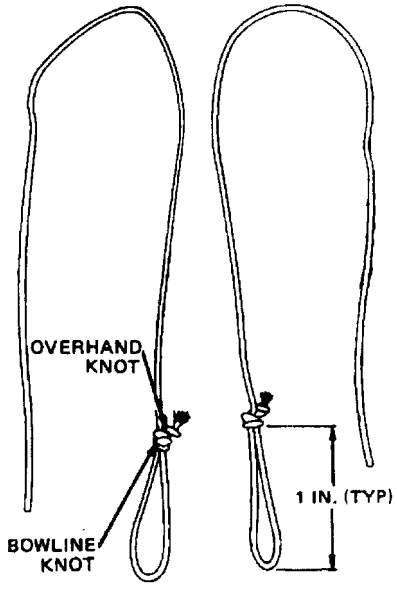


Figure 49. Form a 1-in. Loop

c. Position connector links side by side so that top connector links are on helper's side of bottom connector links (Figure 50).

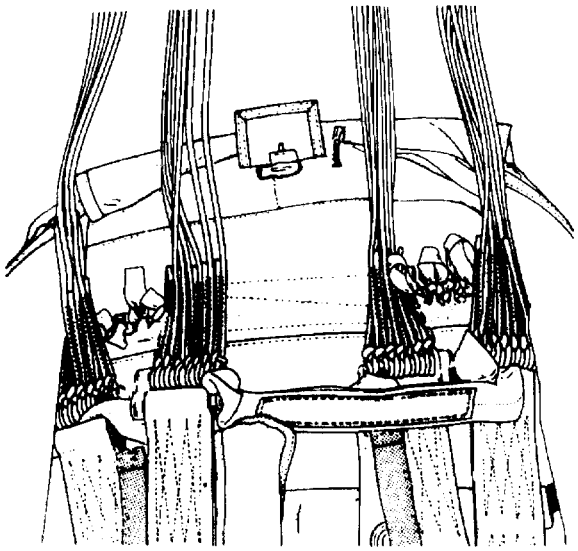


Figure 50. Position Connector Links

d. Form a noose around connector links located on helper's side with one of the tie cords (Figure 51).

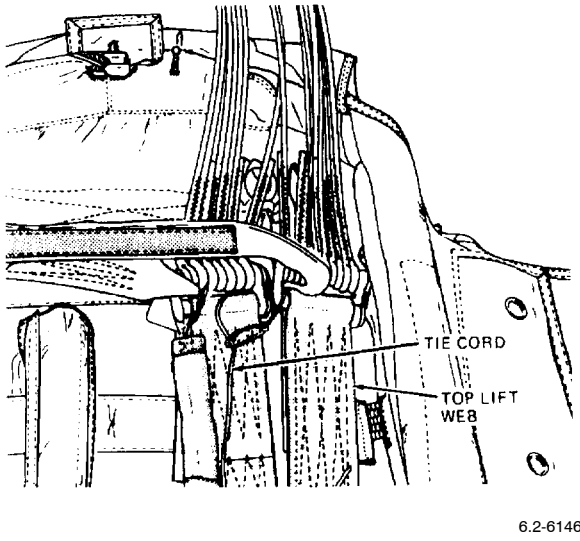


Figure 51. Form a Noose Around Connector Links

e. Tighten noose and route tie cord under suspension lines and cross connector straps draw tight and tie free end of tie cord to bottom in-board retaining band loop with 3 to 4 half-hitches, ending with an overhand knot. Trim excess cord (Figure 52).

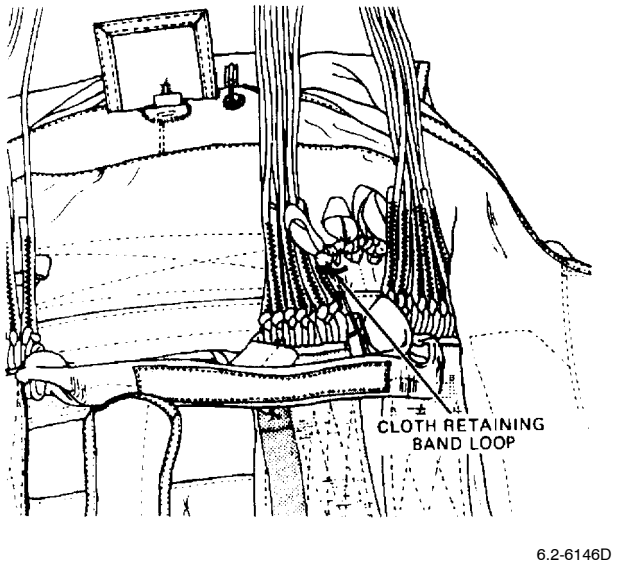


Figure 52. Tighten Noose and Route Tie Cord

f. Repeat steps d and e on packer's side of container.

31. INSTALLATION OF RIPCORD AND RIPCORD RELEASE LANYARD.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Mark release lanyard 36-in. from locking pin end.

b. Fold top end flap onto container so that base plate faces up.

WARNING

Power cable housing must be properly attached to base plate with clamp assembly.

c. Secure power cable housing to baseplate assembly with clamp and screw. Position large slotted end of releasable clamp under screwhead on base plate. Position ripcord housing on left of power cable housing with two flat sides together and other two flat sides against base plate (Figure 53). (QA)

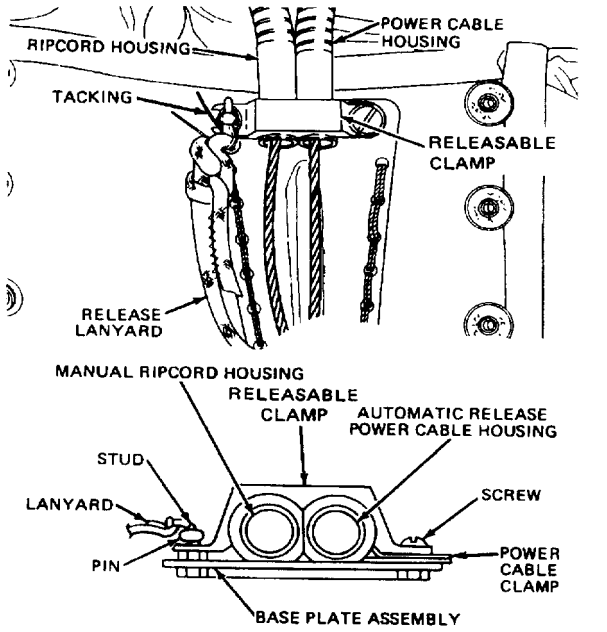


Figure 53. Installation of Ripcord Release Lanyard and Clamp

WARNING

Base plate releasable clamp must be positioned over hex nut prior to installing locking pin.

d. Holding ripcord and power cable housings under releasable clamp, place over top of hex nut stud and insert release lanyard locking pin into stud hole. Tighten screw and secure clamp in place. Locking pin should be finger tight. If necessary, slightly loosen screw (Figure 53). (QA)

e. Tack locking pin to stud with one turn size FF thread, single and waxed. Pass thread thru lanyard knot and then tie off (Figure 53). (QA)

f. Insert top ripcord pin thru beveled side of eye in power cable. Rig ripcord release lanyard as described below.

g. Route release lanyard to top end flap "V". Tack lanyard to top end flap at "V" with 1/8-in. slack between locking pin and tacking. Tacking shall pass around lanyard and thru end flap and consist of one turn of size E thread, single and waxed; tie off (Figure 54).

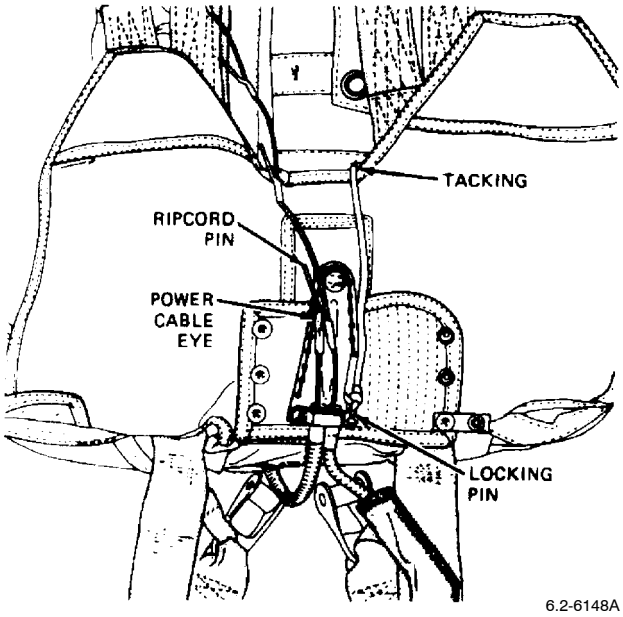


Figure 54. Route Release Lanyard to Top End Flap V

h. Route lanyard along inside of container end flap to power cable buttonhole. Tack lanyard to lower edge of container, allowing 1/8-in. slack between tackings. Tacking shall pass around lanyard and then thru container fabric and shall consist of one turn size E thread, single and waxed; tie off (Figure 55).

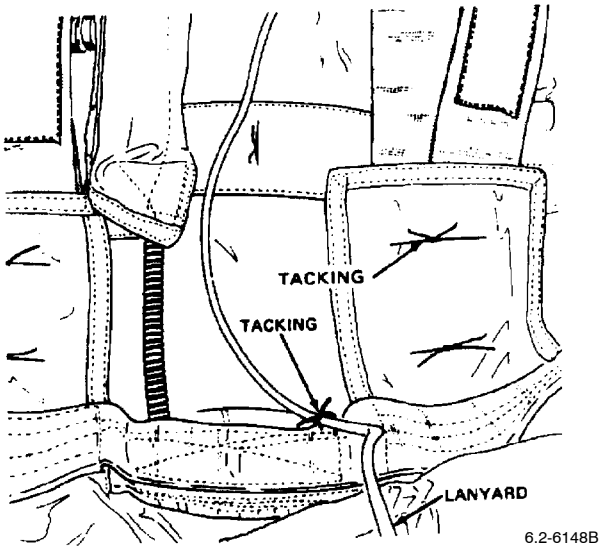


Figure 55. Route Lanyard Along Inside of Container

i. Reeve lanyard up thru lanyard guide grommet. Position 36-in. mark on lanyard over bar on inboard connector link. Secure lanyard to connector link bar with a bowline knot followed by an overhand knot (Figure 56). (QA)

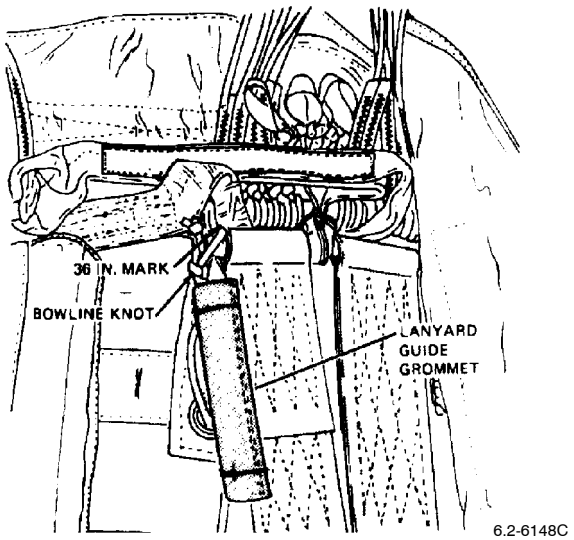


Figure 56. Reeve Lanyard Up thru Lanyard Guide Grommet

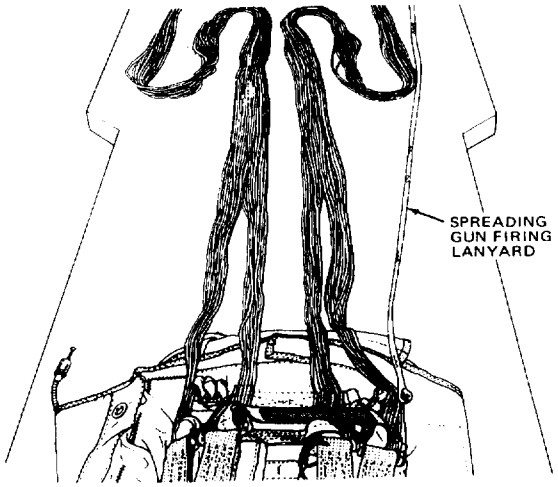
32. ATTACHMENT OF FIRING LANYARD TO CONNECTOR LINK.

WARNING

Safety pin must be installed in spreading gun.

Ensure no suspension lines are dropped from connector link bar.

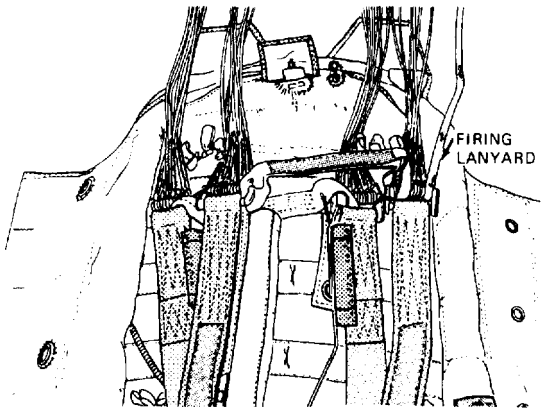
a. At spreading gun, route firing lanyard between suspension lines 7 and 8. Slide canopy towards container and form S-folds in suspension lines large enough to allow loop in end of firing lanyard to align with connector links (Figure 57).



6.2-6149A

Figure 57. Route Firing Lanyard Between Suspension Line 7 and 8

b. Remove yoke and plate assembly on outboard top connector link located on helper's side. Insert connector link bar thru loop in firing lanyard and reattach yoke and plate assembly. Tighten screw to a torque value of 20 to 25 in-lbs. Apply torque seal to connector link screwhead (Figure 58). (QA)



6.2-6149B

Figure 58. Remove Yoke and Plate Assembly

33. STOWAGE OF SUSPENSION LINES.

NOTE

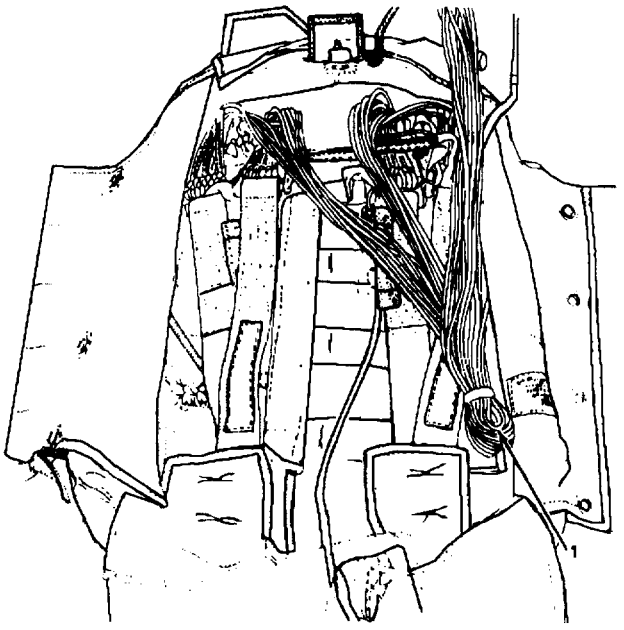
During stowing operation, ensure suspension lines do not become loose or rotated and no suspension lines are left out of retaining bands.

NOTE

Canopy shall be drawn along packing table only in sufficient lengths to permit suspension line bights to be formed for insertion into retaining bands.

Retaining bands must lie flat around stows without twist or folded under edges.

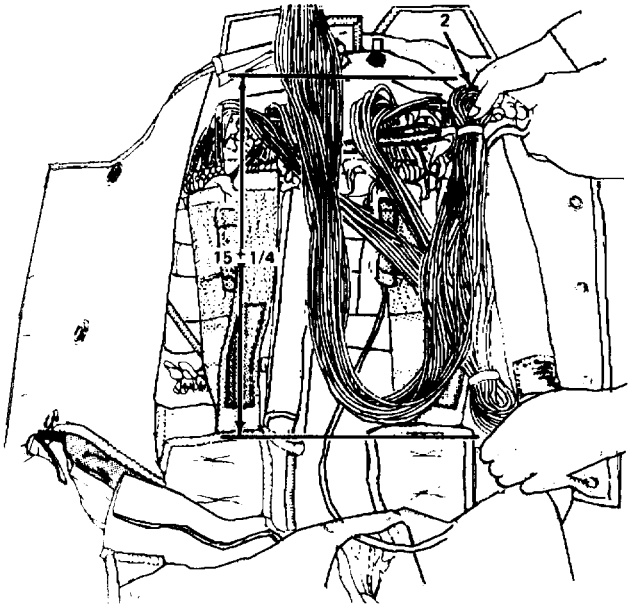
a. Packer shall grasp suspension lines about 16-in. from connector links and form and stow first suspension line bight in retaining band farthest from canopy on helper's side (Figure 59).



6.2-5811A

Figure 59. Packer Shall Grasp Suspension Lines 16-in. From Connector Links

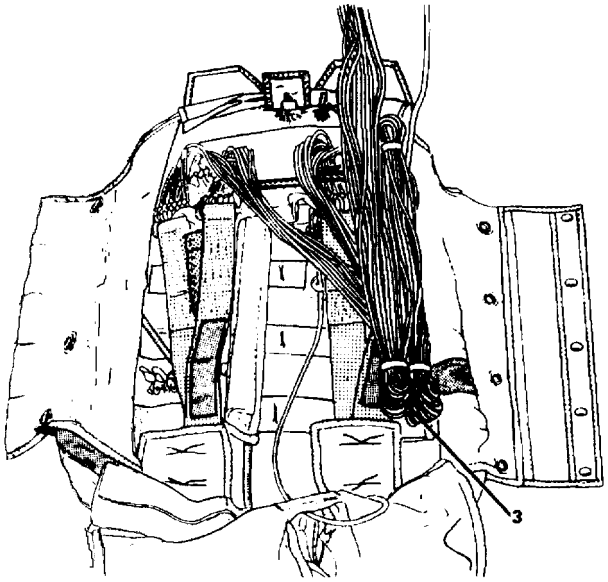
b. Packer shall form and stow second bight in retaining band opposite first stow on helper's side. There shall be 14 3/4 to 15 1/4-in. of line between bights (Figure 60).



6.2-5811B

Figure 60. Packer Shall Form and Stow Second Bight

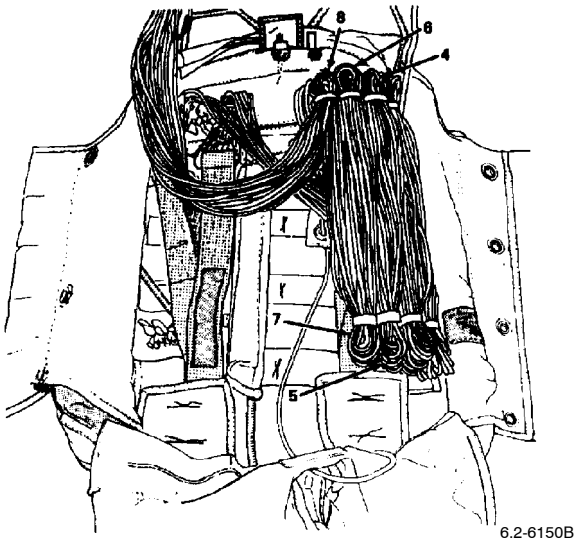
c. Third bight is form in same manner as second bight. Bight is stowed next to first stow (Figure 61).



6.2-6150A

Figure 61. Third Bight is Formed in Same Manner

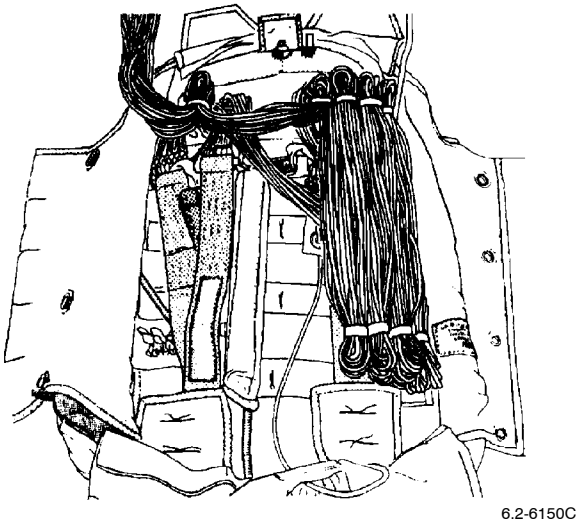
d. Stow bights 4 thru 8 in same manner as bights 1 thru 3 (Figure 62).



6.2-6150B

Figure 62. Stow Bights 4 thru 8 in Same Manner

e. Stow bight 9 in inboard retaining band across from stow 8 (Figure 63).



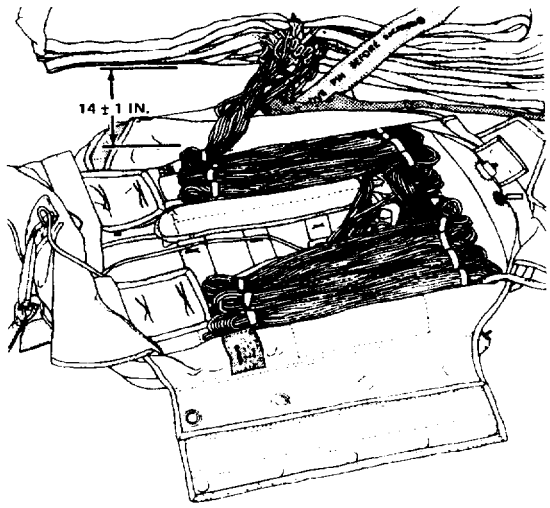
6.2-6150C

Figure 63. Stow Bight 9 in Inboard Retaining Band

WARNING

There shall be 14 ± 1-in. of suspension line between last stow and skirt hem.

f. Stow bights 10 thru 16 in same manner as bights 1 thru 8. there shall be 14 ± 1-in. of suspension line between last stow and skirt hem. The distance may be adjusted by increasing or decreasing length of line between bights 8 and 9 (Figure 64). (QA)



6.2-6150D

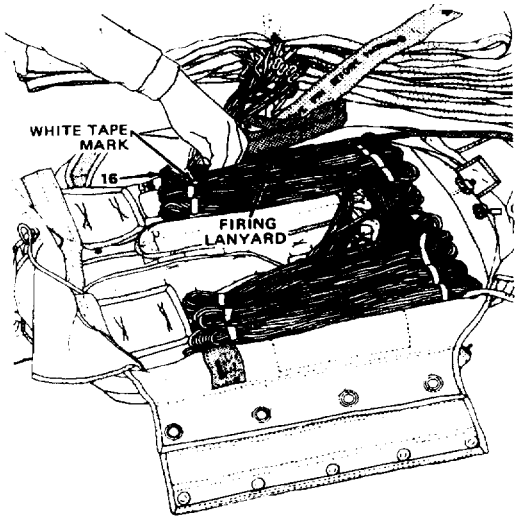
Figure 64. Stow Bights 10 thru 16

34. STOWAGE OF FIRING LANYARD IN CONTAINER.

WARNING

Safety pin must be installed in spreading gun.

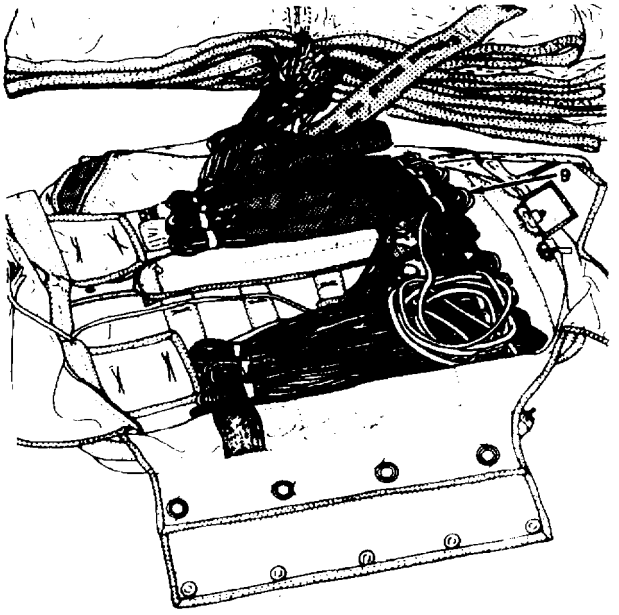
a. Packer shall form a bight in firing lanyard at white tape mark on extractor sleeve. Stow firing lanyard bight in center of suspension line bight 16 (Figure 65).



6.2-6151A

Figure 65. Packer Shall Form a Bight in Lanyard

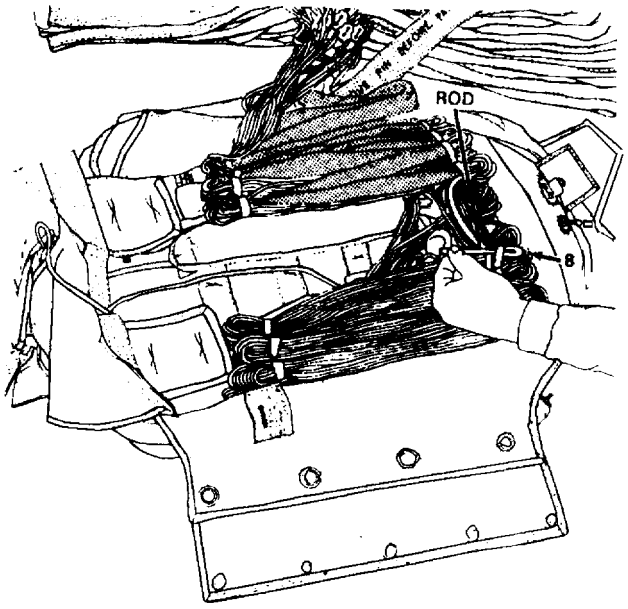
b. Continue to stow lanyard in center of bights 15 thru 9 (Figure 66).



6.2-6151B

Figure 66. Continue to Stow Lanyard in Center Bights

c. Using a 3/8-in. rod with a smooth rounded end, tuck a 5/8-in. bight of firing lanyard into retaining band holding bight 8. Position bight on top of suspension lines (Figure 67).



6.2-6151C

Figure 67. Tuck Firing Lanyard into Retaining Band

d. Stow remainder of firing lanyard in center of bights 7 thru 3. Position remainder of firing lanyard between suspension lines and outboard connector link on helper's side of container (Figure 68). (QA)

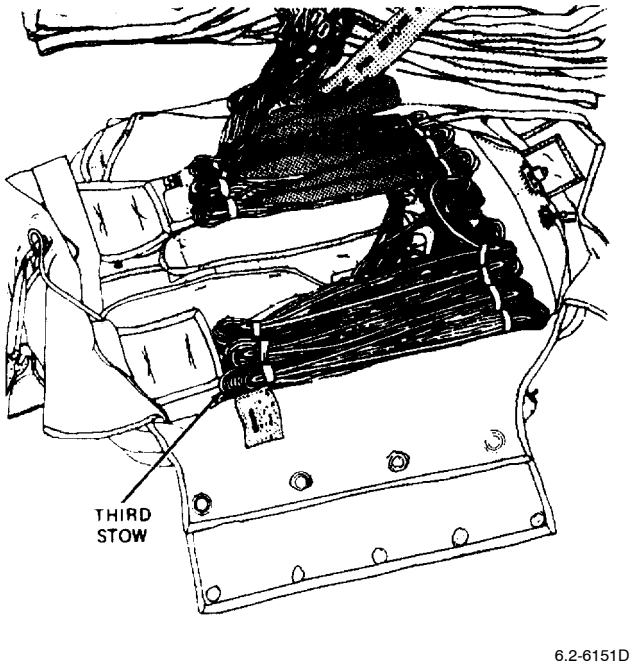


Figure 68. Stow Remainder of Firing Lanyard

35. PREPARATION OF CANOPY FOR FOLDING.

a. Cut a 36-in. length of MIL-T-5608, Type II, Class A, 3/8-in. wide nylon tape. Tie an overhand knot in each end of tape.

b. Insert tape thru loop on canopy radial seam and lay tape across canopy.

c. Spread the two groups of suspension lines 15 ±1-in. apart the length of canopy. This corresponds roughly to width of container. Allow normal tapering at vent and skirt hem (Figure 69).

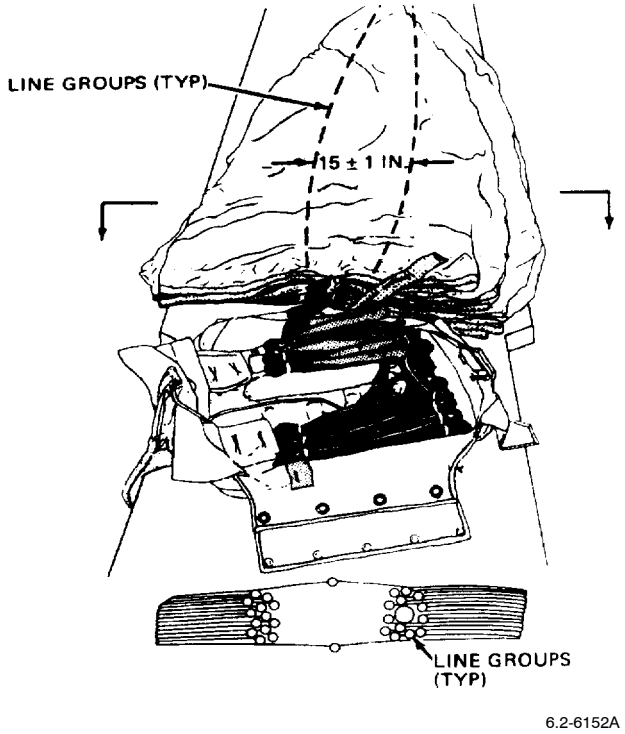


Figure 69. Spread the Two Groups of Suspension Lines Apart

d. Straighten skirt hem.

e. Fold all gores over as a group, the skirt edges being brought to center of spreading gun. Allow canopy to break at tie loop for canopy tie. Keep canopy in place with three shot bags (Figure 70).

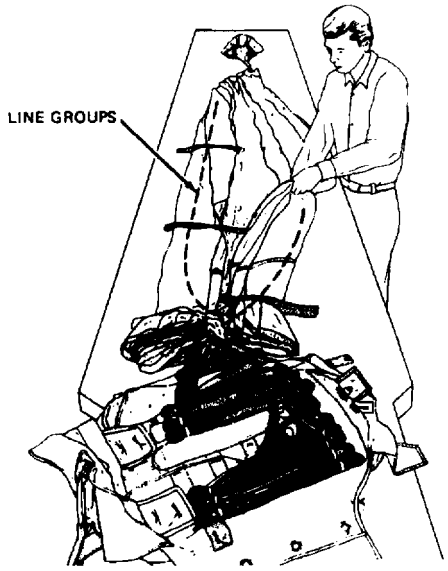


Figure 70. Fold all Gores Over as a Group

f. Fold all gores as a group on the helper's side, in the same manner. Adjust canopy gores to obtain a finished canopy width of 20-in (Figure 71).

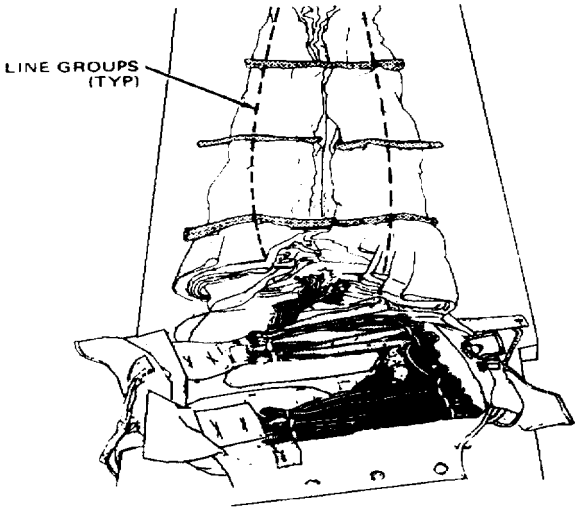


Figure 71. Fold all Gores as a Group on Helper's Side

36. STOWAGE OF SPREADING GUN AND CANOPY.

a. Remove shot bag from canopy at skirt hem. (QA)

b. Six folds shall be made when stowing canopy in container. Use the following illustration as a guide while stowing canopy (Figure 72).

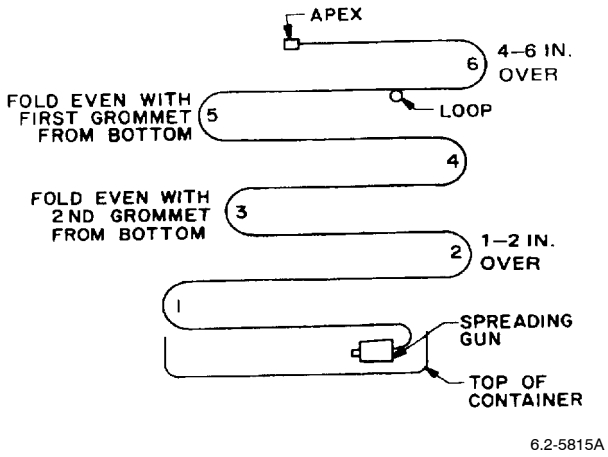


Figure 72. Six Folds Shall be Made When Stowing Canopy

c. Grasp skirt hem and spreading gun. Helper shall draw skirt hem and spreading gun across container to top edge. Position firing mechanism of the spreading gun towards bottom of container.

WARNING

Safety pin must be removed from spreading gun.

d. Remove safety pin from spreading gun (Figure 73). (QA)

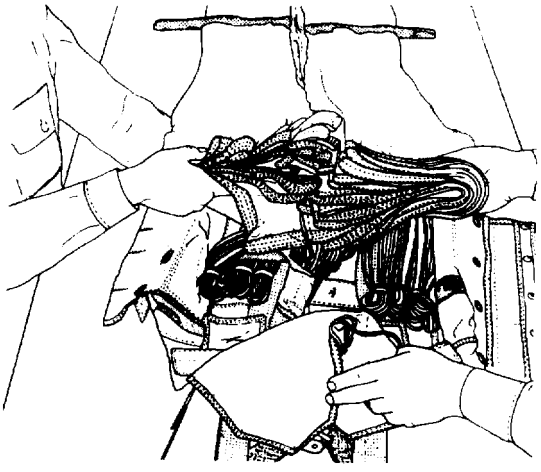


Figure 73. Remove Safety Pin

e. With canopy lowered into position onto container, line groups slightly overlap each side of container. Fan skirt hem about 20 to 35-degrees. Maintain this fan position and with hand lying flat insert skirt into top corners of container. Keep center of container as free as possible of canopy bulk (Figure 74).

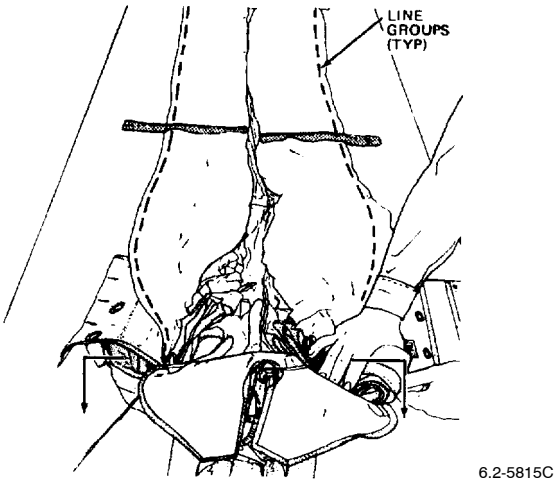


Figure 74. Canopy Lowered into Position

f. Stow as compactly as possible, edges of the two gore groups with related line groups into container, with a downward, outward motion (Figure 75).

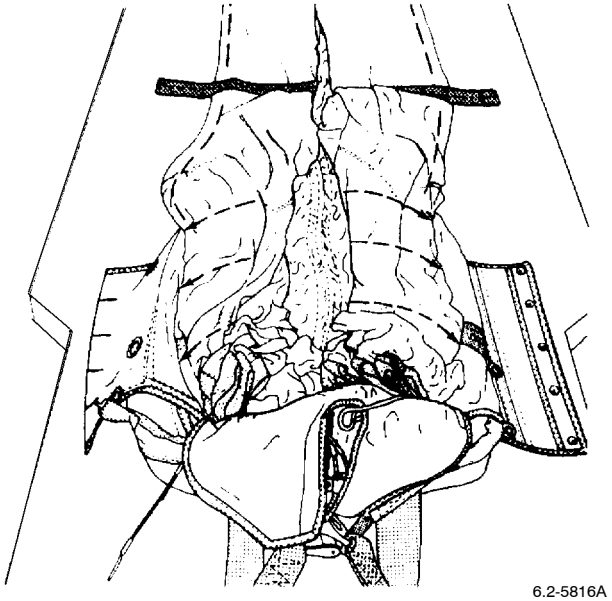


Figure 75. Stow as Compactly as Possible

g. To form first fold, hold a long bar in place on top of canopy even with bottom edge of container. Grasp canopy about the length of container from long bar. Rotate this fold towards top of container. Second fold is extended over top edge of container 1 or 2-in (Figure 76).

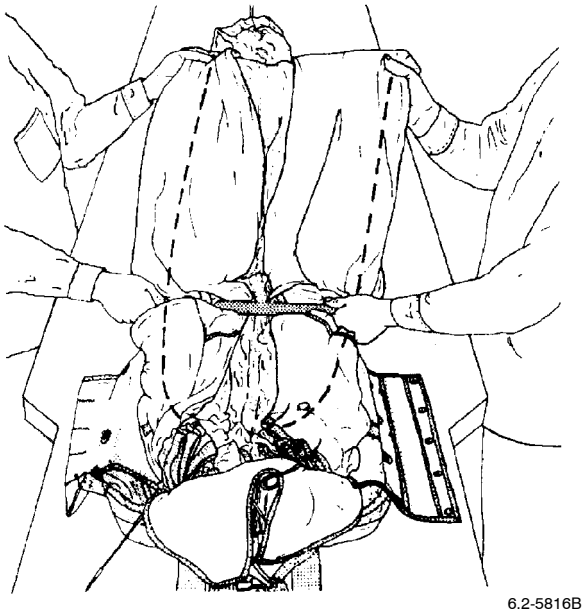


Figure 76. Form First Fold

h. Insert folded canopy corners into container corners with flat of hands. Work gore material with line groups into sides of container. Keep center of container as free of canopy material as possible (Figure 77).

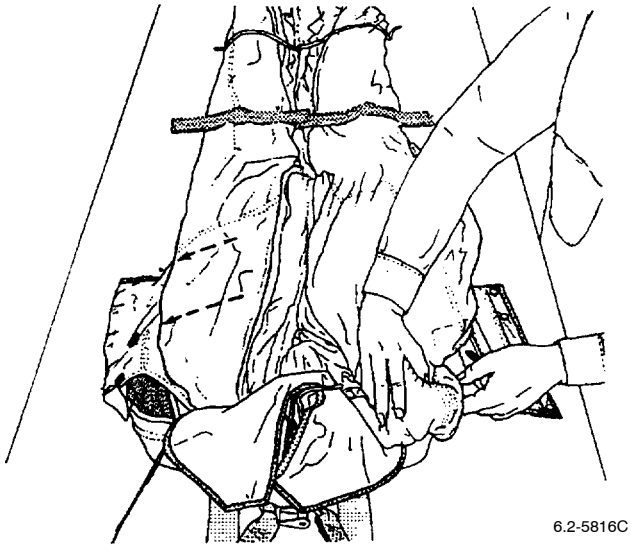


Figure 77. Insert Folded Canopy Corners into Container

i. To form third fold, first remove two remaining shot bags, then hold a long bar in place on top of canopy even with second grommet from bottom of side flaps. Grasp canopy, about two-thirds length of container from long bar. Rotate this fold towards top of container. Fourth fold is extended over the top edge of the container 1 or 2-in (Figure 78).

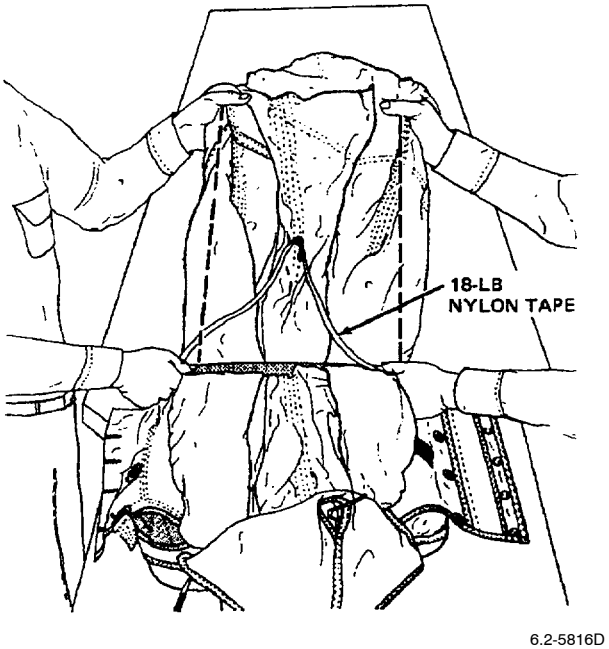


Figure 78. To Form Third Fold

j. Stow canopy and line groups toward sides. Particular attention must be paid to inserting fold four in area of riser slots. Center is still kept clear of canopy material as much as possible (Figure 79).

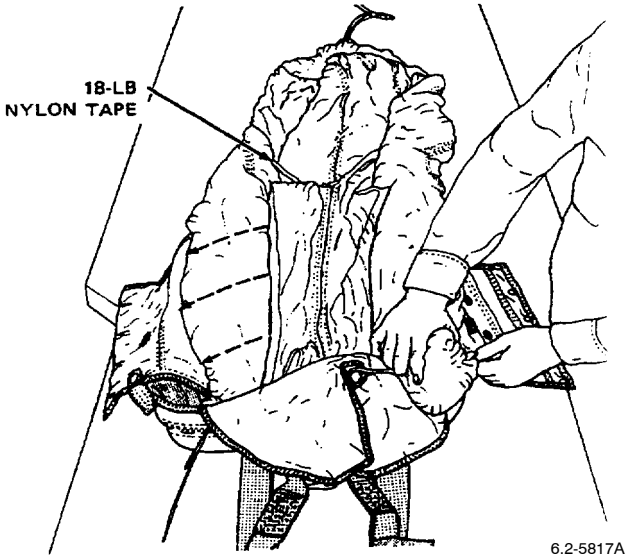


Figure 79. Stow Canopy and Line Groups

NOTE

Ensure nylon tape in loop on radial seam remains centered.

k. Form fifth fold by holding long bar even with bottom set of grommets. End of fold extends 5 ± 1-in. over top edge of container (Figure 80).

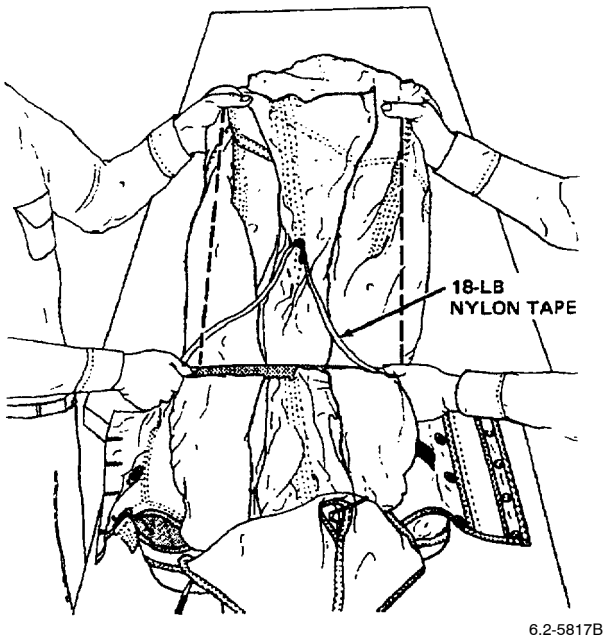


Figure 80. Form Fifth Fold

l. Route one end of MIL-T-5608, Type II, Class A, 3/8-in. wide nylon tape thru vent lines and spreading gun retaining cord, tie ends of tape together with a surgeon's knot. Knot should be positioned as near ends of tape as possible to ensure canopy apex is not compressed by pulling tape up tight (Figure 81). (QA)

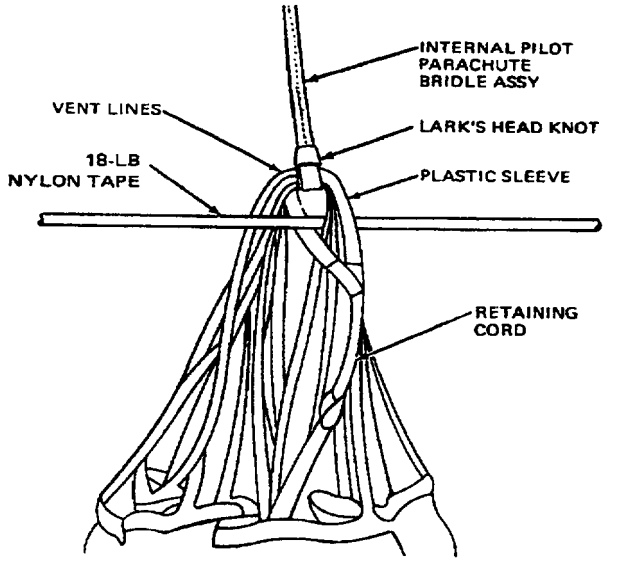


Figure 81. Route One End of Nylon Thru Vent Lines

NOTE

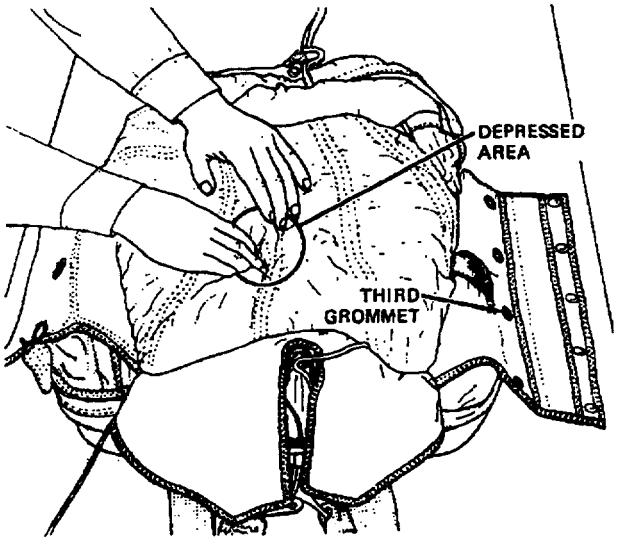
Care must be taken not to break tape securing radial seam loop to vent lines.

m. Spread vent hem across width of container. Insert fold 6 into top corners of container. Maintain flow of canopy material towards sides of container (Figure 82).

6.2-5818A

Figure 82. Spread Vent Hem Across Width of Container

n. Form a deep depression along center line even with third grommet from container bottom. This serves as a spring bed for internal pilot parachute (Figure 83).

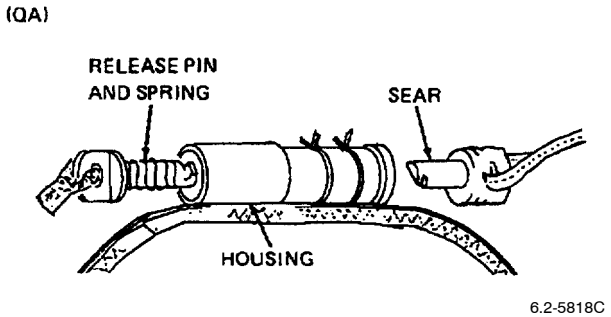


6.2-5818B

Figure 83. Form a Deep Depression Along Center Line

o. Insert release pin and spring attached to external pilot parachute bridle into wide end of override disconnect housing. Push sear into housing, using a temporary locking pin, until sear protrudes from opposite end.

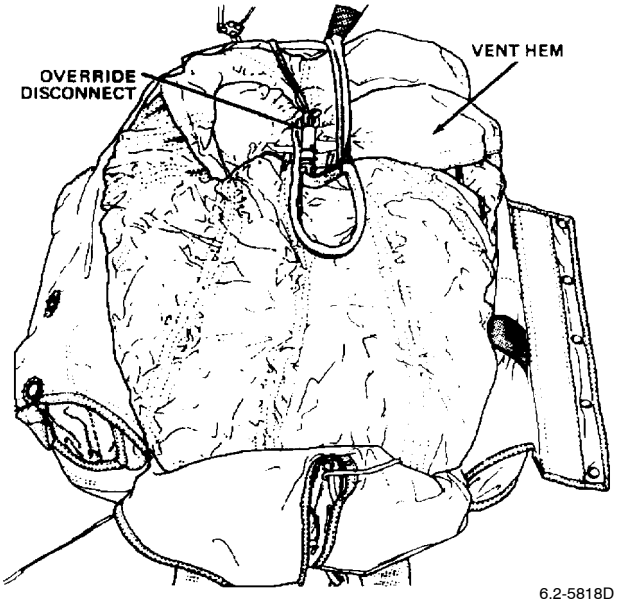
p. Engage sear on internal pilot parachute connector strap with release pin and spring in housing and release tension on release pin and spring (Figure 84). (QA)



6.2-5818C

Figure 84. Engage Sear on Internal Pilot Parachute Connector Strap

q. Place override disconnect on top of vent hem (Figure 85).



6.2-5818D

Figure 85. Place Override Disconnect on Top

r. Remove any entanglements in pilot parachute connector strap.

s. Position pilot parachute vertically on packing table and insert guide tube into grommet in crown of pilot parachute. Guide tube shall extend to bottom of pilot parachute and be positioned over locking cone in spring base plate (Figure 86).

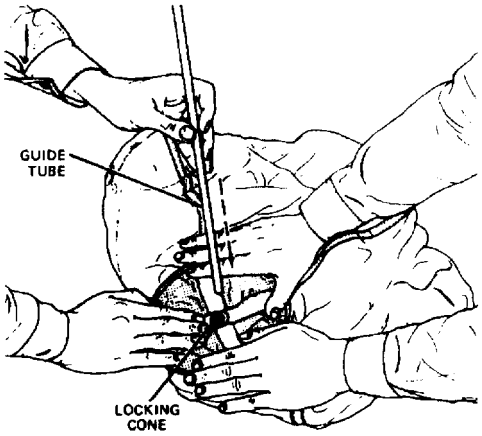


Figure 86. Position Pilot Parachute Vertically on Packing Table

CAUTION

Ensure that pilot parachute cloth is neither twisted nor entangled in compressed pilot parachute spring.

t. Completely compress pilot parachute spring, and remove guide tube from locking cone. Cone shall protrude thru grommet. Pull all nylon cloth away from locking cone so that no cloth shows thru grommet (Figure 87).

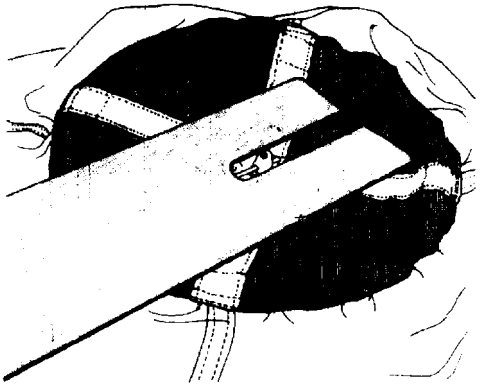


Figure 87. Completely Compress Pilot Parachute Spring

u. Insert pin of temporary locking pin plate into bottom hole of locking cone to keep pilot parachute compressed.

v. Position pilot parachute so locking cone is aligned with second grommet from top end of container. Pilot parachute temporary locking pin plate shall extend over top end flap. Tuck pilot parachute cloth under outer edge of crown (Figure 88). (QA)

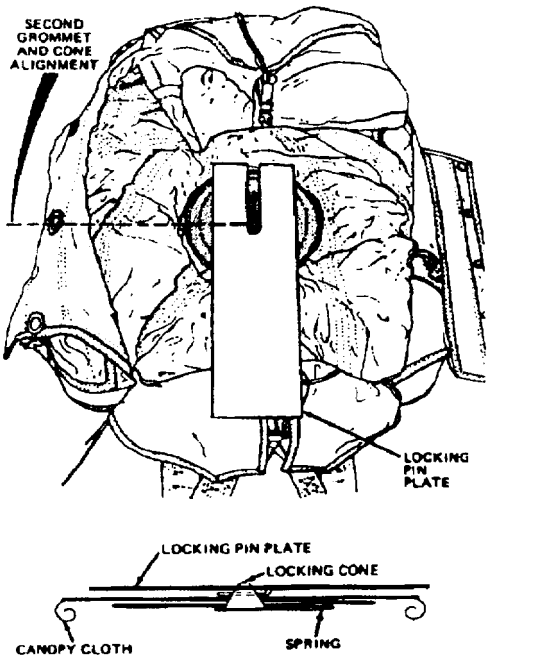


Figure 88. Position Pilot Parachute so Locking Cone is Aligned

w. Route external pilot parachute bridle out bottom end of container on external pilot parachute pocket side. (QA)

37. CLOSING CONTAINER.

WARNING

Safety pin must be removed from spreading gun.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Only the temporary locking pin shown in WP 004 00 shall be used.

b. Rotate container 90-degrees clockwise.

c. Pull side flap with locking cone over pilot parachute and folded canopy (Figure 89).

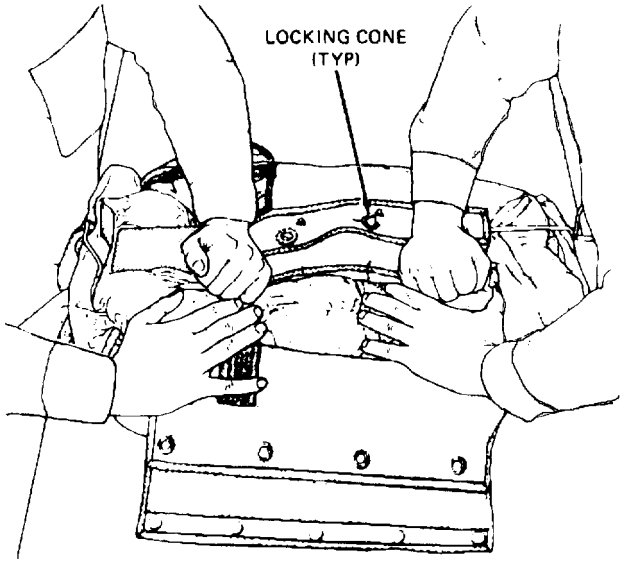


Figure 89. Pull Flap with Locking Cone Over Pilot Parachute

d. Pull side flap with grommets over side flap with locking cone (Figure 90).

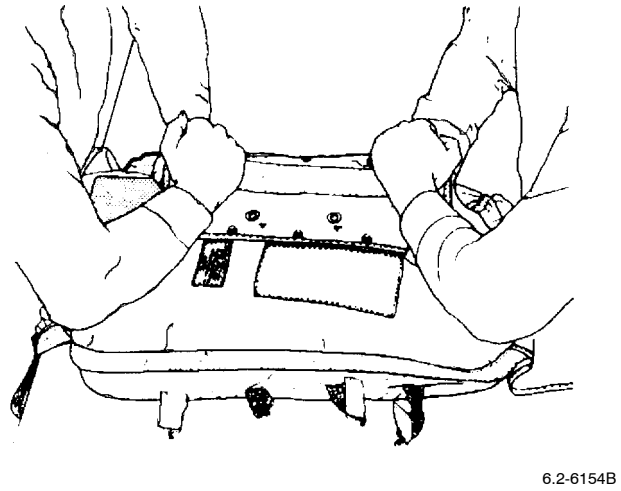


Figure 90. Pull Side Flap with Grommets Ober Locking Cone

e. Align second grommet from top of container on each side flap over locking cone in pilot parachute. Insert temporary locking pin in top hole in pilot parachute locking cone. Note direction of temporary locking pin (Figure 91).

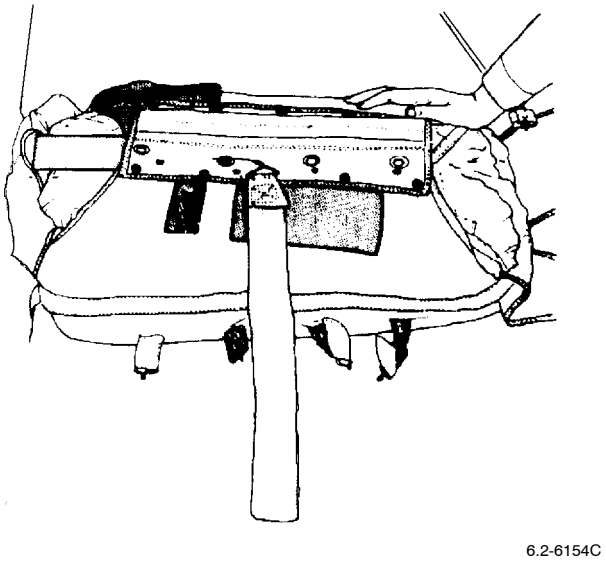


Figure 91. Alignment of Second Grommet

f. Remove temporary locking pin plate. (QA)

NOTE

Ensure that bent hook on opposite end of spring band assembly faces down.

g. Place end tab spring band on third locking cone from top of container so that end tab is bend-side down. Spring band should be positioned to exit bottom left side of container (Figure 92). (QA)

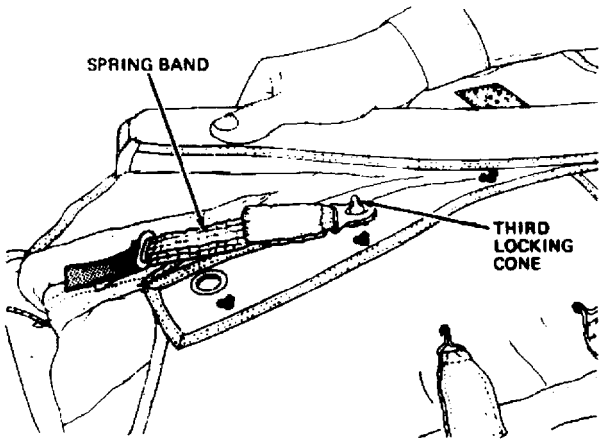
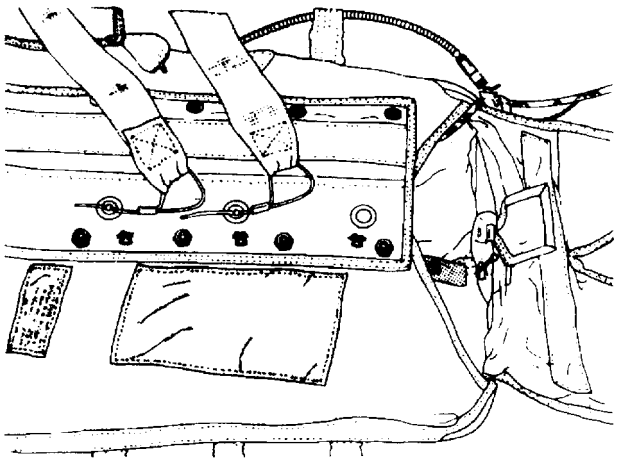


Figure 92. Place End Tab of Spring Band on Third Locking Cone

h. Align third grommet from top of container over spring band and over locking cone on opposite side flap. Insert temporary locking pin in locking cone from bottom to top of container. Note direction of temporary locking pins. Ensure that metal tab end of spring band is positioned between third locking cone and third grommet from top of container (Figure 93). (QA)

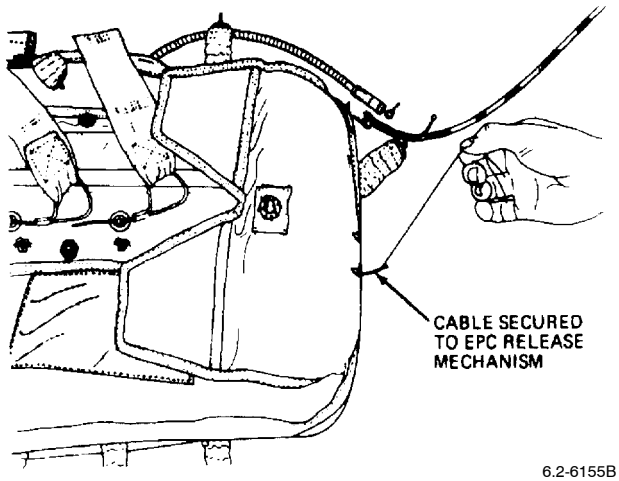


6.2-6155A

Figure 93. Align Third Grommet From Top

i. Cut a 12-in. length of waxed size FF thread, with Lark's head knot; tie thread around ball end of cable that extends from external pilot parachute release mechanism.

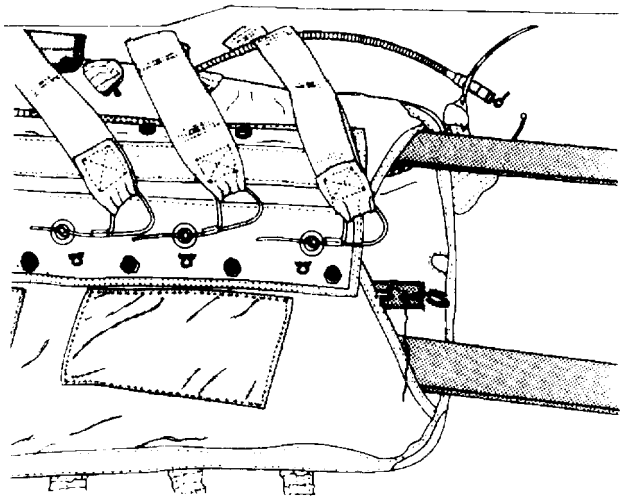
j. Pass both thread and cable thru button hole in bottom of container (Figure 94).



6.2-6155B

Figure 94. Pass Both Thread and Cable thru Button Hole

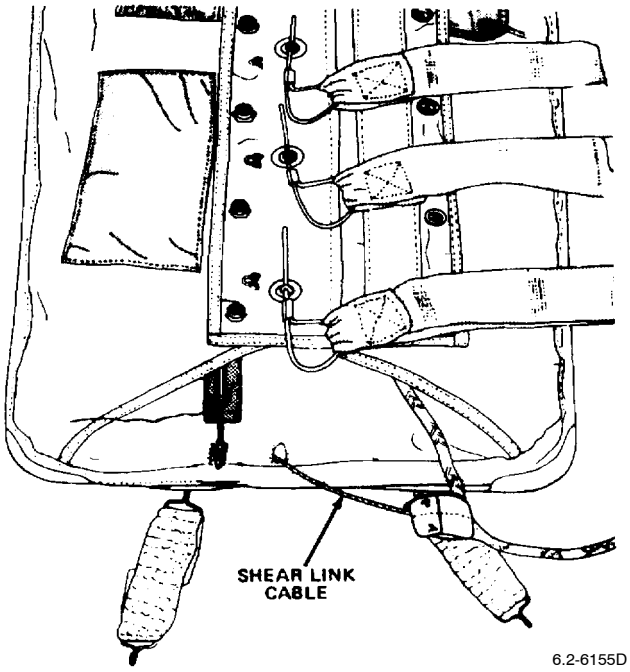
k. Tuck bottom end flap under side flaps using long bars inserted into pockets. Align grommets in side flaps over locking cone in bottom end flap. Insert temporary locking pin. Ensure external pilot parachute bridle is routed out bottom end of container on stowage pocket side of end flap locking cone (Figure 95).



6.2-6155C

Figure 95. Tuck Bottom End Flap Under Side Flaps

l. Pass swaged ball of shear link cable attached to external pilot parachute shear link thru buttonhole in bottom end flap of container (Figure 96).



6.2-6155D

Figure 96. Pass Swaged Ball of Shear Link Thru Button Hole

m. Pass thread attached to swaged ball on cable of release mechanism thru button hole in spring opening assembly.

n. Insert swaged ball of shear link cable firmly into opening of release mechanism. Maintain pressure on shear link cable by pushing it into opening of release mechanism.

o. Pull forward on ball of release mechanism cable to its maximum travel, simultaneously maintaining pressure on shear link cable. Pull spring band assembly toward bottom of container and then insert release mechanism cable ball into slot of spring band assembly. Release mechanism cable must extend 1 7/8 ±1/8-in. from release mechanism, measured from ball end to hole in release mechanism (Figure 97). (QA)

WARNING

Parachute must pass the following test to be placed in service.

NOTE

Application of a 70 lb. load on shear link cable will determine if cable is properly engaged in release mechanism.

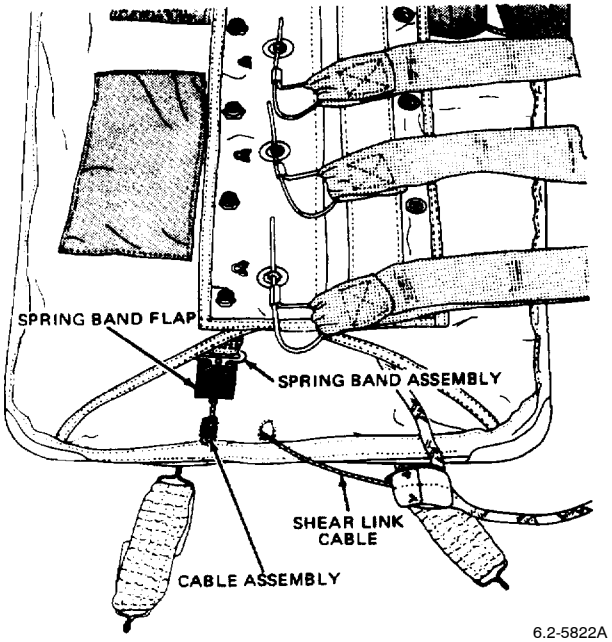


Figure 97. Pull Forward on Ball of Release Mechanism Cable

p. Attach spring scale to shear link cable with a nylon cord. Using a straight steady pull, apply a 70 lb. load upward from release mechanism. Cable must remain locked in release mechanism (Figure 98). (QA)

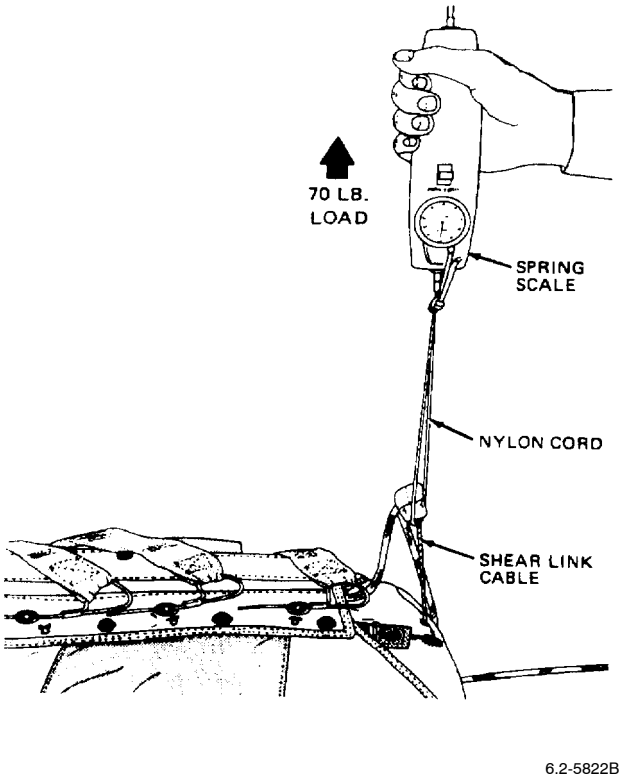


Figure 98. Attach Spring Scale to Shear Link Cable

q. The shear link cable, with about 30 lbs. pull applied, shall release when tension on cable/ball assembly is removed. Test this release function at least twice, re-inserting swaged ball of shear link cable after each test per steps m thru o. (QA)

r. Remove size FF thread from cable.

s. Fold back end tab of spring opening assembly and tack both sides of tab to spring opening assembly at point nearest hook. Use one turn of size E thread, single and waxed; tie off. Ensure tacking does not penetrate container end flap (Figure 99). (QA)

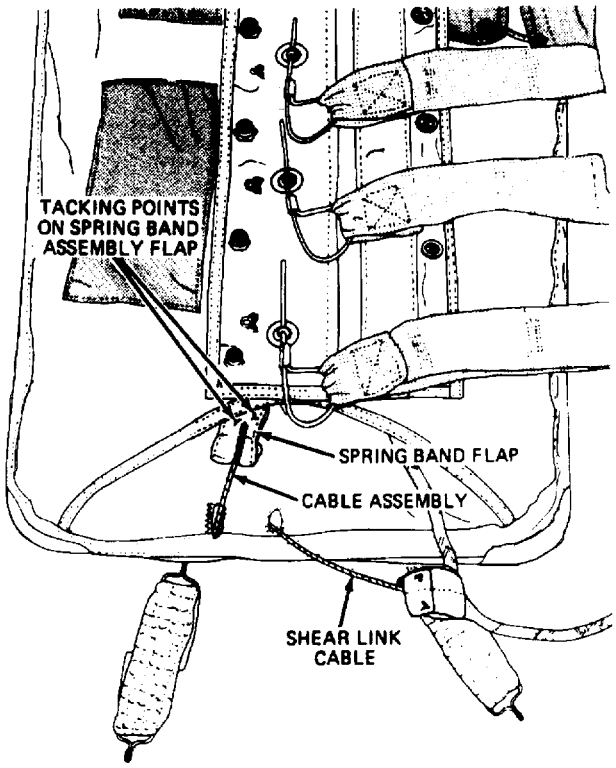


Figure 99. Fold Back End Tab of Spring Opening Assembly

t. Tuck top end flap under side flaps with long bar.

WARNING

Use of ripcord pins as an alignment aid during installation may cause bending of pins and result in excessive pull forces.

Ensure that ripcord pins are centered in locking cones so that shoulder of ripcord pin is not jammed against locking cone, but extends more than 1/4-in. beyond base of grommet.

u. Align grommets on side flaps over locking cone on top end flap. Insert top ripcord pin into beveled side of power cable eye and insert pin into top locking cone (Figure 100).

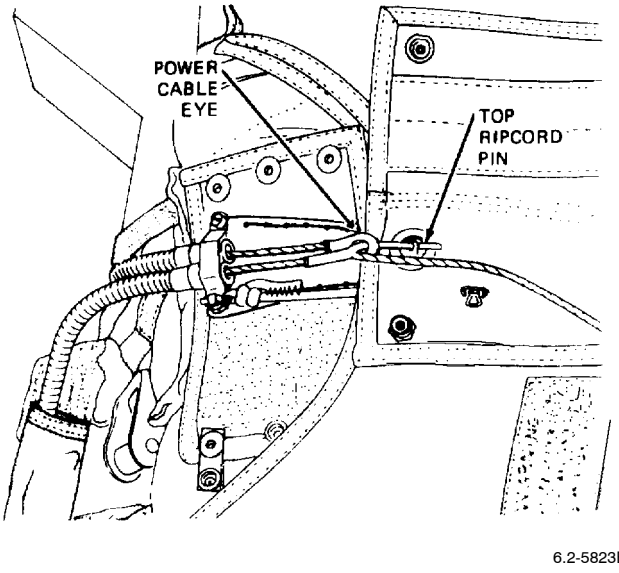


Figure 100. Align Grommets on Side Flaps

v. Replace remaining temporary locking pins with ripcord pins, working from top to bottom of container (Figure 101). (QA)

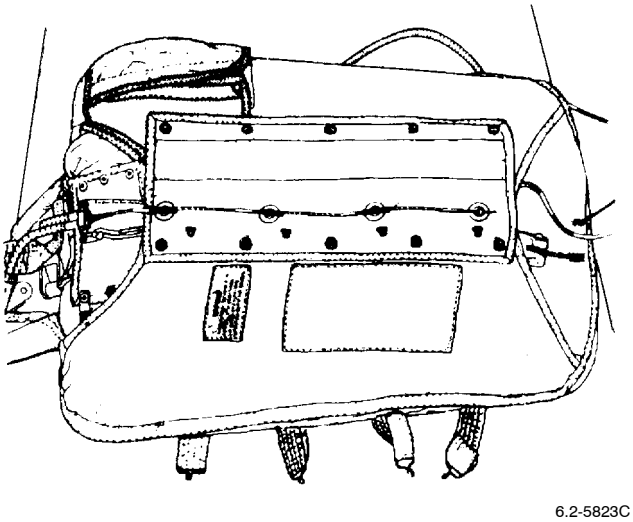


Figure 101. Replace Temporary Locking Pins

WARNING

Container spring opening assemblies must pass under external pilot parachute lanyard and static line.

w. Attach side flap spring opening assemblies except for top right assembly which passes over the EPC pocket (Figure 102).

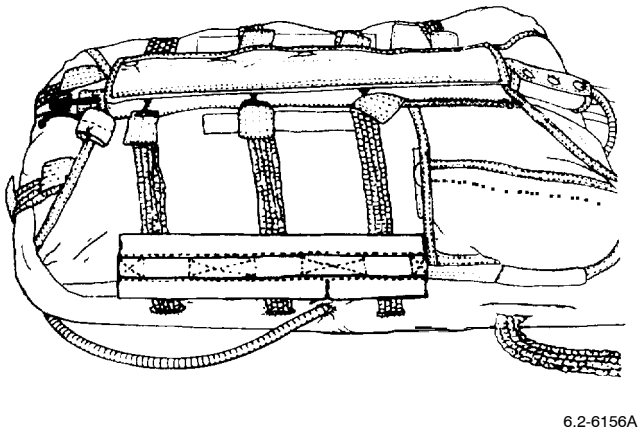


Figure 102. Attach Side Flap Spring Opening Assemblies

x. Attach bottom spring opening assemblies (Figure 103).

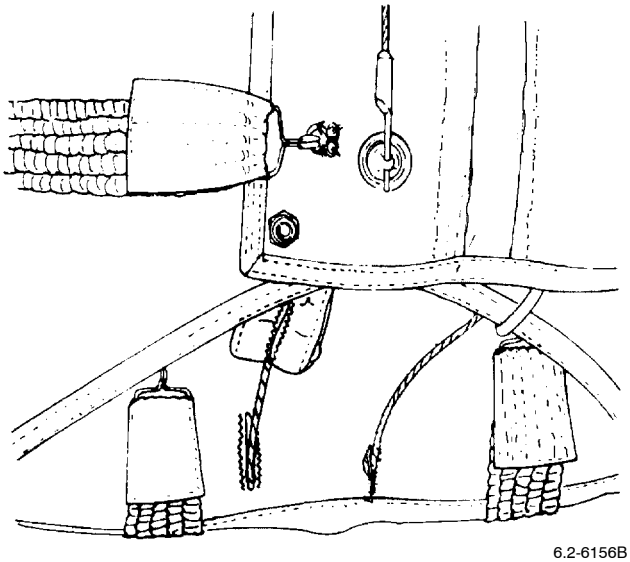


Figure 103. Attach Bottom Spring Opening Assemblies

38. FOLDING AND STOWING EXTERNAL PILOT PARACHUTE.

a. Lay out external pilot parachute on packing table and remove any dips and twists in internal and external suspension lines (Figure 104).

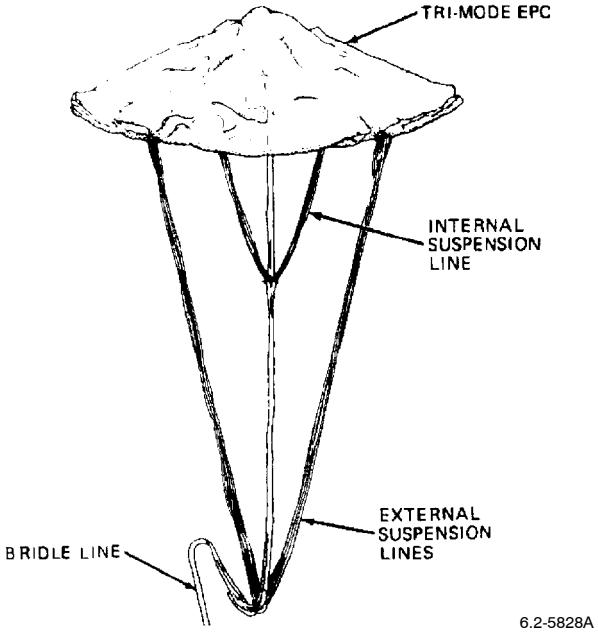


Figure 104. Lay Out External Pilot Parachute

b. Fold top gore onto group of gores on packer's side of table; at same time, helper shall fold bottom gore under group of gores on helper's side of table (Figure 105).

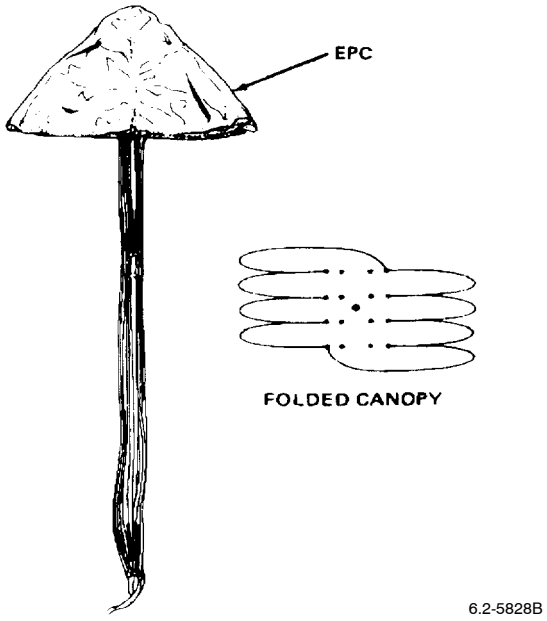


Figure 105. Fold Top Gore Onto Group of Gores

c. Fold skirt at 90-degrees angles and position on each side of suspension lines (Figure 106).

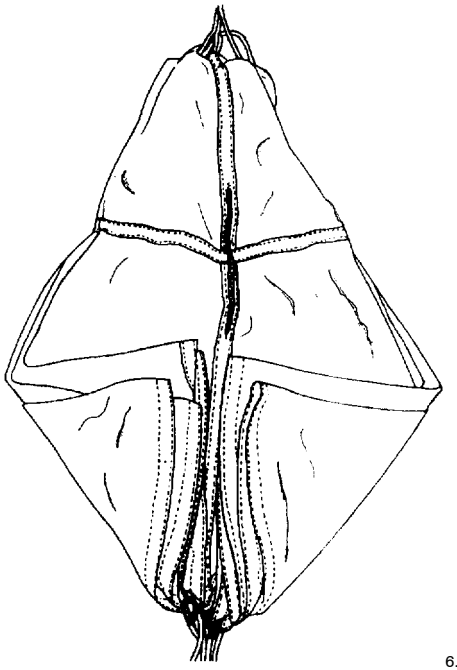


Figure 106. Fold Skirt at 90° Angles

d. Fold both gore groups towards center line to achieve width of deployment bag (Figure 107).

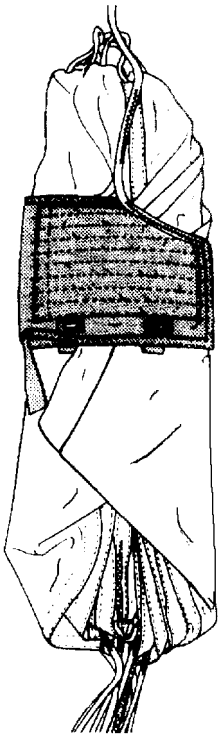


Figure 107. Fold Both Groups Towards Center

e. S-fold canopy in 7-in. folds (Figure 108).

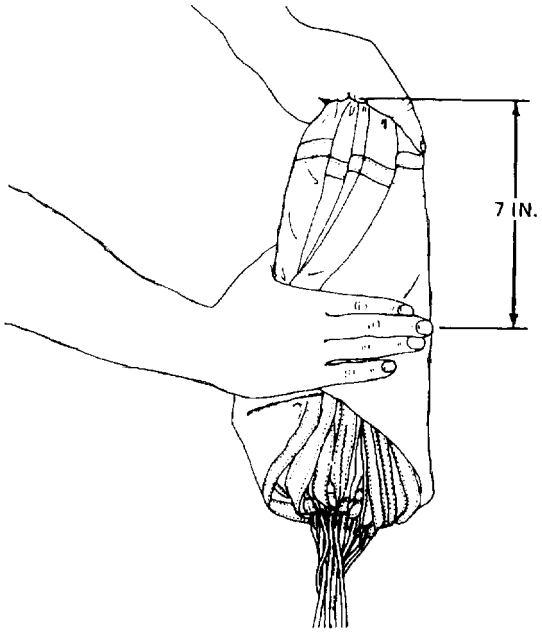


Figure 108. S-Fold Canopy

f. Position apex towards packer's side of table. Align deployment bag with curved indent towards helper. Bag locking loop openings face up (Figure 109). (QA)

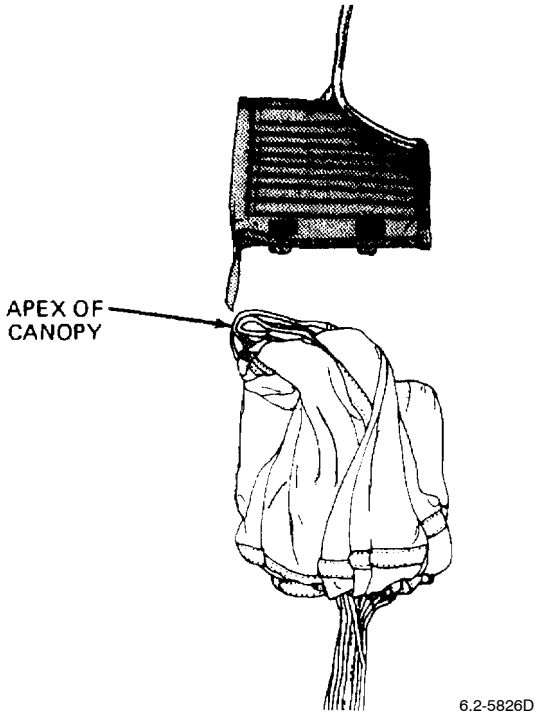
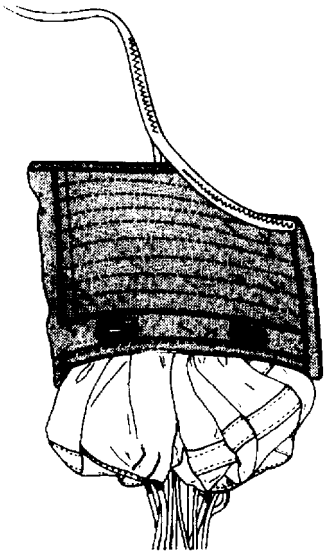


Figure 109. Position Apex Towards Packer's Side

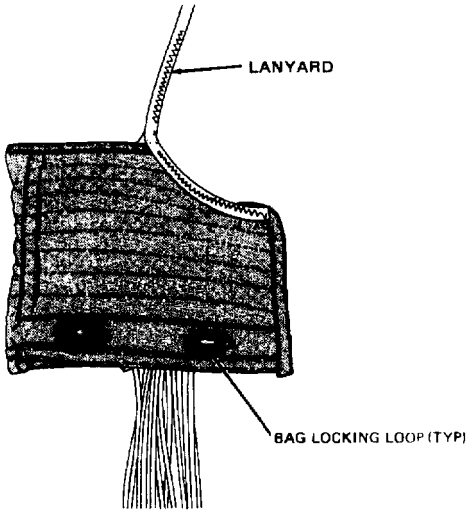
g. Compress canopy and insert into deployment bag. Smooth and adjust canopy to shape of deployment bag with least thickness (Figure 110).



6.2-5827A

Figure 110. Compress Canopy and Insert into Deployment Bag

h. Insert bag locking loops thru locking loop openings (Figure 111).



6.2-5827B

Figure 111. Insert Bag Locking Loops

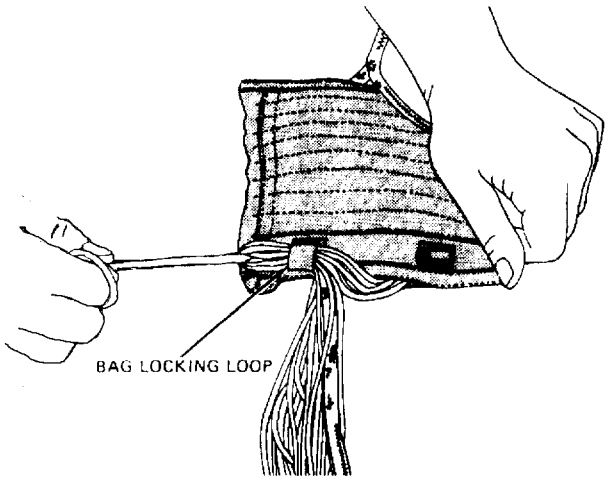
CAUTION

Rapid removal of draw cord can damage suspension lines.

NOTE

Beeswax may be lightly applied to draw cord for lubrication.

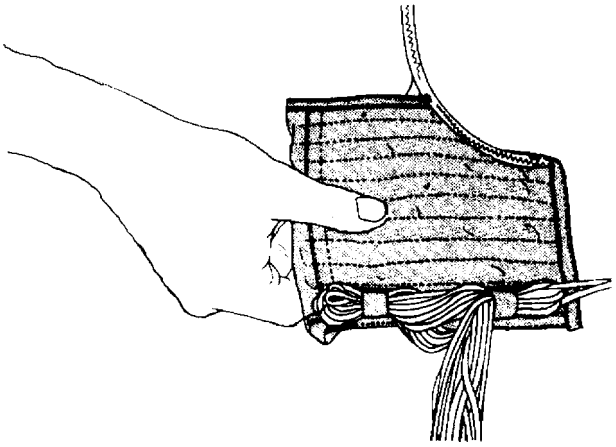
i. Stow first bight of suspension lines into deployment bag locking loop using a draw cord. Remove draw cord slowly (Figure 112).



6.2-5827C

Figure 112. Stow First Bight of Suspension Lines

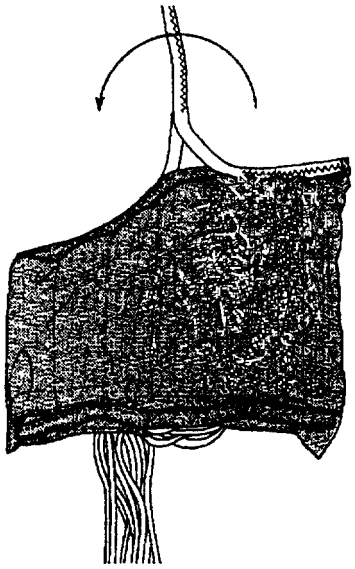
j. Stow second bight into remaining locking loop (Figure 113).



6.2-5827D

Figure 113. Stow Second Bight

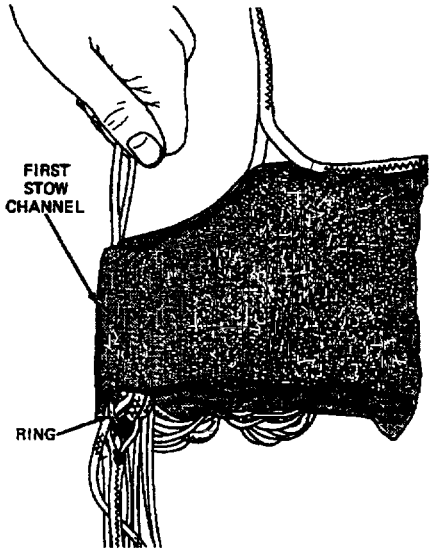
k. Rotate deployment bag over 180-degrees as shown to prepare for suspension line stowage (Figure 114).



1902-110

Figure 114. Rotate Deployment Bag 180°

l. Stow third bight of lines using draw cord into right hand (wide) short channel. Ring should rest at mouth of first stow channel (Figure 115).



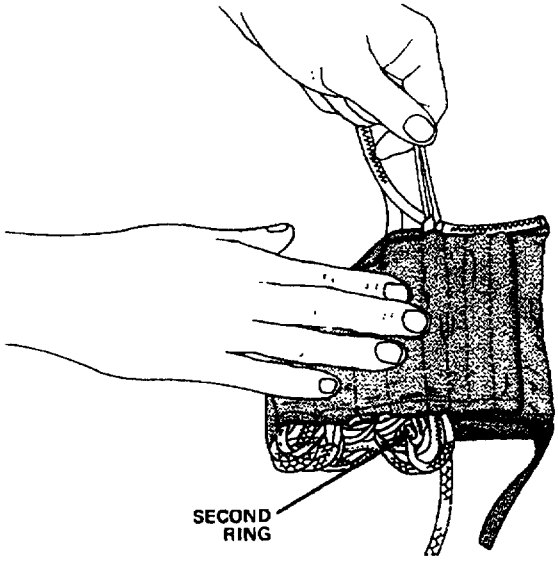
1902-111

Figure 115. Stow Third Bight

m. Remove draw cord. Bight loop must not extend beyond bottom edge of channels.

n. Complete stowing lines in wide channels; do not pull second ring into channel.

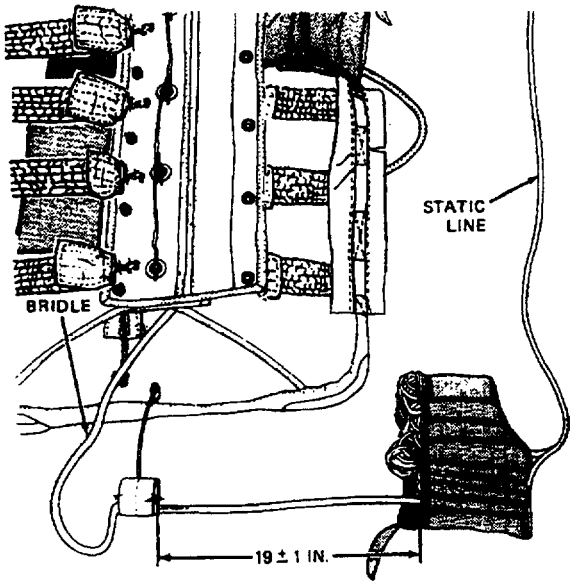
o. Stow EPC bridle in narrow channel on same side of bag. Bights do not extend beyond bottom of channel (Figure 116).



1902-112

Figure 116. Stow EPC Bridle

p. Complete stowage of bridle. Last stow is adjusted to allow 19 ± 1-in. of bridle to extend from deployment bag (Figure 117).



1902-113

Figure 117. Complete Stowage of Bridle

q. Rotate bag over 180-degrees, using draw cord, make first stow of static line into first stow channel of deployment bag on inside closest to locking loops. Stows will commence from tab end of deployment bag. Ring end of static line shall extend from edge of stow channel 22 ± 1-in. when stow is complete. Stowed bight shall not extend beyond edge of channel (Figure 118).

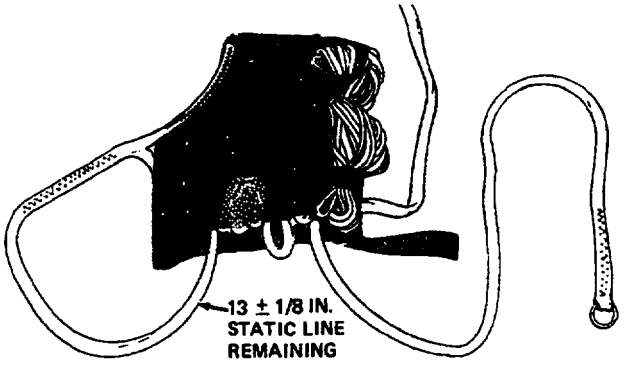


Figure 118. Rotate Bag over 180°

r. Continue stowage of static line into channels 2 and 3 with the fourth stow only, leaving 3/4-in. extending from edge of stow channel and edge of bag between channels 3 and 4.

s. Complete static line stowage leaving 13 ± 1/8-in. of static line remaining unstowed from attachment point to bag (Figure 118). (QA)

39. STOWAGE OF DEPLOYMENT BAG IN EXTERNAL PILOT PARACHUTE POCKET.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Using flat of the hand, create a depression in external pilot parachute pocket. Shift internal mass of canopy with external force as required.

b. Insert deployment bag with locking loops facing up and outward from parachute container center line (Figure 119).

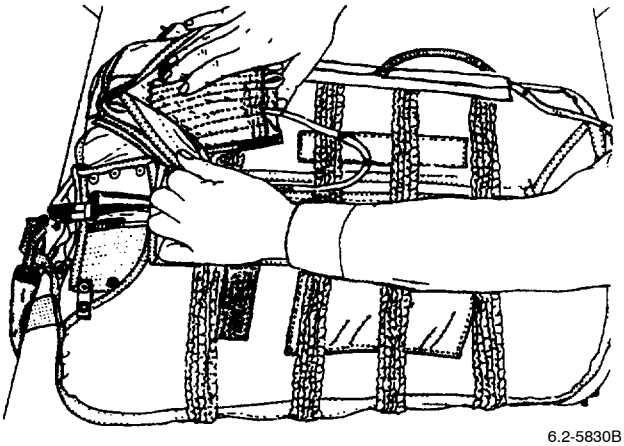


Figure 119. Insert Deployment Bag with Locking Loops Facing Up

WARNING

Ensure that remaining 13-in. of static line is not routed under deployment bag when bag is installed into EPC pocket.

c. Position remaining static line on top of, and toward center of container. Using a length of nylon cord, draw container pocket locking loop up thru the 3/4-in. static line loop formed during fourth stow (Figure 120). (QA)

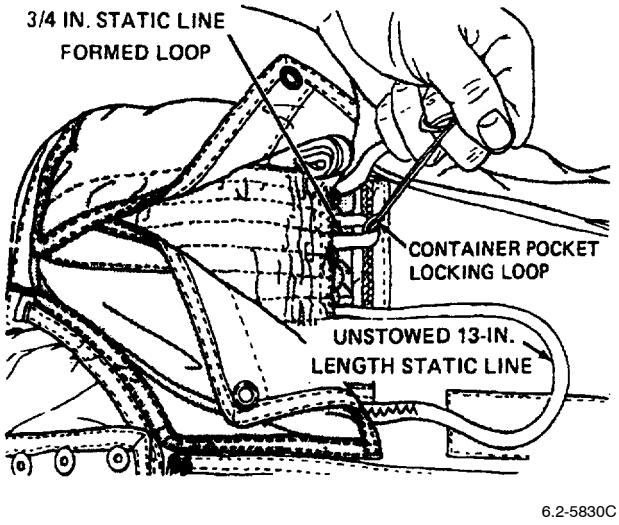


Figure 120. Position Remaining Static Line on Top

d. Continue drawing container pocket locking loop up and thru grommets installed on pocket closing flaps (Figure 121). (QA)

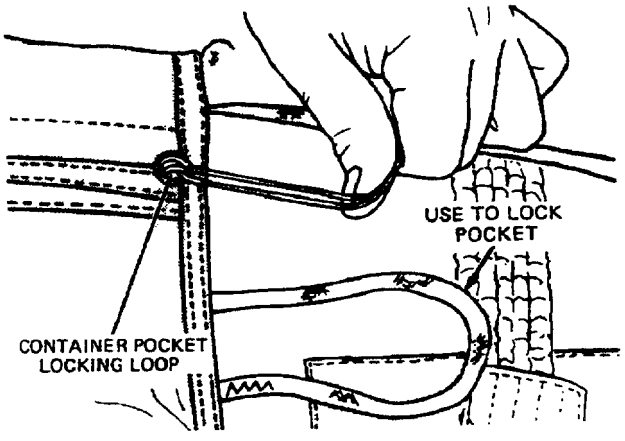


Figure 121. Continue to Draw Container Pocket Up

e. Lock pocket flaps by inserting and drawing the unstowed lanyard into container pocket locking loop, forming a bight of about 3/4-in. stow excess lanyard on top of deployment bag under left pocket flap (Figure 122). (QA)

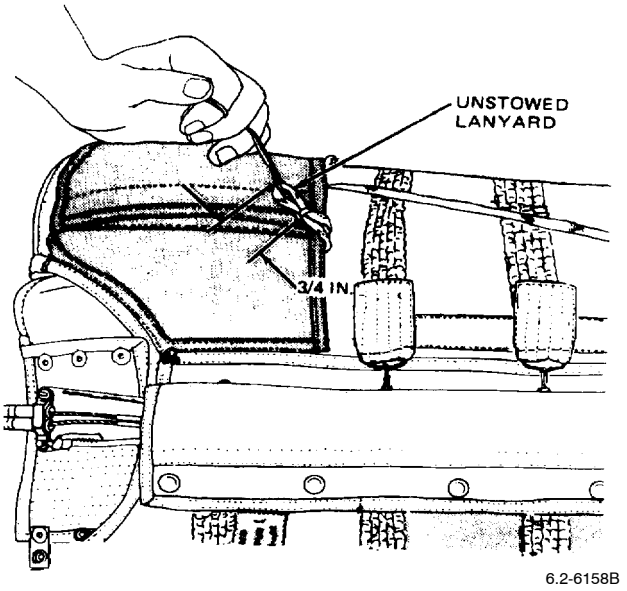


Figure 122. Lock Pocket Flaps

f. Attach remaining spring opening assembly to top right eyelet passing thru guide loop on side of EPC pocket (Figure 123).

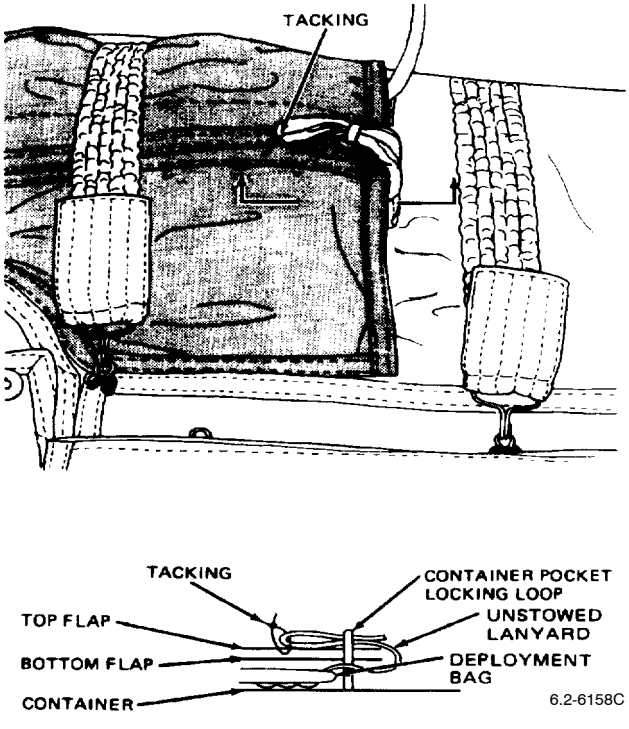


Figure 123. Attach Remaining Spring Opening Assembly

g. Tack lanyard loop to pocket edge with one turn of size E thread, single and waxed; tie off. (QA)

40. STOWAGE OF EXTERNAL PILOT PARACHUTE BRIDLE LINE.

NOTE

Tie off all tacking with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Position bridle line in protector tunnel with deployment bag tab over bridle.

b. Fold bottom protector flap over deployment bag tab and bridle. Tack at each end with one turn of size E thread, single and waxed. Tacking shall pass thru bottom protector flap, deployment bag tab, and bridle, in that order; tie off (Figure 124).

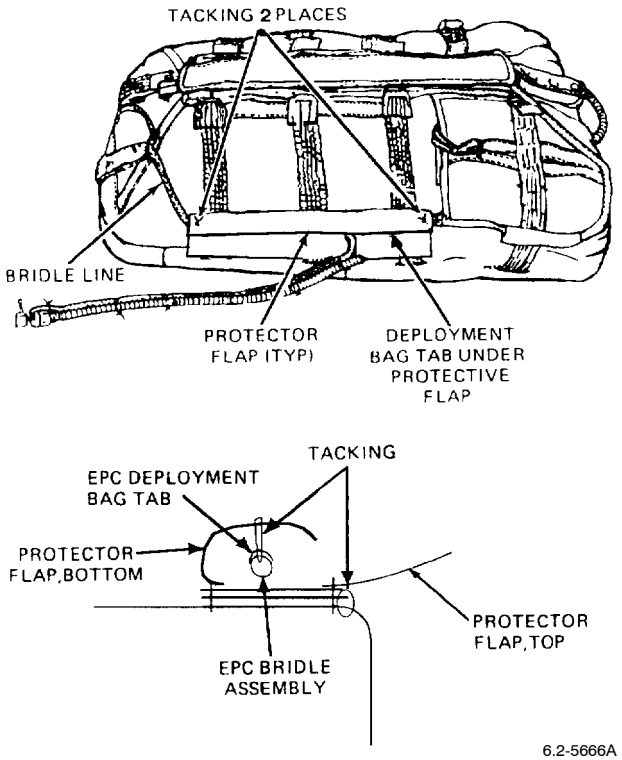
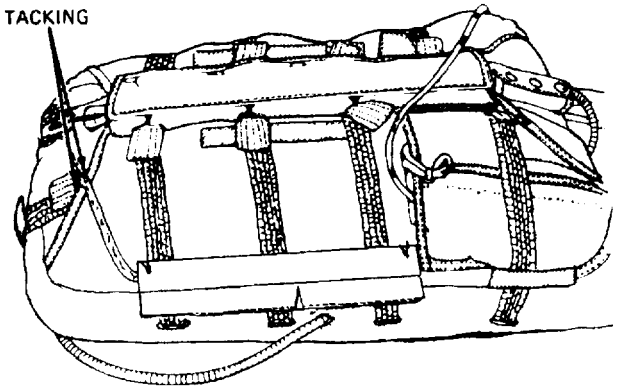


Figure 124. Lock Pocket Flaps by Inserting and Drawing the Unstowed Lanyard

c. Position shear link under side flap and secure by tacking release cable to flap. Pass one turn size E thread, single and waxed, around cable and thru flap; tie off. Tack bridle line to side flap with one turn size E thread, single and waxed; tie off (Figure 125).

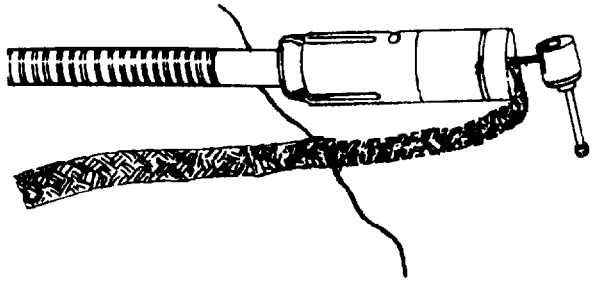


6.2-61598B

Figure 125. Position Shear Link Under Side Flap

41. STOWAGE OF DEPLOYMENT BAG STATIC LINE.

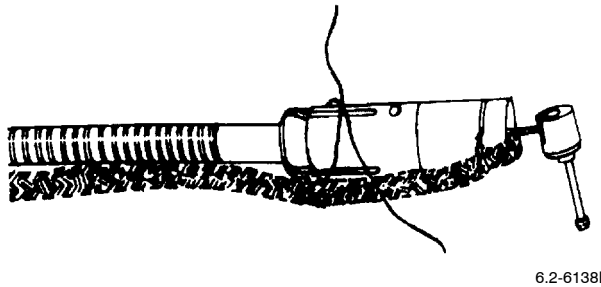
a. Route a 12-in. length size 6 nylon thread, single and waxed, around static line at concave groove in retainer clip. Tie off with a binder knot (Figure 126).



6.2-6138A

Figure 126. Route a 12-in. Length of Size 6 Thread Around Static Line

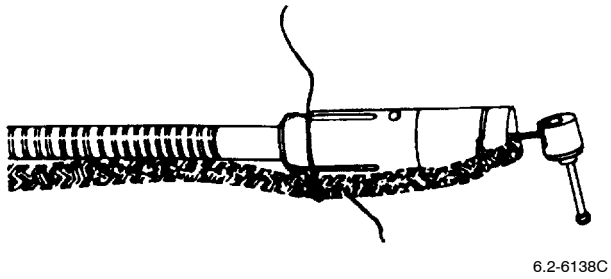
b. Route free ends of thread around opposite sides of retainer clip groove (Figure 127).



6.2-6138B

Figure 127. Route Free Ends of Thread Around Opposite Sides

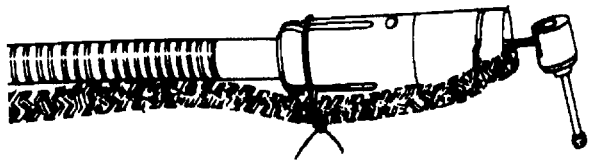
c. Bring thread ends back around static line pulling the static line snug against the retainer clip (Figure 128).



6.2-6138C

Figure 128. Pull Static Line Snug Around Retainer Clip

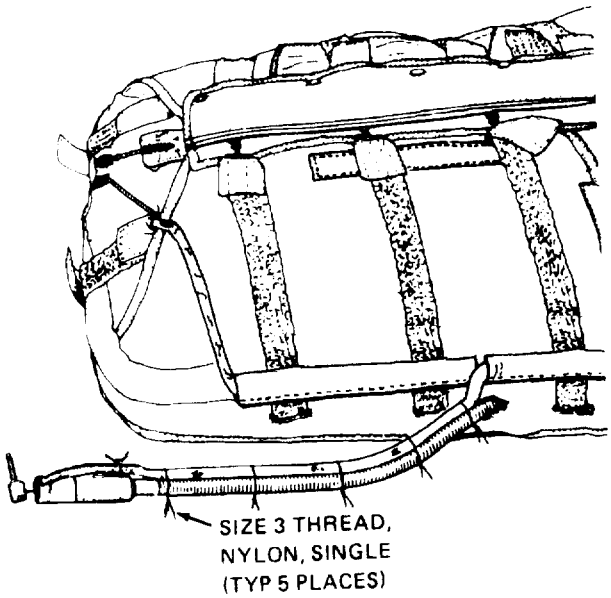
d. Secure ends; Tie off. Trim excess to 1/2-in (Figure 129).



6.2-6138D

Figure 129. Secure Ends

e. Route static line align arming cable housing. Tie static line to housing with ties placed in grooves of housing at five equally spaced points between end of housing ferrule and where housing exits container, one turn of size 3 thread, single and waxed; tie off. Ties will be made around static line, not thru it. Trim excess to 1/2-in. (Figure 130). (QA)



6.2-6160A

Figure 130. Route Static Line Align Cable Housing

f. Allowing no slack, route static line from last tie directly up to slit in top protector flap. Stow remaining static line in protective tunnel. Place top protector flap over bottom protector flap and tack protective tunnel closed in four places with one turn size E thread, single and waxed; Tie off. Upper tacking shall pass thru top flap, static line and bottom flap. Second tacking shall pass thru both slit edges of top flap, static line, and bottom flap. Third tacking shall centered between lower spring opening assembly from bottom, tacking shall pass thru top and bottom flaps only. Bottom tacking shall pass thru top and bottom flaps only (Figure 131). (QA)

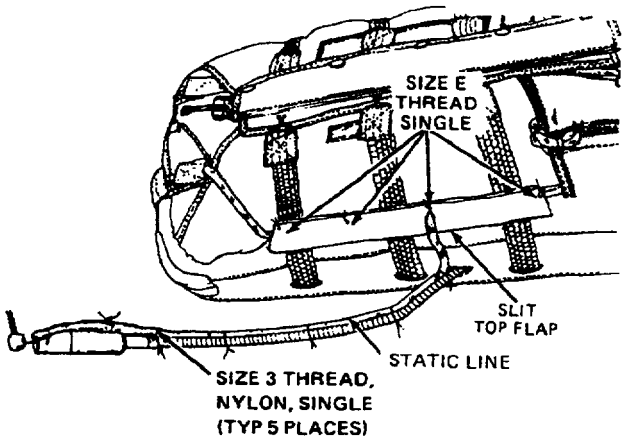


Figure 131. Allowing No Slack Route Static Line From Last Tie to Slit in Top Protector Flap

NOTE

Tie off all tacking with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

42. STOWAGE OF SAFETY PIN FLAG.

a. Position spreading gun safety pin flag on table with securing strap facing down and safety pin as shown (Figure 132).

b. Fold flag with safety pin tucked inside so securing strap faces up (Figure 132).

c. When flag is completely folded, pass securing strap around upper left side spring opening assembly and close snap fastener. Close flag snap fastener.

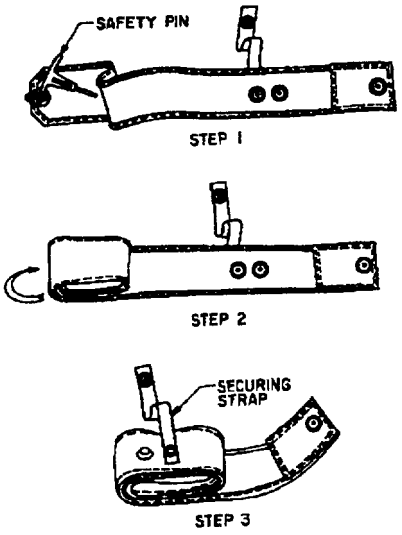


Figure 132. Stowage of Spreading Gun Safety Pin Flag

43. GO-NO-GO CHECK.

a. Remove lumbar pad on assembly (PN 576AS100-35).

b. Check flatness of packed assembly using template (WP 004 00). If container fails to fit under template, adjustment of internal mass by external hand pressure is permissible (Figure 133). (QA)

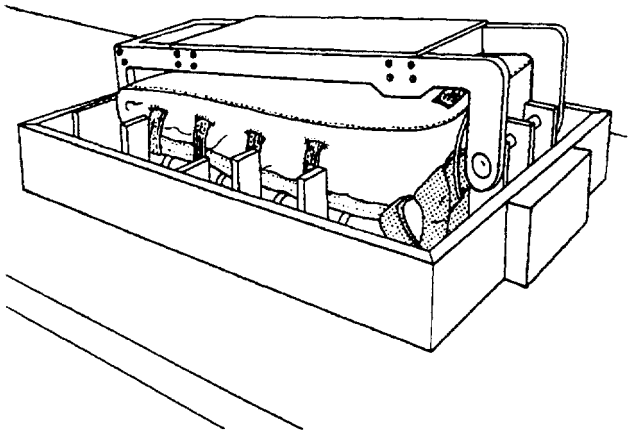


Figure 133. Go-No-Go Check

c. Reinstall lumbar pad on assembly (PN 576AS100-35).

44. RIPCORD PIN PULL CHECK.

a. Set spring scale to zero.

b. Insert ripcord pin lock on bottom ripcord pin (Figure 134).

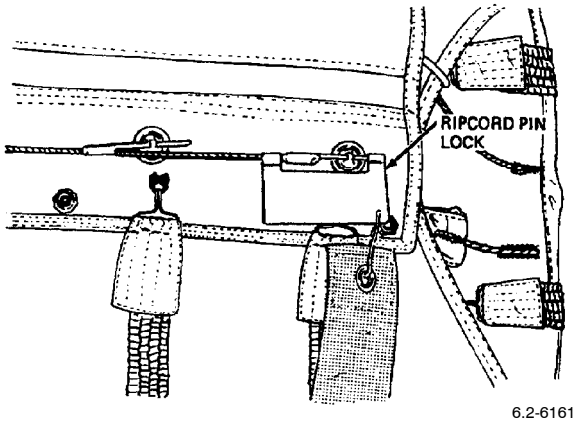


Figure 134. Ripcord Pin Pull Check

c. Ensure ripcord grip is fully seated in ripcord grip retainer. Attach spring scale to ripcord grip using nylon cord. Using a straight steady pull, remove grip from retainer. Force required shall be 15 ± 5 lbs. (QA)

d. If pull force is not within limits, use pliers to adjust ripcord grip retainer. Ensure plier jaws are covered with protective material. After adjustment, repeat ripcord grip pull test.

e. Reset scale to zero. Apply a straight steady load on ripcord grip until initial movement of ripcord pins is observed. Maximum allowable force is 27 lbs. (QA)

f. Reinsert ripcord grip into retainer (Figure 135).

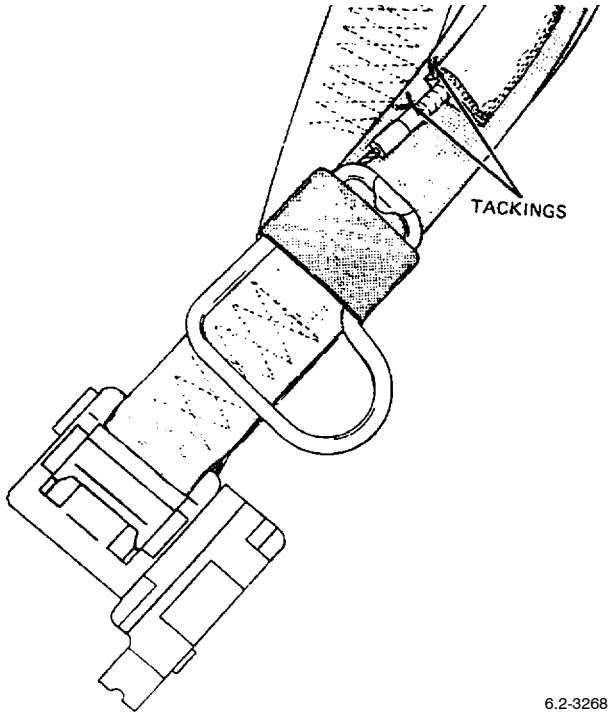


Figure 135. Reinsert Ripcord Grip

WARNING

Ripcord pin lock must be removed.

g. Remove ripcord pin lock. (QA)

h. Reposition ripcord pins so they are centered in locking cones. (QA)

45. ATTACHMENT OF RISER PROTECTION SHEATH.

NOTE

Either sheath may be used for left or right riser assembly.

a. Fold the sheath over the set of two left riser webbing straps. Place the sheath between the shoulder restraint strap and rear riser and over the front riser strap with the fold on the inside and opening toward the outside of the risers route the restrictor strap thru the slit on top left of the sheath and flute containing the ripcord cable and housing. Fasten the four snaps.

b. Fold the sheath around the set of two right riser webbing straps. Place the sheath between the shoulder restraint strap and rear riser strap and fold over the front riser strap. With the fold on the inside and opening toward the outside of the risers route the restrictor strap thru the slit on the top right of the sheath. Fasten the four snaps.

c. Adjust and ensure that the top of each sheath completely covers each set of risers jutting out from the container.

46. PARACHUTE HARNESS SENSING RELEASE UNIT (PHSRU), MXU-746/P AND MXU-747/P.

a. Measure the knurled actuating lever torque as follows:

(1) Hold locking lever in the open position and insert the torque meter with 1/16-in. hex head driver into actuating lever cavity.

(2) Rotate actuating lever to just prior to contact with body. Acceptable torque values are 28 to 50 in-oz. (Figure 136). (QA)

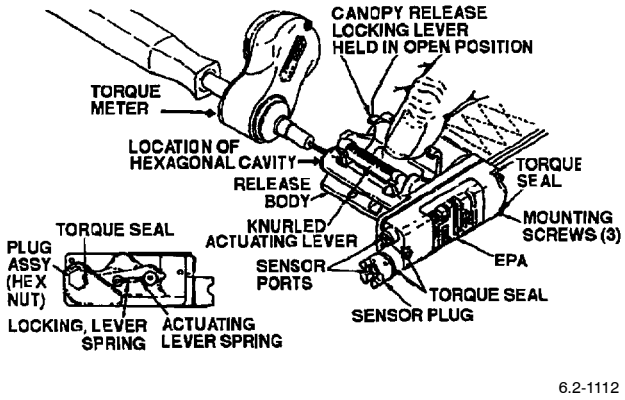


Figure 136. Rotate Actuating Lever

b. Check battery voltage as follows:

(1) Install test leads in multimeter observing proper polarity.

(2) Select VDC and scale exceeding 26 VDC.

CAUTION

Avoid touching the meter probes together when making this test. Firing of the PHSRU may result.

(3) Contact negative (black) probe to sensor plug assembly center conductor. Contact positive (red) probe to EPA sensor center conductor.

(4) Reading of +22.5 volts DC or greater indicates PHSRU is serviceable. (QA)

c. If plug assembly was removed, perform the following:

(1) Forward complete packed parachute assembly to either non-destructive inspection lab or medical facility for X-ray.

(2) From review of X-ray (Figure 137), if plug assembly is suspected or known to be partially or fully recessed, the unit shall have a shear pin integrity check per WP 024 02.

(3) Record inspection on Parachute Record (OPNAV 4790/101).

(4) Attach X-rays to the Parachute Record (OPNAV 4790/101).

(5) If voltage is below +22.5 volts DC, replace battery per WP 024 02.

(6) Record voltage for each EPA in the Local Use Block on the Parachute Record (OPNAV 4790/101).

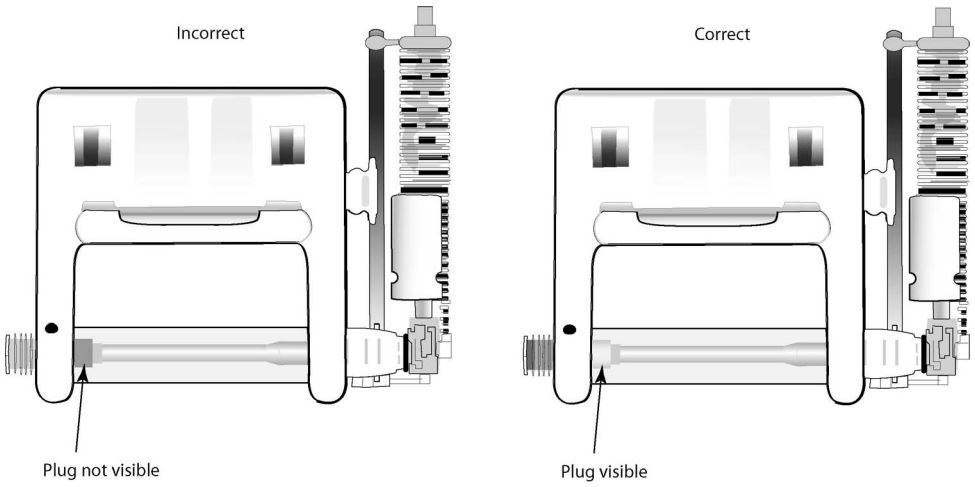


Figure 137. PHSRU X-Ray

47. FINAL CHECKOUT.

a. Account for all packing tools and spreading gun safety pin. (QA)

b. Examine packed parachute for general condition.

c. Close ripcord pin and base plate protector flap.

d. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA)

e. QA inspector shall examine completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

f. QA inspector shall sign Parachute Record (OPNAV 4790/101).

g. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPN DIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

INTERMEDIATE AND DEPOT MAINTENANCE

REPAIR PROCEDURES

NES-12 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 576AS100-37 and 576AS100-38

List of Effective Work Package Pages

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1 thru 25	9						

Reference Material

Common Repairs . . . . . WP 004 00
Intermediate and Depot Maintenance, Maintenance Procedures, Parachute Harness Sensing Release Units . . . . WP 024 02
Intermediate and Depot Maintenance, Original Issue Rigging Procedures,
Parachute Harness Sensing Release Units (PHSRU), MXU-746/P and MXU-747/P . . . . . WP 024 01
Intermediate and Depot Maintenance, Packing Procedures, NES-12 Personnel Parachute Assembly . . . . . WP 019 02
Organizational Repair Procedures, NES-12 Personnel Parachute Assembly . . . . . WP 019 01
Parachute Loft Requirements/Administration . . . . . WP 003 00
Support Equipment . . . . . WP 005 00

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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date

None

1. INTRODUCTION.

a. This work package (WP) contains instructions for the maintenance, repair, replacement and fabrication of various parachute part or subassemblies to ensure that proper items of equipment remain in a ready-for-issue (RFI) status. Selected repairs shall be documented on the Parachute Record. For common repairs refer to WP 004 00.

2. CANOPY ASSEMBLY REPAIRS.

3. REPLACEMENT OF CANOPY ASSEMBLY.

NOTE

For Double "L" Connector Link, refer to Paragraph 47 for disassembly, assembly, and inspection instructions.

a. Remove four-line release rigging from connector links and then remove lanyard from flutes.

WARNING

Safety pin must be installed in spreading gun.

b. Remove spreading gun link yoke and plate assemblies.

c. Remove spreading gun per WP 004 00.

d. Remove connector links from riser loops and cross-connector straps; then reinstall yoke and plate assemblies.

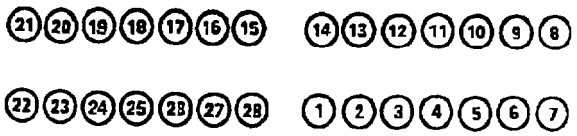
e. Dispose of canopy assembly per supply directives.

f. Lay out replacement canopy assembly and stretch it to its full length on packing table.

g. Attach tension strap hook to canopy vent lines.

h. Locate gore 28 (nameplate gore) and place it uppermost in center of packing table.

i. At skirt hem, separate suspension lines into two equal groups with lines 15 thru 28 on packer's side and lines l thru 14 on helper's side (Figure 1). Grasping each group of lines, walk from skirt hem to connector links removing any dips and twists between two groups.



6.2-5318

Figure 1. Arrangement and Orientation of Suspension Lines on Connector Links

j. Place connector link holding lines 15 thru 21 on top of connector link holding lines 22 thru 28. Place connector link holding lines 8 thru 14 on top of connector link holding lines 1 thru 7. Insert tension hooks into connector links and insert hooks into packing table (Figure 1).

k. Apply tension.

l. Pull vent collar toward canopy and adjust vent hem.

m. Pull vent collar back to its original position.

n. Check suspension line continuity on left side of gore 14. Packer shall grasp line 15 at skirt hem and raise to a sufficient height to ensure line is free of dips and twists. Continue this procedure with lines 16 thru 28 (Figure 1). Helper shall be positioned at connector links to check lines selected by packer.

o. Check suspension line continuity on right side of gore 14. Packer shall grasp line 14 at skirt hem and raise to a sufficient height to ensure line is free of dips and twists. Continue this procedure with lines 13 thru 1 (Figure 1). Helper shall be positioned at connector links to check lines selected by the packer.

p. Inspect four-line release anchor loops for proper attachment to lines 3 and 26. Measure 30 ± 1/2-in. above upper connector link bar. Anchor loops must be attached with 2-in. of zigzag stitching.

q. Continue to inspect canopy assembly per WP 019 02.

r. Record any damage on canopy damage chart WP 003 00.

s. Reattach pilot parachute, internal bridle line and spreading gun retainer cord.

t. Lay out risers and cross-connector straps on packing table.

u. Remove connector links from tension hooks. Remove tension hooks from packing table.

v. Remove connector link yoke and plate assemblies from bottom connector links.

w. While maintaining continuity, slide suspension lines onto a temporary locking pin or rod.

x. Insert bottom connector links thru loop in each cross-connector strap and then thru loops in bottom risers.

CAUTION

Ensure that clove-hitch and half-hitch at ends of suspension lines do not separate during handling.

y. Reinstall suspension lines 3 thru 7 and 26 thru 22 onto connector links.

z. Reattach yoke and plate assemblies to bottom connector links ensuring knurled plate faces up and screwheads face outboard.

aa. Remove connector link yoke and plate assemblies from top connector links.

ab. Insert top connector links thru loop in each cross-connector strap and then thru loops in top risers.

ac. Reattach yoke and plate assemblies to top connector links ensuring knurled portion of plate faces up and screwheads face outboard.

ad. Insert tension hooks into connector links and then apply tension to canopy.

ae. Perform suspension line continuity check as in steps o and p.

NOTE

Top right connector link screwhead will be torqued after attachment of spreading gun firing lanyard.

af. Tighten screws on top left and bottom connector links to a torque value of 20 to 25 in-lbs. (QA)

ag. Apply torque seal to each connector link screwhead.

ah. Reattach spreading gun per WP 004 00.

ai. Mark date placed in service on canopy assembly per WP 004 00. Mark canopy secial number and contract number on assembly label. Make required entries on Parachute Record (OPNAV 4790/101). (QA)

aj. Fabricate four-line release lanyards per WP 004 00.

ak. Attach four-line release lanyards to suspension lines 3 and 26 per WP 004 00.

al. Rig four-line lease lanyards per WP 004 00.

4. REMOVAL AND INSTALLATION OF SUSPENSION LINES FOR PROPER SEQUENCING.

Support Equipment

Part Number	Nomenclature
Refer to WP 005 00	Temporary Locking Pin

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

For Double "L" Connector Link, refer to Paragraph 47 for disassembly, assembly, and inspection instructions.

a. Remove connector link yoke and plate assembly.

b. Slide suspension lines onto a temporary locking pin or rod.

CAUTION

Ensure clove-hitch and half-hitch at ends of suspension lines do not separate during handling.

c. Sequence lines on connector link bar per (Figure 1).

d. Attach yoke and plate assembly to connector link so knurled portion faces up and screwheads face outboard.

e. Check suspension line continuity (Figure 1).

f. Tighten screw on yoke and plate assembly to a torque value of 20 to 25 in-lbs. (QA)

g. Apply torque seal to screwhead.

5. CONTAINER ASSEMBLY REPAIRS.

6. REPLACEMENT OF CLAMP BASE ASSEMBLY AND/OR LOCKING CONE ON CONTAINER TOP FLAP.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Cut and remove stitching retaining base assembly and locking cone from top flap. Remove base assembly and locking cone.

b. If base assembly is to be replaced, remove clamp and screws and retain for reinstallation. If locking cone is to be replaced, leave clamp with ripcord housing/power cable housing attached to base assembly.

c. Using a sufficient length of size 6 thread, doubled and waxed, to complete repair, tie a binder knot 3 to 4-in. from end of thread for tie-off; when stitching is complete.

d. Position replacement base assembly/locking cone in exact location of damaged or missing base assembly/ locking cone. Ensure that ripcord locking pin hole is aligned in same direction as that removed.

e. Start handstitching from inside of container at widest end of base assembly, using a running stitch thru each hole in the base assembly and applicable holes in locking cone. Stitch to last hole in sequence; then stitch back around base assembly to starting hole. Tie off; trim ends 1/2-in. (QA)

7. FABRICATION OF CONTAINER BASE PLATE PROTECTOR FLAP EXTERNAL TAB.

Support Equipment Required

Part Number	Nomenclature
—	Hot Knife

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon, Type I, Class I, IA or 2
MS27981-1B	Snap, Fastener, Button
MS27981-3B	Snap, Fastener, Socket
MS27981-4B	Snap, Fastener, Stud
MS27981-5B	Snap, Fastener, Eyelet
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in

a. Using a hot knife, cut a 3 3/4-in. length of webbing.

b. Fold the webbing and install the snap fasteners, to construct the extender tab (Figure 2).

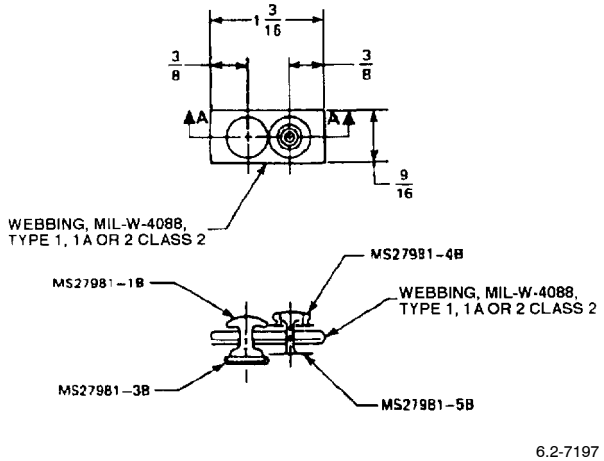


Figure 2. Manufacture of Extender Tab

c. Snap the extender tab onto the top snap fastener of the ripcord base plate protector flap. Lock extender tab to closure flap with one turn of size FF thread, doubled and waxed; tie off (Figure 3).

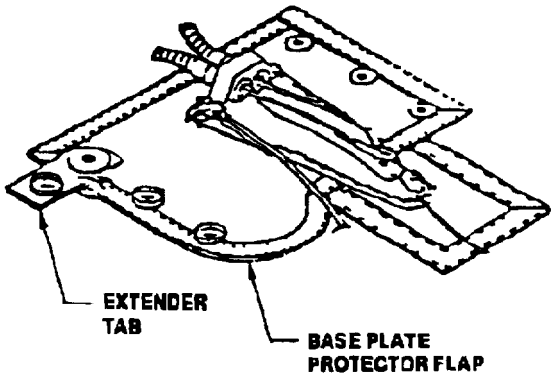


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Figure 3. Installation of Extender Tab

8. REPLACEMENT OF CONTAINER.

Support Equipment Required

Part Number	Nomenclature
—	Hot Knife

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. If installed, remove container protective cover.

b. If serviceable, remove EPC release from container per Paragraph 11.

c. Inspect replacement container per WP 004 00.

WARNING

Do not allow hot nylon drippings or hot ends of nylon webbing to come in contact with skin or clothing.

d. Using a hot knife, make a 3/4-in. slit in top flap (perpendicular to selvage edge) of protector tunnel; cut horizontally opposite buttonhole located on side of container.

e. Using a hot knife, cut open the buttonhole on right side of container for the ripcord release arming cable housing.

f. Install EPC release assembly in container per Paragraph 12.

g. Install container protective cover per Paragraph 10.

h. Mark date placed in service on identification and service life label and complete assembly label marking. Make required entries on Parachute Record (OPNAV 4790/101).

9. INSTALLATION OF SUSPENSION LINE RETAINING BANDS.

CAUTION

Do not use old retaining rubber bands. Only new retaining bands shall be used.

a. Ensure new retaining bands are used. (QA)

b. Install nre suspension line retaining rubber bands (using lark's head knot) on eight inboard retaining band loops located on helper's side of packing table, and on eight inboard retaining loops located on packer's side of table (Figure 4).

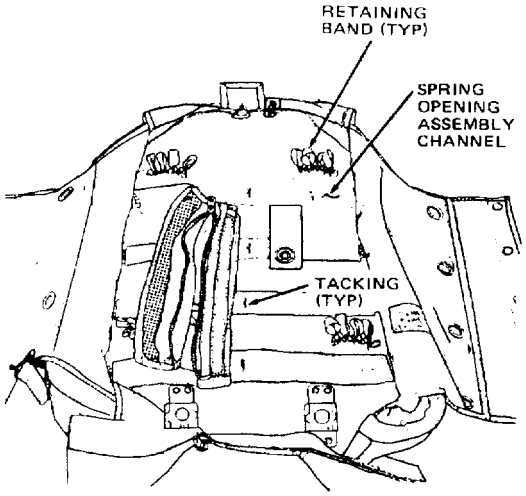

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Figure 4. Installation of Suspension Line Retaining Bands

10. REPLACEMENT OF CONTAINER COVER.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove old protective cover.

b. Pull protective cover over container. Pass spring opening assemblies thru respective slots.

c. Pass kit retention straps thru flaps. Close flaps.

d. Pass ripcord release power cable thru slot in top of cover

e. Secure protective cover by tacking on the four corners and then whipstitching around outer edge of cover. Whip-stitching stitch shall be 1-in. apart, stitch with size of 6 thread, single and waxed; tie off. (QA)

11. REMOVAL OF SERVICEABLE EPC RELEASE.

NOTE

Serviceable EPC releases shall be removed from non-RFI containers and retained for installation in replacement containers.

a. Pull bottom flap back.

b. Open slide fastener which connects inside panel to expose EPC release assembly.

c. Remove four nuts, washers, and screws which secure EPC release assembly in place to container.

d. Remove EPC release from container and inspect outside surface for dirt, cracks, and unbroken torque seal on roundhead screw. If necessary, reapply torque seal to roundhead screw.

e. Tag EPC release RFI and store in a plastic bag.

NOTE

If EPC is found unserviceable after inspection, it shall be scrapped.

12. REPLACEMENT OF EPC RELEASE.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Pull bottom flap back.

b. Open slide fastener which connects inside panel to expose EPC release assembly mounting area.

c. Insert EPC release assembly into container, against installed mounting bracket. Part number will be visible (upward) for proper orientation (Figures 5 and 6).

d. Insert and position retainer plate between EPC release assembly and container. If properly positioned, wide tab of retainer plate will be in line with cable release button hole in container.

e. Position plate on outside of container using a drift or small screwdriver to maintain hole alignment.

f. Insert two mounting screws from outside, thru two top holes, container frame, retainer plate, EPC release assembly, and mounting bracket. Place washers onto these screws and attach nuts finger tight.

g. Insert two remaining mounting screws from outside thru two remaining lower holes in outside plate, container frame, EPC release assembly and mounting bracket. Place washers onto these two screws and attach nuts finger tight.

CAUTION

Overtorque can cause cracking of the container frame.

h. Tighten nuts snugly to a mimum of two threads showing. (QA)

i. Apply torque seal to mounting nuts.

j. Ensure spring opening assemblies are properly routed out thru container openings.

k. Close slide fastener. (QA)

13. MODIFICATION OF EXTERNAL PILOT CHUTE (EPC) RELEASE MECHANISM CAM ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
- - - -	Torque Screwdriver

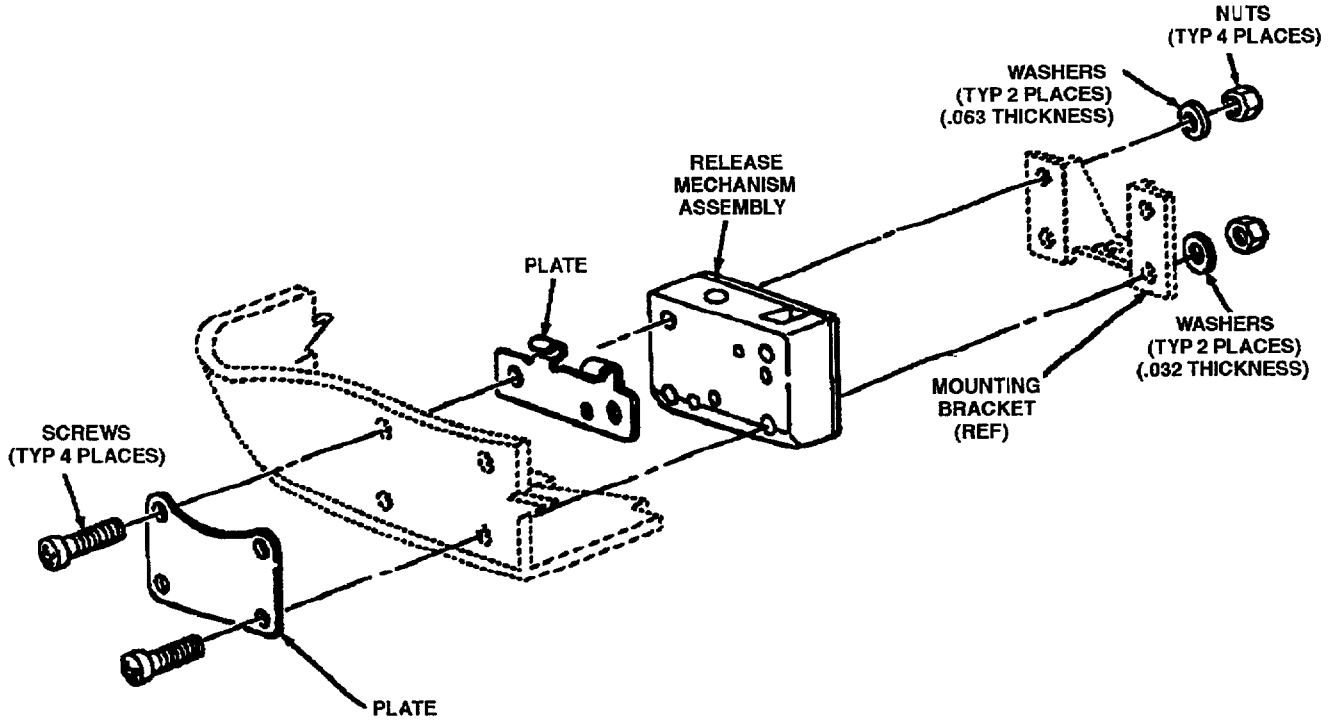

Figure 5. External Pilot Parachute Release Assembly, Exploded View

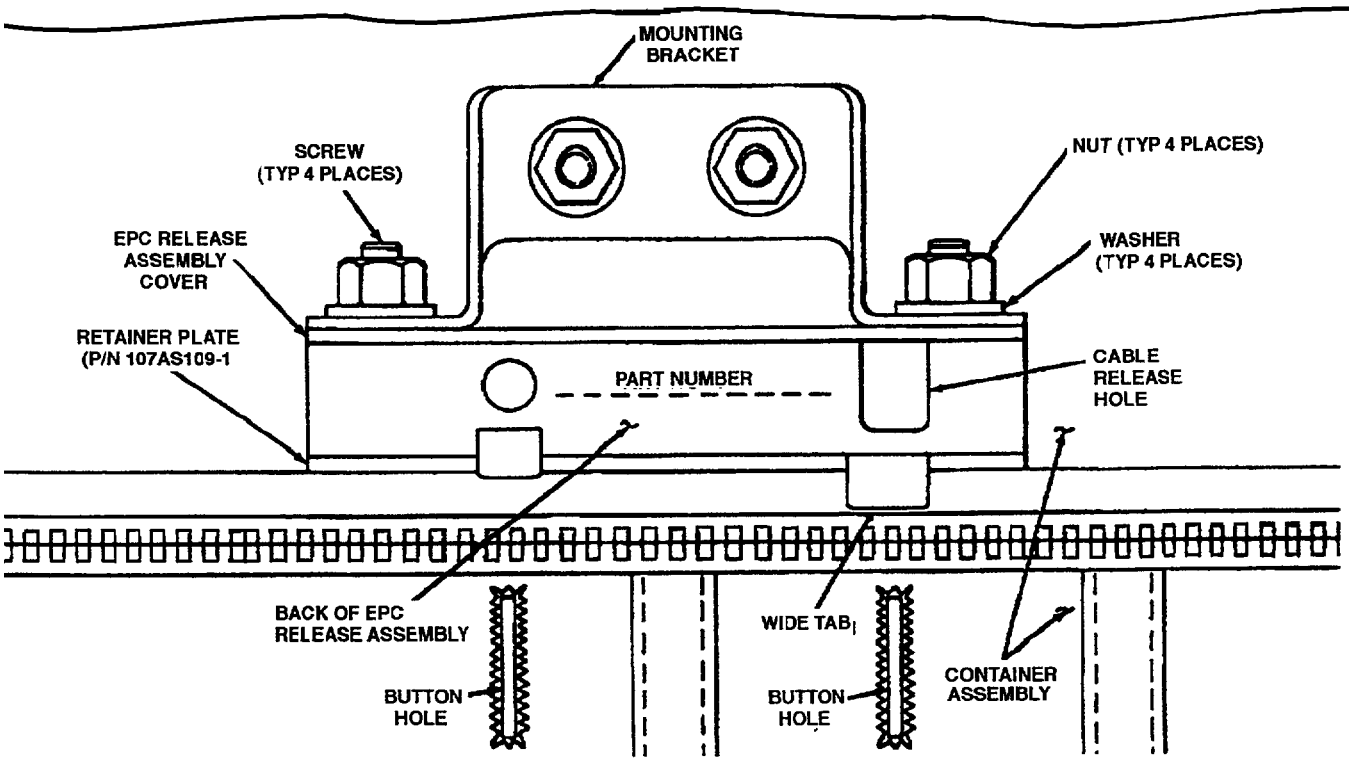

Figure 6. View of EPC Release Assembly Inside Parachute Container

a. Pull bottom flap back.

b. Open slide fastener which connects inside panel and expose EPC release assembly.

c. Remove four nuts, washers and screws holding EPC release assembly to container. Retain attaching hardware (Figure 5).

d. Remove EPC release from container. Inspect outside for dirt, cracks and unbroken torque seal on roundhead screw. (QA)

NOTE

If EPC release is unserviceable, scrap.

e. Remove the two Phillips-head screws from the EPC release assembly.

f. Loosen the roundhead screw approximately 1 1/2 turns. Do not remove screw.

g. Pivot EPC release assembly cover clockwise to expose internal components (Figure 7).

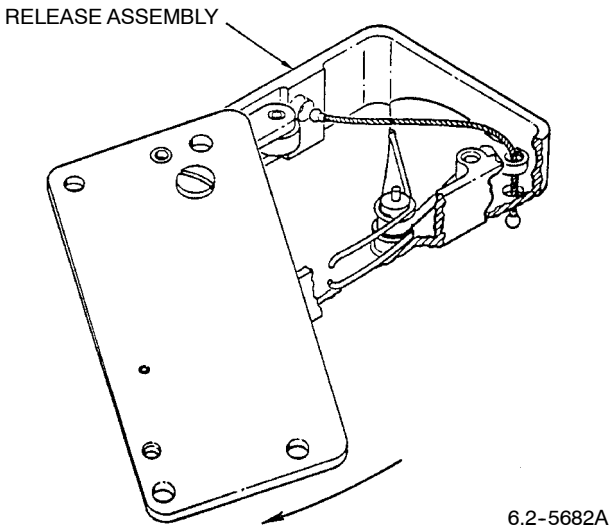

Figure 7. Pivot EPC Release Assembly

h. Remove upper bushing from pin. Do not lose lower bushing on the pin (Figure 8).

i. Remove cable assembly from cam assembly (Figure 8). (QA)

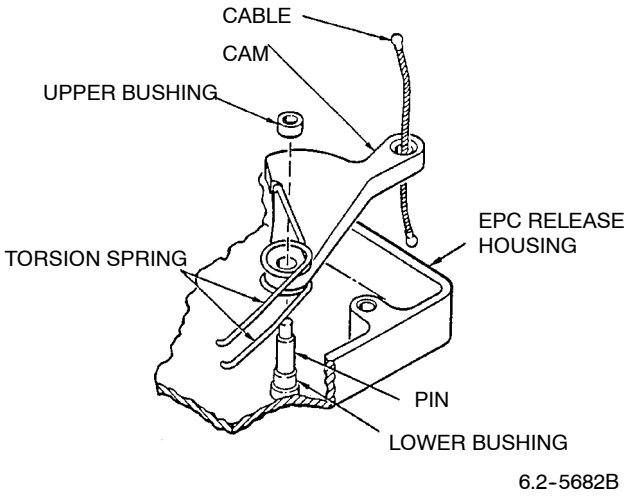

Figure 8. Remove Upper Bushing From Pin

j. Remove torsion spring and cam (Figure 9).

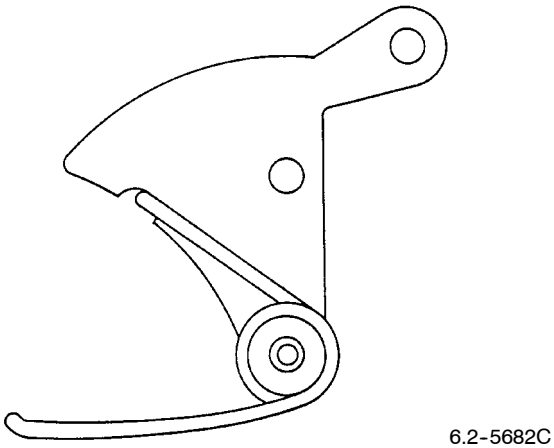

Figure 9. Remove Torsion Spring

k. Remove torsion spring from cam (Figure 10).

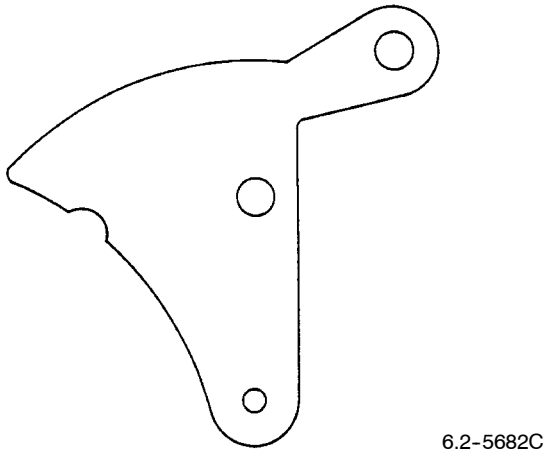

Figure 10. Remove Torsion Spring from Cam

NOTE

The following step should be accomplished in a machine shop.

l. Remove the surface area per Figure 11, to conform with Figure 12. Smooth all rough edges. (QA)

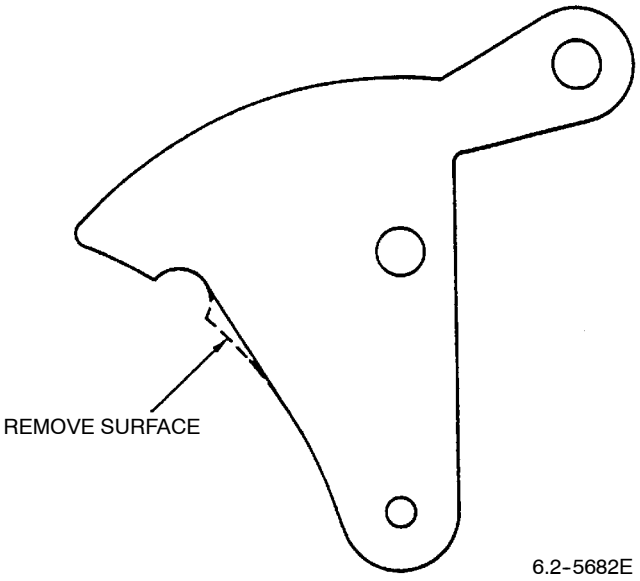

Figure 11. Remove Surface Area

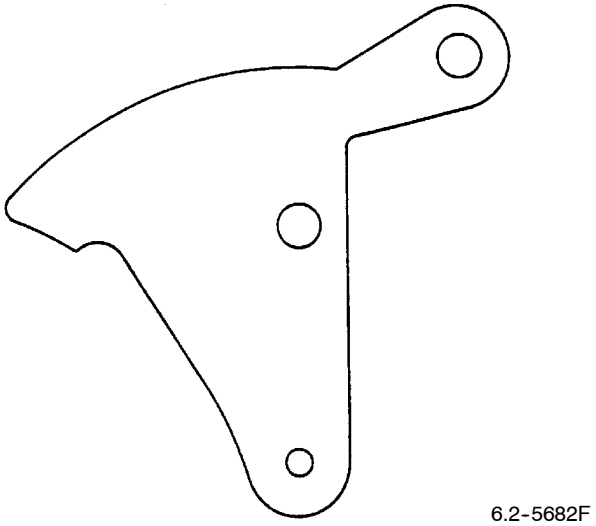

Figure 12. Remove to Conform With

m. Position the modified cam between the two coils of the torsion spring (Figure 13).

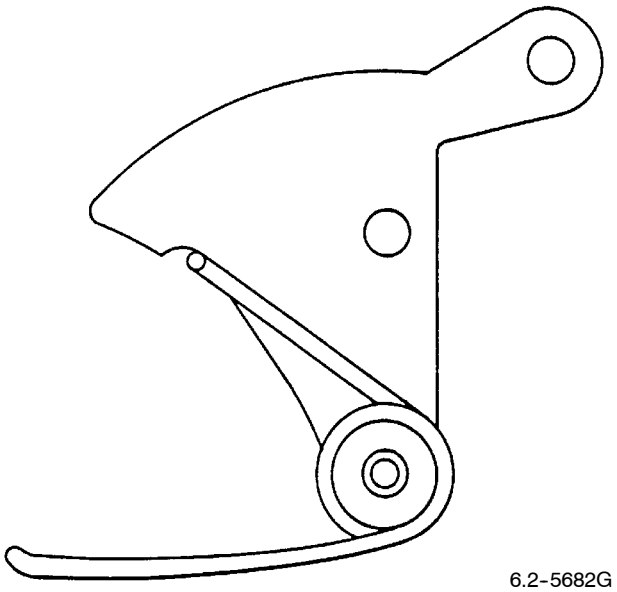

Figure 13. Positioning of Modified Cam

n. Place the cam assembly on the pin with the torsion spring (Figure 14).

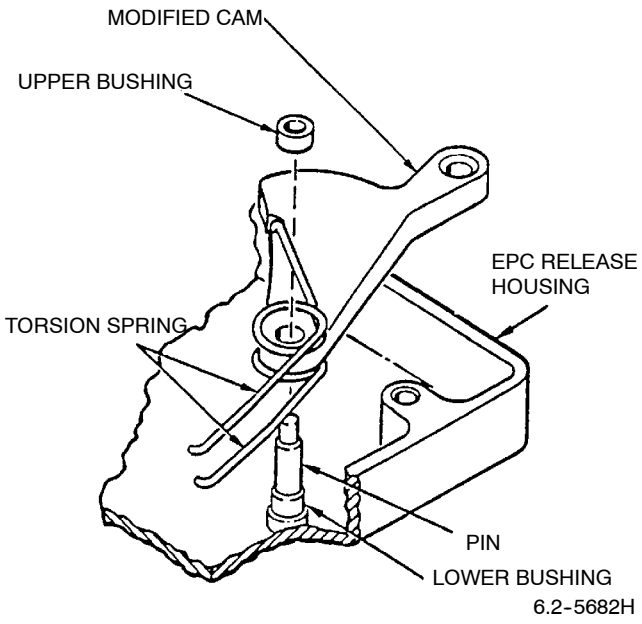

Figure 14. Placement of Cam on the Pin

o. Place upper bushing on pin.

p. Pass the small end of the cable assembly thru the lower right-hand hole in the EPC release assembly housing and thru the hole in the lever arm of the cam assembly. Pass balance of cable thru opening on back of housing (Figure 15). (QA)

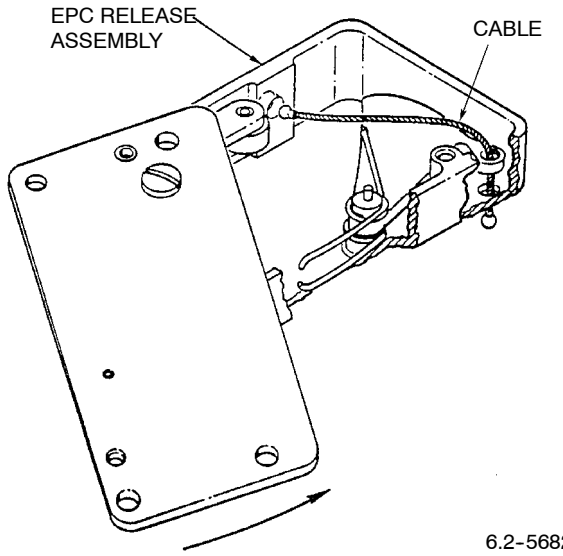

Figure 15. Pass Small End of Cable thru Lower Right Hand Hole

q. Pivot cover counter-clockwise to closed position.

r. Install the Phillips-head screws (2) and tighten.

s. Torque the round-head screw to 8 ± 1 in-lbs. Use torque screw driver. (QA)

t. Apply torque seal to round-head screw slot.

u. Mark out existing part number on EPC release assembly and ink stamp new part number on top of release assembly. (QA)

v. Reidentify container, and parachute assembly (if not previously accomplished).

w. Make requred entries on Parachute Record (OPNAV 4790/101).

14. REPLACEMENT OF SPRING OPENING ASSEMBLY TACKINGS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove loose or broken tacking.

b. With hooks facing up, center spring opening assembly in container channel, leaving it in a relaxed state.

c. Tack spring opening assembly to channel in center of container with one turn of size 6 thread, doubled and waxed; tie off (Figure 16).

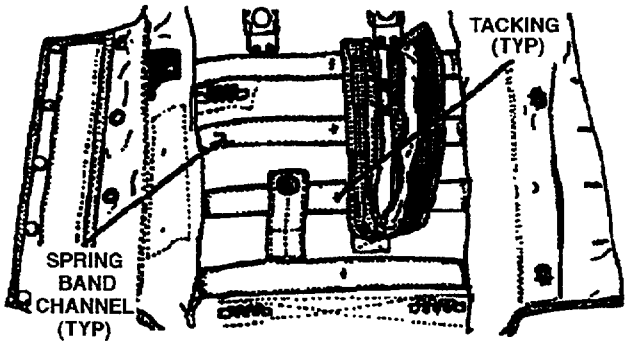

Figure 16. Replacement of Spring Opening Assembly Tackings

15. REPLACEMENT OF SIDE FLAP SPRING OPENING ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Parachute assembly container must be open with canopy and lines removed.

a. Measure length of replacement spring opening assembly. Required length is 21 3/8 ± 1/4-in. when measured with no tension applied from end of one hook to end of other hook.

b. Inspect spring opening assembly per WP 019 02.

c. Completely remove tacking.

d. Attach replacement spring opening assembly, with hook facing up, to hook of defective spring, and at the same time, pull replacement spring assembly thru channel.

e. Center replacement spring opening assembly in container leaving it in a relaxed state.

f. Tack replacement spring opening assembly per Paragraph 14. (QA)

16. REPLACEMENT OF BOTTOM FLAP SPRING OPENING ASSEMBLY.

a. Measure length of replacement spring opening assembly. Required length is 4 7/8 ±1/8-in. when measured with no tension applied from end of one hook to end of other hook.

b. Inspect spring opening assembly per WP 019 02.

c. Remove defective spring opening assembly.

d. Attach hook of replacement spring opening assembly opposite end tab to eye on container frame with hook facing down. Crimp hook to eye.

e. Attach remaining hook to corresponding eye on container end flap at proper point during packing.

17. FABRICATION OF EPC BRIDLE PROTECTOR FLAP.

Materials Required

Specification or Part Number	Nomenclature
PIA-T-5038	Tape, Nylon Reinforcing, Type IV, Class I or IA
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

a. Remove parachute canopy from container during repack of the parachute assembly, remove the top and bottom external pilot chute (EPC) bridle protector flaps by carefully removing the old stitching attaching the flaps to the container. Using a hot knife, cut two 11 1/2-in. and one 23-in. length of nylon tape.

b. Mark the locations from the spring opening band channels on the 23-in. length of tape. Sew the two 11 1/2-in. lengths to the 23-in. length with size E thread (Figure 17).

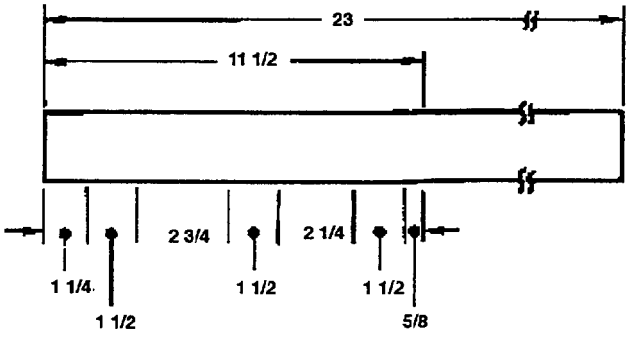

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Figure 17. Mark Locations for Spring Opening Band Channels

c. Fold the free end of the 23-in. tape back under itself so that it is even with the opposite end. Sew the ends together with size E thread (Figure 18).

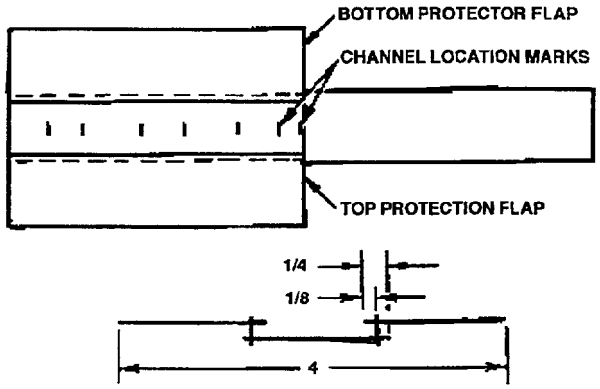

Figure 18. Fold Free End 6.2-7175

d. Set down the tape between the channels in a box X stitch pattern with size E thread (Figure 19).

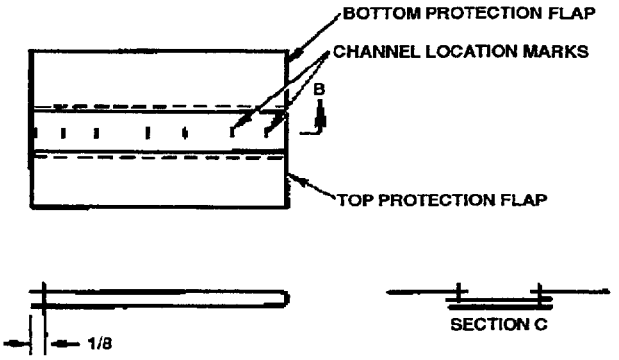

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Figure 19. Set Down Tape Between Channels

e. Using a hot knife, cut a 1 1/4-in. slit 3 1/4-in. from the right-hand edge of the top protector flap to route the EPC static line (Figure 20).

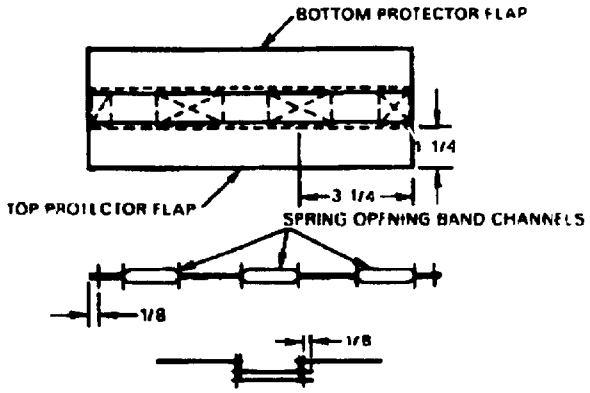

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Figure 20. Using a Hot Knife Cut Slit

f. Install new EPC bridle protector flap 3/16-in. below EPC pocket by routing spring opening bands thru the channels on bottom of protector flap. Start stitching with an overhand knot, secure protector flap in place by sewing the outer edge of the flap between the channels and the end of the container binding with size FF thread, single and waxed. Using a whip stitch pattern, tie off with an overhand knot (Figure 21). (QA)

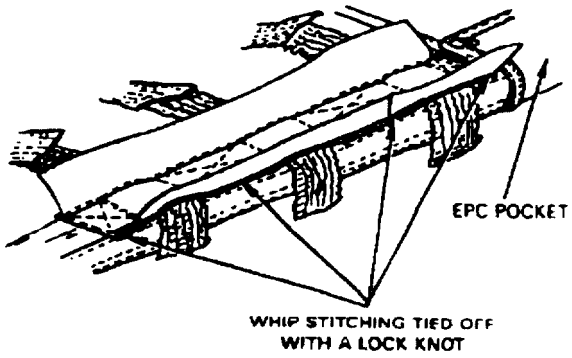

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Figure 21. Install New EPC

18. INSTALLATION OF AUTOMATIC PARACHUTE RIPCORD RELEASE POWER AND ARMING CABLE HOUSING IN CONTAINER.

a. Route end of arming cable housing thru housing port located in right side of release pocket and thru buttonhole located on right side of container.

b. Insert power cable housing thru buttonhole in top end of container (Figure 22).

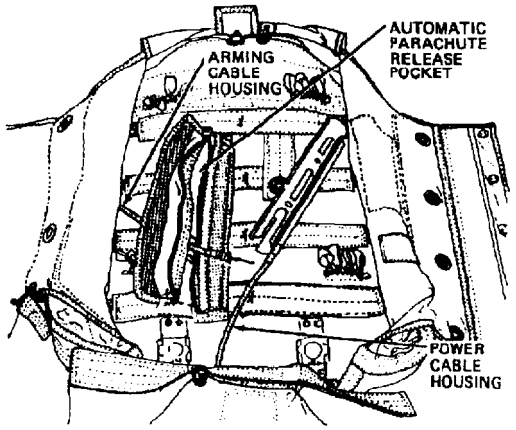

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Figure 22. Installation of Automatic Parachute Ripcord Release Power and Arming Cable Housings in container

CAUTION

Do not use old retaining rubber bands. Only new retaining rubber bands shall be used.

c. Ensure new retaining rubber bands are used. (QA)

19. CROSS-CONNECTOR STRAPS.

20. GENERAL.

a. Repair of cross-connector straps is limited to cleaning of contaminated areas. Replace cross-connector straps if any other damage exists that may affect the safe operation of the parachute assembly.

21. REPLACEMENT OF CROSS-CONNECTOR STRAPS.

Support Equipment Required

Part Number	Nomenclature
—	Torque Screwdriver

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

For Double "L" Connector Link, refer to Paragraph 47 for disassembly, assembly, and inspection instructions.

a. Remove connector link yoke and plate assemblies.

b. Remove connector links from riser loops and then remove connector straps.

c. Inspect replacement cross-connector straps for contamination, cuts, fraying, burns, loose or broken stitching and proper length 16 ± 1/4-in.

d. Insert connector links thru loop in each end of connector strap and then thru loop in riser.

e. Reattach yoke and plate assemblies to connector links ensuring knurled plate faces up and screwheads face outboard.

NOTE

Top right connector link will be torqued after attachment of spreading gun firing lanyard.

f. Tighten screws on top left and bottom connector links to a torque value of 20 to 25 in-lbs. (QA)

g. Apply torque seal to each torqued connector link screwhead.

h. Mark date placed in service on identification and service life label. Make required entries on Parachute Record (OPNAV 4790/101). (QA)

22. DEPLOYMENT BAG ASSEMBLY REPAIRS.

a. Repair of the deployment bag assembly is limited to the following:

(1) Cleaning of contaminated areas.

(2) Repair of loose or broken stitching.

b. Replace deployment bag assembly for any of the following:

(1) Expiration of service/total life.

(2) Damaged reefing ring.

(3) Cut or frayed static line and/or deployment bag.

23. REPLACEMENT OF DEPLOYMENT BAG ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
DPP-50	Scale, Spring

a. Inspect replacement deployment bag assembly per WP 019 02.

b. Measure length of static line. Place static line under 5 lbs. tension and measure length from edge of bag at attachment points to end of static line. Length shall be 110 ± 4-in.

c. Mark date placed in service on deployment bag. Make proper entries on Parachute Record (OPNAV 4790/101).

d. Replace deployment bag at appropriate point in packing procedures.

24. REPAIR OF DEPLOYMENT BAG ASSEMBLY LOOSE OR BROKEN STITCHING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Trim off any loose thread ends.

b. Machine stitch over loose or broken stitching on original stitch line using type 301, type 308 stitching as applicable per WP 004 00. New stitch shall begin and extend 3/4-in. beyond affected area.

25. EXTERNAL PILOT PARACHUTE (EPC) REPAIRS AND FABRICATIONS.

a. Repair of the external pilot parachute is limited to the following:

(1) Cleaning contaminated areas.

(2) Replacement of loose or broken tackings.

(3) Replacement of shear link chafing webbing.

b. Replace the external pilot parachute for any of the following:

(1) Service/total life has expired per WP 019 02.

(2) Holes, tears, seam separations, and loose or broken stitching (yarn separation is acceptable) that may affect the safe operation of the parachute assembly.

(3) Damaged shear link/cable.

(4) Damaged release pin.

26. REPLACEMENT OF EPC TRI-MODE STAGING TACKINGS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size A, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove loose or broken tacking.

b. Tacking A and A-A (Figure 23). Pass one turn of size A thread, single and waxed, thru loops of four suspension lines and tie loops together.

c. Tacking B and B-B (Figure 23). Pass one turn of size A thread, single and waxed, thru loops of four suspension lines and tie loops together.

d. Tackings C (Figure 23). Lay bridle cords together with no slack. Pass one turn of size A thread, single and waxed, thru center of cords and tie off.

e. Tackings D (Figure 23). Loops formed when making per step d, above tackings shall be stabilized by tacking end of each loop to adjacent bridle with one turn of size A thread, single and waxed; tie off.

27. FABRICATION AND INSTALLATION OF SHEAR LINK CHAFING WEBBING.

Support Equipment Required

Part Number	Nomenclature
—	Awl

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
PIA-W-4088	Webbing, Nylon, Type VI, Class 1,1A or 2 1 23/32-in. Width

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

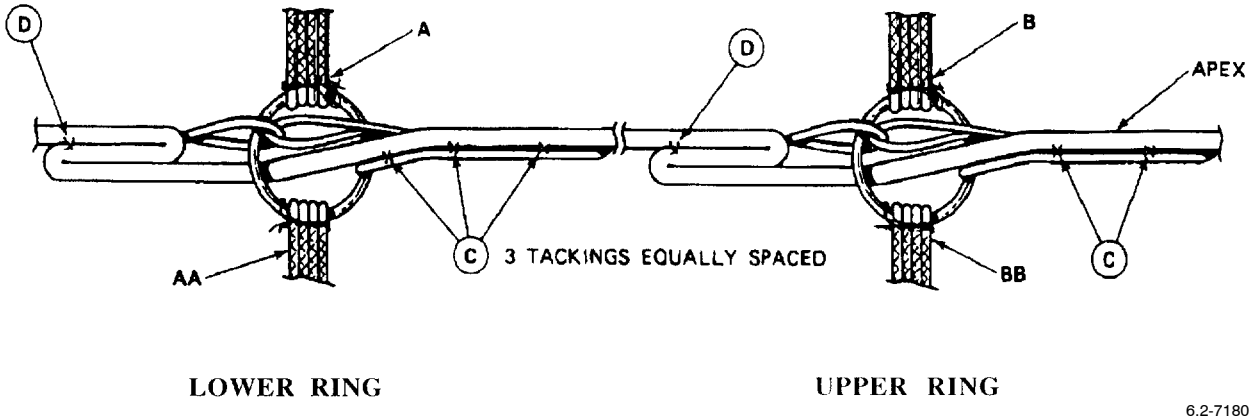

Figure 23. EPC Trimode Staging Tackings Replacement

a. Cut one 6 5/8-in. piece of Type VI nylon webbing. Sear ends to prevent raveling.

b. Measure and mark webbing 1 3/4-in. from each end as shown. Using an awl, separate weave of webbing at markings until a hole of about 3/16-in. is formed (Figure 24).

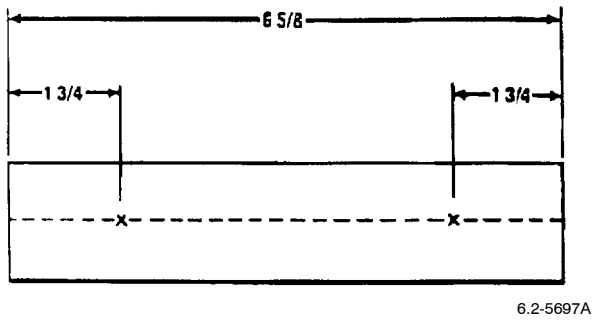

Figure 24. Measure and Mark Webbing

c. Route shear cable thru one of holes formed in steps b (Figure 25).

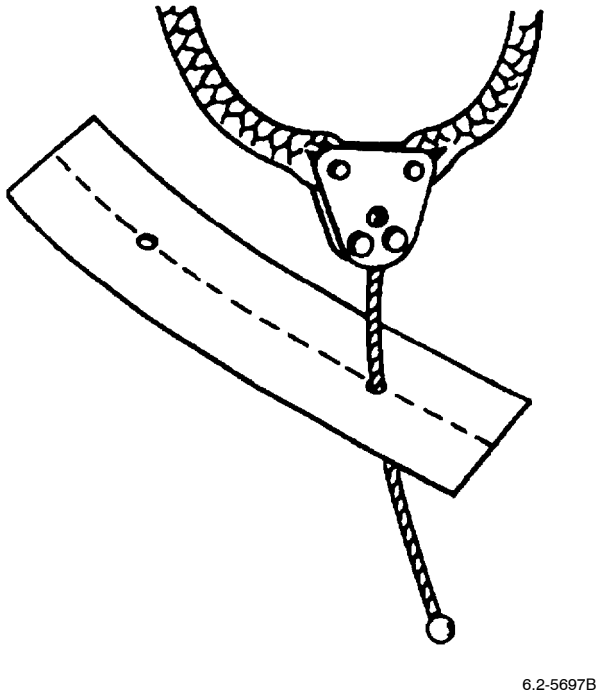

Figure 25. Route Shear Cable

d. Form fold on end of webbing and position on link to fill void between upper and lower rivets. Route free end of webbing between bridles and around shear link. Route shear cable thru remaining hole of webbing formed in per step b (Figure 26).

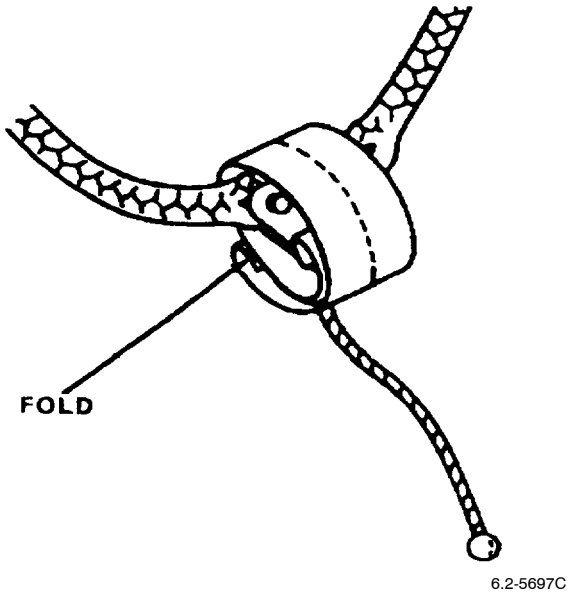

Figure 26. Form Fold End of Webbing

e. Pull cable taut; continue to wrap webbing around link and form fold on end of webbing to fill void between upper and lower rivets of reverse side of link.

f. Tack six plies of webbing with two turns of size 6 thread, single and waxed at each edge of webbing. Tie off (Figure 27).

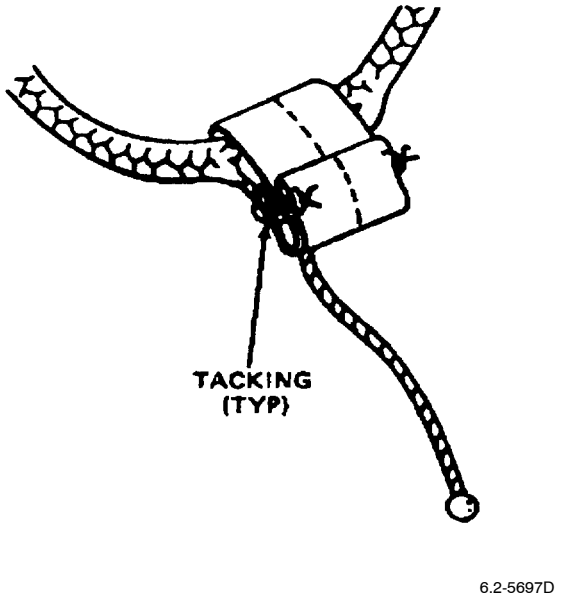

Figure 27. Tack Six Piles of Webbing

28. REPLACEMENT OF SHEAR LINK CHAFING TACKINGS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove loose or broken tacking.

b. Tack webbing per Figure 27.

29. REPLACEMENT OF EXTERNAL PILOT PARACHUTE.

a. Inspect replacement external pilot parachute per WP 019 02.

b. Mark date placed in service on nameplate gore.

c. Replace external pilot parachute at proper place during packing procedures.

d. Record date on Parachute Record (OPNAV 4790/101).

30. PARACHUTE HARNESS SENSING RELEASE UNITS INSTALLATION.

a. Install per WP 024 01 and WP 024 02.

31. PILOT PARACHUTE AND INTERNAL BRIDLE LINE REPAIRS.

a. Repair of the pilot parachute and/or internal bridle line is limited to the following:

(1) Cleaning of contaminated areas.

(2) Replacement of loose or broken tacking.

b. Replace plot parachute and/or connector strap for any of the following:

(1) Service/life has expired per WP 019 02.

(2) Holes, tears, seam separations and loose or broken stitching (yarn separation is acceptable) that may affect the safe operation of the parachute assembly.

(3) Pilot parachute spring is bent or broken.

(4) Pilot parachute locking cone or grommet is loose or damaged.

(5) Internal bridle line finished length is incorrect.

32. REPLACEMENT OF INTERNAL BRIDLE LINE.

Support Equipment Required

Part Number	Nomenclature
DPP-50	Scale, Spring

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Inspect replacement bridle line per WP 019 02.

b. Place bridle line under 10 lb. tension and measure unattached length. Proper length is 40 $\pm$ 1/2-in.

c. Remove tacking on Lark's head knot at canopy apex lines.

d. Remove bridle line and pilot parachute from apex lines.

e. Remove bridle line from pilot parachute loop.

f. Pass small loop end of internal bridle thru loop in pilot parachute. Form a Lark's head knot by passing large loop end of bridle thru small loop and pulling tight.

g. Count 14 vent line in sequence. Pass large loop end of bridle line around the 14 lines and thru spreading gun retainer cord.

h. Pass pilot parachute thru large loop of bridle line; pull tight and form a Lark's head knot.

i. Tack Lark's head knot at canopy apex with two turns of size 6 thread, single and waxed; tie off.

j. Mark date placed in service on bridle line. Make required entries on Parachute Record (OPNAV 4790/101).

33. REPLACEMENT OF LOOSE OR BROKEN TACKING PILOT PARACHUTE (PLATE ASSEMBLY).

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove broken tacking, or completely remove loose tacking.

NOTE

Plate assembly is attached at base of coil spring.

b. Locate the four holes in plate assembly within pilot parachute fabric.

c. Tack thru holes with two turns of size 6 thread, doubled and waxed; tie off.

34. REPLACEMENT OF LOOSE OR BROKEN TACKING ON PILOT PARACHUTE CONNECTOR STRAP.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove thread from broken tacking or completely remove loose tacking.

b. Pull Lark's head knot tight.

c. Tack Lark's head knot at canopy apex with two turns of size 6 thread, single and waxed; tie off.

35. REPLACEMENT OF OVERRIDE DISCONNECT HOUSING TACKINGS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove loose or broken tacking(s).

b. Tack housing in two places at grooved end to bridle with two turns of size 6 thread, doubled and waxed; tie off (Figure 28).

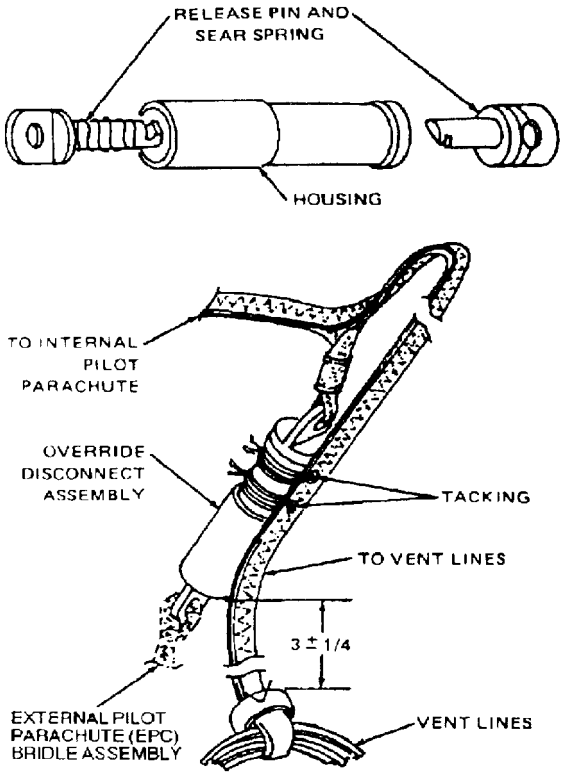

Figure 28. Replacement of Override Disconnect Housing Tackings

36. REPLACEMENT OF PILOT PARACHUTE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Inspect replacement pilot parachute per WP 019 02.

b. Remove tackings at Lark's head knot at canopy apex lines.

c. Remove bridle line and pilot parachute from apex lines.

d. Remove bridle line from pilot parachute loop.

e. Pass small loop end of bridle line thru loop in replacement pilot parachute. Form a Lark's head knot by passing large loop end of bridle thru small loop and pulling right.

f. Pass large loop of bridle line around apex lines and thru spreading gun retainer cord.

g. Pass pilot parachute thru large loop of bridle line; pull tight and form a Lark's head knot.

h. Tack Lark's head knot at canopy apex with two turns of size 6 thread, single and waxed; tie off.

i. Mark date placed in service on pilot parachute. Make required entries on Parachute Record (OPNAV 4790/101).

37. REPLACEMENT OF TRI-STAGE PARACHUTE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Position override disconnect housing on bridle line at a point 3 ± 1/4-in. above knot at canopy vent (Figure 28).

b. With larger diameter opening facing vent lines, tack housing to bridle line at two places with two turns of size 6 thread, doubled and waxed; tie off.

c. Fabricate and install EPC shear link chafing webbing per Paragraph 27.

d. Insert release pin and spring attached to external pilot parachute into wide end of override disconnect housing.

e. Push release pin into housing using a temporary locking pin until release pin protrudes from opposite end. Engaged sear on bridle line with release pin and then release tension on spring allowing sear and release pin to become fully engaged inside housing (Figure 28).

38. RIPCORD ASSEMBLY REPAIR.

39. REPLACEMENT OF RIPCORD ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove ripcord housing and housing flute tackings.

b. Remove ripcord assembly from ripcord grip retainer and housing flute.

c. Inspect replacement ripcord assembly per WP 019 02.

d. Pass ripcord housing thru flute on riser and then insert ripcord grip into ripcord retainer (Figure 29).

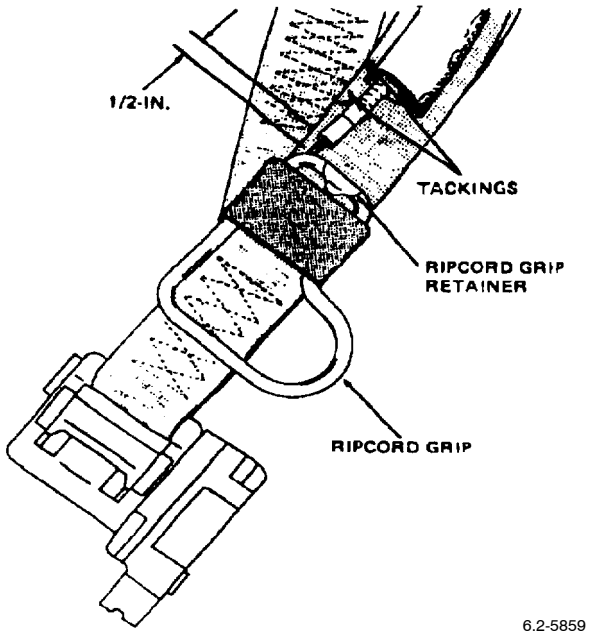

Figure 29. Ripcord Assembly Replacement

e. Position end of ripcord housing 1/2-in. from ripcord retainer and then tack to riser with three turns of size 6 thread, doubled and waxed. Tacking shall pass around grooved part of housing next to and snug against ferrule; tie off (Figure 29).

f. Tack edge of flute hem to inboard side of riser with one turn of size FF thread, single and waxed; tie off (Figure 29).

40. RISER ASSEMBLY REPAIRS.

a. Repair of risers is limited to the following:

(1) Cleaning of contaminated areas.

(2) Repair of stitching if less than three stitches are loose or broken.

(3) Repair of loose or broken stitching on ripcord housing flute.

(4) Removal/repair/replacement of four-line release flutes.

(5) Removal/replacement of riser protection sheath.

b. Replace risers for any of the following:

(1) Service/total life has expired per WP 019 02.

(2) Cuts, tears, or holes in webbing.

(3) Loose or broken stitching in excess of three stitches.

(4) Twists, fading, fusing, fraying, burns, contamination, and abrasion.

(5) Damaged roller fittings, retainer fittings, and ripcord housing flute.

41. FABRICATION OF RETAINER CORD.

Support Equipment Required

Part Number	Nomenclature
—	Bodkin
DPP-50	Spring, Scale

Materials Required

Specification or Part Number	Nomenclature
MIL-C-7515	Cord, Nylon, Type V
TT-I-1795	Ink, Red, Waterproof
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

a. Place nylon cord under 10 ± 2 lb. tension. Mark and cut as shown in Figure 30. Use red ink for marking.

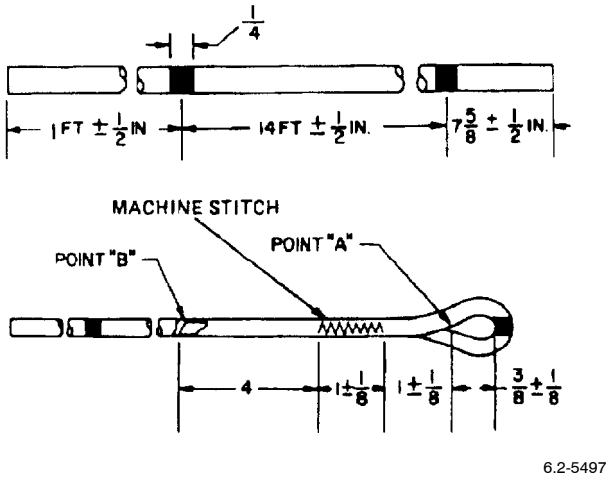

Figure 30. Retainer Cord Fabrication

b. Form a 3/8-in. loop in line (at line end where red mark is 7 5/8-in. from end).

c. Insert bodkin at point B and exit bodkin at point A (Figure 30). Pull cord thru point A and out point B. Cut excess at a 45 degree angle and work line smooth on inside of casing.

d. Zig zag machine stitch cord for a length of 1-in. as shown in Figure 30.

42. REPAIR OF RIPCORD GRIP RETAINER.

a. Repair of grip retainer and cover is limited to:

(1) Replacement of defective grip retainer.

(2) Replacement of stitching securing grip retainer to riser assembly.

(3) Replacement of ripcord grip retainer cover.

b. Repair or replace ripcord grip retainer for any of the following:

(1) Grip retainer is corroded, bent, or cracked, where that damage may affect the safe operation of the parachute assembly.

(2) Stitching securing grip retainer to riser assembly is loose or missing.

c. Repair or replace grip retainer cover for any of the following:

(1) Cover loose or deteriorated.

(2) Tackings securing cover to riser assembly are loose or missing.

43. REPLACEMENT OF RIPCORD GRIP RETAINER.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove stitching securing grip retainer cover to riser assembly and slide cover back.

b. Remove stitching securing ripcord grip retainer to webbing riser.

c. Measure 3 1/4 ± 1/8-in. from end of riser assembly and mark for reference.

d. Place grip retainer on riser assembly with lower edge positioned at 3 1/4-in. reference mark.

e. Handstitch grip retainer to riser assembly using a running stitch with size 6 thread, doubled and waxed. Start handstitch by placing an overhand knot 5-in. from bitter end of thread, starting and ending underside of riser assembly at the same hole location; tie off. Repeat procedure for remaining set of holes (Figure 31). (QA)

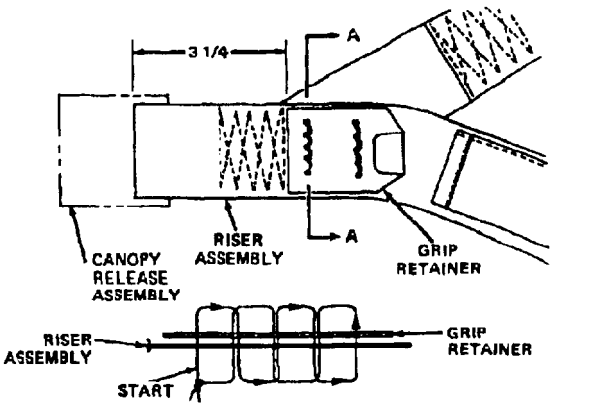

Figure 31. Ripcord Grip Retainer Replacement

f. Perform ripcord grip retainer test per WP 019 02.

g. Reinstall grip retainer cover by positioning cover over grip retainer with lower edges aligned.

h. Tack retainer cover to lower riser in four places with size FF thread, doubled and waxed; tie off (Figure 32). (QA)

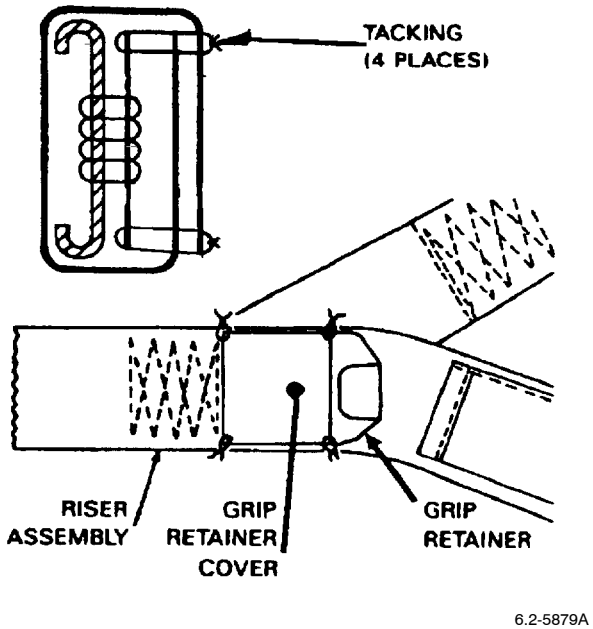

Figure 32. Ripcord Grip Retainer Cover Replacement

44. REPLACEMENT OF RIPCORD GRIP RETAINER COVER.

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon, Type XII, 1 3/4-in. Wide Class 1, 1A or 2
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove defective or loose retainer cover.

b. Cut a 7-in. length of webbing.

c. Sear both ends of the webbing to prevent fraying.

d. Mark 1 3/4-in. from bitter ends.

NOTE

Do not wrap cover around harness restraint strap.

e. Wrap webbing around riser assembly overlapping the 1 3/4-in. mark (Figure 32).

f. Tack retainer cover to uppermost portion of riser in four places with size FF thread, doubled and waxed; tie off (Figure 32). (QA)

45. REPLACEMENT OF RISER ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
—	Line Stowage Aid
—	Temporary Locking Pin
—	Torque Screwdriver

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

For Double "L" Connector Link, refer to Paragraph 47 for disassembly, assembly, and inspection instructions.

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove ripcord assembly from riser.

b. Remove parachute harness sensing release units from risers per WP 024 02.

c. Remove four-line release tackings from flutes and carefully remove release lanyards from flutes. Insert temporary locking pin into last four-line release daisy chain.

d. Remove connector link yoke and plate assemblies.

e. Slide riser loops off connector link bar.

f. Reinstall yoke and plate assemblies.

g. Ensuring suspension line continuity is maintained insert connector links onto tension hooks (Figure 1).

h. Inspect replacement risers per WP 019 02.

i. Lay out replacement riser assembly and connector strap on packing table with riser strap loops towards connector links and ripcord assembly facing up on helper's side (Figure 33).

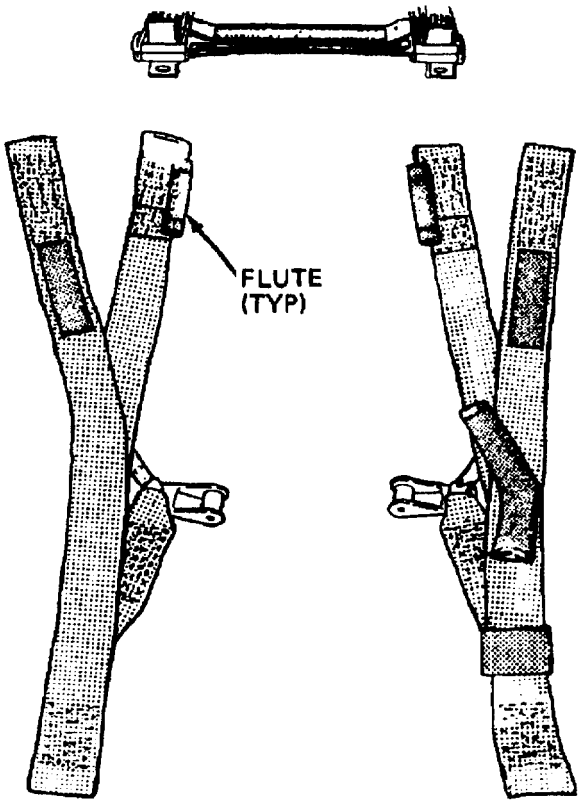

Figure 33. Replacement of Riser Assembly

j. Remove connector link yoke and plate assemblies from bottom connector links.

k. Slide suspension lines onto a temporary locking pin or rod.

l. Insert bottom connector links into bottom riser loops.

WARNING

Ensure that suspension line continuity is maintained at all times. Also ensure that the clove-hitch and half-hitch knots at the ends of the suspension lines have not separated during handling.

m. Reinstall yoke and plate assemblies to bottom connector links ensuring knurled plate faces up and screwheads face outboard.

n. Remove connector link yoke and plate assemblies from top connector links.

o. Insert top connector links into top riser loops.

p. Reinstall yoke and plate assemblies to top connector links ensuring knurled plate faces up and screwheads face outboard.

q. Check suspension line continuity (Figure 1). (QA)

NOTE

Top right connector link will be torqued after attachment of spreading gun firing lanyard.

r. Tighten screws on top left and bottom connector links to a torque value of 20 to 25 in-lbs. (QA)

s. Apply torque seal to each torqued connector link screwhead.

t. Using a line stowage aid or equal tool, insert and pull release lanyard pull loops thru proper lanyard flute. Pull loops should extend completely thru flute with top of loops butted up against lower edge of flute.

u. Remove temporary locking pins from last four-line release daisy chains.

v. Tack release lanyard to flute with one turn of size FF thread, single and waxed. Tacking shall pass thru outer cover of flute, thru the release lanyard, thru and around last daisy chain loop and then back thru flute; tie off per WP 004 00.

w. With lanyard pull loop fully extended, tack risers together. Tack at center of riser and 1/2-in. above bottom of lanyard pull loop with one turn of size FF thread, single and waxed; tie off per WP 004 00. (QA)

x. Reinstall parachute harness sensing release units WP 024 02.

y. Reinstall ripcord assembly per Paragraph 39.

z. Mark date placed in service on identification and service life label. Make required entries on Parachute Record (OPNAV 4790/101). (QA)

46. REPLACEMENT OF RISER PROTECTION SHEATH.

a. Install the protection sheath on the riser by folding it over both webbing layers of the left.

b. The sheath should not cover 1 23/32-in. wide harness strap attached to the roller fitting.

c. Route the 9/16-in. wide retention strap and roller fitting assembly thru the side opening on the top of each sheath.

d. The ripcord cable housing and flute should also pass thru this side opening.

e. Secure each of the snap fasteners and ensure that the top of each sheath completely covers the risers as they emerge from the parachute container.

f. Repeat for right riser.

g. Ensure that each protection sheath is correctly installed over the riser. (QA)

47. REPLACEMENT OF MS22021-1 CONNECTOR LINK (SPEED LINK) WITH MS22002-1 (DOUBLE "L") CONNECTOR LINK.

NOTE

New canopies received from supply may have the Double 'L" Connector Links installed.

Instructions for attachment of Firing Lanyards, PDVL's, Four-Line Release Systems, etc., will remain the same and will be contained in the application parachute manual.

Materials Required

Specification or Nomenclature	Part Number
MS22002-1	Connector Link (Double "L")
F-900 Torque Seal (Color Optional)	Sealing Compound
—	Torque Screwdriver
MIL-S-43243 (See WP 002 00)	Separator, Link or Equivalent

a. Remove yoke and plate assembly from parachute connector link, P/N MS22021-1.

b. Slide suspension lines from connector link onto a temporary locking pin or rod.

c. Remove cross-connector strap.

d. Slide riser loop off connector link bar and dispose of connector link, P/N MS22021-1.

e. Remove screws from the double "L" connector link, P/N MS22002-1 and separate the two halves of the link.

f. It may be necessary to use a separator device to separate the two halves of the connector link if a separator device is not available, loosen both screws of the connector link by four turns. Place a long bar between the connector link bars to hold the link in place. Using a rawhide or rubber mallet, tap one screw head and then the other screw head several times until the connector link bars separate.

g. Install suspension lines on the new connector link bar. The short leg of the "L" connector is to be positioned to the inside (Figure 34).

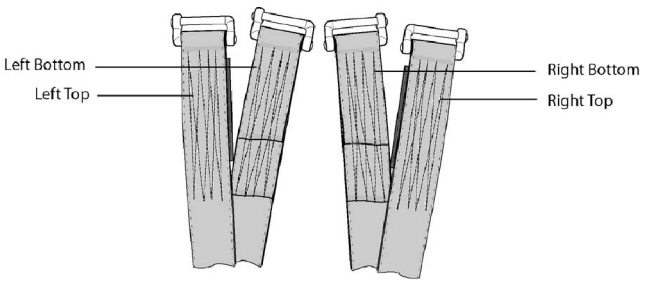

Figure 34. Double "L" Connector Link Layout

h. Install cross-connector strap.

i. Slide riser loop onto opposite connector link bar.

j. Mate both halves of the connector link together.

k. Install screws (2 each).

NOTE

Screws must make a minimum of 6 full turns prior to applying torque.

l. Check suspension line continuity. (QA)

m. Tighten screws to a torque value of 15 in-lbs. (QA)

WARNING

Care must be taken when tightening screws as screwdriver may slip and cause minor injury.

NOTE

It may be necessary to check the torque value on each screw more than once due to the interference fit design feature of the connector link.

n. Apply torque seal to both screw heads and allow to dry before proceeding with remainder of parachute packing.

o. Repeat steps a through l on each riser group.

p. Re-identify the parachute canopy by using an indelible black pen to cross out the existing part number and marking the new superceding part number per Illustrated Parts Breakdown (IPB) WP 019 04.

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ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

NES-12 PERSONNEL PARACHUTE ASSEMBLY

PART NO. 576AS100-37 and 576AS100-38

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1	11	2 thru 7	9				

Reference Material

Intermediate and Depot Maintenance, Packing Procedures, NES-12 Personnel Parachute Assembly ..... WP 019 02

Alphabetical Index

Title	Page
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Service/Total Life	1
Usable on Codes	1

List of Figures

Title	Page
NES-12 Personnel Parachute Assembly	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the NES-12 Personnel Parachute Assembly (Figure 1).

2. USABLE ON CODES.

a. The usable on codes in this WP refer to the aircraft applications for the NES-12 Personnel Parachute Assembly.

b. The following usable on codes apply to this WP:

A – S-3

B – TA-4F, TA-4J

3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in WP 019 02.

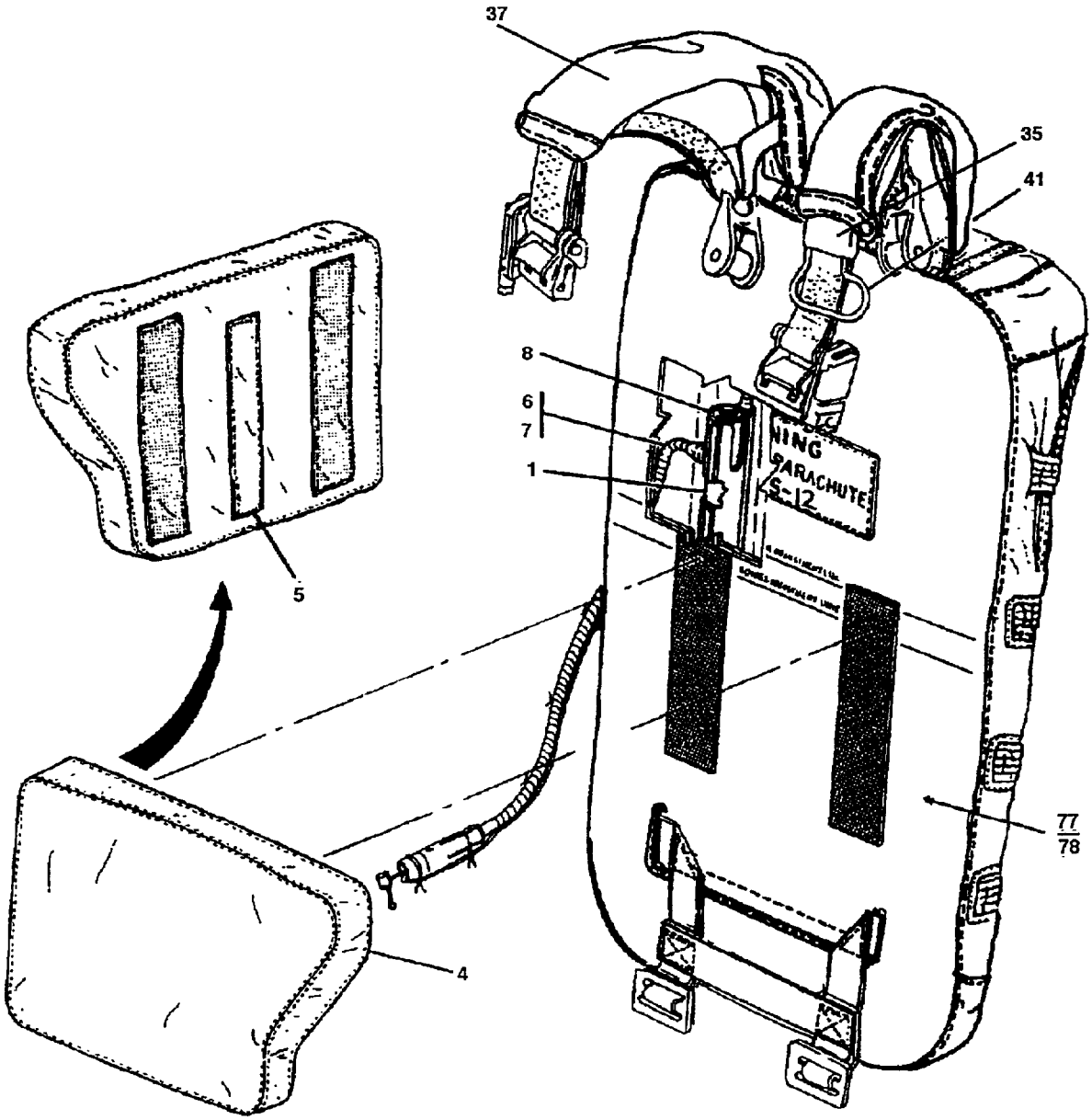

Figure 1. NES-12 Personnel Parachute Assembly (Sheet 1 of 6)

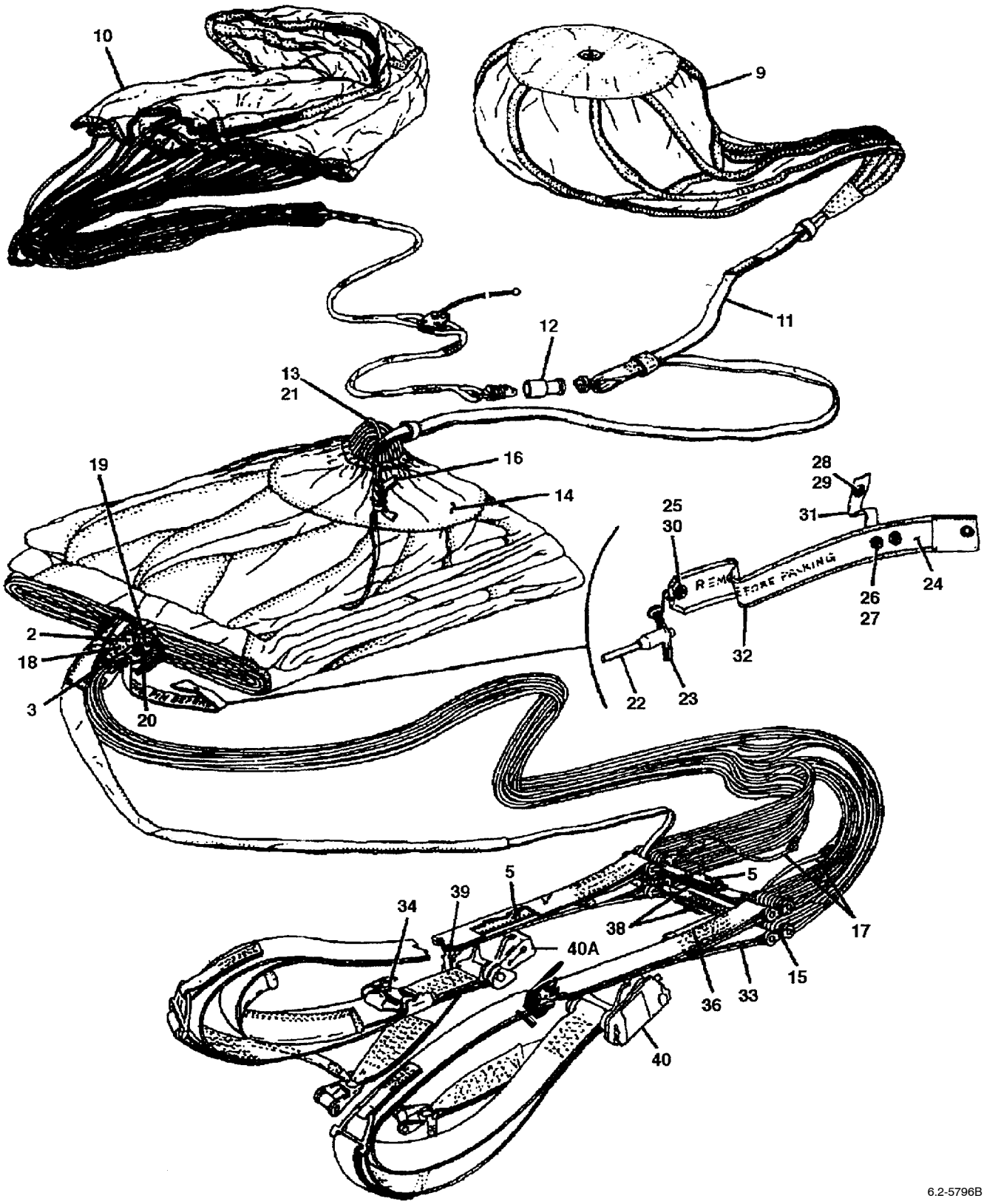

Figure 1. NES-12 Personnel Parachute Assembly (Sheet 2 of 6)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	576AS100-37	PARACHUTE ASSEMBLY, COMPLETE, NES-12 .	1	A	AGOGG
	576AS100-38	PARACHUTE ASSEMBLY, COMPLETE, NES-12 .	1	B	AGOGG
1	851AS100	. CARTRIDGE, DELAY, CCU-59/A (MF 37)	1	A	PCGZA
	2519703	. CARTRIDGE, DELAY, MK 4 MOD 2 (M282) ...	1	B	PCGZA
2	825AS100	. CARTRIDGE, IMPULSE, CCU-33/B (MF78) ...	1		PCGZA
3	MS16555-630	. PIN, STRAIGHT HEAD	1		PAGZZ
4	510AS141-1	. PAD ASSEMBLY, LUMBAR	1	A	PAOZZ
5	676AS100-1	. . LABEL/NOTE 1/	4		XBGZZ
6	711-07025	. HOUSING, ARMING CABLE /52497/	1		PAGZZ
7	711-07108	. CABLE, ARMING /52497/	1		PAGZZ
8	711-07022-34	. RELEASE, AUTOMATIC PARACHUTE ..... RIPCORD, MOD 7000 /52497/	1		PAGDD
9	60A125E16-1	. PARACHUTE ASSEMBLY, PILOT	1		PCGGG
10	510AS108-1	. PARACHUTE ASSEMBLY, PILOT ..... EXTERNAL TRI-STAGE	1		PCGZZ
11	510AS106-1	. BRIDLE ASSEMBLY, INTERNAL	1		PCGGG
12	SK86-0029-1	. . HOUSING /24632/	1		PAGZZ
13	702AS100-1	. SLEEVE/MAKE FROM MIL-I-22129/NOTE 2/	1		MGGZZ
14	107AS106-22	. CANOPY ASSEMBLY	1	*	PCGGG
	107AS106-24	. CANOPY ASSEMBLY (WITH DOUBLE "L" ... CONNECTOR LINK INSTALLED	1	*	PCGGG
15	MS22021-1	. . LINK, REMOVABLE CONNECTOR	4	*	PAGZZ
	MS22002-1	. . CONNECTOR LINK (DOUBLE "L")	4	*	PAGZZ
16	701AS100-1	. . TAPE ASSEMBLY, MIL-T-5608, ... TYPE II, CLASS A	1		MGGZZ
17	666AS101-2	. . LANYARD, FOUR LINE RELEASE	2		MGGZZ
18	SK86-0051-10	. GUN ASSEMBLY, SPREADING, ...	1	*	PAGGD
	SK86-0051-12	. GUN ASSEMBLY, SPREADING, /24632/	1	*	PAGGD
19	472P215DO17-7	. . MOUNT, CANOPY /24632/	14		PAGZZ
20	LKD7F52Z5	. . SCREW /24632/	28		PAGZZ
21	SK86-0093-1	. . CORD, RETAINER	1		MGGZZ
22	SK86-0089-1	. . SAFETY PIN ASSEMBLY /24632/	1		PAGGG
23	MS17985C310	. . . PIN, QUICK RELEASE	1		PAGZZ
24	39768	. . . FLAG ASSEMBLY /89771/	1		MGGGG
25	MS20230B10	. . . . GROMMET ASSEMBLY	2		PAGZZ
26	MS27983-4	. . . . EYELET	2		PAGZZ
27	MS27983-3	. . . . STUD	7		PAGZZ
28	MS27983-2N	. . . . SOCKET	7		PAGZZ
29	MS27983-1	. . . . BUTTON	7		PAGZZ
30	39768-3	. . . . WASHER /89771/	1		MGGZZ
31	39768-2	. . . . STRAP /89771/	1		MGGZZ
32	39768-1	. . . . FLAG /89771/	1		MGGZZ
33	510AS136-20	. RISER ASSEMBLY	1		PCGGG
34	60A116C10-1	. . RETAINER, RIPCORD GRIP	1		PAGZZ
35	510AS136-10	. . COVER, RETAINER	1		MDOGG

Figure 1. NES-12 Personnel Parachute Assembly (Sheet 3 of 6)

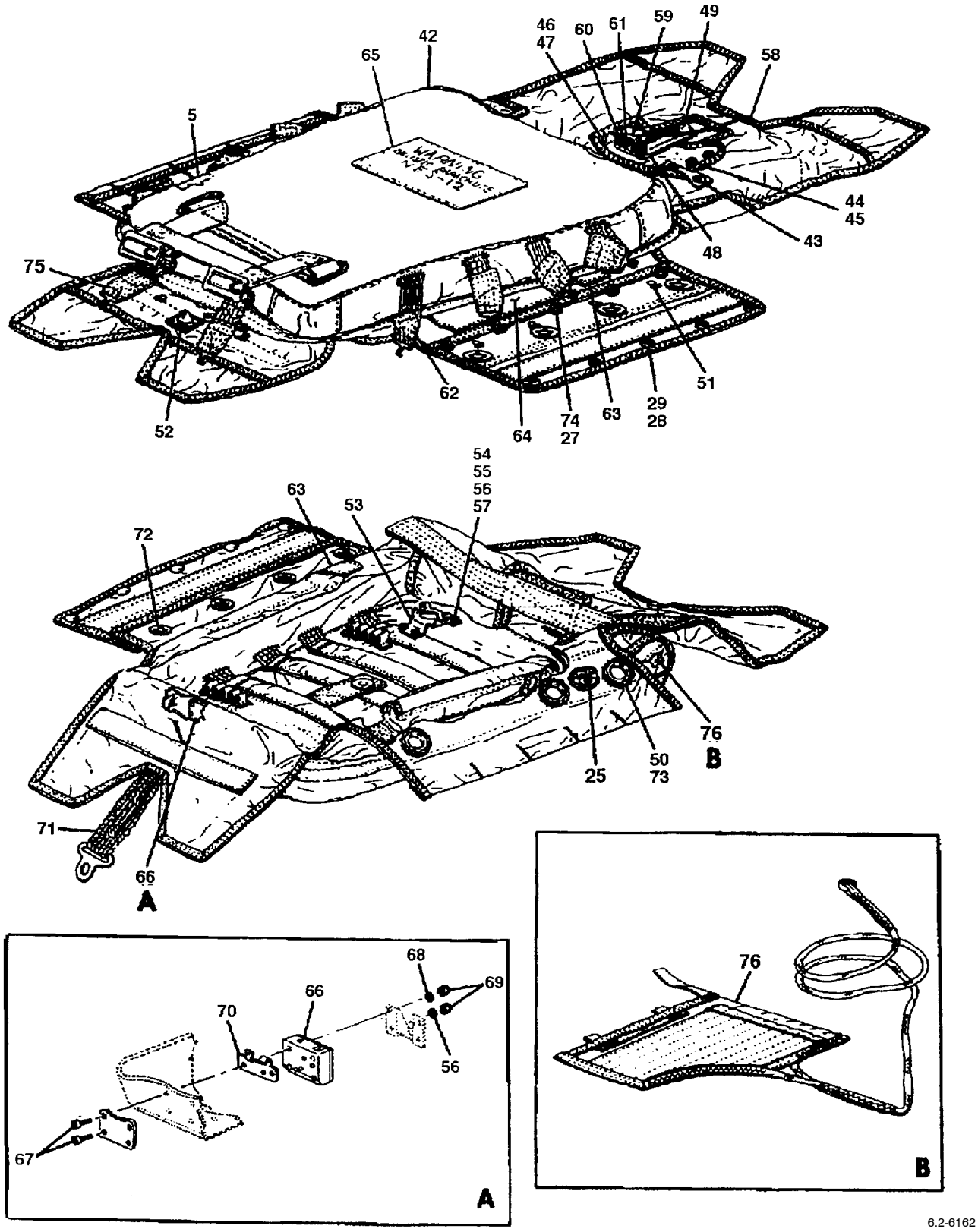

Figure 1. NES-12 Personnel Parachute Assembly (Sheet 4 of 6)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
36	666AS102-5	. . FLUTE, FOUR-LINE RELEASE LANYARD	2		MGGZZ
37	510AS144-1	. SHEATH, RISER PROTECTIVE	2		PCOZZ
38	677AS100-2	. STRAP, CONNECTOR	2		PCGGG
39	852AS117-3	.SENSING RELEASE UNIT, PARACHUTE HARNESS MXU-746/P LEFT SIDE	1		AGGGG
40	852AS117-4	.SENSING RELEASE UNIT, PARACHUTE HARNESS MXU-746/P RIGHT SIDE	1		AGGGG
40A	990055-1	. RELEASE ASSEMBLY, CANOPY/99449/	2	*	PAGZZ
	015-10307-5	. RELEASE ASSEMBLY, CANOPY/99449/ (USE UNTIL EXHAUSTED)	2	*	PAGZZ
41	782AS109-1	. RIPCORD ASSEMBLY, PARACHUTE	1		PAGZZ
42	510AS101-501	. CONTAINER ASSEMBLY	1		PCGGG
	510AS101-101	. CONTAINER ASSEMBLY /SEE NOTE 3/	1		PCGGG
43	510AS133-1	. . TAB EXTENDER	1		MGGZZ
44	MS27981-1B	. . FASTENER, BUTTON	3		PAGZZ
45	MS27981-3B	. . FASTENER, SOCKET	3		PAGZZ
46	MS27981-4B	. . FASTENER, STUD	3		PAGZZ
47	MS27981-5B	. . FASTENER, EYELET	3		PAGZZ
48	60A113D16-1	. . BASE ASSEMBLY, CLAMP	1		PAGZZ
49	60A113C24-1	. . CONE, 0.410 GRIP	1		PAGZZ
50	60A113C25-1	. . WASHER, GROMMET	3		PAGZZ
51	60A113C28-1	. . EYE	12		PAGZZ
52	60A113C31-1	. . CONE, 0.338 GRIP	2		PAGZZ
53	782AS108-1	. . RETAINER SUPPORT, RISER /ATTACHING PARTS/	2		PAGZZ
54	NAS514P1032-8	. . SCREW, MACHINE	8		PAGZZ
55	NAS1169-10	. . WASHER, SHOULDER	8		PAGZZ
56	AN960C10L	. . WASHER, FLAT	10		PAGZZ
57	22NKM02	. . NUT /72962/ ---*---	8		PAGZZ
58	60A116D26-2	. . LANYARD, RELEASE	1		PCGZZ
59	782AS119-1	. . CLAMP, RIPCORD HOUSING	1		PAGZZ
60	782AS122-1	. . SCREW	1		PAGZZ
61	72300-01	. . . CLAMP /07878/	1		PAGZZ
62	60A113D11-21	. . SPRING ASSEMBLY, CONTAINER OPENING	4		PAGZZ
63	510AS102-1	. . LABEL, WARNING	2		MDGZZ
64	585AS100-1	. . LABEL, PARACHUTE ASSEMBLY /NOTE 1/	1		XBGZZ
65	510AS126-1	. . LABEL, WARNING	1		MDGZZ
66	510AS129-2	. . RELEASE, EXTERNAL PILOT CHUTE	1		PAGZZ
67	MS27039-1-19	. . SCREW, MACHINE	4		PAGZZ
68	AN960C10	. . WASHER, FLAT	2		PAGZZ
69	MS21045C3	. . NUT, SELF-LOCKING ---*---	4		PAGZZ

Figure 1. NES-12 Personnel Parachute Assembly (Sheet 5 of 6)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
70	107AS109-1	. . PLATE, RETAINER, EPC BOX	1		XAZZZ
71	510AS130-1	. . SPRING BAND ASSEMBLY	1		PAGGG
72	MS22048C2	. . GROMMET AND WASHER, PARACHUTE PACK	4		PAGZZ
73	MS22048GC1	. . GROMMET	3		PAGZZ
74	MS27980-8B	. . FASTENER, EYELET	5		PAGZZ
75	60A113D11-8	. . SPRING ASSEMBLY, CONTAINER OPENING	2		PAOZZ
76	699AS101-1	. BAG ASSEMBLY DEPLOYMENT	1		PCGZZ
77	579AS115-501	. PROTECTIVE COVER/NOTE 4/	1	B	PAGZZ
78	579AS115-503	. PROTECTIVE COVER	1	A	PAGZZ

NOTE:
1. Available from the In-Service Support Team (ISST).
2. Make from MIL-I-22129 insulation sleeving, NIIN 00-899-6650 (size 0.020-in. wall x 0.30-in. ID x 6.0-in. long).
3. Modify 510AS101-101 configuration to 510AS101-501 configuration by incorporation of ACC 494 ECP Bridle protector flap installation.
4. Protective cover without velcro and markings.

Figure 1. NES-12 Personnel Parachute Assembly (Sheet 6 of 6)

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ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

NES-25A PERSONNEL PARACHUTE ASSEMBLY

PART NO. 926AS104-6

LS-1 DROGUE PARACHUTE ASSEMBLY PART NO. 1.9083GR-3

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

Illustrated Parts Breakdown, NES-25A Personnel Parachute Assembly ..... WP 020 04
Illustrated Parts Breakdown, LS-1 Drogue Parachute Assembly ..... WP 021 03

Alphabetical Index

Title	Page
Description	2
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Subassembly Configurations	2
Principles of Operation	2
Automatic Operation Above 13,000-Ft. Altitude	2
Automatic Operation Below 13,000-Ft. Altitude	9
Manual Operation	10
Repack Schedule	10

Record of Applicable Technical Directives

None

1. DESCRIPTION.

2. GENERAL. The NES-25A Personnel Parachute Assembly and LS-1 Drogue Parachute Assembly are part of the North American Aviation LS-1 Ejection Seat Escape System and are designed for use with a PCU-33/P or PCU-56/P Parachute Restraint Harness (Figure 1 and 2).

3. The LS-1 drogue parachute is used to decelerate and stabilize the ejection seat and to position the seat in the proper attitude for aircrew/seat separation.

4. The drogue parachute is 52-in. in diameter, made of nylon fabric and constructed in a ribless type surface. The drogue canopy consists of 12 gores and 12 suspension lines. The drogue risers are made of nylon webbing whose ends are covered with leather buffers. The drogue parachute is stowed in the ejection seat headrest and is attached to the seat by its four risers.

5. The NES-25A Personnel Parachute includes a multicolored (white, olive green, international orange, and sand shade), 28 ft. diameter, flat, circular, nylon canopy with 28 gores modified with water deflation pockets and spreading gun loops. The canopy is packed in a nylon fabric container. An automatic parachute ripcord release (APRR) is used to open the container and a ballistic spreading gun is used to rapidly extend the canopy skirt hem during deployment. The riser assembly includes shoulder harness fittings used with the ejection seat restraint system and two canopy release fittings or parachute harness sensing release units which attach to two adapters on the PCU-33/P or PCU-56/P Parachute Restraint Harness. The container also incorporates a lapbelt assembly used with the ejection seat restraint system and to provide attachment points for the seat survival system.

6. CONFIGURATIONS. The only authorized configurations for the NES-25A and the LS-1 Parachute Assemblies are shown in (Figures 1 and 2). Refer to Illustrated Parts Breakdowns WP 020 04 and WP 021 03 for exact configuration requirements.

7. SUBASSEMBLY CONFIGURATIONS. The subassemblies listed below make up the NES-25A assembly and are shown in (Figure 3). Refer to WP 020 04 for detailed information on subassemblies.

Pilot Parachute

Bridle Line

Riser Assemblies

Connector Straps

Ripcord Assembly

Back Pad

Line Stowage Sleeve Assembly

Automatic Parachute Ripcord Release

Spreading Gun Assembly

Canopy Assembly

Container Assembly

Parachute Harness Sensing Release Units

8. PRINCIPLES OF OPERATION.

NOTE

The LS-1 Ejection Seat Escape System is designed to initiate seat/man separation at 13,000 feet or 0.5 seconds after ejection if below 13,000 feet.

9. AUTOMATIC OPERATION ABOVE 13,000 FT. ALTITUDE. When an aircrew ejects above the predetermined aircrew/seat separation altitude (13,000 ± 1,000 ft.), the following functions take place:

a. As ejection sequence is initiated and the ejection seat begins to travel, a bell crank arm contacts a striker pin on the cockpit structure. The drogue gun fires and deploys the drogue parachute. The drogue parachute stabilizes the seat as the aircrew/seat combination free falls to aircrew/seat separation altitude.

b. When the aircrew/seat separation altitude is reached, the seat aneroid power device initiates aircrewmember/seat separation by actuating the harness release thruster, releasing the lap and shoulder fittings. Immediately after harness release, the separation bladders installed behind the parachute and under the survival kit inflate forcibly thrusting the aircrew forward and upward from the seat.

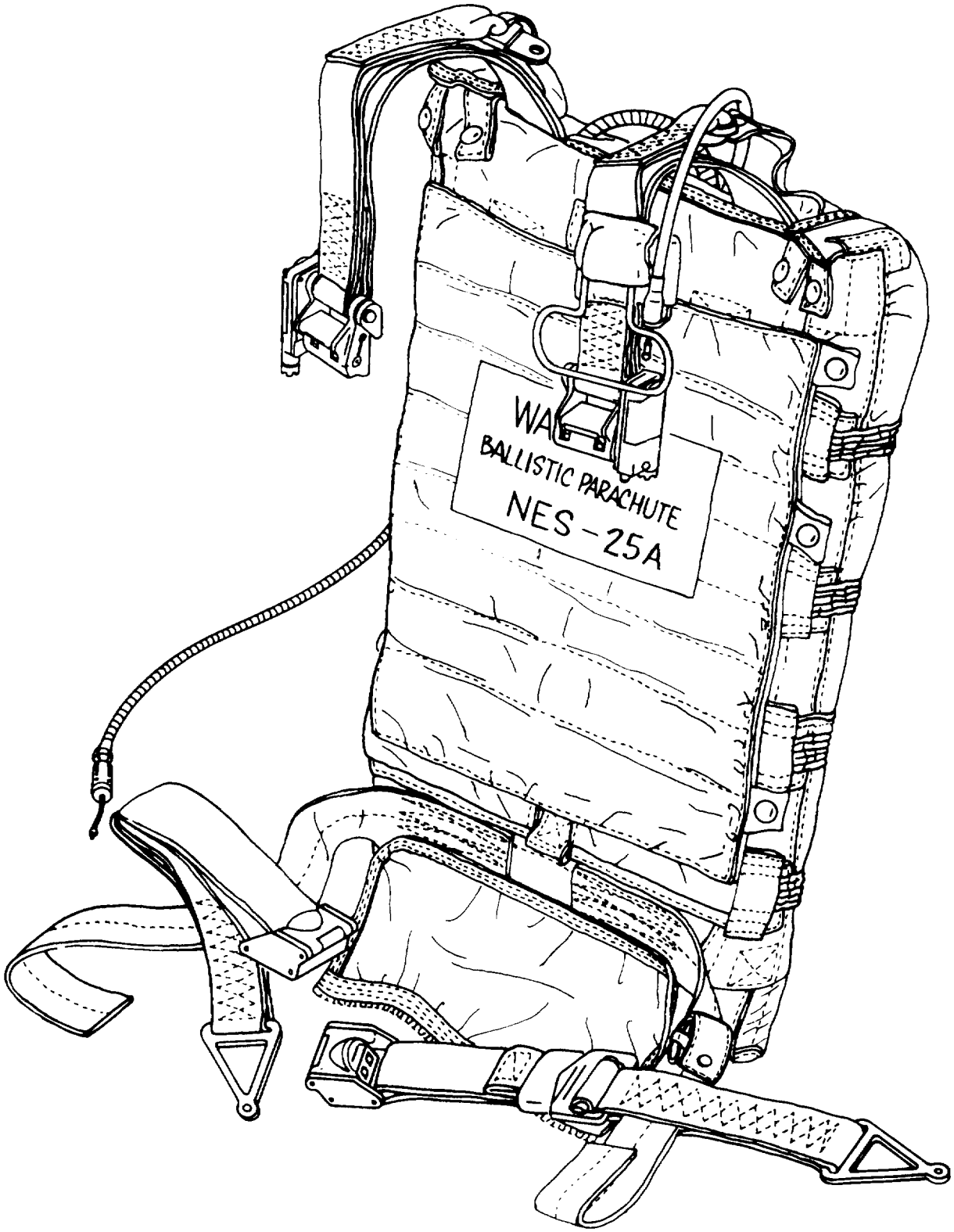
c. As the aircrew separates from the seat, the ripcord release arming cable is withdrawn, arming the release.

d. The aircrew may free fall until increasing air pressure causes the ripcord release aneroid to contract. As the pre-set altitude is reached, the aneroid has contracted sufficiently to allow the firing pin and hammer to unlock.

e. The hammer firing pin strikes the cartridge.

f. The cartridge fires after a 0.575 sec time delay.

g. The piston is forced forward in the release barrel, pulling the ripcord cable which is attached to the top ripcord pin. The ripcord pins are pulled, allowing the container grommets and locking cones to separate.



6.2-5458

Figure 1. Personnel Parachute Assembly, NES-25A

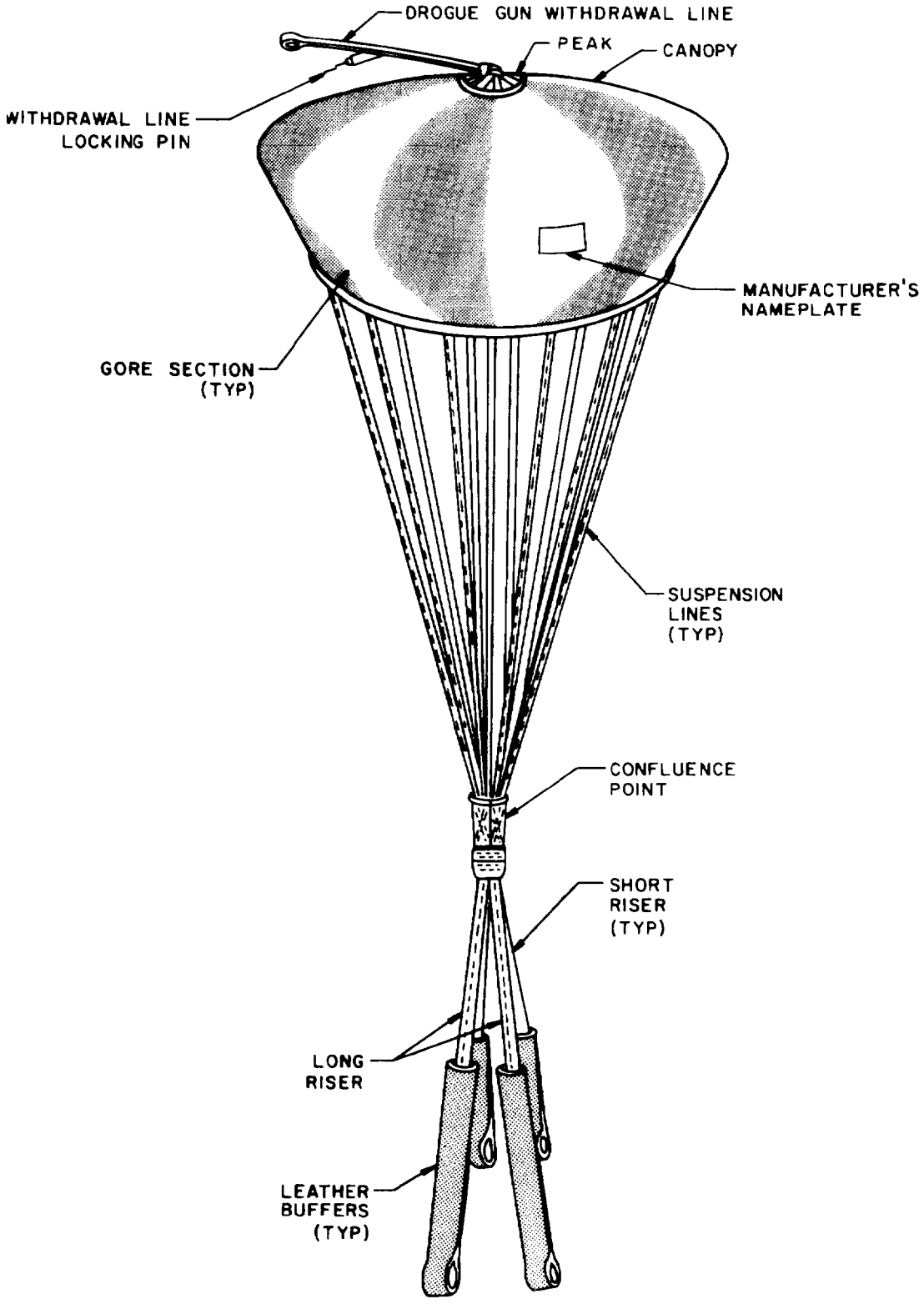
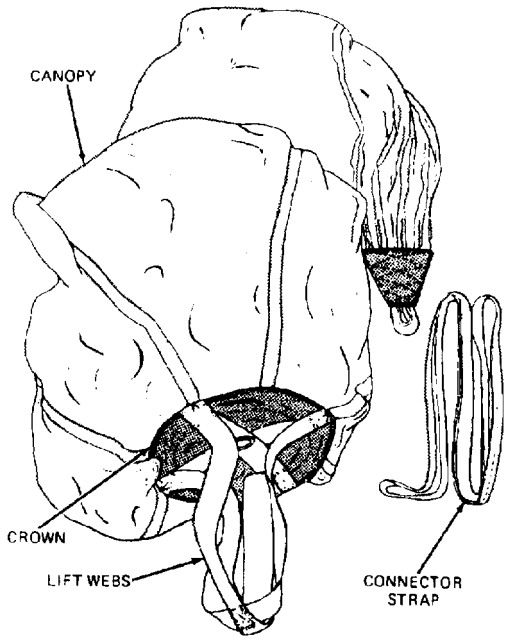
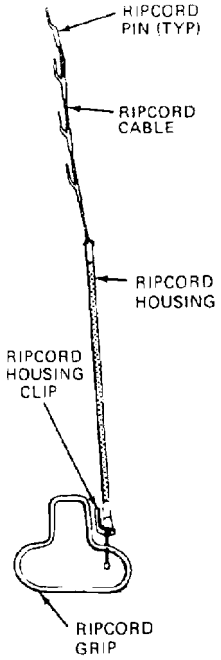


Figure 2. Drogue Parachute Assembly, LS-1

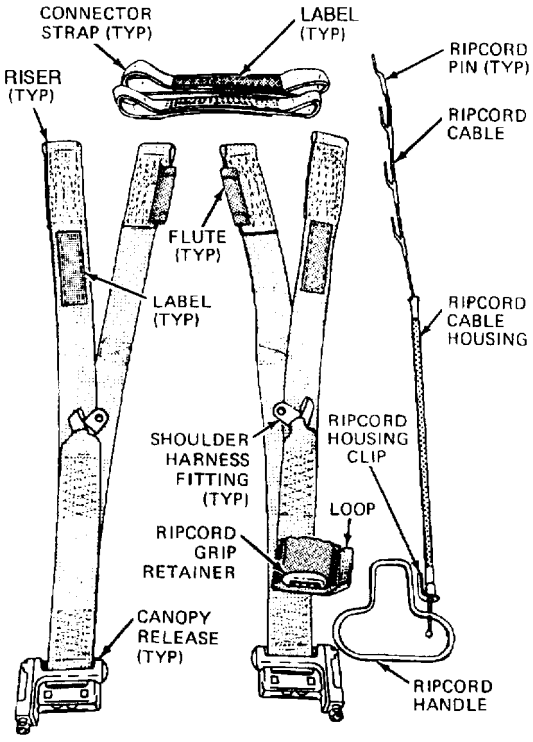
6.2-5459A



Pilot Parachute and Connector Strap



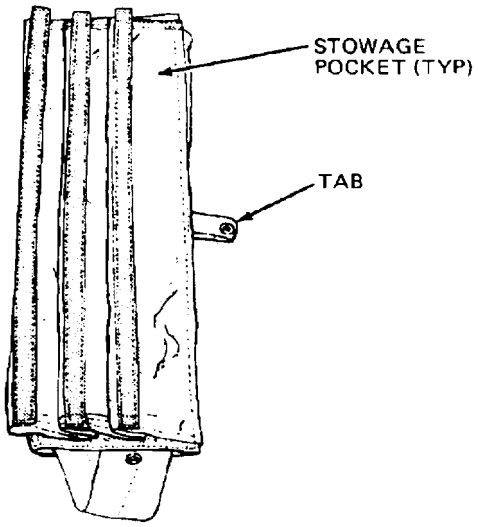
Ripcord Assembly



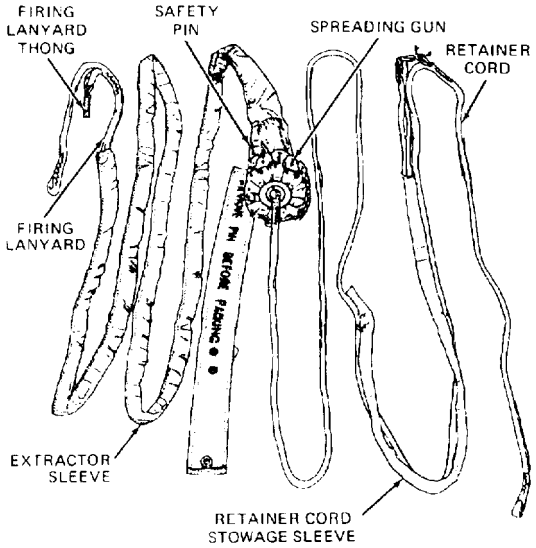
Riser Assemblies and Connecor Straps

Back Pad

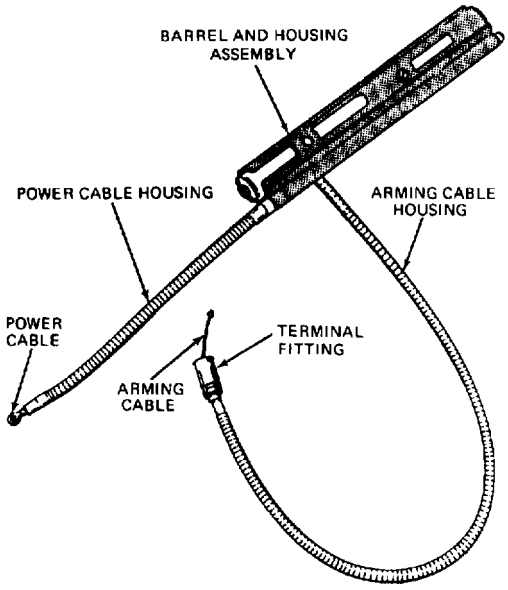
Figure 3. Subassemblies, NES-25A (Sheet 1 of 4)



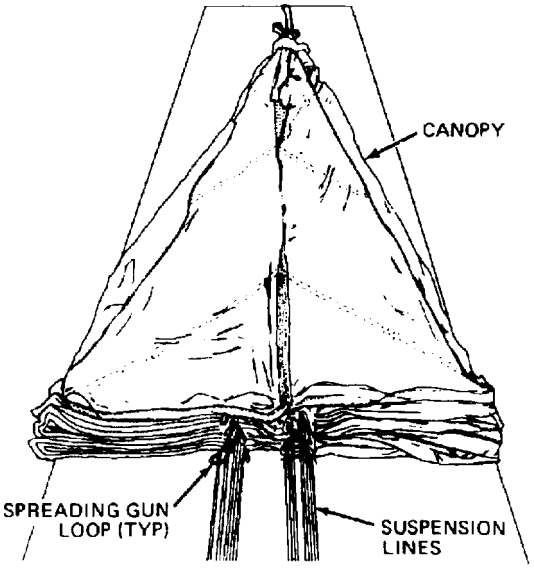
Line Stowage Sleeve Assembly



Spreading Gun Assembly

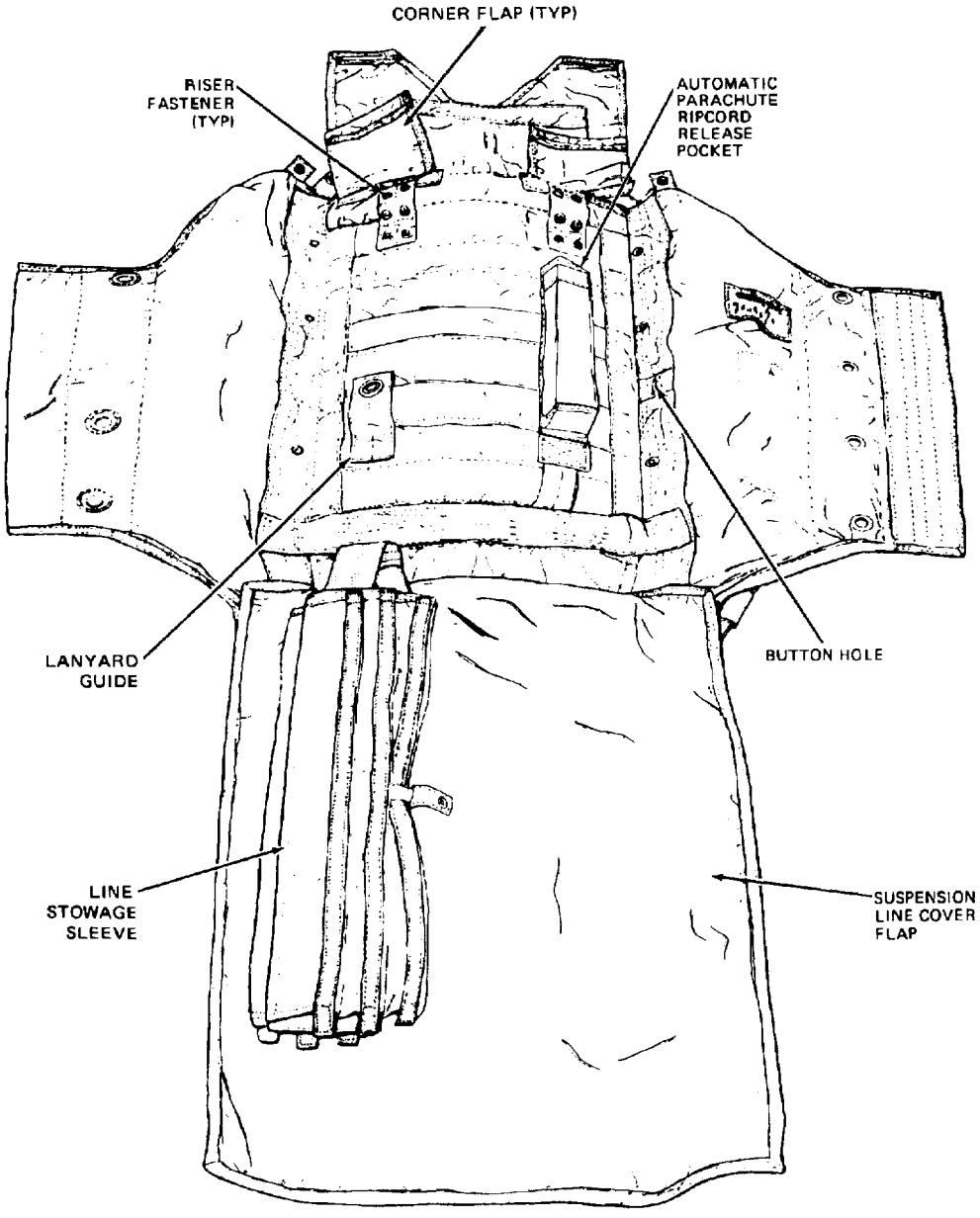


Automatic Parachute Ripcord Release



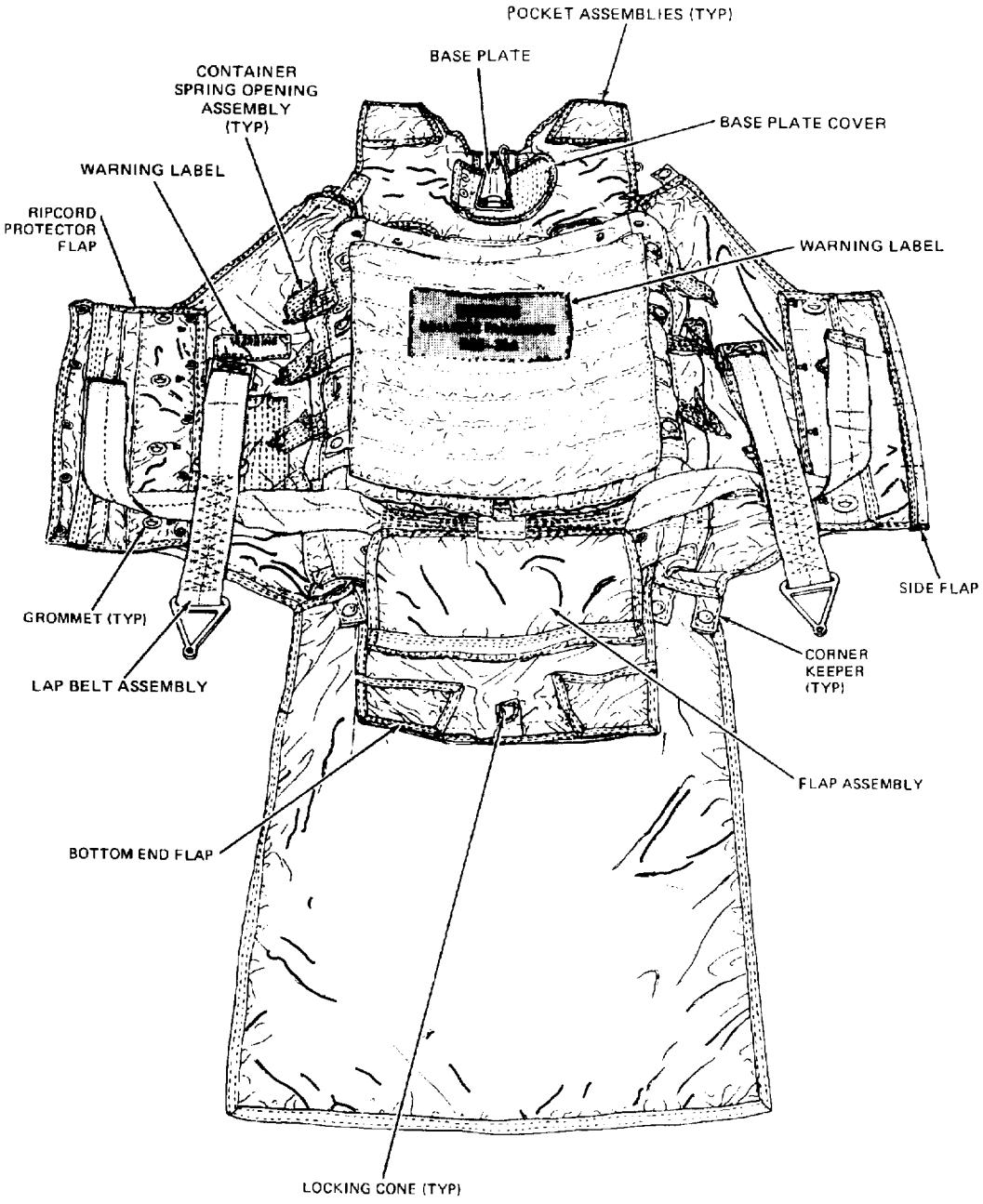
Canopy Assembly

Figure 3. Subassemblies, NES-25A (Sheet 2 of 4)



6.2-5462

Figure 3. Subassemblies, NES-25A (Sheet 3 of 4)



Container Assembly (outside)

6.2-5463

Figure 3. Subassemblies, NES-25A (Sheet 4 of 4)

h. The container spring opening assemblies pull the side flaps apart, allowing the internal pilot parachute to spring from the container and inflate.

i. The aircrew falling away from the pilot parachute causes the canopy to be pulled from the container, followed by the suspension lines.

j. Just prior to full canopy and suspension line deployment, the spreading gun firing lanyard pulls the firing pin from the firing mechanism. This releases the striker which, under spring pressure, strikes and initiates the cartridge.

k. Gas pressure from cartridge forces out the internal pistons propelling the slugs outward. The slugs simultaneously drag the attached suspension lines outward in a 360-degrees spread, allowing a more rapid opening of the canopy.

l. In the event of a spreading gun malfunction, a fail-safe backup subsystem operates. After the firing pin is withdrawn, tension on the firing lanyard is exerted on the fail-safe assembly sleeve which retracts the shear band assembly. This releases the slugs and allows the canopy to inflate aerodynamically.

m. As load is applied, the riser fasteners disengage from the container and the connector link ties break. The releasable clamp lanyard is pulled from the base plate stud, releasing the clamp and freeing the ripcord and power cable housing. Full deployment of the parachute then occurs. The aircrewmember descends suspended in the PCU-33/P or PCU-56/P Parachute Restraint Harness.

n. During descent, the aircrew may manually actuate the four-line release system which will reduce oscillation and allow the aircrew to maneuver the parachute to a less hazardous landing site.

o. Upon landing, the aircrew releases the parachute from the PCU-33/P or PCU-56/P Parachute Restraint harness by actuation of the canopy release fittings.

p. The parachute harness sensing release unit provide an automatic backup method of releasing the risers after the aircrew makes a seawater entry.

10. AUTOMATIC OPERATION BELOW 13,000 FT. ALTITUDE. When an aircrew ejects below the predetermined aircrew/seat separation altitude (13,000 ± 1,0000 ft.) the following functions take place:

a. As ejection sequence is initiated and the ejection seat begins to travel, a bell crank arm contacts a striker pin on the cockpit structure. The drogue gun fires and deploys the drogue parachute. The drogue parachute stabilizes the seat for aircrew/seat separation.

b. The seat aneroid power device initiates aircrew/seat separation by actuating the harness release thruster, releasing the lap and shoulder fittings. Immediately after harness release, the separation bladders installed behind the parachute and under the survival kit inflate forcibly thrusting the aircrew forward and upward from the seat.

c. As the aircrew separates from the seat, the ripcord release arming cable is withdrawn, arming the release.

d. The hammer firing pin strikes the cartridge.

e. The cartridge fires after a 0.575 sec. time delay.

f. The piston is forced forward in the release barrel, pulling the ripcord cable which is attached to the top ripcord pin. The ripcord pins are pulled, allowing the container grommets and locking cones to separate.

g. The container spring opening assemblies pull the side flaps apart allowing the pilot parachute to spring from the container and inflate.

h. The aircrew falling away from the pilot parachute causes the canopy to be pulled from the container, followed by the suspension lines.

i. Just prior to full canopy and suspension line deployment, the spreading gun firing lanyard pulls the firing pin from the firing mechanism. This releases the striker which under spring pressure, strikes and initiates the cartridge.

j. Gas pressure from the cartridge forces out the internal pistons propelling the slugs outward. The slugs simultaneously drag the attached suspension lines outward in a 360-degrees spread, allowing a more rapid opening of the canopy.

k. In the event of a spreading gun malfunction, a fail-safe backup subsystem operates. After the firing pin is withdrawn, tension on the firing lanyard is exerted on the fail-safe assembly sleeve which retracts the shear band assembly. This releases the slugs and allows the canopy to inflate aerodynamically.

l. As load is applied, riser fasteners disengage from container and the connector link ties break. The releasable clamp lanyard is pulled from base plate stud, releasing the clamp and freeing the ripcord and power cable housing. Full deployment of the parachute then occurs. The aircrew descends suspended in the PCU-33/P or PCU-56/P Parachute Restraint Harness.

m. During descent, the aircrew may manually actuate the four-line release system which will reduce oscillation and allow the aircrew to maneuver the parachute to a less hazardous landing site.

n. Upon landing, the aircrew releases the parachute from the PCU-33/P or PCU-56/P Parachute Restraint harness by actuation of the canopy release.

o. The parachute harness sensing release units provide an automatic backup method of releasing the risers after the aircrew makes a seawater entry.

11. MANUAL OPERATION. Manual operation of the parachute assembly is necessary when the ejection seat emergency restraint release is used as an emergency exit control, leaving the seat in the aircraft, which prevents the arming of the automatic parachute release. In addition, if the ripcord release fails after aircrew/seat separation during the ejection sequence, manual operation is required. If manual operation is initiated, the following functions take place:

a. Manually pulling the ripcord grip removes the ripcord pins from the container locking cones, permitting grommets and locking cones to separate.

b. The container spring opening assemblies pull the side flaps apart allowing the pilot parachute to spring from the container and inflate.

c. The aircrew falling away from the pilot parachute causes the canopy to be pulled from the container followed by the suspension lines.

d. Just prior to full canopy and suspension line deployment, the spreading gun firing lanyard pulls the firing pin from the firing mechanism. This releases the striker which, under spring pressure, strikes and initiates the cartridge.

e. Gas pressure from cartridge forces out the internal pistons propelling the slugs outward. The slugs simultaneously drag the attached suspension lines outward in a 360-degrees spread, allowing a more rapid opening of the canopy.

f. In the event of a spreading gun malfunction, a fail-safe backup subsystem operates. After the firing pin is withdrawn, tension on the firing lanyard is exerted on the fail-safe assembly sleeve which retracts the shear band assembly. This releases the slugs and allows the canopy to inflate aerodynamically.

g. As load is applied, the riser fasteners disengage from the container and the connector link ties break. The releasable clamp lanyard is pulled from the base plate stud, releasing the clamp and frees the ripcord and power cable housing. Full deployment of the parachute then occurs. The aircrew descends suspended in the PCU-33/P or PCU-56/P Parachute Restraint Harness.

h. Upon landing, the aircrew disengages the parachute assembly from the PCU-33/P/P or PCU-56/P Parachute Restraint Harness by actuating the canopy release assembly.

i. The parachute harness sensing release units provide an automatic backup method of releasing the risers after the crew makes a seawater entry.

12. REPACK SCHEDULE.

a. Schedule repack cycle is 448 days. ■

ORGANIZATIONAL MAINTENANCE

REPAIR PROCEDURES

NES-25A PERSONNEL PARACHUTE ASSEMBLY

PART NO. 926AS104-6

List of Effective Work Package Pages

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1 thru 6	10						

Reference Material

Aviation-Crew Systems, Seat Survival Kits (SKU-Series Seat Kits) . . . . . NAVAIR 13-1-6.3-2
Intermediate and Depot Maintenance, Maintenance Procedures, Parachute Harness Sensing Release Units (PHSRU) MXU-746/P and MXU-747/P . . . . . WP 024 02
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdowns, Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00

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Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains instructions for organizational level repair to ensure that the parachute assembly remains in Ready-For-Issue (RFI) status.

b. When performing repairs detailed in this WP, follow these guidelines:

(1) Review all applicable instructions prior to starting repair.

(2) Ensure that all necessary support equipment and materials required are available prior to starting repair.

(3) When required remove enough material from its source for immediate use only. Ensure that the material identification ticket remains with the source material at all times. Material that cannot be identified will not be used.

(4) To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

(5) A Quality Assurance (QA) inspector shall examine the finished work.

2. RISER ASSEMBLY.

3. REPLACEMENT OF RIPCORD HOUSING CLIP TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. If necessary, reinsert ripcord housing clip into webbing loop attached to riser (Figure 1).

b. Tack thru loop and thru hole in housing clip with one turn of size E thread, single and waxed; tie off (Figure 1). (QA)

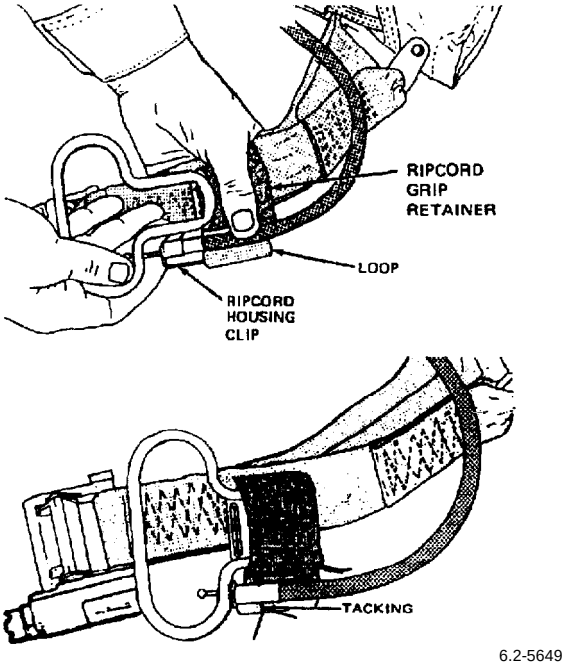


Figure 1. Ripcord Housing Clip Tacking Replacement

c. Insert ripcord grip into retainer.

4. CONTAINER ASSEMBLY.

5. REPLACEMENT OF RIPCORD PIN RETENTION TIE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Completely remove broken retention tie from ripcord pin and cable.

b. Loop a 12-in. length size E thread, single and waxed, under bottom ripcord pin. Secure by bringing thread ends together and forming 3 to 5 half-hitches above ripcord pin ferrule. Top off with a binders knot (Figure 2).

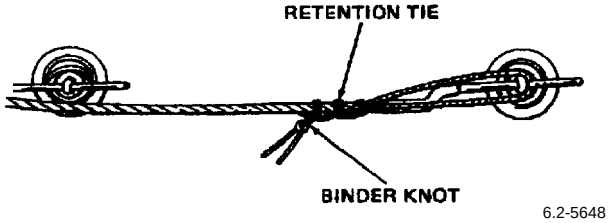


Figure 2. Ripcord Pin Retention Tie Replacement

c. Trim excess thread 1/2-in. from knot.

6. REPLACEMENT OF SPRING OPENING ASSEMBLY.

a. Measure length of replacement spring opening assembly. Required length is 10 3/8 ±1/4-in. when measured from end of one hook to end of other hook with no tension applied.

b. Inspect spring opening assembly for broken spring, contamination, corrosion, cuts, fraying, bent or broken hooks, elasticity and loose or broken stitching.

c. Remove back pad from container.

d. Remove defective spring opening assembly from eyelet on container centerline.

e. Attach hook of defective spring opening to hook of replacement spring opening assembly at pull tab end. Pull replacement spring opening assembly thru channel while removing defective spring opening assembly.

f. Attach hook of replacement spring opening assembly with hook facing down to eyelet on container centerline. Crimp hook to eyelet.

g. Attach remaining hook to corresponding eyelet on container.

h. Attach back pad to container.

7. REPLACEMENT OF RELEASE LANYARD LOCKING PIN SAFETY TIE.

Materials Required

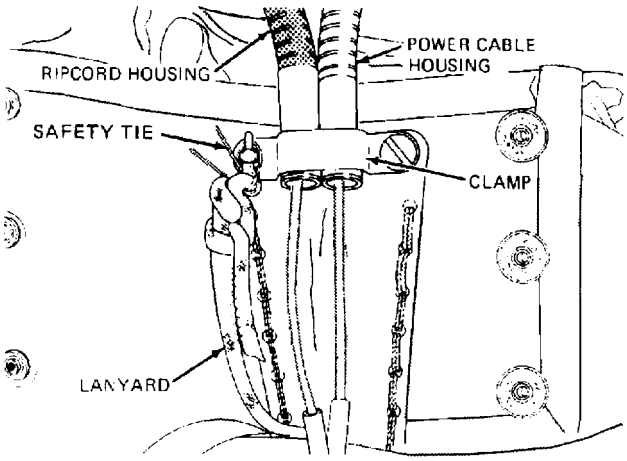
Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove loose or broken safety tie.

b. Tie locking pin to stud with one turn of size FF thread, single and waxed. Pass thread thru lanyard knot; tie off (Figure 3).



6.2-5673

Figure 3. Release Lanyard Locking Pin Safety Tie Replacement

8. LAP BELT ASSEMBLY.

9. REPLACEMENT OF LAP BELT RELEASE ASSEMBLY.

Materials Required

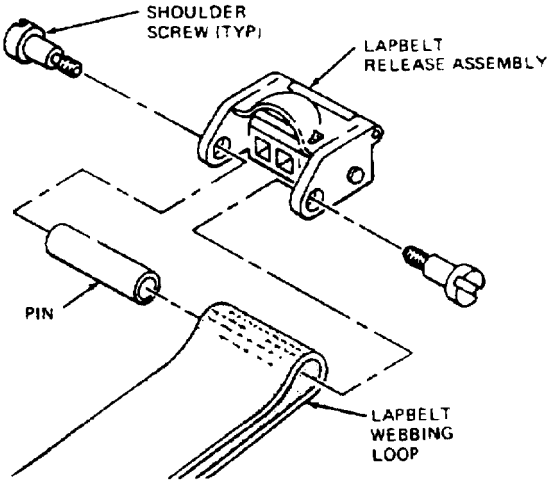
Specification or Part Number	Nomenclature
MIL-S-22473	Sealing, Compound, Grade H

a. Remove two shoulder screws. Pull release assembly away from webbing and slide pin out of harness webbing loop.

b. Inspect new release assembly for operation, corrosion, burrs, and sharp edges.

c. Insert new pin into webbing loop.

d. Apply sealing compound to threads of two shoulder screws. Install screws thru holes in release assembly and into pin (Figure 4).



6.2-5652

Figure 4. Lap Belt Release Assembly Replacement

10. SURVIVAL KIT.

11. REPLACEMENT OF RSSK-3 SURVIVAL KIT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

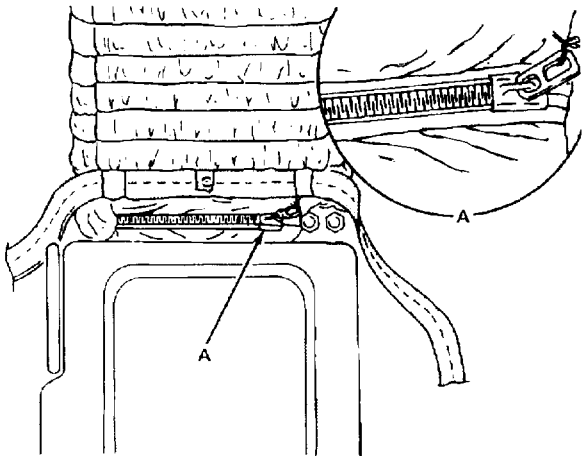
Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Ensure survival kit has been inspected per NAVAIR 13-1-6.3-2.

b. Position packed parachute assembly on table with back pad facing up. Position RSSK-3 survival kit on table so that attaching flaps of survival kit and parachute face each other.

c. Attach parachute survival kit by mating slide fastener. Tack slider tab to attaching flap on parachute container with two turns of size 6 thread single and waxed; tie off (Figure 5).

d. Ensure retention straps on left side are inboard of oxygen hose connection of survival kit container.



6.2-5674

Figure 5. Attach Parachute Survival Kit

e. Reeve kit retention straps on parachute thru adapters on survival kit. Reeve straps back thru adapters to obtain 5 to 6 in. of straps between center of adapter and lapbelt. Fold free ends of straps under and wedge straps down to buckle. Tack fold of strap to strap underneath with two turns of size 6 thread, single and under waxed; tie off (Figure 6).

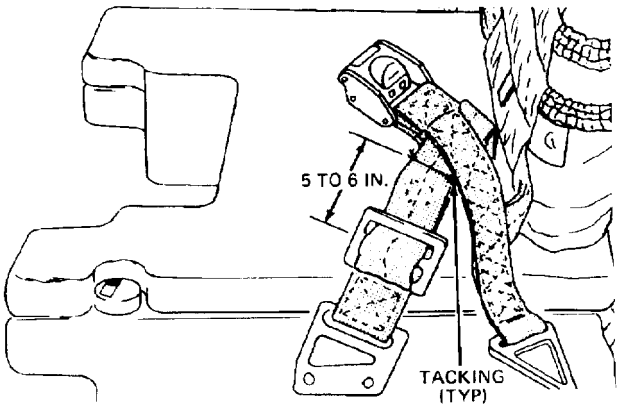


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Figure 6. Reeve Kit Retention Straps Thru Adapters

12. REPLACEMENT OF SLIDER TAB AND RETENTION STRAP TACKINGS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove loose or broken tacking(s).

b. Replace slider tab tacking by tacking tab to flap with two turns of size 6 thread, single and waxed; tie off per Paragraph 11, Step c.

c. Replace retention strap tackings with two turns of size 6 thread, single and waxed; tie off per Paragraph 11, Step e.

13. STOWAGE OF SPREADING GUN SAFETY PIN FLAG.

a. Position spreading gun safety pin flag on table with securing strap facing down and safety pin as shown. Fold flag with safety pin tucked inside so that securing strap faces up (Figure 7).

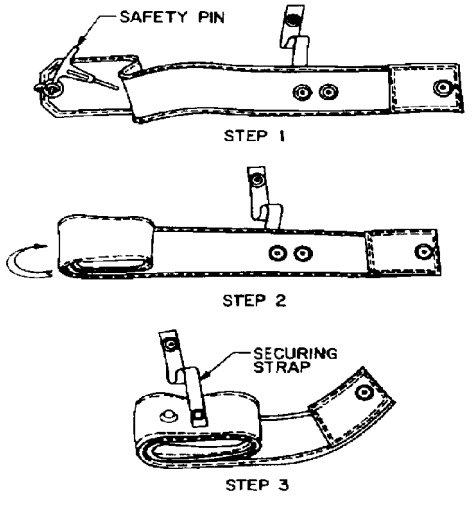

Figure 7. Positioning of Spreading Gun Safety Pin Flag

b. When flag is completely folded, pass securing strap around left kit retention strap between container and lapbelt (ripcord handle side). Close snap fastener. Close flag snap fastener (Figure 8). (QA)

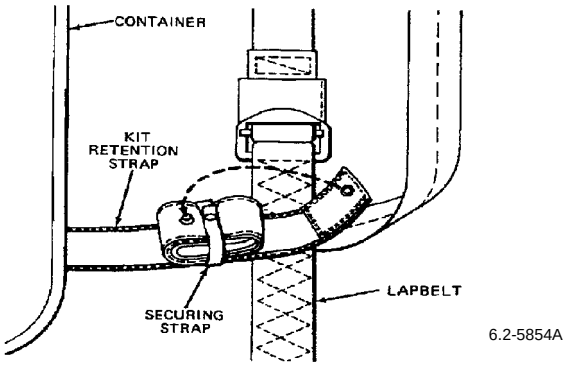

Figure 8. Securing of Safety Pin Flag

14. PARACHUTE HARNESS SENSING RELEASE UNIT (PHSRU).

15. REPLACEMENT OF PHSRU TORQUE SEAL.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Torque loose screws to a value of 11 to 13 in-lbs.

b. Apply torque seal to the plug assembly, sensor plug and electronics package assembly attaching screws (Figure 9).

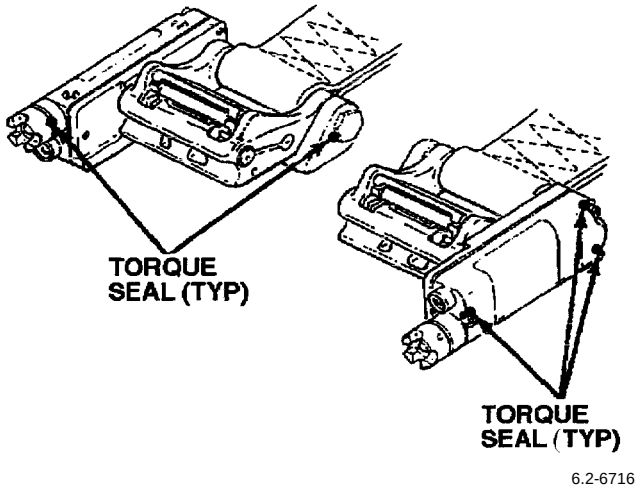

Figure 9. Replacement of Torque Seal on PHSRU

16. REPLACEMENT OF PHSRU BATTERY AND SENSOR PLUG.

Support Equipment Required

Specification or Part Number	Nomenclature
FLUKE-77	Multimeter
SA852AS112	Torque Driver
SA852AS113	Torque Tool, Sensor Plug
GGG-W-641	Socket Handle, 1/4-in. Drive
3405AS101-2	Socket, Special 7/16 x 1/4-in. Drive

a. Perform PHSRU Organizational Level Maintenance in accordance with WP 024 02 for the following tasks:

(1) Removal of battery.

(2) Installation of battery.

(a) Conduct the following:

1) Battery voltage check.

2) Battery polarity check.

3) Battery installation.

4) Final check.

(3) Removal of sensor plug.

(4) Installation of sensor plug.

(a) Conduct the following:

1) Sensor plug resistance check.

2) Final check.

INTERMEDIATE AND DEPOT MAINTENANCE

PACKING PROCEDURES

NES-25A PERSONNEL PARACHUTE ASSEMBLY

PART NO. 926AS104-6

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9 thru 10	11	18 thru 19	9				

Reference Material

Cartridge Actuated Devices (CADS) and Propellant Actuated Devices (PADS) (IETM) . . . . . NAVAIR 11-100-1.1
Intermediate and Depot Maintenance, Common Repairs . . . . . WP 004 00
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdowns, Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00
Organizational, Intermediate and Depot Maintenance, Illustrated Parts Breakdown, NES-25A Personnel Parachute Assembly . . . . . WP 020 04
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration . . . . . WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment . . . . . WP 005 00

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Record of Applicable Technical Directives

None

1. GENERAL.

a. Packing instructions are provided with the assumption that they will be carried out under ideal conditions in a parachute loft (WP 003 00). When a parachute assembly must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

b. In no case shall the packing of a parachute assembly be interrupted after the packing operation has been started. If the packing operation is interrupted due to unforeseen circumstances, parachute assembly shall be completely repacked per instructions contained in this Work Package (WP).

c. Quality Assurance (QA) points have been included in the packing procedures. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Witnessing of QA steps may be delayed QA if their satisfactory completion is verified in later steps.

d. During packing procedures, packer shall be positioned on left side of packing table and helper on right side when viewed from riser end of table.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
711-07076	Altitude Chamber
—	C-Clamp (2)
Refer to WP 005 00	Fid (2)
Refer to WP 005 00	Guide Tube
TMA2	Hex Head Driver 1/16-in. Bit
Refer to WP 005 00	Line Stowage Aid
Refer to WP 005 00	Long Bar (2)
FLUKE 77	Multimeter
Refer to WP 005 00	Packing Hook
Refer to WP 005 00	Pilot Parachute, Pin Plate
Refer to WP 005 00	Ripcord Pin Lock
MS17985C310	Safety Pin
DPP-50	Scale, Spring
—	Screwdriver, Torque
Refer to WP 005 00	Shot Bag (6)
11-1-3512	Small Line Separator
Refer to WP 005 00	Temporary Locking Pin (4)
ST86-0064-1	Test Fixture
TQS6	Driver, Torque, in-lbs.
GGG-W-00686	Wrench, Torque

Materials Required

Specification or Part Number	Nomenclature
O-E-760	Alcohol, Denatured
MIL-S-45180	Compound Sealing Type II
PIA-C-5040	Cord, Nylon, Type IA or III, 16 ft.
TT-I-1795	Ink, Marking Black
701AS100-1	Tape, Nylon Type II, 18-in.
V-T-295	Thread, Nylon, Size A, Type I or II, Class A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
V-T-295	Thread, Nylon Size 6, Type I or II, Class A

Specification or Part Number	Nomenclature
711-07077	Test Slug (3)
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Ensure that all support equipment and materials required are available prior to starting.

b. Inspect packing tools for nicks, burrs, or sharp edges which may cause damage to the parachute assembly.

c. Count and record number of packing tools.

d. Clean packing table.

3. SPREADING GUN SAFETY PIN.

a. Ease of operation.

b. Presence of two locking balls.

c. Condition of flag and flag stowage strap.

4. LAYOUT OF RIGGED PARACHUTE ASSEMBLY.

WARNING

Use extreme caution. This parachute assembly incorporates a spreading gun.

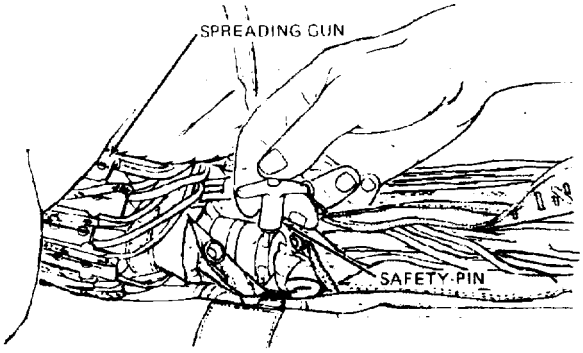
a. Check proper operation of spreading gun safety pin by depressing button and ensuring ball bearings on top of pin depress only while button is engaged. Check condition of flag and flag stowage strap.

WARNING

Do not remove spreading gun or suspension lines from container.

b. Completely open parachute container and detach spring opening assemblies.

c. Carefully raise folded canopy exposing spreading gun. Open fasteners on extractor sleeve and fully insert safety pin into spreading gun. The safety pin button must be depressed to insert pin (Figure 1). (QA)



6.2-5520

Figure 1. Safety Pin Installation

WARNING

Do not remove spreading gun safety pin at any time during this procedure.

d. Open extractor sleeve fasteners on each side of spreading gun safety pin.

e. Release fastener securing stowage sleeve to extractor sleeve.

f. Remove stowage sleeve from extractor sleeve.

g. Remove only folded canopy from container.

h. Cut tackings from suspension line cover flap and rotate flap from container.

i. Remove yoke and plate assembly from connector link on helper's side and then remove spreading gun firing lanyard.

j. Reinstall yoke and plate assembly on connector link.

k. Remove safety tie to firing lanyard thong and then remove thong from nylon tape secured to grommet on line stowage sleeve attachment loop.

l. Remove tacking from firing lanyard to stowage sleeve. Remove firing lanyard from suspension line stowage sleeve.

m. Cut tacking from stowage sleeve tab and remove suspension lines from stowage sleeve.

n. Remove connector link ties from connector links and container assembly.

o. Remove release lanyard from bottom left connector link.

p. Remove risers from container strap assembly fasteners.

5. REMOVAL OF SPREADING GUN CARTRIDGE.

WARNING

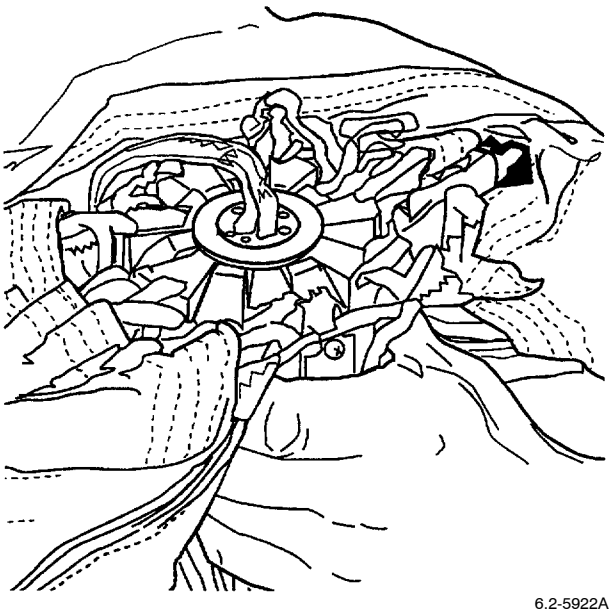
Safety pin must be installed in spreading gun.

NOTE

Use only special tools furnished for cartridge removal or replacement. It is recommended that a helper assist person performing cartridge replacement by verifying procedures as each step is accomplished. Cartridge removal firing pin pull force check shall be made each time the parachute assembly is packed.

a. Ensure safety pin is installed in spreading gun. (QA)

b. Helper will place spreading gun on packing table, with cartridge opening in upright position and hold (Figure 2).



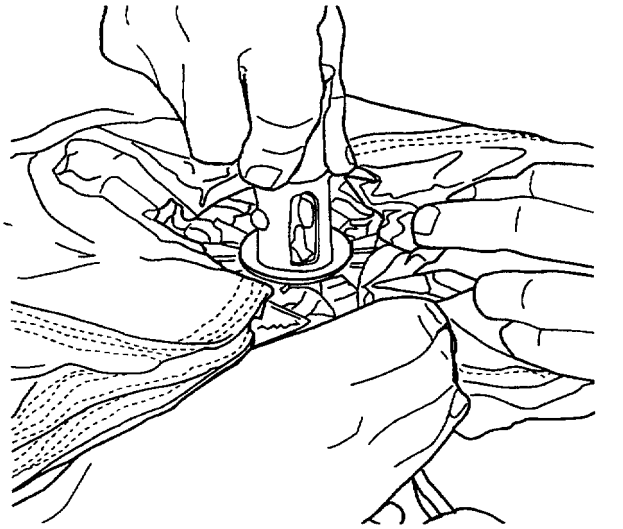
6.2-5922A

Figure 2. Positioning of Spreading Gun

CAUTION

Cartridge extractor wrench surface must mate with cartridge. Resurface wrench if required.

c. Place pins of cartridge extractor wrench into holes in cartridge (Figure 3).



6.2-5923A

Figure 3. Removal of Spreading Gun Cartridge

WARNING

The spreading gun employs an explosive cartridge. Failure to observe procedures in this Paragraph could result in serious injury.

WARNING

If difficulty occurs in removal of cartridge using extractor wrench furnished with test fixture, request aid of explosive ordnance disposal (EOD)

d. Manually unscrew and remove cartridge from chamber.

e. Remove cartridge from retainer cord by removing pin. Retain pin for reinstallation.

f. Store/dispose of cartridge per NAVAIR 11-100-1.1.

g. Attach a 16-ft. length of messenger cord to loop end of anti-squid retainer cord.

6. SPREADING GUN PULL FORCE CHECK.

a. Clamp spreading gun test fixture (WP 005 00) to packing table. Use one C-clamp positioned as closely as possible to clamp assembly.

b. Examine spreading gun chamber to ensure that no pistons are protruding into chamber and that no foreign matter is present.

c. Remove safety pin from spreading gun.

d. Slide spreading gun onto test fixture so that shaft butts against bottom of cartridge chamber (Figure 4).

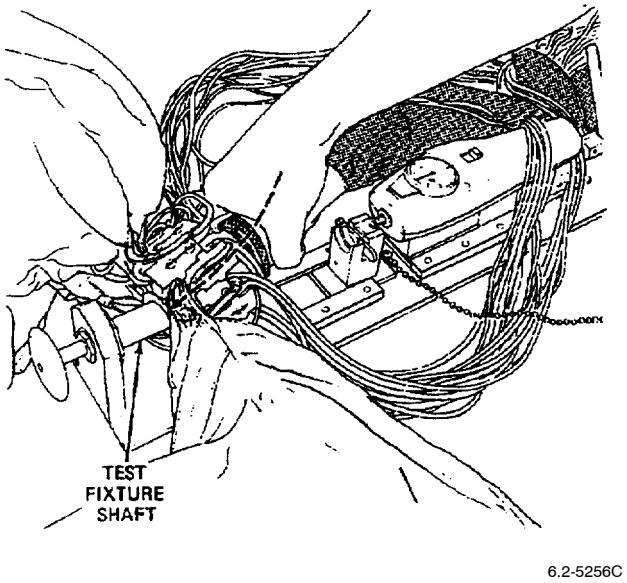


Figure 4. Installation of Spreading Gun

e. Open spreading gun extractor sleeve and expose firing pin housing.

f. Slide block assembly at center of test fixture under firing pin housing until block assembly pin slides into base plate hole. Align firing pin subassembly so that eye is horizontal and firing lanyard is located on top (Figure 5).

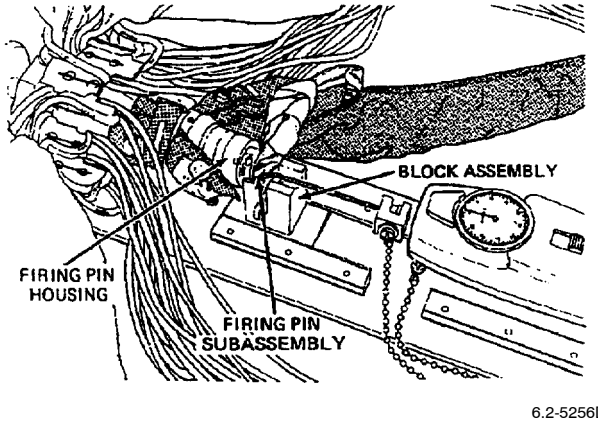


Figure 5. Alignment of Spreading Gun in Text Fixture

g. Attach hook assembly to firing pin eye and slide hook assembly block over nut attached to spring scale.

h. Move switch on spring scale to center position. Zero scale by rotating bezel. Move switch to full down position away from meter to observe pull force.

CAUTION

Do not withdraw firing pin subassembly further than the distance needed for release of firing pin. Complete removal of firing pin is not required for this test. Complete removal will cause ball bearings to unseat, thus requiring depot overhaul.

i. Pull test fixture lever until firing pin subassembly releases. Verify pull force is between 32 ± 6 lbs. If spreading gun fails first test, it shall be retested twice more. Spreading gun must pass both retests. (QA)

NOTE

If spreading gun fails pull force check, remove gun from service per WP 004 00.

j. After pull force measurement has been obtained, remove hook assembly from firing pin subassembly.

k. Push firing pin subassembly back into housing. Push control disc firmly inward, forcing firing pin subassembly out of housing. Apply inward hand pressure to firing pin subassembly as it moves out. Continue to move control disc inward, applying hand pressure to firing pin subassembly until it clicks into place. When click is heard, gun is cocked. Gently release control disc while still exerting pressure on firing pin subassembly.

l. Tug gently on firing pin subassembly until effect of spring loading is felt. If firing pin subassembly moves without spring tension, the gun is not cocked and step k must be repeated. (QA)

m. Release block assembly by pulling pin out of hole in baseplate and sliding away from spreading gun.

WARNING

Safety pin must be installed.

n. Install safety pin in spreading gun.

o. Remove spreading gun from test fixture. Do not remove gun by pulling on firing lanyard.

p. Remove test fixture from packing table.

7. LAYOUT OF PARACHUTE ASSEMBLY.

a. Stretch canopy and suspension lines full length on packing table. Rotate spreading gun so that suspension lines 1 and 28 are facing up and lines 14 and 15 are on bottom.

b. Attach tension strap hook to canopy apex lines.

c. At spreading gun, separate suspension lines into two equal groups with lines 1 thru 14 on packer's side and lines 15 thru 28 on helper's side. Grasping each group of lines, walk from skirt hem to connector links removing any dips and twists between the two groups (Figure 6).

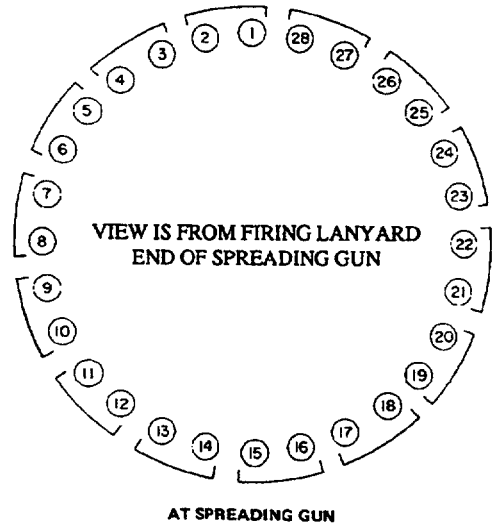


Figure 6. Arrangement and Oreintation of Suspension Lines

d. Place connector link holding suspension lines 1 thru 7 on top of connector link holding suspension lines 8 thru 14. Place connector link holding suspension lines 15 thru 21 on top of lines 22 thru 28. Insert tension hooks into connector links and into packing table.

e. Apply slight tension to canopy until suspension lines are taut.

f. Pull vent collar down toward canopy. Align exposed vent hem.

g. Pull vent collar back to original position.

8. REMOVAL/DISARMING/DISASSEMBLY OF AUTOMATIC PARACHUTE RIPCORD RELEASE.

WARNING

Do not pull arming cable from armed release assembly, as this will cause it to fire.

a. Open release assembly pocket in the parachute container, and remove release assembly a sufficient distance to allow disassembly.

b. Remove cover locking screw and washer (Figure 7).

NOTE

Cover and power cable assembly and receiver and barrel assembly are serialized, matched sets. Do not mix assemblies.

c. Slide cover off receiver and barrel assembly.

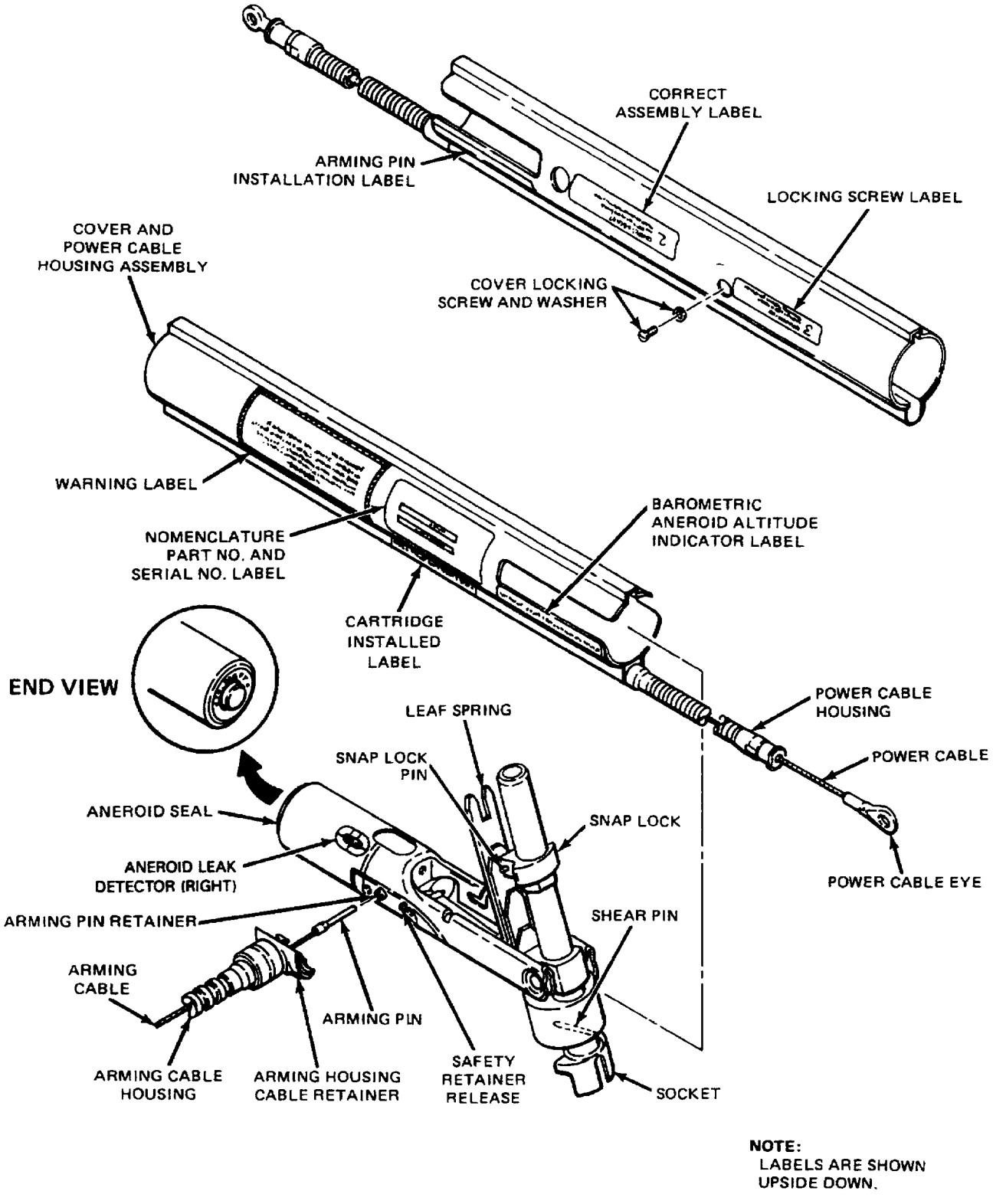


Figure 7. Automatic Parachute Ripcord Release, Model 7000

d. Disengage barrel by pushing down on snap-lock; slide back and release (Figure 8).

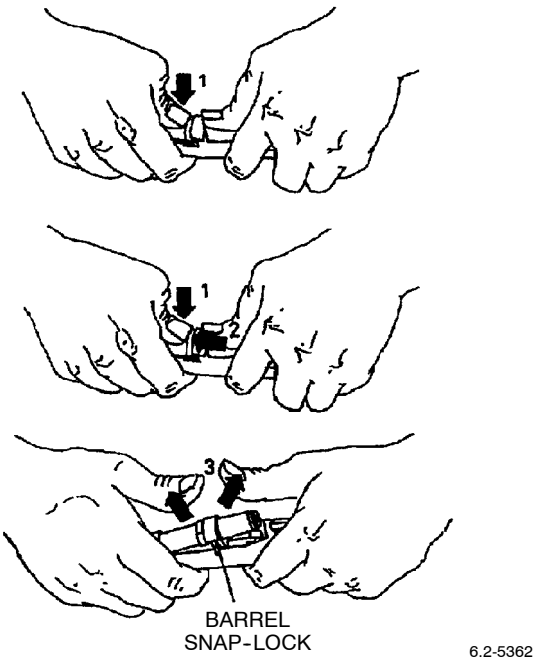


Figure 8. Disarming Ripcord Release

e. Remove cartridge from barrel immediately after barrel is disengaged. Store cartridge per NAVAIR 11-100-1.1. (QA)

f. Remove arming cable housing from receiver and barrel by depressing retainer release (Figure 7). Remove arming cable housing from receiver, leaving arming cable pin installed.

g. Ensure that arming cable pin is positively retained by arming pin retainer (Figure 7).

h. Remove arming cable pin from receiver by grasping arming pin and pulling.

i. Remove arming cable and clip from arming cable housing.

9. INSPECTION (SPECIAL).

a. Maximum scheduled repack cycle is 448 days.

10. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Parachute Harness Sensing Release Unit Cartridge) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be re-based if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Components without a service/total life shall be removed from service if the components do not pass inspection, as determined by Quality Assurance Representative (QAR) or Collateral Duty Inspector (CDI).

g. Spreading gun retainer cord is changed with the spreading gun.

h. Check date placed in-service and date of manufacture on each parachute part for service/total life as follows:

Nomenclature	Service Life (Yr)	Total Life (Yr)
Battery	4	4
Canopy Assembly	None	15
Cartridge, Impulse MF-78	Refer to NAVAIR 11-100-1.1	
Cartridge MF-37	Refer to NAVAIR 11-100-1.1	
Cartridge MW19	Refer to NAVAIR 11-100-1.1	
Cross-Connector Strap	(See Note 1)	(See Note 1)
Electronics Package Assembly	None	8
Pilot Parachute	None	15
Pilot Parachute Connector Strap		15
Riser Assembly	None	15
Spreading Gun	None	11 1/2

Note 1: Replace at Canopy Assembly replacement.

(1) Markings for completeness, legibility, and agreement with information on Parachute Record (OPNAV 4790/101).

(2) Compare configuration of parachute assembly to that shown in WP 020 04 Illustrated Parts Breakdown.

11. AUTOMATIC PARACHUTE RIPCORD RELEASE.

NOTE

Do not mismatch cover and power cable housing assembly and barrel and receiver assembly.

a. Serial numbers on the cover and power cable housing and receiver and barrel assembly for matched numbers. (QA)

b. Receiver and barrel assembly for nicks, cracks, gouges, distortion, corrosion, or other damage which could cause malfunction in-service.

c. Decals and labels for legibility and security of attachment.

d. Cover and power cable housing for nicks, gouges, distortion, corrosion, and security of power cable housing.

e. Power cable for freedom of movement and secure attachment of swaged ball and power cable eye (Figure 9).

f. Arming cable for kinks, broken strands, corrosion, and security of arming pin and sqaged ball.

g. End fitting for distortion, corrosion, cracks, breaks, and security of attachment.

h. Arming cable clip retainer and retainer pin for distortion, corrosion, and other damage.

i. Arming cable housing for bends, retention of end furrel, retention of housing retainer.

j. Aneroid for evidence of expansion and correct indication.

k. Ensure proper retention of arming pin retainer by inserting arming pin in retainer while barrel is unlocked. Press pin into place firmly until locked into pin groove. Pin should now be held securely.

l. Manually pull arming cable pin from retainer, ensuring that pin was properly secured. (QA)

m. Sealing compound on aneroid; seal must be intact. Cracks due to normal aging of seal material are acceptable (Figure 10).

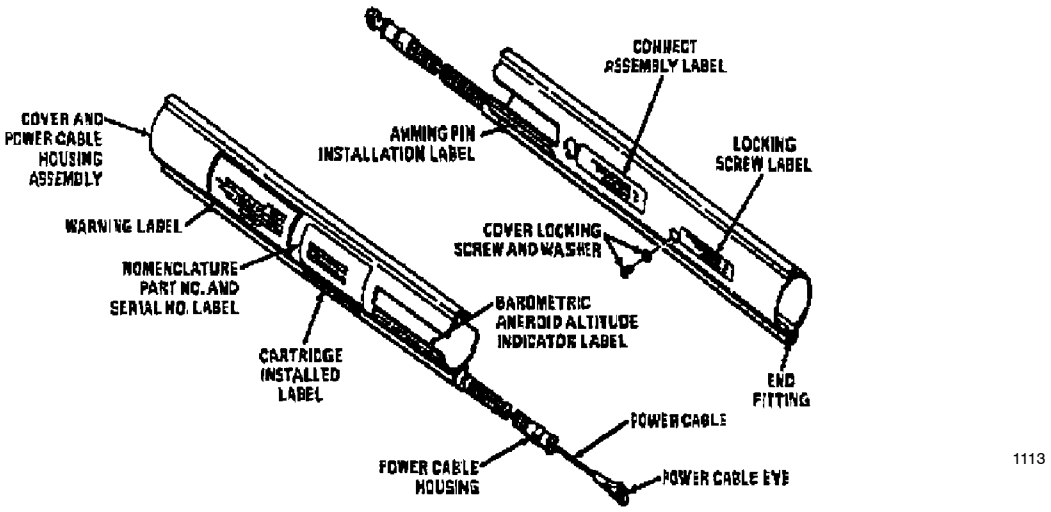


Figure 9. Attachment of Swaged Ball and Power Cable Eye

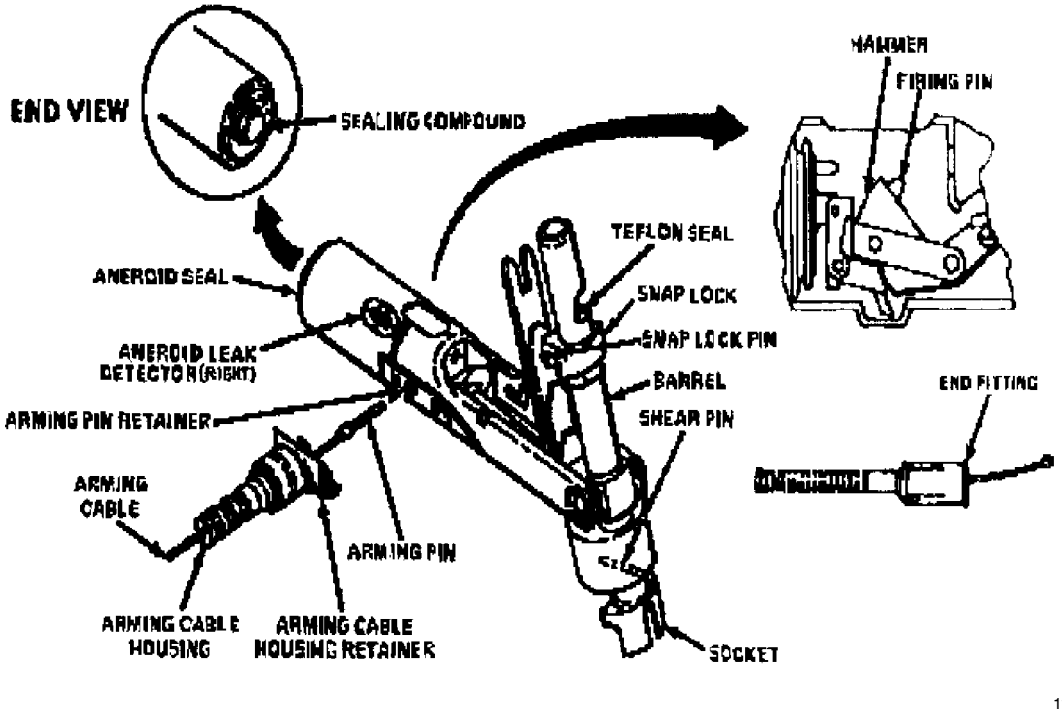


Figure 10. Sealing Compound Check

WARNING

Do not twist socket, as this will break shear pin.

n. Socket for visible damage and retention of socket and piston by shear pin.

o. Snap-lock pin for security and damage.

p. Teflon seal (inside of barrel) for placement.

q. Firing pin for flattening, gouges, and other damage.

r. Leaf springs on receiver and barrel assembly for damage; leaf spring retaining screw for condition and presence of torque seal (Figure 11).

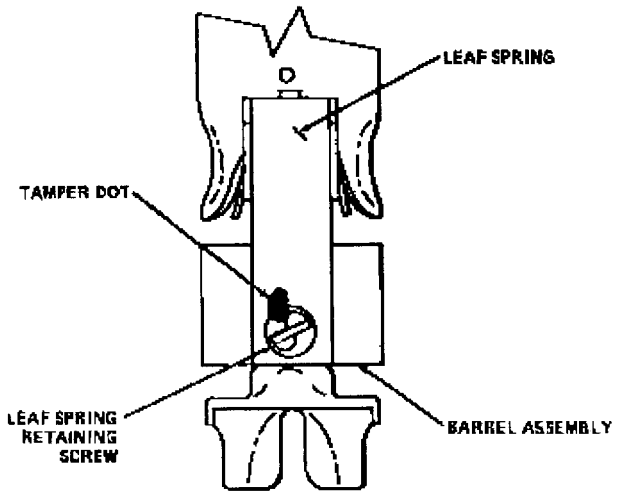


Figure 11. Presence of Torque Seal

12. RIPCORD RELEASE FIRING ALTITUDE CHECK.

a. Install test chamber substitute arming pin in ripcord release.

CAUTION

Do not release firing mechanism without test slug installed, as this will distort the firewall.

b. Install test slug.

CAUTION

At no time will a tool or other device be used to open or close the ripcord release.

c. Press barrel down into position in receiver, ensure snap-lock pins lock barrel in position.

d. Perform firing altitude check:

NOTE

Determine whether actuator being tested is pre-set for 10,000 ft. or 14,000 ft. The ripcord release firing check must simulate firing ±1,000 ft. of pre-set altitude.

(1) Install barrel and receiver in test chamber. (QA)

(2) Set altimeter to 29.92 in. Hg. (QA)

(3) Evacuate chamber to a minimum of 25, 000 ft. pressure altitude. (QA)

(4) Decrease altitude at a rate of 175 to 200 ft./sec. (QA)

(5) Actuate arm toggle to withdraw arming pin at approximately 20,000 ft. pressure altitude. (QA)

(6) Verify altitude at which ripcord release firing pin strikes test slug. (QA)

(7) Remove test slug from barrel; check primer for indent; indent must be present and centered. (QA)

CAUTION

Test slug must be removed from barrel after each use.

(8) Repeat firing altitude check two additional times; using a new test slug each time; the ripcord release must pass all three firing altitude checks. (QA)

(9) Discard test slugs. (QA)

(10) Remove ripcord release from altitude chamber. (QA)

13. RIPCORD RELEASE END FITTING REMOVAL TEST.

NOTE

The arming cable and housing shall be removed from the automatic parachute ripcord release assembly.

a. Helper shall hold arming cable housing steady on packing table.

b. Attach gage to the swaged ball using Type I or IA nylon cord.

c. Using a straight steady pull, observe amount of pull required to remove end fitting from arming cable housing. Allowable force is 17 lbs. ± 3 lbs. (QA)

14. SPREADING GUN.

WARNING

Safety pin must be installed. Do not twist or pull on firing lanyard.

a. Extractor sleeve for contamination, fraying, loose or broken stitching, security and condition of fasteners, and security of attachment.

b. Decals and labels for presence and legibility.

c. Firing lanyard and stowage sleeve for contamination, twists, cuts, burns, fraying, security of attachment and condition of fasteners.

d. Spreading gun for corrosion, slugs properly held by shear band assembly, security of plates, condition of unbroken lock seal, and plate screws for presence and condition of torque seal.

e. Firing pin housing for security. Grasp around housing slug/plates with left hand. With right hand grasp safety pin and top of firing mechanism. In counterclockwise direction try to rotate firing mechanism. Any rotation of the firing mechanism is cause for rejection.

f. Inspect the anti-squid retaining cord for proper attachment to the apex lines and the cartridge. Verify presence of tacking, and inspect for proper stowage of excess line in the stowage sleeve. For proper tacking of the anti-squid retainer cord, refer to WP 004 00. (QA)

g. Firing lanyard for proper stowage in stowage sleeve channels and presence of tacking (Figure 12). (QA)

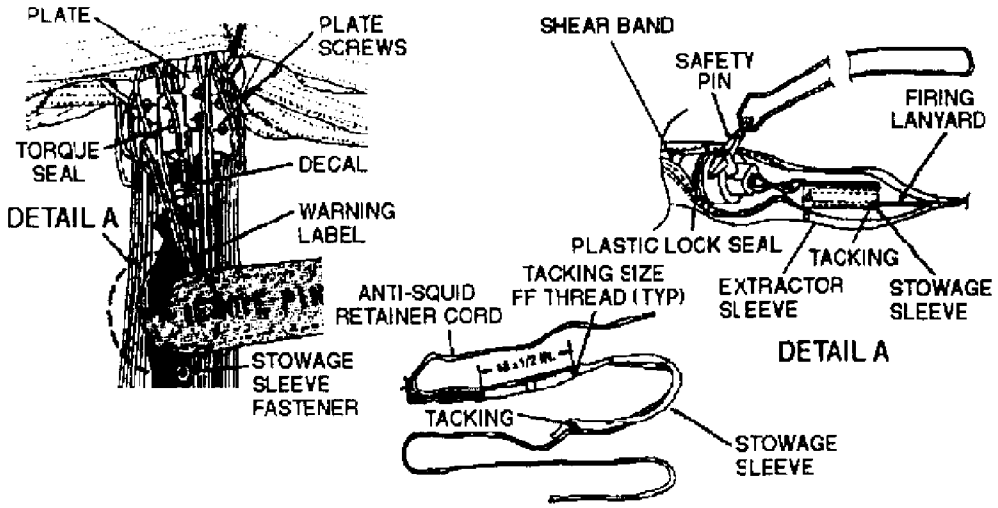


Figure 12. Firing Lanyard Stowage

15. CANOPY ASSEMBLY.

a. Canopy skirt hem, fabric surface, diagonal seams, radical seams, vent hem, water deflation pockets, for cuts, holes, ruptures, contamination, deterioration, and loose or broken stitching.

b. Suspension lines and canopy apex lines for fraying, ruptures, protruding inner core lines, burns, contamination, and presence of twists.

c. Lines and spreading gun anchor loops for security of attachment to skirt hem.

d. Attachment of four-line release anchor loops to suspension lines 3 and 26.

e. Attachment of four-line release lanyards to anchor loops on suspension lines 3 and 26.

f. Connector links for corrosion, distortion, nicks, burrs, sharp edges, and cracks.

NOTE

For Double "L" Connector Link, refer to WP 020 03 for disassembly, assembly, and inspection instructions.

g. Connector links for defective yoke and plate assemblies. Maximum of 1/32-in. play allowable in plate.

h. Torque seal unbroken with yoke and plate assemblies installed with knurled portion facing up and screwheads facing outboard (Figure 13). (QA)

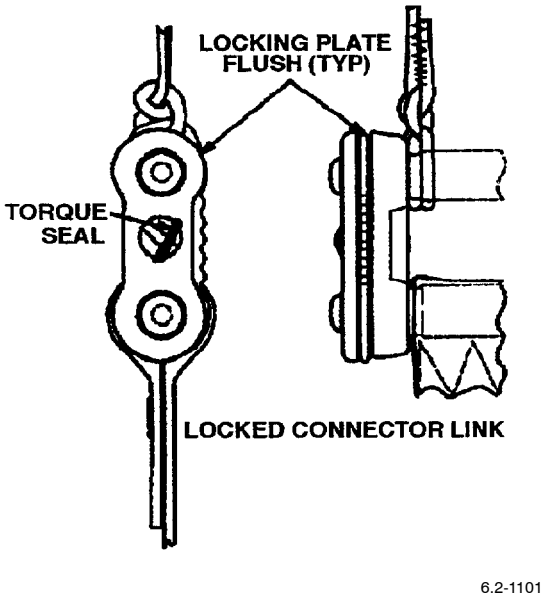


Figure 13. Torque Seal Unbroken

16. PILOT PARACHUTE AND BRIDLE ASSEMBLY.

a. Pilot parachute:

(1) Fabric surfaces and seams for cuts, tears, fraying, and loose or broken stitching.

(2) Seam area at crown for seam separation.

(3) Spring assembly for distortion.

(4) Loose or broken tackings (4 places each) at bottom and top of the coil spring.

(5) Locking cone and grommet for condition, and security of attachment.

(6) Risers for security of attachment.

b. Internal bridle assembly:

(1) Cuts, fraying, and loose or broken stitching.

(2) Proper attachment to vent lines and pilot parachute Lark's head knot.

(3) Loose or broken tacking of lark's head knot at pilot parachute loop.

17. RISERS AND CROSS-CONNECTOR STRAPS.

a. Webbing for contamination, rust at points of contact with metal parts, cuts, twists, fading, wear, burns, fraying, abrasions, and loose or broken stitching.

b. Four-line release lanyard flute and ripcord housing flute for wear and security of attachment.

c. Four-line release lanyard pull loops for loose or broken tackings.

d. Ripcord grip retainer for corrosion, damage, and security of attachment.

e. Shoulder harness fittings for corrosion, damage, and security of attachment.

f. Ripcord grip retainer cover for condition and security of attachment.

g. Cross-connector straps for contamination, cuts, fraying, and loose or broken stitching.

h. Cross-connector straps for proper attachment to connector links.

18. RIPCORD ASSEMBLY.

a. Cable for corrosion, bends, broken strands and security of swaged terminal ball.

b. Locking pins for bends, dents, cracks, corrosion, and security of attachment to cable.

c. Ripcord grip for dents, cracks, and corrosion.

d. Housing and clip for corrosion, bends, dents, loose ferrules, breaks, and cracks.

19. CONTAINER AND SUSPENSION LINE STOWAGE SLEEVE.

a. Grommets, cones, snap fasteners for security of attachment, cracks, corrosion, nicks, and gouges.

b. Slide fasteners for condition and proper operation.

c. Fabric areas for seam separations, loose or broken stitching, cuts, tears, contamination, and deterioration.

d. Presence and condition of warning labels.

e. Hardware for corrosion, bends, dents, nicks, sharp edges, and security of attachment.

f. Spring opening assemblies for broken springs, contamination, corrosion, cuts, fraying, bent or broken hooks, elasticity, and loose or broken stitching.

g. Spring opening eyes (8) for security of attachment.

h. Releasable clamp and base plate for corrosion, damage and security of stitching.

i. Release lanyard and lanyard guide for contamination, tears, fraying, loose or broken stitching, cuts, burns, and locking pin for security of attachment.

j. Stowage sleeve for contamination, cuts, tears, deterioration and loose or broken stitching.

k. Grommets and washers for corrosion, damage, and security of attachment.

l. Stowage sleeve for security of attachment to container.

20. LAP BELT ASSEMBLY AND BACK PAD.

a. Webbing for contamination, rust, cuts, fraying, twists; loose or broken stitching and presence and condition of keeper straps.

b. Adapters for corrosion, nicks, burrs, wear, and cracks.

c. Lap belt fittings for corrosion, bends, burrs, wear, and cracks.

d. Slide fastener for condition, and security of attachment.

e. Release assemblies for condition, corrosion, security of attachment and proper operation (Figure 14).

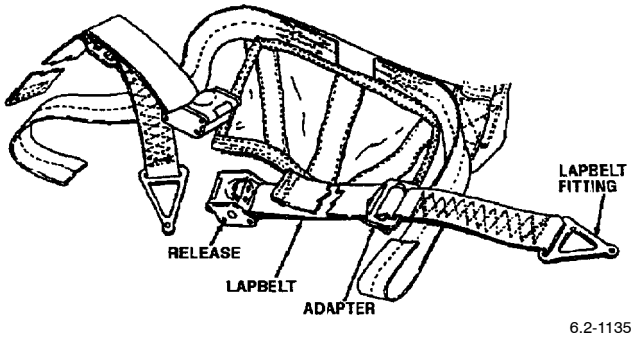


Figure 14. Release Assemblies

f. Back pad fabric area for cuts, tears, contamination, loose or broken stitching and defective snap fasteners.

g. Back pad for presence and condition of warning label.

21. SUSPENSION LINE CONTINUITY.

a. Activate the four line release and retack per WP 004 00. (QA)

b. Ensure the spreading gun with suspension lines 1 and 28 are facing up. Inspect the suspension lines for correct sequencing to the connector links and the spreading gun.

c. Lines shall pass thru corresponding numbered slots in spreading gun slugs. Ensure that loops attached to odd-numbered suspension lines pass thru slots in odd-numbered slugs. (QA)

d. Lines shall run free from skirt hem thru corresponding numbered slots in spreading gun slugs to connector links without dips or twists (Figure 15). (QA)

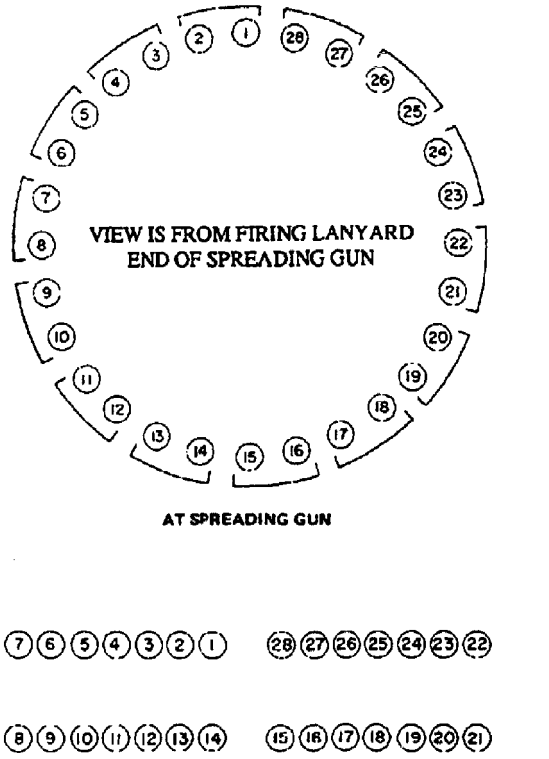


Figure 15. Suspension Line Continuity Check

22. PACKING.

23. STRAIGHTENING OF CANOPY GORES.

a. Arrange canopy on packing table with folded gores 1 thru 14 on packer's side and folded gores 28 thru 15 on helper's side. Ensure attachment loop is located on uppermost radial seam of folded canopy (Figure 16).

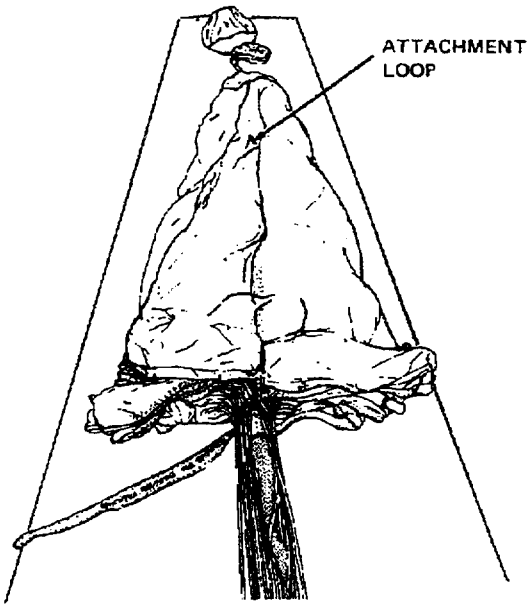


Figure 16. Arrangement of Canopy

b. Helper shall place a shot bag on helper's side of skirt hem (Figure 17).

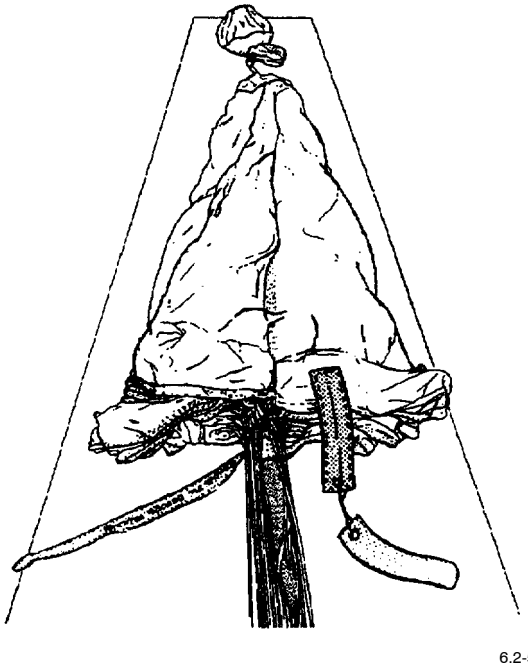


Figure 17. Placement of Shot Bag on Helper's Side

c. Packer shall rotate all gores on packer's side as a group, except bottom gore, over to helper's side of packing table. Packer shall straighten and smooth bottom gore on packer's side of table, throughout its length to apex (Figure 18).

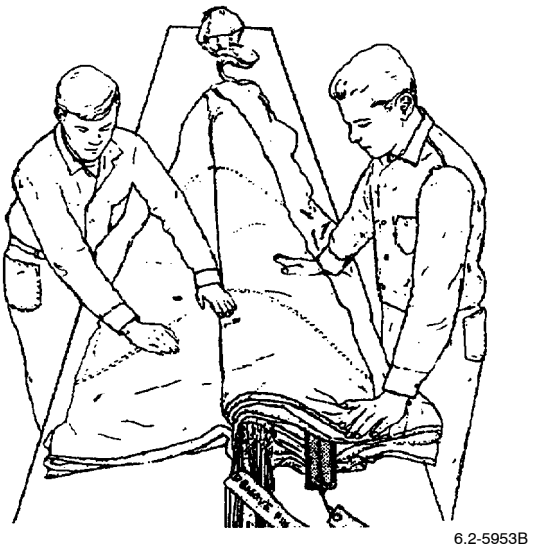


Figure 18. Packer Shall Rotate All Gores on Packer's Side

d. Packer shall return gores above shot bag on helper's side of packing table to packer's side one at a time. Each fold shall be straightened and smoothed (Figure 19).

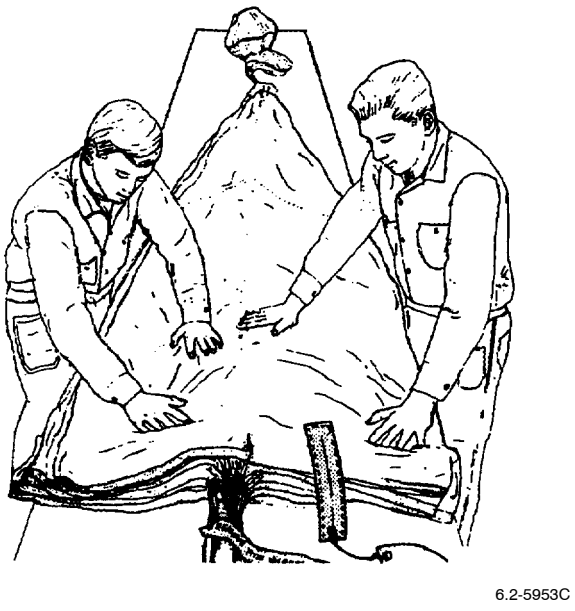
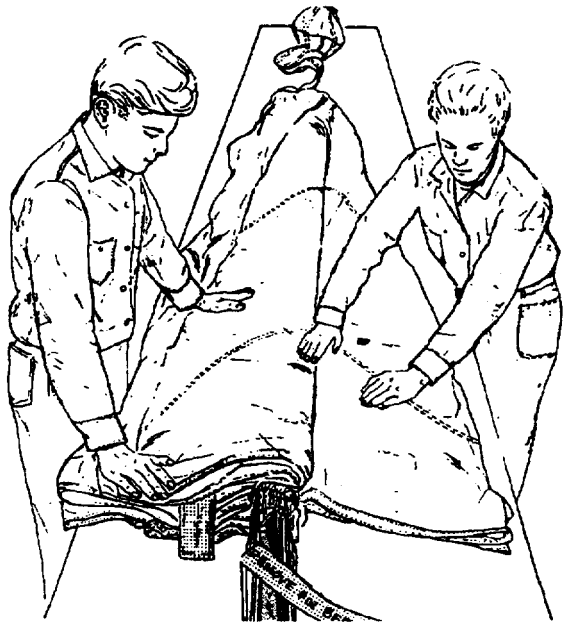


Figure 19. Packer Shall Return All Gores Above Shot Bag on Helper's Side

e. Helper shall remove shot bag from canopy and place it on skirt hem on packer's side.

f. Helper shall rotate all gores on helper's side as a group; except bottom gore over to packer's side of packing table. Helper shall straighten and smooth gore on helper's side of table, throughout its length to apex (Figure 20).

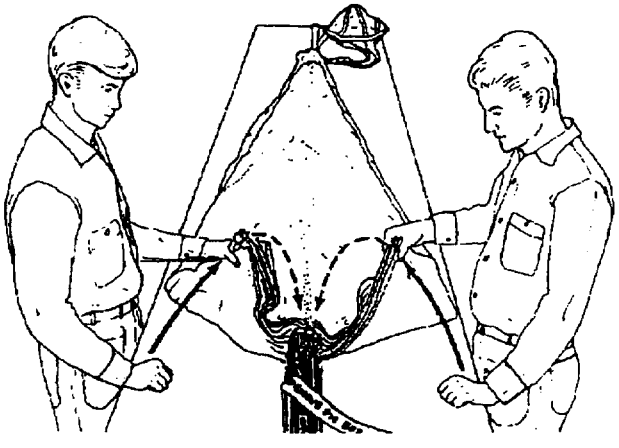


6.2-6168

Figure 20. Helper Shall Rotate All Gores on Helper's Side

g. Helper shall return gores above shot bag on packer's side of table to helper's side one at a time. Each fold shall be straightened and smoothed. Remove shot bag on packer's side.

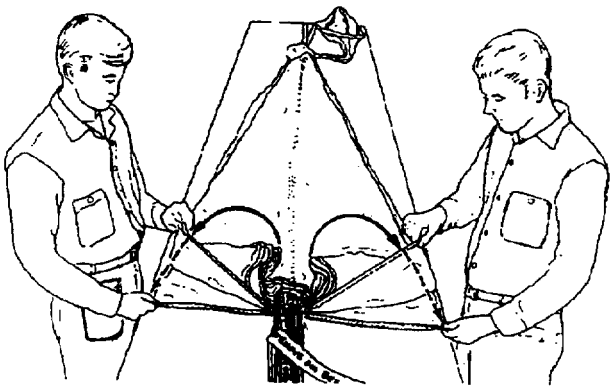
h. Packer and helper shall grasp skirt hem at mid-sections of gores and rotate toward suspension lines (Figure 21).



6.2-6168A

Figure 21. Packer and Helper Shall Grasp Skirt Hem and Rotate to Center

i. Each fold shall be aligned and counted when placed back onto table (Figure 22).



6.2-6168B

Figure 22. Each Fold Shall Be Aligned and Counted

j. Each group of folds on left and right of spreading gun shall count 14 gores.

24. STOWAGE OF STOWAGE SLEEVE IN EXTRACTOR SLEEVE.

WARNING

The 1/2-in. tapes must not be twisted around firing lanyard.

a. Ensure 1/2-in. tapes are not twisted around firing lanyard.

b. Insert stowage sleeve into extractor sleeve open end first (Figure 23).

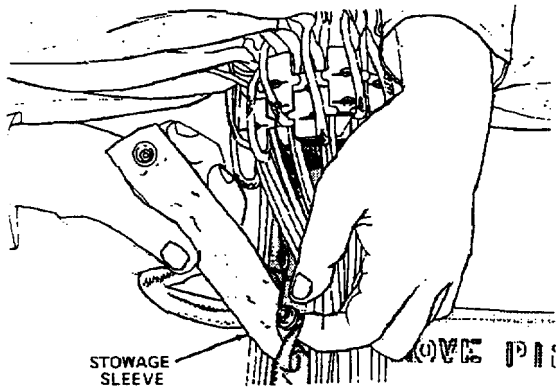


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Figure 23. Insert Stowage Sleeve

c. Engage fastener on stowage sleeve to fastener on extractor sleeve. (QA)

d. Engage extractor sleeve fasteners on each side of safety pin. Pull extractor sleeve straight and gently pull slack from firing lanyard (Figure 24). (QA)

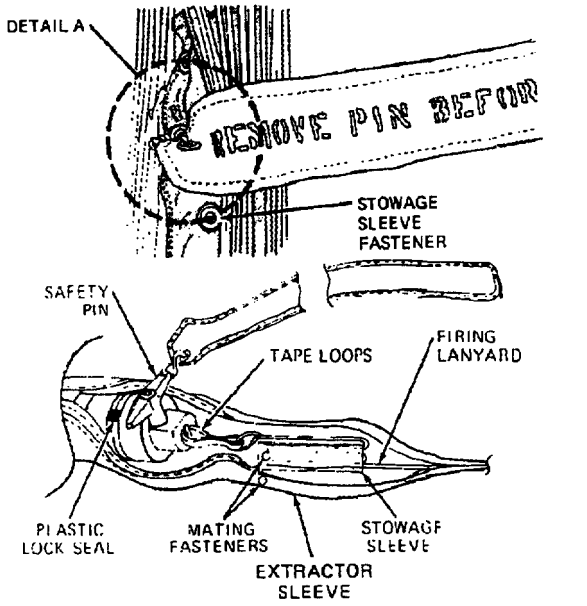

Figure 24. Engage Fastener on Stowage Sleeve

e. Remove tension from canopy and remove tension strap from vent lines.

25. INSTALLATION OF SPREADING GUN CARTRIDGE.

CAUTION

Do not allow alcohol to flow inside gun as this could damage O-rings and lubrication.

a. Clean cartridge chamber and threads with small amount of denatured alcohol. Ensure that old sealing compound and all foreign matter are removed. Gun shall be tilted to allow alcohol to run out of gun. Allow a minimum of 2 min. drying time for alcohol to evaporate.

b. Record type of cartridge, part number, delay time, lot number, and service life expiration date on Parachute Record (OPNAV 4790/101). (QA)

c. Apply sealing compound to top two threads of cartridge (Figure 25).

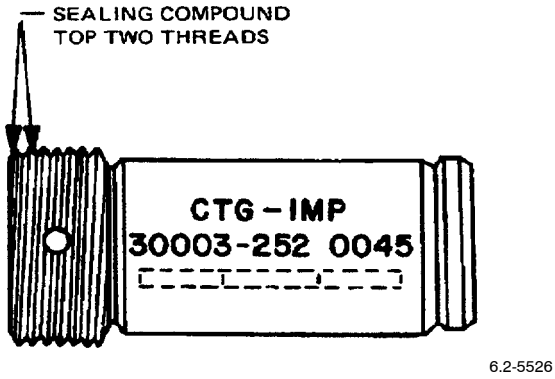

Figure 25. Spreading Gun Cartridge Installation

d. Using messenger cord, draw vent toward skirt until anti-squid retainer cord is even with spreading gun. Remove messenger cord.

e. Helper will place spreading gun on packing table, with cartridge opening in upright position and hold (Figure 2).

f. Ensure there are no knots in retaining cord. Attach new cartridge to anti-squid retainer cord by passing pin thru screw base of cartridge and loop in end of anti-squid retainer cord. (QA)

WARNING

Do not force cartridge into chamber. Safety pin must be installed.

When a cartridge is properly installed, base should be about even with top edge of chamber. If cartridge is more than one thread above edge, remove cartridge and check bottom of chamber for any obstruction, i.e., slug pistons. If cartridge is damaged replace with new cartridge.

NOTE

Use only special tools furnished for cartridge installation. It is recommended that a helper assist the person performing cartridge installation by verifying procedures as each step is accomplished.

g. Insert cartridge into chamber. Manually tighten cartridge into chamber. If cartridge stops before threads are engaged, remove cartridge and check for protruding slug pistons, and push back as necessary.

h. Place pins of cartridge extractor wrench into holes in cartridge and torque to a value of 84 ± 12 in-lbs. (QA)

26. FOLDING OF CANOPY.

a. Straighten canopy skirt hem.

b. Fold canopy on helper's side by rotating gores to center of canopy (Figure 26).

6.2-6169

Figure 26. Fold Canopy on Helper's Side

c. Fold canopy on packer's side by rotating gores to center. Folded canopy should be width of container assembly (Figure 27).

6.2-6169A

Figure 27. Fold Canopy on Packer's Side

d. Place one shot bag slightly behind skirt hem and another on middle of canopy (Figure 28).

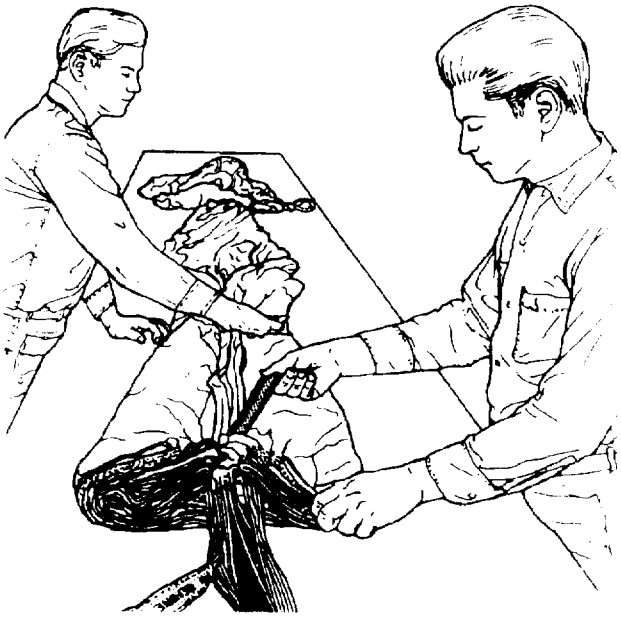

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Figure 28. Place One Shot Bag Behind Skirt Hem

27. AUTOMATIC PARACHUTE RIPCORD RELEASE ASSEMBLY AND ARMING.

NOTE

Right side of release assembly contains aneroid leak detector.

WARNING

Ripcord release with proper altitude setting, time delay cartridge, arming cable housing, and arming cable must be used.

a. Ensure ripcord release has proper altitude setting, arming cable housing, and arming cable. (QA)

b. Ensure arming cable housing is routed thru hole in right side of release pocket and buttonhole in right side of container.

c. Insert arming cable into cable housing.

d. Attach clip retainer to cable housing.

e. With receiver and barrel assembly in the open position, install arming pin release assembly by inserting and locking (arming pin is fully seated when an audible click is heard) the arming pin into the arming pin retainer, ensuring the arming cable housing exits out the left side of container (Figure 29). (QA)

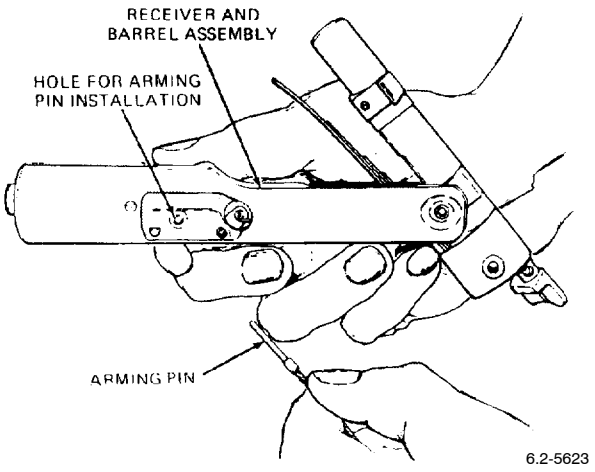


Figure 29. Installation of Arming Pin

WARNING

To ensure proper penetration of cartridge primer, firing pin/hammer assembly must be completely retracted. If edge where curved surface meets flat surface of the hammer assembly is not aligned directly above the arming pin, the release assembly is not properly armed.

f. Ensure that firing pin/hammer assembly is completely retracted. The firing pin/hammer is completely retracted if top edge of hammer is aligned above arming pin (Figure 30). (QA)

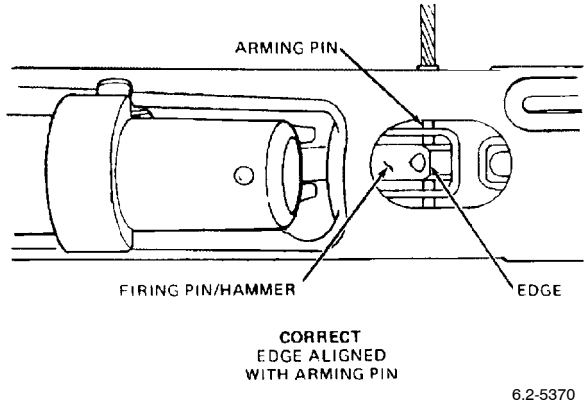


Figure 30. Verification of Firing Pin/ Hammer Retraction

g. Connect arming cable housing retainer to receiver and barrel assembly. Ensure that safety retainer secures housing to receiver (Figure 31).

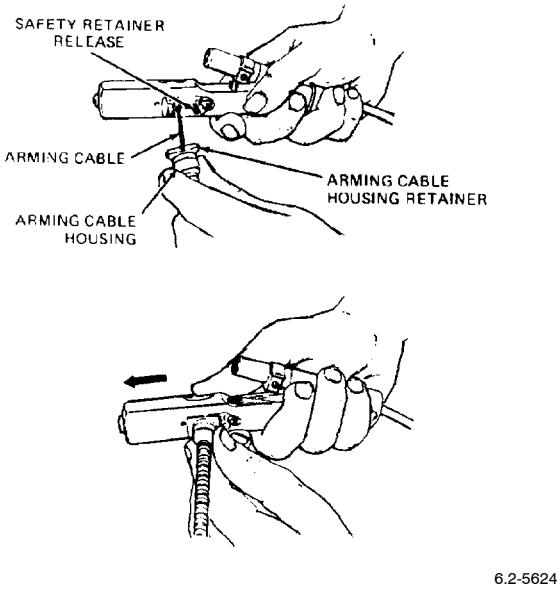


Figure 31. Attachment of Arming Cable Housing

WARNING

Complete arming and installation are mandatory from this point as a safety measure.

h. Enter cartridge time delay, part number, type, expiration date, and load lot number on Parachute Record (OPNAV 4790/101). (QA)

WARNING

Before installing delay cartridge in the automatic parachute release, be sure that arming pin has been inserted thru both the hammer and lock.

i. Insert correct cartridge per WP 020 04 in barrel. (QA)

WARNING

If arming pin is improperly installed, cartridge will fire while locking barrel.

j. While pressing barrel down, look thru inspection hole in receiver and ensure that hammer assembly does not swing toward firewall. If hammer swings, arming pin is improperly installed. Do not attempt to assemble release assembly further, as this could discharge the cartridge. Disassemble improperly armed release assembly and rearm.

k. Press barrel down into position in receiver. As barrel reaches proper position, exert forward pressure on snap-lock, causing snap-lock pins to lock barrel in position. Ensure that snap-lock is aligned with alignment arrow (Figure 32).

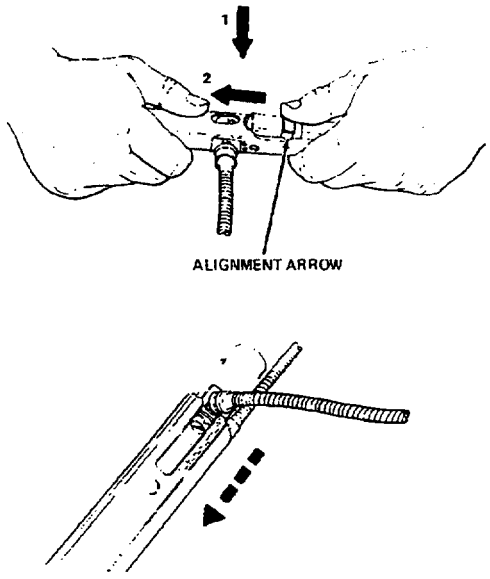


Figure 32. Locking Barrel and Installation of Cover

l. Position cover and power cable housing assembly with power cable facing container.

m. Position receiver and barrel assembly so locking screw hole aligns with locking screw hole in cover and power cable housing assembly (Figure 32).

n. Slide receiver and barrel assembly into cover and power cable assembly until holes for screws are aligned.

o. Install cover locking screw and lockwasher. Apply torque seal to locking screw. (QA)

WARNING

After automatic parachute release has been assembled with delay cartridge firing pin is in a cocked position. Movement of arming cable from the parachute release in excess of 0.5-in. will cause actuation of the device.

28. AUTOMATIC PARACHUTE RIPCORD RELEASE ARMED CHECKOUT AND INSTALLATION IN CONTAINER.

a. Ensure arming device pin protudes (about 1/32-in.) from arming pin retainer (Figure 33).

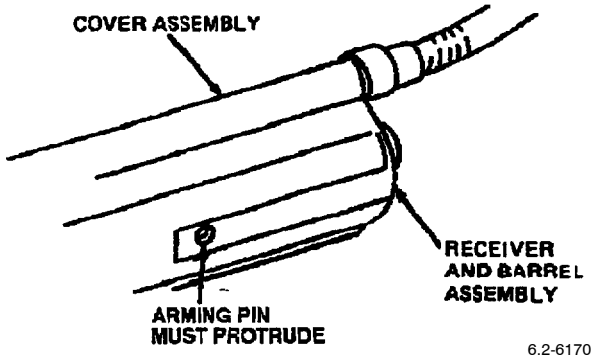


Figure 33. Ensure Pin Protudes

b. Ensure roll pin is visible and centered ± 1/8-in. in viewing hole (Figure 34).

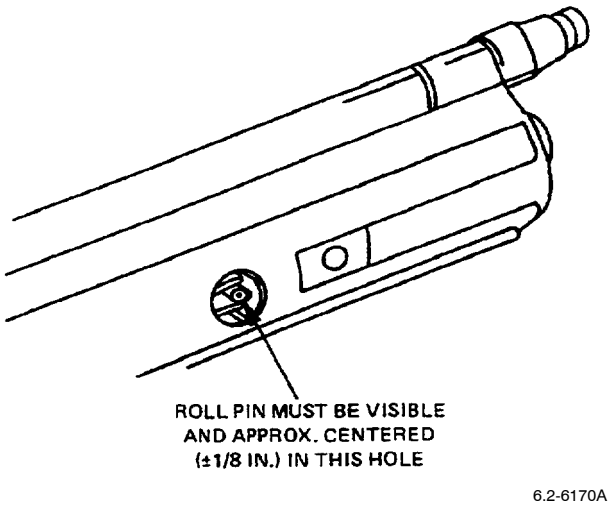


Figure 34. Ensure Pin is Visible

c. Ensure cover locking screw is installed with torque seal applied (Figure 35).

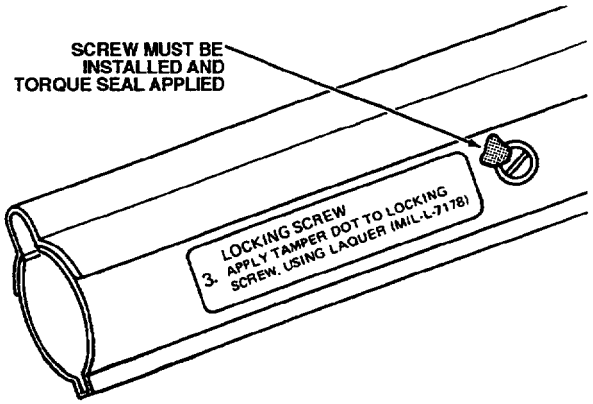


Figure 35. Ensure Locking Screw is Installed

d. Ensure aneriod indicator is in proper position for local elevation (Figure 36).

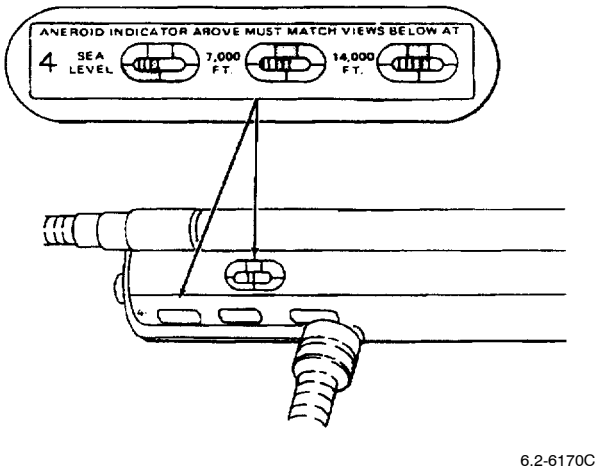


Figure 36. Ensure Aneriod Indicator is in Proper Position

e. Ensure cartridge is installed, look thru port and verify cartridge rim is visible (Figure 37). (QA)

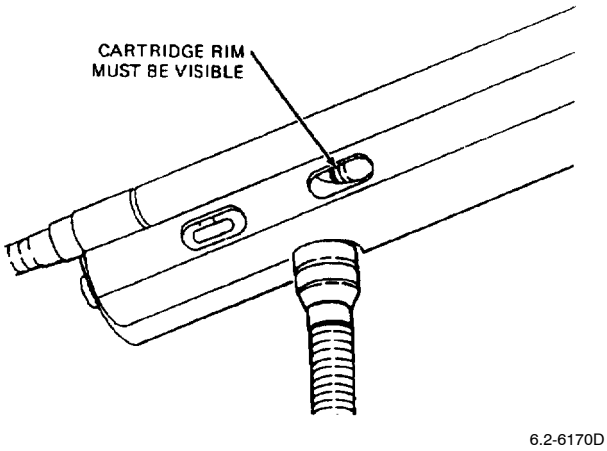


Figure 37. Ensure Cartridge is Installed

f. Insert ripcord release into pocket and close slide fastener.

29. ATTACHMENT OF FIRING LANYARD TO CONNECTOR LINK.

WARNING

Ensure that safety pin is installed in spreading gun.

a. At spreading gun, route firing lanyard between suspension lines 21 and 22 (Figure 38).

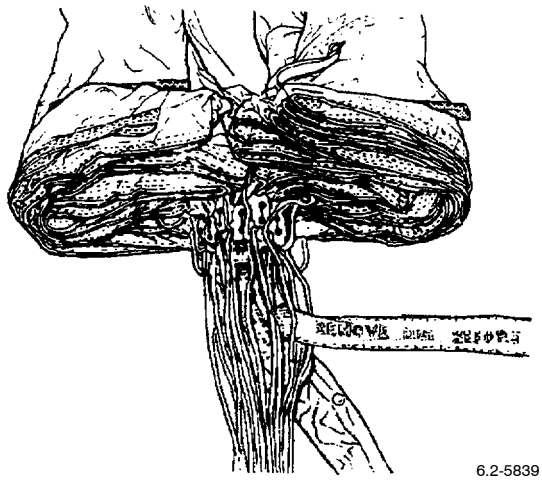


Figure 38. Routing of Suspension Lines

b. Slide canopy towards container and form S-folds in suspension lines large enough to allow loop in end of firing lanyard to align with connector links (Figure 39).

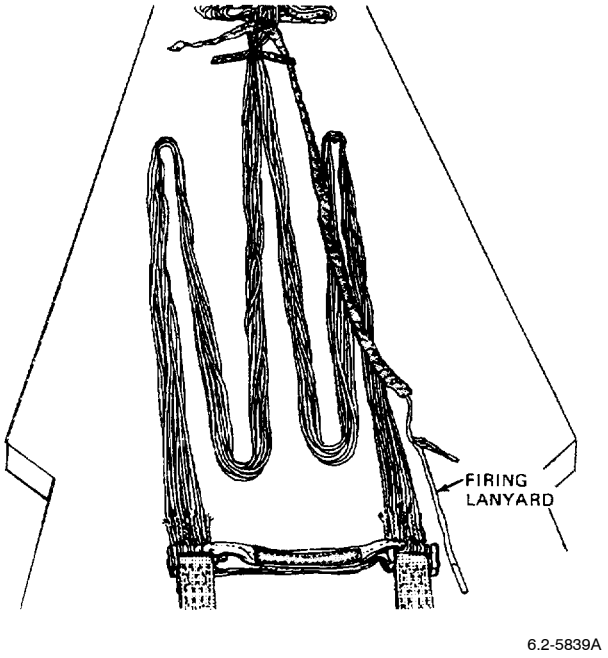


Figure 39. Slide Canopy Towards Container

WARNING

Ensure that no suspension lines are dropped from connector link bar.

Firing lanyard shall be routed in such a manner as to avoid encircling suspension lines.

c. Remove yoke and plate assembly from top connector link on helper's side.

d. Insert connector link bar thru loop in firing lanyard; reattach yoke and plate (Figure 40).

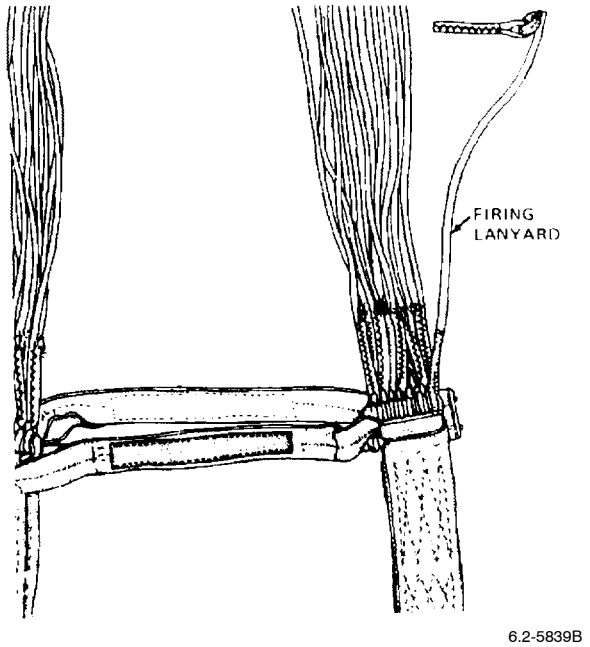


Figure 40. Insert Connector Link Bar thru Loop

e. Tighten screw to a torque value of 23 ± 2 in-lbs. (QA)

f. Apply torque seal to connector link screwhead.

30. ATTACHMENT OF CONNECTOR LINK TIES AND RISERS TO CONTAINER AND RELEASE LANYARD TO CONNECTOR LINK.

a. Cut two 23-in. lengths of Type I or IA nylon cord and sear ends. Do not use waxed cord, secure one end of each cord to grommets at bottom end of container with a bowline knot.

b. Remove the stud and eyelet fastener nearest to canopy release end. Slide the eyelet fastener out through the unsewn part of the webbing, between the two box-X stitching.

c. Position container on top of risers, inside facing up and end flap with ripcord base plate facing toward canopy. Insert risers into end flap slots at top of container (Figure 41).

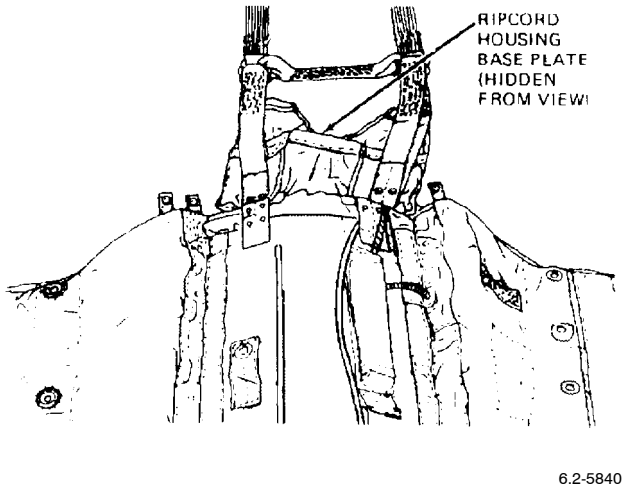


Figure 41. Position Container on Top of Risers

d. Remove connector links from tension hook and remove tension hooks from packing table.

e. Rotate risers onto container and secure riser fasteners to top two container fasteners (Figure 42).

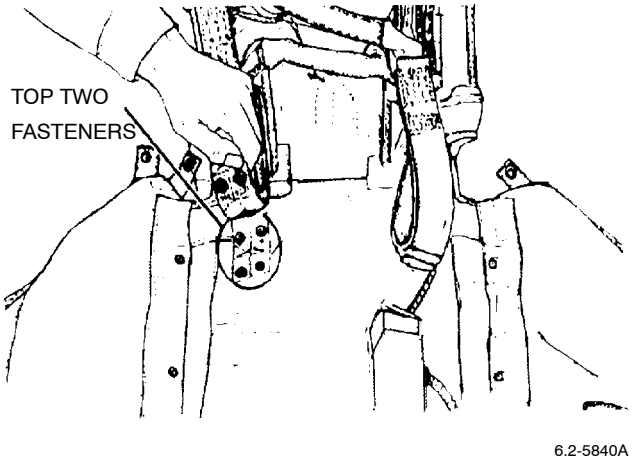


Figure 42. Rotate Risers onto Container

f. Position riser protection flaps over risers.

g. Position risers on container so connector links are on top of second metal stiffener from bottom. Spread suspension line groups outboard of each side of container.

h. Reeve release lanyard thru lanyard guide grommet. Position 36-in. mark on lanyard around bar on inboard side of bottom connector link on packer's side. Secure with a bowline knot followed by an overhand backup knot (Figure 43). (QA)

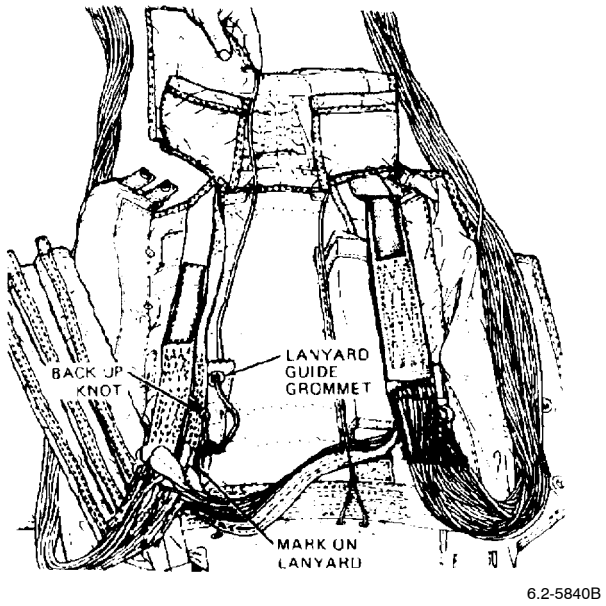


Figure 43. Reeve Release Lanyard thru Lanyard Guide

i. Route connector link ties thru container grommets to inboard side of connector links. Tie using three half-hitches, trim excess (Figure 44). (QA)

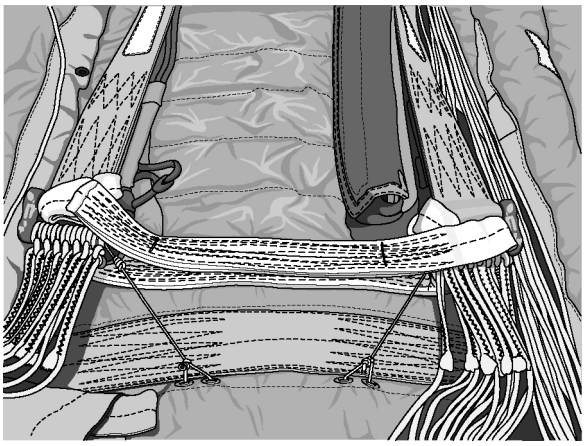


Figure 44. Tie Inboard Side of Connector Links

j. Place cross connector straps on the second stiffener from the bottom of container. Tack around cross connectors and thru container with 1 turn of size E thread, single and waxed; tie off (Figure 45).

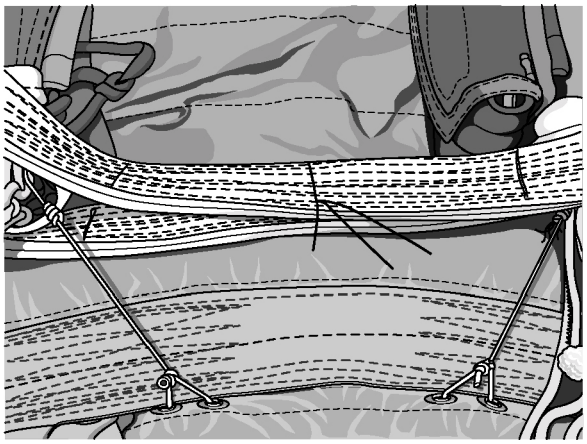


Figure 45. Tack Cross Connector Straps to Container

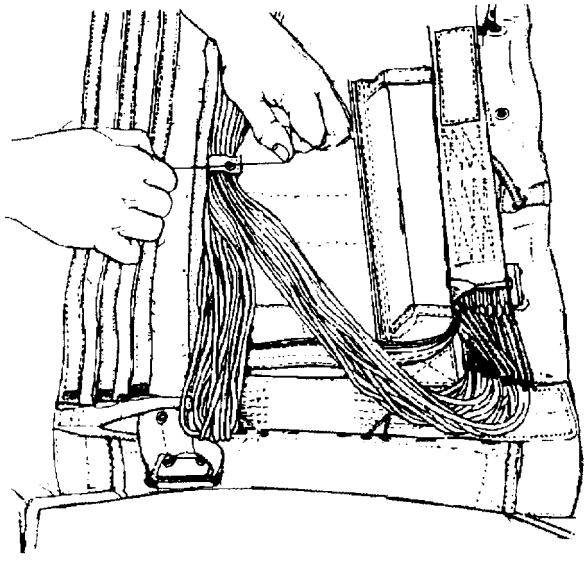
31. STOWAGE OF SUSPENSION LINES.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Bring suspension lines together in center of container.

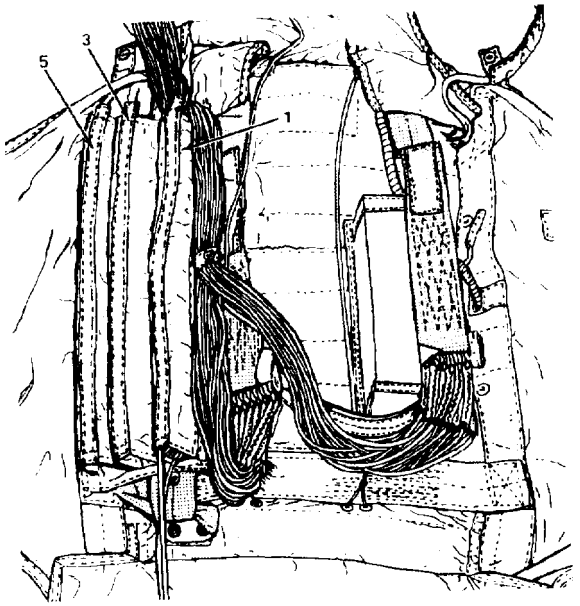
b. Secure suspension lines to tab on suspension line stowage sleeve with one turn of size FF thread, single and waxed; tie off (Figure 46).



6.2-5842

Figure 46. Secure Suspension Lines to Tab

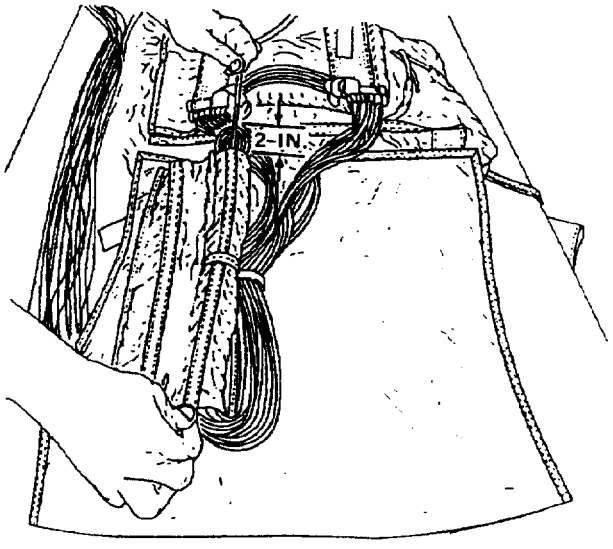
c. Stow first bight of suspension line in stowage pocket number 1. Suspension lines do not extend beyond pocket (Figure 47).



6.2-5842A

Figure 47. Stow First Bight of Suspension Line

d. Rotate sleeve and stow second bight in pocket number 2. Extend this bight, 1 1/2 to 2-in. beyond pocket (Figure 48).



6.2-5842B

Figure 48. Rotate Sleeve and Stow Second Bight

e. Rotate sleeve and stow remainder of suspension lines in respective pockets in same manner as step c, and to a point where the white mark, located on firing lanyard, is even with stowage sleeve. Adjust length of last stow as necessary (Figure 49).

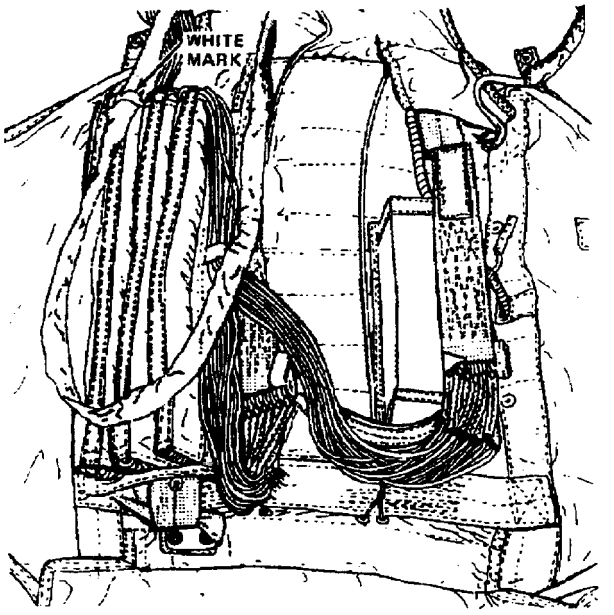


Figure 49. Rotate Sleeve and Stow Remainder of Suspension Lines

32. STOWAGE OF FIRING LANYARD IN CONTAINER.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

WARNING

Ensure that safety pin is installed in spreading gun.

a. Starting with stowage pocket number 6, stow firing lanyard in reverse order of stowed suspension lines. Firing lanyard shall be stowed within stowage pockets between stowed suspension lines and outer pocket reinforcement tape. Avoid entanglement of firing lanyard with suspension lines (Figure 50).

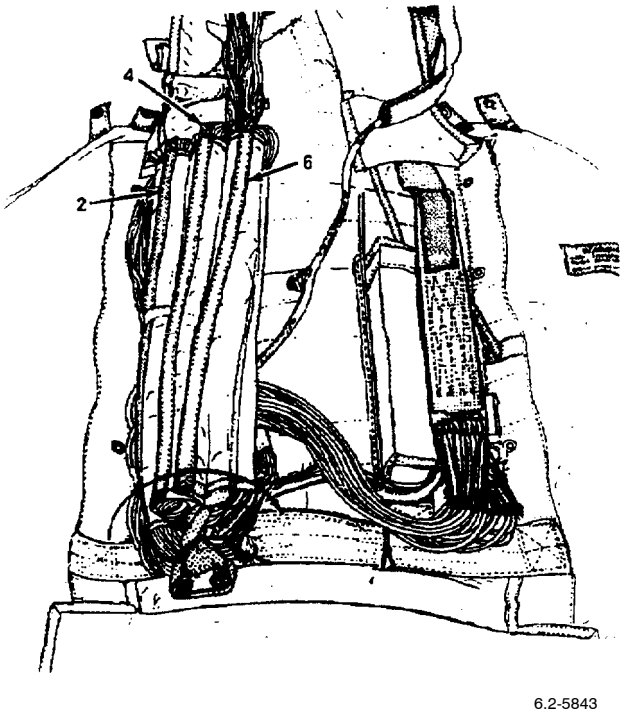


Figure 50. Stowing of Firing Lanyard

WARNING

Firing lanyard shall be routed in such a manner as to avoid encircling suspension lines.

b. Continue stowing firing lanyard with last stow in pocket number 4. Locking thong must be even with grommet in stowage sleeve attachment webbing (Figure 51).

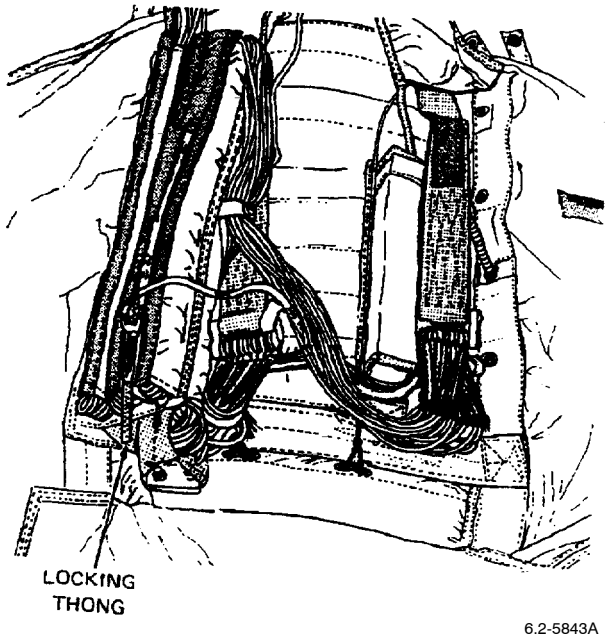


Figure 51. Continue Stowing Firing Lanyard

c. Cut an 18-in. length of Type II nylon tape. Pass one end of tape thru loop in suspension line stowed in pocket number 2 (Figure 52).

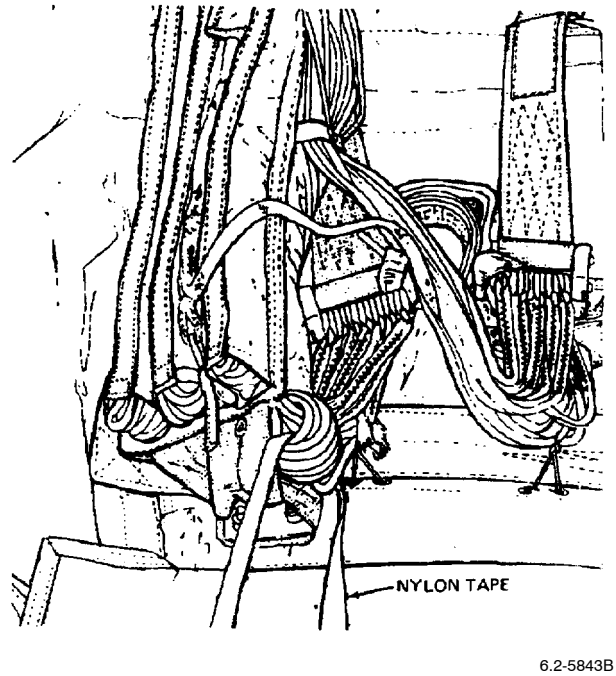


Figure 52. Cut an 18-in. Length of Nylon Tape

d. Form a loop in one end of tape and pass it thru grommet of stowage sleeve attachment webbing (Figure 53).

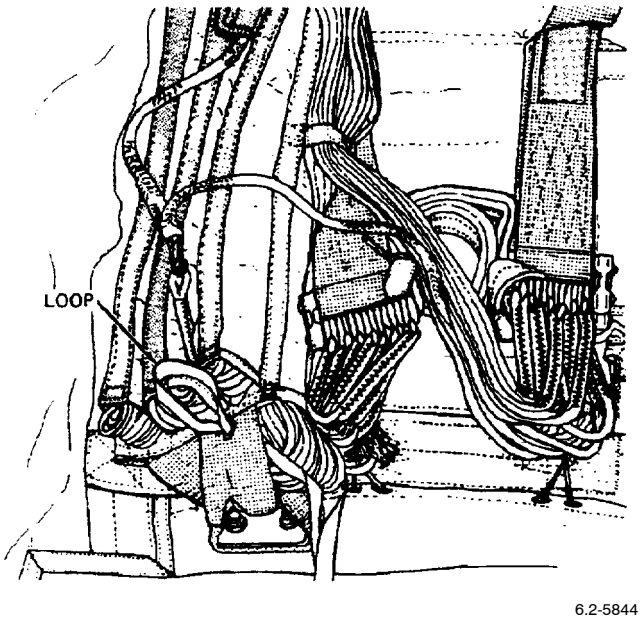


Figure 53. Form a Loop in One End of Tape

e. Route firing lanyard thong thru loop in nylon tape and draw tape tight (Figure 54).

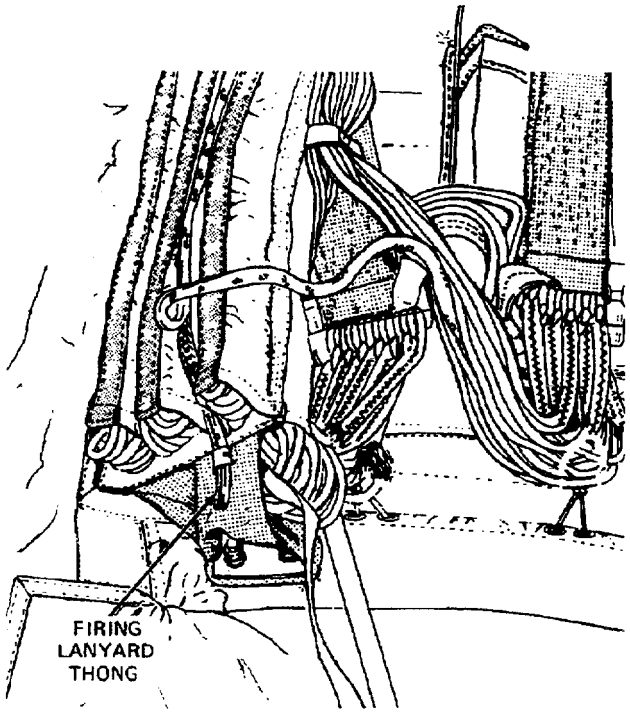


Figure 54. Route Firing Lanyard Thong thru Loop

f. Route free end of nylon tape thru stowage sleeve attachment loop (Figure 55).

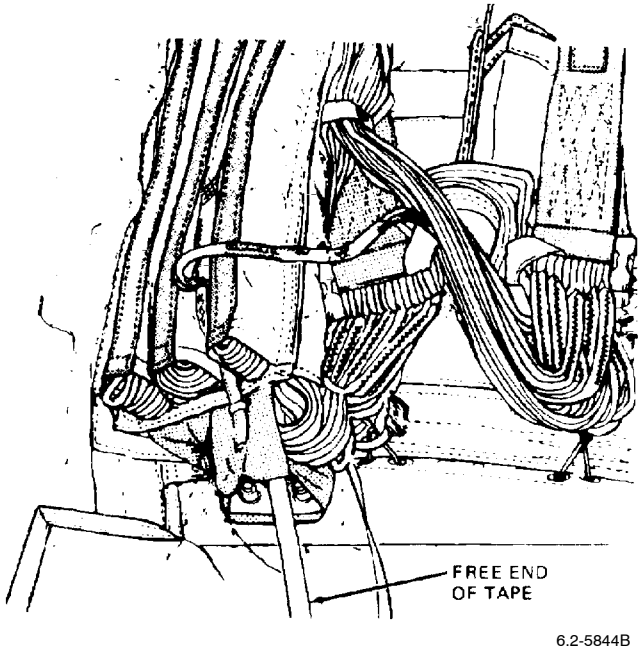


Figure 55. Route Tape Thru Stowage Sleeve

g. Draw tight and tie nylon tape to stowage sleeve attachment loop. Trim excess tape to 1/2-in (Figure 56).

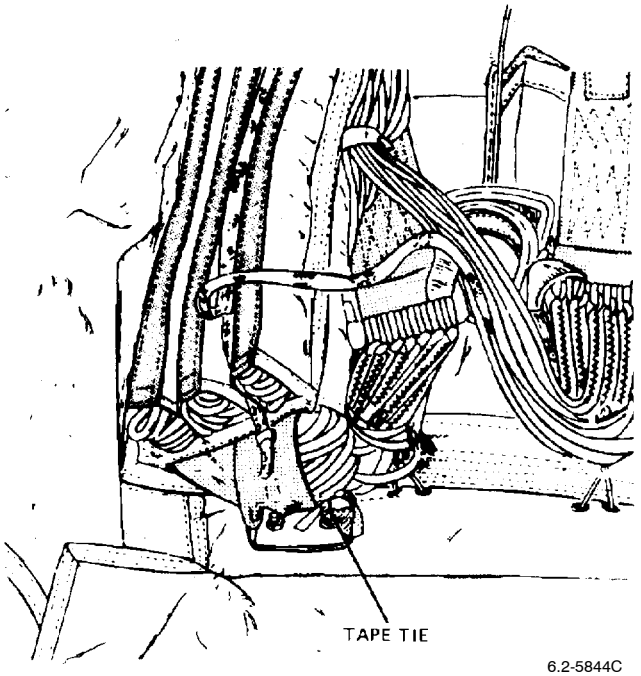


Figure 56. Draw Tight and Tie Tape

h. Safety-tie firing line thong to stowage sleeve attachment webbing with tacking passing thru thong and webbing, then back thru webbing and thong, using one turn of size FF thread, single and waxed; tie off (Figure 57).

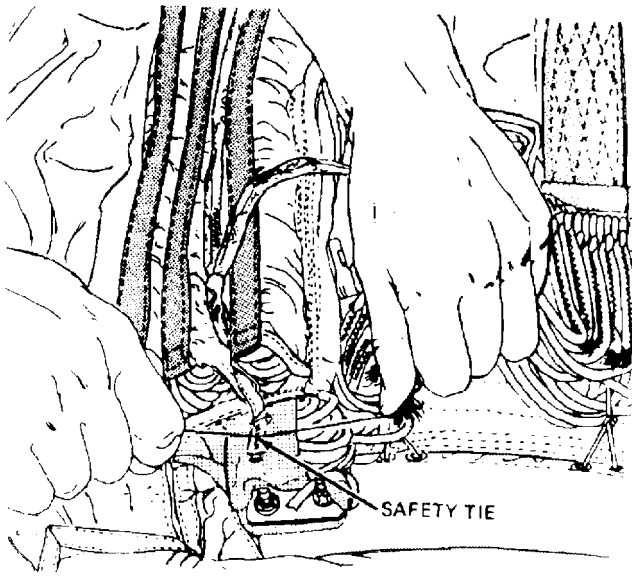


Figure 57. Safety-Tie Firing Line Thong

i. Tack slack in lanyard to stowage sleeve 2 1/2 ± 1/2-in. from bottom of stowage sleeve. Pass tacking thru lanyard and edge of binding tape, then back thru edge of binding tape and lanyard with one turn of size A thread, doubled and waxed; tie off (Figure 58).

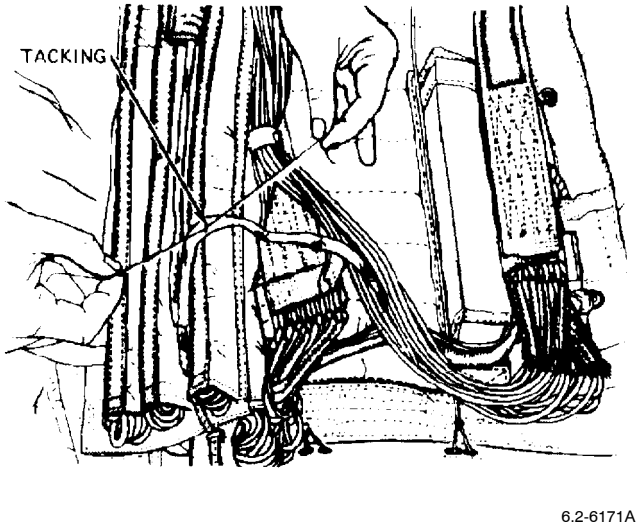


Figure 58. Tack Lanyard Slack

33. STOWAGE OF SPREADING GUN AND CANOPY.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Six folds shall be made when stowing canopy. Use the following illustration as a guide while stowing canopy (Figure 59).

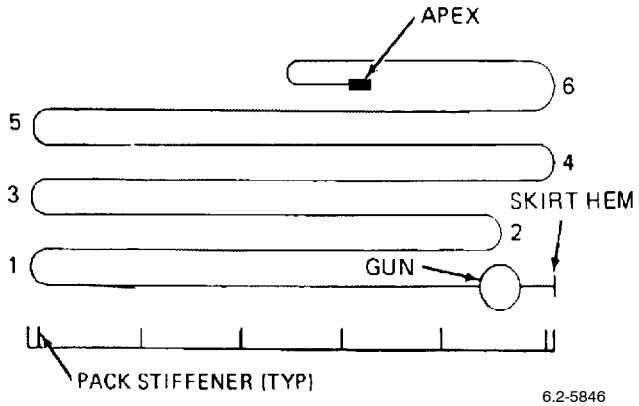


Figure 59. Six Folds Shall Be Made When Stowing

b. Fold suspension line cover flap over suspension lines (Figure 60).

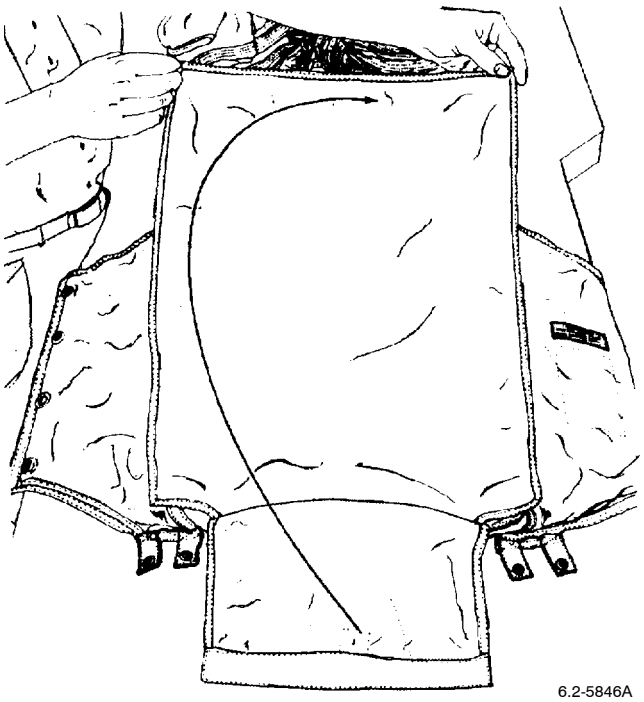


Figure 60. Fold Suspension Line Cover Flap

c. Tack both corners of cover flap to container with one turn of size FF thread, doubled and waxed, at each corner; tie off (Figure 61).

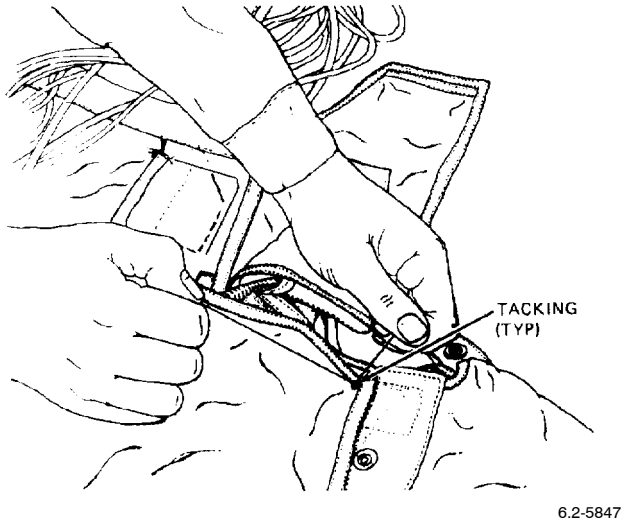


Figure 61. Tack Both Corners of Cover Flap

NOTE

Ensure that bottom of spreading gun faces towards packer's side.

d. Remove shot bags. Place canopy on container with bottom of spreading gun toward packer and centered between first and second container stiffeners from container bottom (Figure 62).

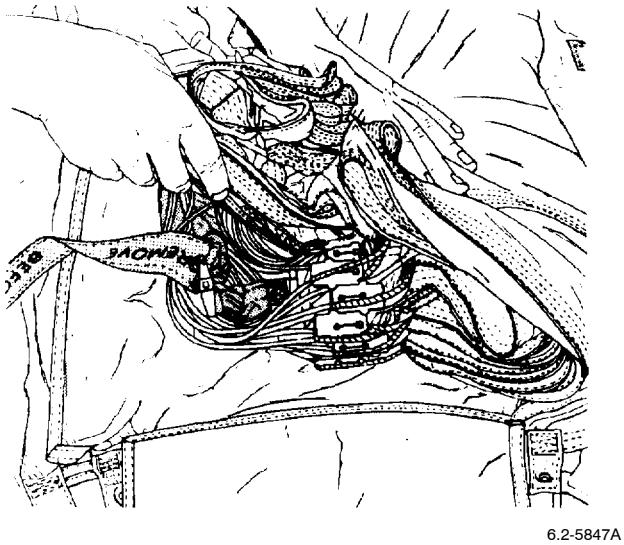


Figure 62. Placement of Canopy on Container

WARNING

Do not twist or pull on firing lanyard as this may accidentally fire spreading gun.

e. Remove spreading gun safety pin and pull skirt hem to bottom of container (Figure 63). (QA)

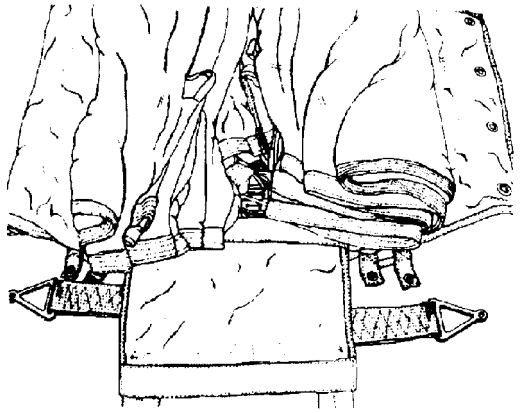


Figure 63. Remove Spreading Gun Safety Pin

f. To make first and second folds, place long bar on top of canopy, parallel with upper container edge. Grasp canopy about one container length from long bar and draw it across container (Figure 64).

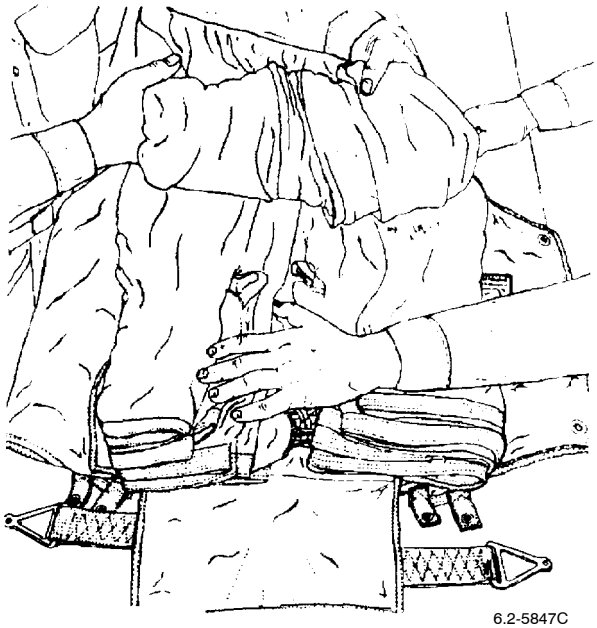


Figure 64. Placement of Long Bar on Canopy

g. Second fold shall be positioned slightly behind skirt hem. Sides of canopy shall spread 3 to 4-in. over sides of container (Figure 65).

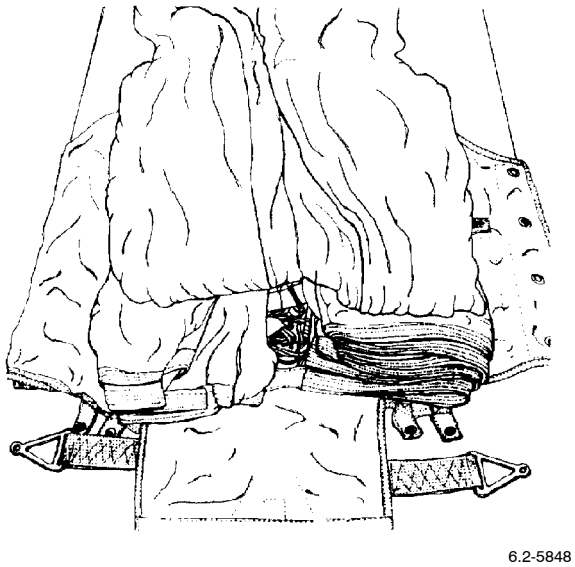


Figure 65. Positioning of Second Fold

h. To make third and fourth folds, helper shall use long bar in same manner as with first and second folds. Fourth fold shall extend to align with bottom container edge (Figure 66).

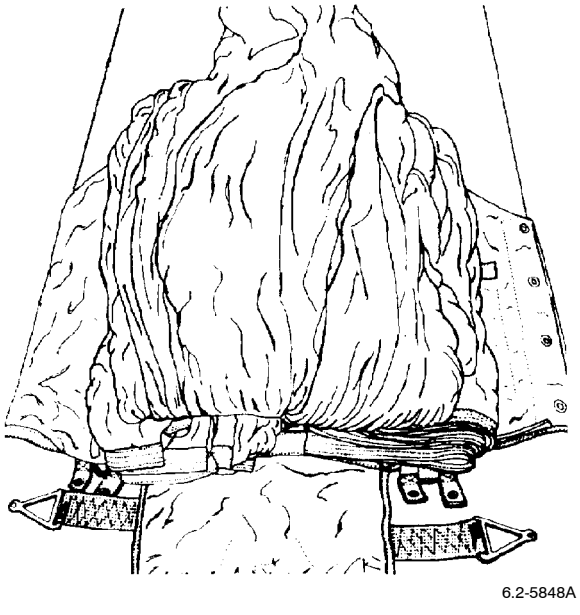
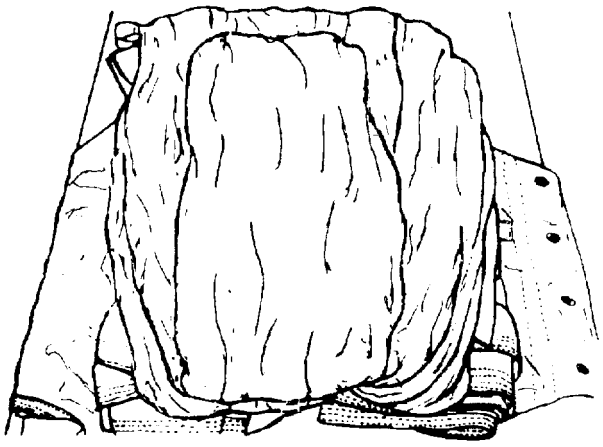


Figure 66. Positioning of Third and Fourth Folds

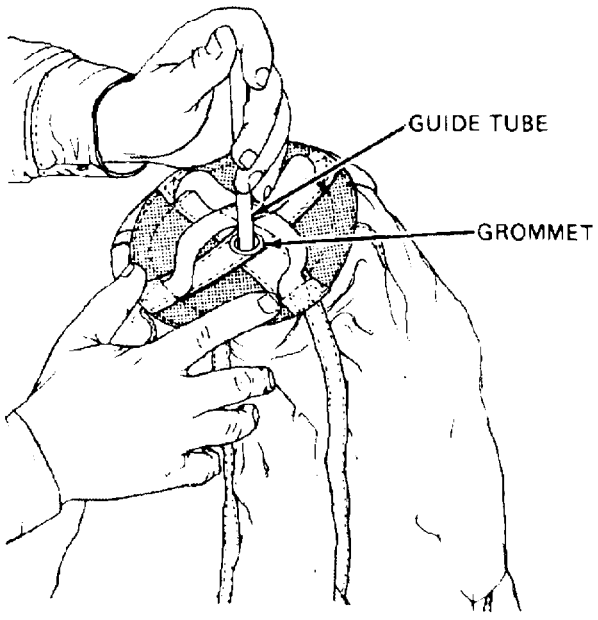
i. Continue accordion-folding remainder of canopy into container, maintaining canopy spread over sides of container. Six folds shall be made when stowing canopy with the last fold folded under (Figures 59 and 67).



6.2-5848B

Figure 67. Accordion Folding of Remainder of Canopy

j. Position pilot parachute vertically on packing table and insert guide tube into grommet in crown of pilot parachute. Extend guide tube to bottom of pilot parachute and position over locking cone on spring baseplate (Figure 68).



6.2-5848C

Figure 68. Positioning of Pilot Parachute

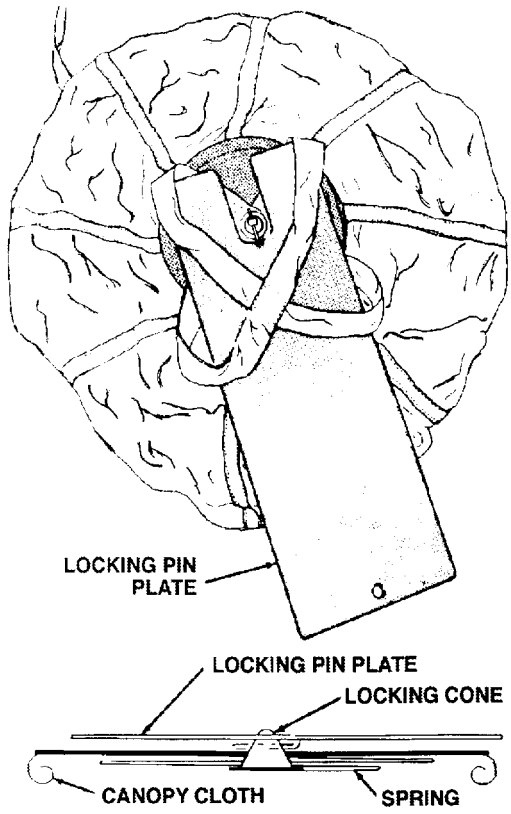
WARNING

Ensure pilot parachute cloth is not twisted around or entangled in compressed pilot parachute spring.

k. Compress pilot parachute spring and remove guide tube from locking cone. Locking cone shall protrude thru grommet. Insert temporary locking pin into top hole of locking cone.

l. Remove any pilot parachute cloth twisted around or entangled in compressed spring.

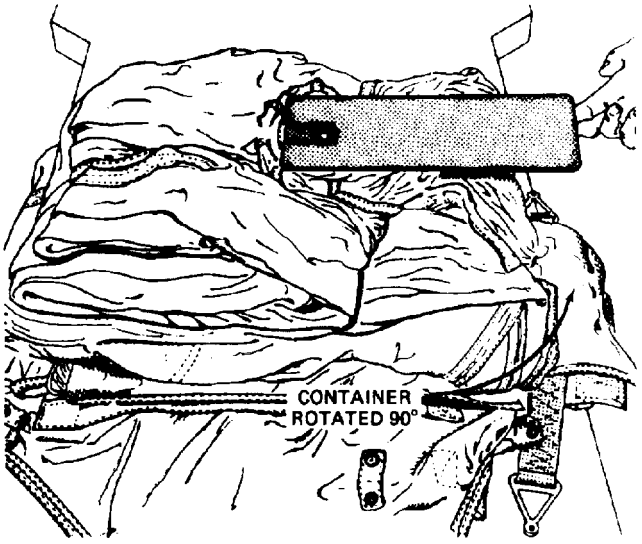
m. Insert pin on temporary locking pin plate into bottom hole of locking cone to keep pilot parachute compressed and then remove temporary locking pin from top hole of locking cone (Figure 69).



6.2-6172

Figure 69. Insert Pin on Temporary Locking Pin Plate

n. Place pilot parachute on top of last fold of canopy with locking cone aligned with second grommet from bottom edge of container and pin plate positioned toward bottom of container. Tuck pilot parachute cloth under outer edge of crown (Figure 70).



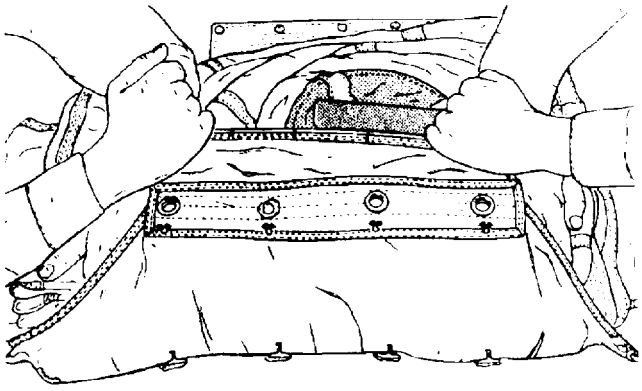
6.2-6172A

Figure 70. Place Pilot Parachute on Top of Canopy

o. Rotate parachute container 90-degrees counterclockwise.

34. CLOSING OF CONTAINER.

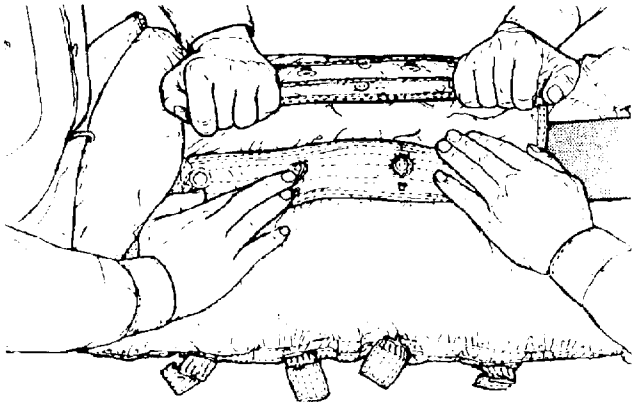
a. Pull side flap with locking cone over canopy and pilot parachute and align second grommet from bottom container edge over locking cone in pilot parachute (Figure 71).



6.2-5850

Figure 71. Pull Flap with Locking Cone Over Pilot Parachute

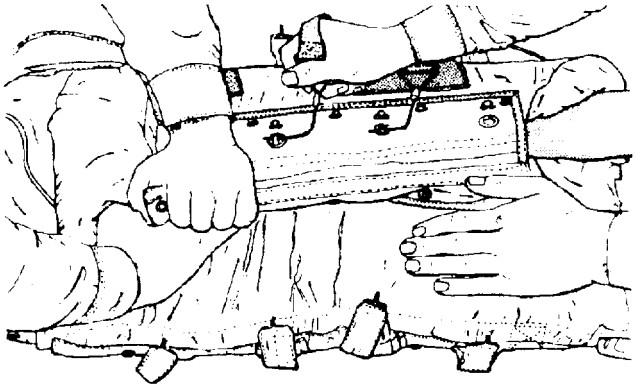
b. Pull side flap with grommets over canopy while holding side flap with locking cone in place. Keep canopy movement to a minimum (Figure 72).



6.2-5850A

Figure 72. Pull Side Flap with Grommets Over Locking Cone

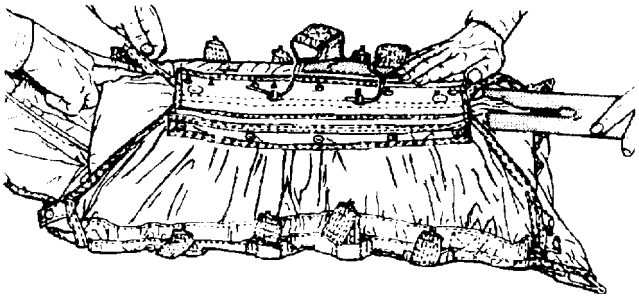
c. Place grommets over locking cones and insert two temporary locking pin toward top of container (Figure 73).



6.2-5850B

Figure 73. Place Grommets over Locking Cones

d. Remove temporary locking pin plate from pilot parachute locking cone and adjust canopy at both ends of container (Figure 74).



6.2-5850C

Figure 74. Remove Temporary Locking Pin Plate

e. Tuck top end flap under side flap using two long bars inserted in pockets (Figure 75).

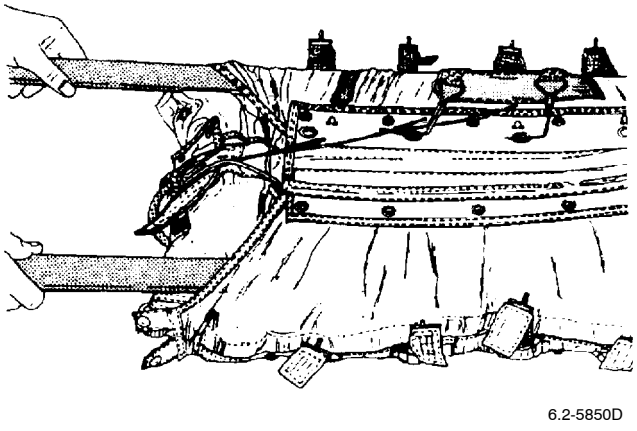


Figure 75. Tuck Top End Flap Under

f. Place side flap grommets over top end flap locking cone and insert temporary locking pin toward top of container (Figure 76).

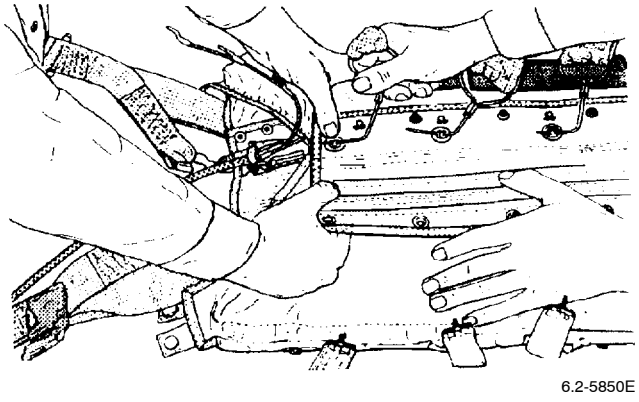


Figure 76. Place Side Flap Grommets Over Top End Flap

g. Tuck bottom end flap under side flaps using two long bars inserted in pockets. Place side flap grommets over bottom end flap grommets and insert temporary locking pin toward top of container (Figure 77).

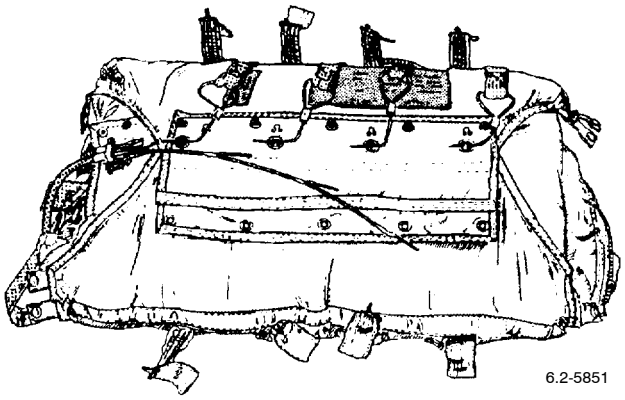


Figure 77. Tuck Bottom End Flap Under Side Flaps

h. Push riser protector flaps firmly into container using packing fid inserted into pockets.

i. Remove wrinkles in corners of container using packing fid (Figure 78).

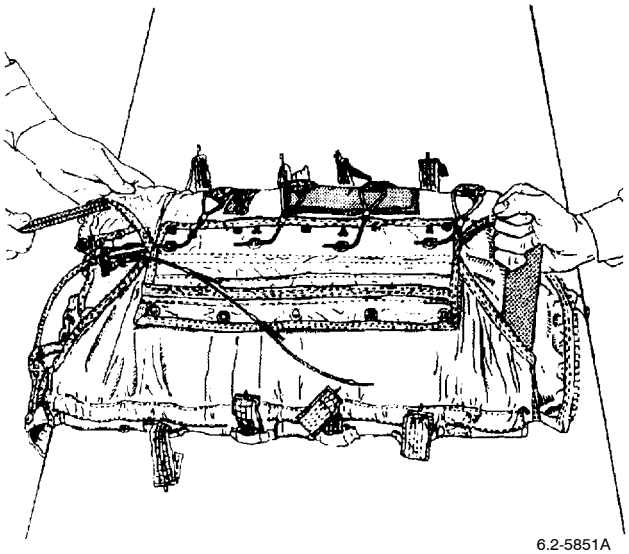


Figure 78. Remove Wrinkles in Corners

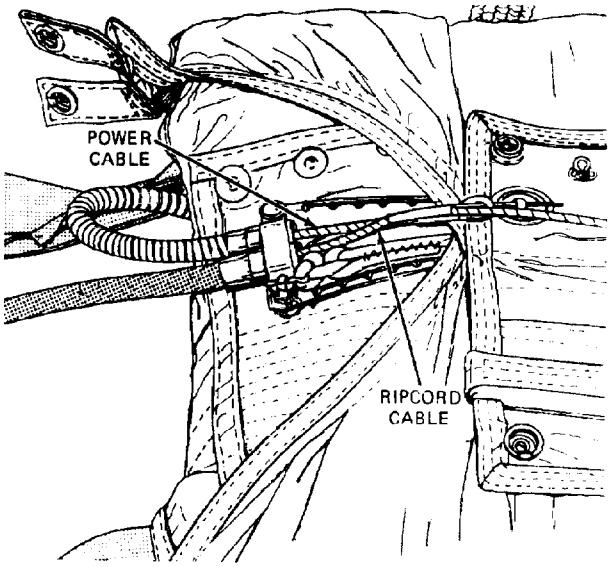
WARNING

Use of pin(s) as an alignment aid during installation may cause bending of pin(s) and result in excessive pull forces.

NOTE

Ensure that ripcord pins are centered in locking cones so that shoulder of ripcord pin is not jammed against locking cone, but extends more than 1/4-in. beyond base of grommet.

j. Pass top ripcord pin thru beveled side of automatic ripcord release power cable eye. Remove temporary locking pin from locking cone nearest ripcord housing. Insert top ripcord pin. pin shall extend more than 1/4-in. beyond base of grommet (Figure 79).

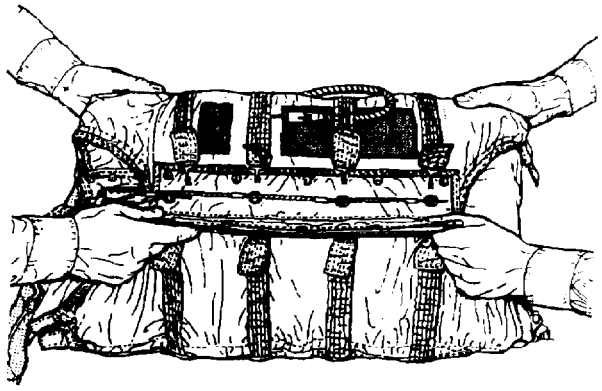


6.2-5851B

Figure 79. Pass Top Ripcord Pin thru Beveled Side of Ripcord Release

k. Continue to remove temporary locking pins from top of container to bottom, simultaneously insert ripcord pins into locking cones. Pin shall extend more than 1/4-in. beyond base of grommets.

l. Attach spring opening assemblies to eyes on side flaps. Temporarily stow arming cable housing under opening assemblies (Figure 80).



6.2-5852

Figure 80. Attach Spring Opening Assemblies

m. Turn container over and secure eight corner keepers to fasteners on container.

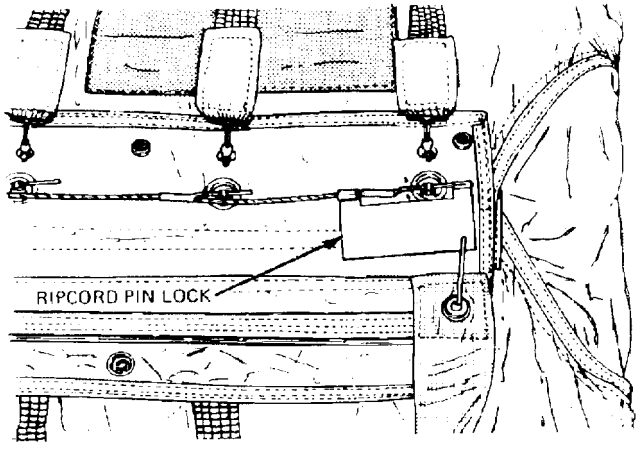
n. Turn container over so ripcord pins face up.

35. RIPCORD PIN PULL CHECK AND SAFETY TYING BOTTOM RIPCORD LOCKING PIN AND RIPCORD HOUSING CLIP.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Insert ripcord pin lock on bottom ripcord pin (Figure 81).



6.2-6173

Figure 81. Insert Ripcord Pin

b. Install ripcord grip in retainer and attach spring scale to ripcord grip with a nylon cord.

c. Apply a straight steady pull and remove ripcord grip from retainer. Force required to remove grip from retainer clip is 15 ± 5 lbs. (QA)

d. If full force is not within limits, use a pliers to adjust ripcord grip retainer. Ensure plier jaws are covered with protective material. After adjustment, repeat ripcord grip pull test.

e. Reset scale to zero. Apply a straight steady force to ripcord grip until initial movement of bottom ripcord pin is observed. Most allowable force is 27 lbs. (QA)

WARNING

Ripcord pinlock must be removed.

f. Remove ripcord pinlock. (QA)

g. Reposition ripcord pins so they are centered in locking cones with shoulder of each pin extending more than 1/4-in. beyond base of grommet.

h. Insert ripcord housing clip into webbing loop attached to riser and insert ripcord grip into retainer (Figure 82).

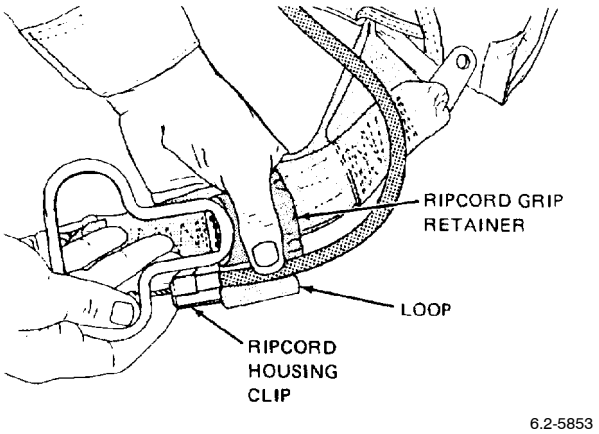


Figure 82. Insert Ripcord Housing Clip into Webbing Loop

i. Tack thru loop and thru hole in ripcord housing clip with one turn of size E thread, single and waxed. Tie off (Figure 83).

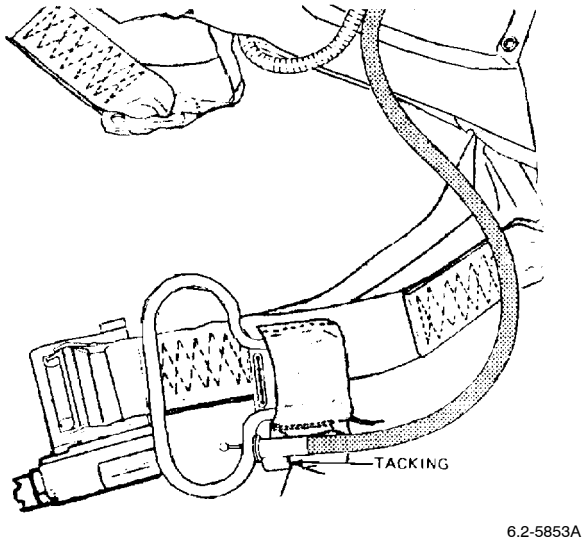


Figure 83. Tack thru Loop and thru Hole

j. Loop a 12-in. length size E thread, single and waxed, under bottom ripcord pin. Secure pin by bringing thread ends together and tying 3 to 5 half-hitches around ripcord cable above ripcord pin ferrule. Top off with a binder knot. Trim excess within 1/2 to 3/4-in. from knot (Figure 84). (QA)

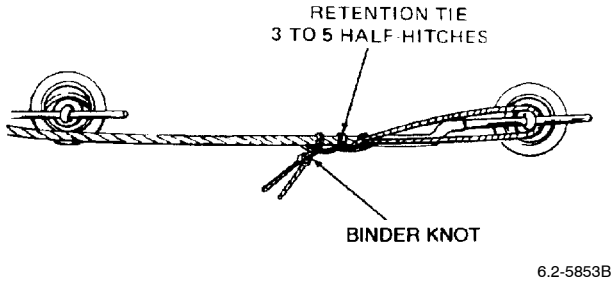


Figure 84. Secure Pin

36. STOWAGE OF SPREADING GUN SAFETY PIN FLAG.

a. Position spreading gun safety pin flag on table with securing strap facing down and safety pin as shown. Fold flag with safety pin tucked inside so that securing strap faces up (Figure 85).

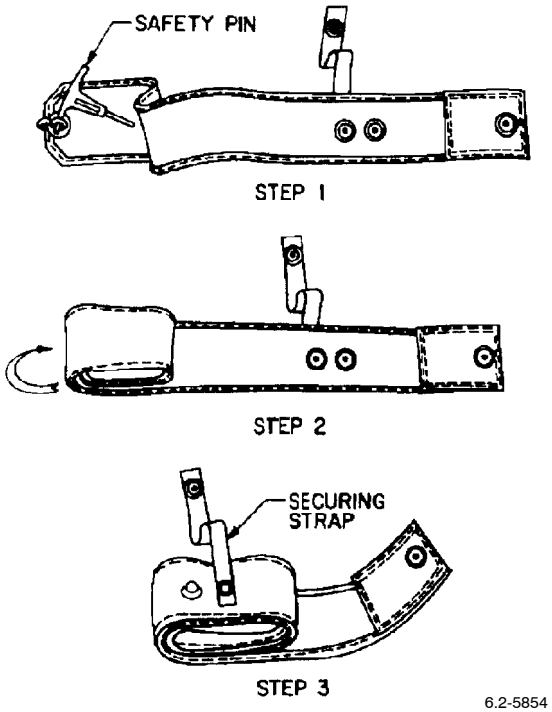


Figure 85. Positioning of Spreading Gun Safety Pin Flag

b. When flag is completely folded, pass securing strap around left kit retention strap between container and lap belt (ripcord handle side). Close snap fastener. Close flag snap fastener (Figure 86). (QA)

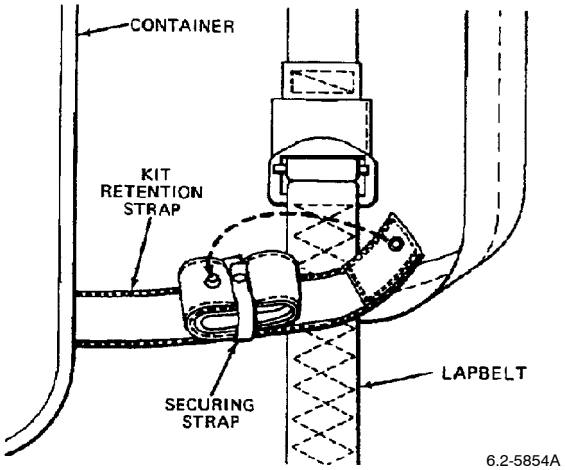


Figure 86. Securing of Safety Pin Flag

37. PARACHUTE HARNESS SENSING RELEASE UNIT (PHSRU), MXU-746/P AND MXU-747/P.

a. Measure the knurled actuating lever torque as follows:

(1) Hold locking lever in the open position and insert the torque meter with 1/16-in. hex head driver into actuating lever cavity.

(2) Rotate actuating lever to just prior to contact with body. Acceptable torque values are 28 to 50 in-oz. (Figure 87). (QA)

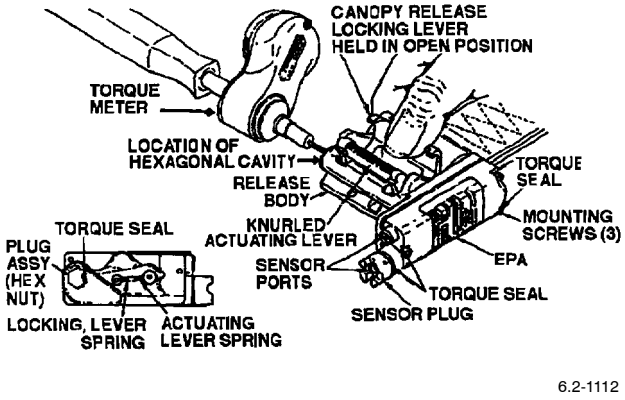


Figure 87. Rotate Actuating Lever

b. Check battery voltage as follows:

(1) Install test leads in multimeter observing proper polarity.

(2) Select VDC and scale exceeding 26 VDC.

CAUTION

Avoid touching the meter probes together when making this test. Firing of the PHSRU may result.

(3) Contact negative (black) probe to sensor plug assembly center conductor. Contact positive (red) probe to EPA sensor center conductor.

(4) Reading of +22.5 volts DC or greater indicates PHSRU is serviceable. (QA)

c. If plug assembly was removed, perform the following:

(1) Forward complete packed parachute assembly to either non-destructive inspection lab or medical facility for X-ray.

(2) From review of X-ray (Figure 88), if plug assembly is suspected or known to be partially or fully recessed, the unit shall have a shear pin integrity check per WP 024 02.

(3) Record inspection on Parachute Record (OPNAV 4790/101).

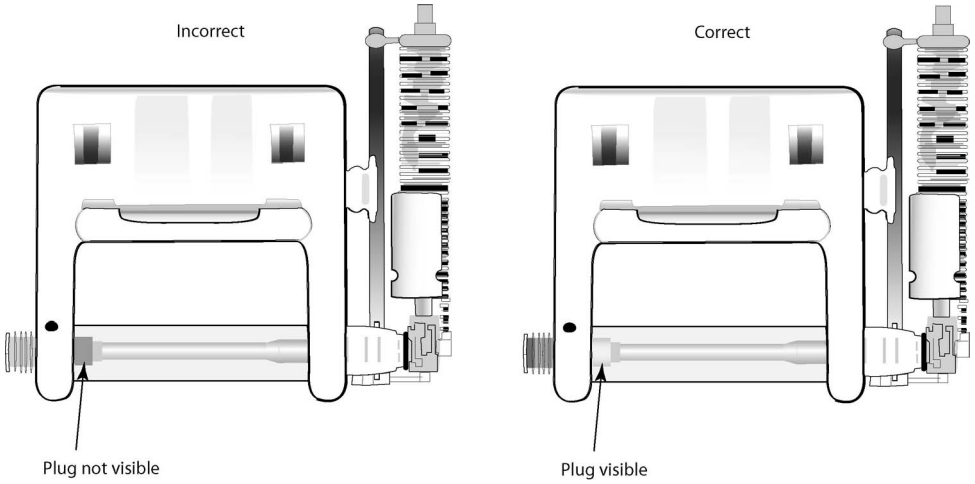


Figure 88. PHSRU X-Ray

(4) Attach X-rays to the Parachute Record (OPNAV 4790/101).

(5) If voltage is below +22.5 volts DC, replace battery per WP 024 02.

(6) Record voltage for each EPA in the Local Use Block on the Parachute Record (OPNAV 4790/101).

38. FINAL CHECKOUT.

a. Account for all packing tools and spreading gun safety pin. (QA)

b. Examine packed parachute for general condition.

c. Snap ripcord pin protector flap and ripcord baseplate flap closed.

d. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA)

e. QA inspector shall examine completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

f. QA inspector shall sign Parachute Record (OPNAV 4790/101).

g. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

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INTERMEDIATE AND DEPOT MAINTENANCE

REPAIR PROCEDURES

NES-25A PERSONNEL PARACHUTE ASSEMBLY

PART NO. 926AS104-6

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1	10	2 thru 12	9	13	10	14	9

Reference Material

Intermediate and Depot Maintenance, Common Repair Procedures . . . . . WP 004 00
Intermediate and Depot Maintenance, Maintenance Procedures, Parachute Harness Sensing Release Units (PHSRU), MXU-746/P and MXU-747/P . . . . . WP 024 02
Intermediate and Depot Maintenance, Packing Procedures, NES-25A Personnel Parachute Assembly . . . . . WP 020 02
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdowns Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00
Organizational Maintenance, Repair Procedures, NES-25A Personnel Parachute Assembly . . . . . WP 020 01
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration . . . . . WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment . . . . . WP 005 00

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Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This work package (WP) contains instructions for the maintenance, repair, replacement, and fabrication of various parachute parts or subassemblies to ensure that appropriate items of equipment remain in a ready-for-issue (RFI) status. Selected repairs shall be documented on the Parachute Record. For common repairs refer to WP 004 00.

2. REPAIR OF PILOT PARACHUTE AND BRIDLE LINE.

a. Repair of the pilot parachute and/or bridle line is limited to the following:

(1) Cleaning of contaminated areas.

(2) Replacement of loose or broken tacking.

b. Replace pilot parachute and/or bridle line for any of the following:

(1) Service/total life has expired per WP 020 02.

(2) Seam separations and loose or broken stitching (yarn separation is acceptable) that may affect the safe operation of the parachute assembly.

(3) Pilot parachute spring is broken or distorted.

(4) Pilot parachute locking cone or grommet is loose or damaged.

(5) Bridle line finished length is incorrect.

3. REPLACEMENT OF PILOT PARACHUTE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Inspect replacement pilot parachute per WP 020 02.

b. Remove tacking at Lark's head knot and then remove pilot parachute.

c. Place either loop end of bridle line thru loop in pilot parachute. Route entire pilot parachute thru bridle loop and pull tight forming a Lark's head knot. Tack with two turns of size 6 thread, single and waxed; tie off.

d. Count 14 lines in sequence. Pass free loop of bridle around the 14 lines. Form a Lark's head knot by passing entire pilot parachute thru loop of bridle and pull tight.

e. Mark date placed in service on pilot parachute. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

4. REPLACEMENT OF PILOT PARACHUTE BRIDLE LINE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Inspect replacement bridle line for cuts, fraying, and loose or broken stitching.

b. Measure length of bridle line. Proper length is 30 ± 1/2-in. unattached.

c. Remove tacking on Lark's head knot at pilot parachute loop and then remove pilot parachute from bridle line.

d. Remove bridle line from apex lines.

e. Pass either loop end of bridle line thru loop in pilot parachute. Form a Lark's head knot by passing opposite end of bridle thru loop and pulling tight. Tack with two turns of size 6 thread, single and waxed.

f. Count 14 lines in sequence. Pass free loop of bridle around the 14 lines. Form a Lark's head knot by passing entire pilot parachute thru loop of bridle and pull tight.

g. Attach tension strap hook to vent lines and pull tight.

h. Mark date placed in service on connector strap. Make proper entries on Parachute (OPNAV 4790/101). (QA)

5. REPLACEMENT OF PILOT PARACHUTE BRIDLE LINE LOOSE OR BROKEN TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove thread from broken tacking or completely remove loose tacking.

b. Pull Lark's head knot tight.

c. Tack Lark's head knot at pilot parachute with two turns of size 6 thread, single and waxed; tie off. (QA)

6. REPLACEMENT OF CANOPY ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Temporary Locking Pin
—	Torque, Screwdriver

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

For Double "L" Connector Link, refer to Paragraph 26 for disassembly, assembly, and inspection instructions.

a. Remove pilot parachute and bridle line from vent lines. Retain for reinstallation.

b. Remove four-line release rigging from connector links and then remove lanyard from flutes.

c. Remove spreading gun.

d. Remove connector link yoke and plate assemblies.

e. Remove connector links from risers and cross-connector straps and then reinstall yoke and plate assemblies.

f. Dispose of canopy assembly per current supply directives.

g. Lay out replacement canopy and stretch it to it's full length on clean packing table.

h. Attach tension strap hook to canopy vent lines.

i. Locate gore 28 (nameplate gore) and place it upper-most in center of packing table.

j. At skirt hem, separate suspension lines into two equal groups with lines 1 thru 14 on packer's side and 28 thru 15 on helper's side (Figure 1). Grasping each group of lines, walk from skirt hem to connector links removing any dips and twists between two groups (Figure 1).

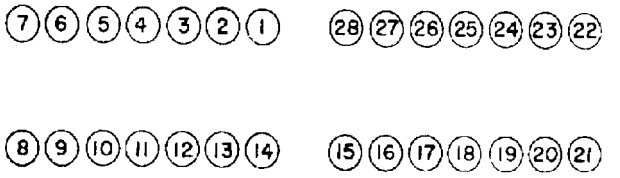

Figure 1. Arrangement and Orientation of Suspension Lines on Connector Links

k. Place connector link holding lines 1 thru 7 on top of connector link holding lines 8 thru 14. Place connector link holding lines 28 thru 22 on top of connector link holding lines 15 thru 21. Insert tension hooks into connector links and insert hooks into packing table (Figure 1).

l. Apply slight tension to canopy until suspension lines are taut.

m. Pull vent collar down toward canopy and adjust hem, align exposed vent hem (Figure 2).

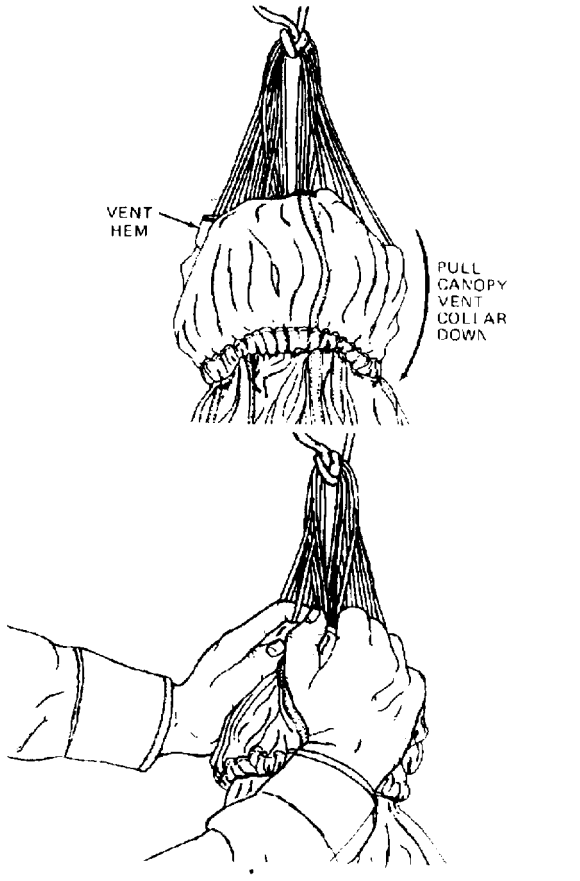

Figure 2. Adjustment of Vent Hem

n. Pull vent collar back to its original position.

o. Check suspension line continuity on left side of gore 28. Packer shall grasp line 1 at skirt hem and raise to a sufficient height to ensure line is free of dips and twists. Continue this procedure with lines 2 thru 14 (Figure 1). Helper shall be positioned at connector links to check lines selected by packer. (QA)

p. Check suspension line continuity on right side of gore 28. Packer shall grasp line 28 at skirt hem and raise to a sufficient height to ensure line is free of dips and twists. Continue this procedure with lines 27 thru 15 (Figure 1). Helper shall be positioned at connector links to check lines selected by the packer. (QA)

q. Inspect four-line release anchor loops for proper attachment to lines 3 and 26. Measure 30 ± 1/2-in. above upper connector link bar. Anchor loops must be attached with 2-in. zig zag stitching.

r. Continue to inspect canopy assembly per WP 020 02.

s. Reattach pilot parachute, bridle line and spreading gun retainer cord.

t. Lay out risers and cross-connector straps on packing table.

u. Remove connector links from tension hooks. Remove tension hooks from packing table.

v. Remove connector link yoke and plate assemblies from bottom connector links.

w. While maintaining continuity, slide suspension lines onto a temporary locking pin or rod.

x. Insert bottom connector links thru loop in each cross-connector strap and then thru loops in bottom risers.

CAUTION

Ensure that clove-hitch and half-hitch at ends of suspension lines do not separate during handling.

y. Reinstall suspension lines 3 thru 7 and 26 thru 22 on respective connector links.

z. Reattach yoke and plate assemblies to bottom connector links ensuring knurled portion of plate faces up and screw-heads face outboard.

aa. Remove connector link yoke and plate assemblies from top connector links.

ab. Insert top connector links thru loop in each cross-connector strap and then thru loops in top riser.

ac. Reattach yoke and plate assemblies to top connector links ensuring knurled portion of plate faces up and screwheads face outboard.

ad. Insert tension hooks into connector links and then tension canopy.

ae. Perform suspension line continuity check per steps o and p.

NOTE

Top right connector link screwhead will be torqued after attachment of spreading gun firing lanyard.

af. Tighten screws on top left and bottom left connector links to a torque value of 20 to 25 in-lbs. (QA)

ag. Apply torque seal to each connector link screwhead.

ah. Reattach spreading gun.

ai. Mark date placed in service on canopy assembly. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

aj. Fabricate four-line release lanyards, if required.

ak. Attach four-line release lanyards to suspension lines 3 and 26.

al. Rig four-line release lanyards.

7. REPLACEMENT OF RISER ASSEMBLY.

Support Equipment

Part Number	Nomenclature
Refer to WP 005 00	Bodkin

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

For Double "L" Connector Link, refer to Paragraph 26 for disassembly, assembly, and inspection instructions.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove ripcord assembly from riser.

b. Remove parachute harness sensing release units from risers per WP 024 02.

c. Remove four-line release tackings from flutes and carefully remove release lanyards from flutes. Insert temporary locking pin into last four-line release daisy chain.

d. Remove connector link yoke and plate assemblies.

e. Slide riser loops off connector link bar.

f. Reinstall yoke and plate assemblies.

g. Ensuring that suspension line continuity is maintained, insert connector links onto tension hooks.

h. Inspect replacement risers per WP 020 02.

i. Lay out replacement risers on packing table (Figure 3).

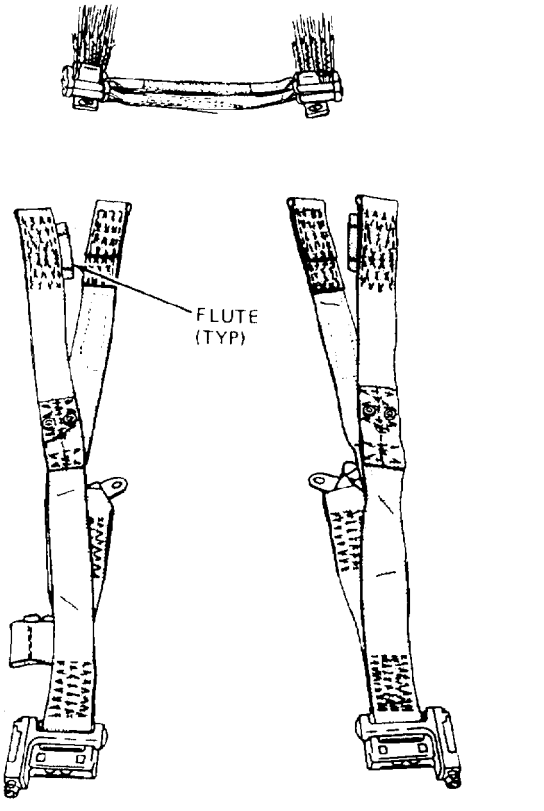

Figure 3. Replacement of Riser Assembly

j. Remove connector link yoke and plate assemblies from bottom connector links.

k. Insert bottom connector links into bottom riser loops.

l. Reinstall yoke and plate assemblies to bottom connector links ensuring knurled portions of plate face up and screwheads face outboard.

m. Remove connector link yoke and plate assemblies from top connector links.

n. Insert top connector links into top riser loops.

o. Reinstall yoke and plate assemblies to top connector links ensuring knurled portions of plate face up and screwheads face outboard.

p. Perform suspension line continuity check (Figure 1). (QA)

NOTE

Top right connector link will be torqued after attachment of spreading gun firing lanyard.

q. Tighten screws on top left and bottom connector links to a torque value of 20 to 25 in-lbs. (QA)

r. Apply torque seal to each connector link screwhead.

s. Using a bodkin or equal tool, insert and pull release lanyard pull loops thru a proper lanyard flute. Pull loops should extend completely thru flute with top of loops butted up against lower edge of flute.

t. Remove temporary locking pins from last four-line release daisy chains.

u. Tack release lanyard to flute with one turn of size FF thread, single and waxed. Tacking shall pass thru outer cover of flute, thru the release lanyard, thru and around last daisy chain loop, and then back thru flute; tie off.

v. With lanyard pull loop fully extended, tack risers together. Tack at center of riser and 1/2-in. above bottom of lanyard pull loop with one turn of size FF thread, single and waxed; tie off. (QA)

w. Reinstall parachute harness sensing release units per WP 024 02.

x. Reinstall ripcord assembly per Paragraph 10.

y. Mark date placed in service on identification and service life label. Make required entries on Parachute Record (OPNAV 4790/101). (QA)

8. LENGTH EXTENSION OF THE SHOULDER RESTRAINT STRAPS.

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon, Type XXVII, Class 1 or 1A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. Remove left hand riser from parachute canopy by:

(1) Remove connector link yoke and plate assemblies.

(2) Slide riser loops off connector link bars.

(3) Reinstall yoke and plate assemblies.

b. Remove release assembly from riser.

c. Remove ripcord assembly from left riser assembly.

d. Cut and remove stitching that secures shoulder harness fitting to shoulder restraint strap.

e. Remove shoulder harness fitting from shoulder restraint strap. Ensure location of restrictor strap is maintained on fitting.

f. From the riser release fitting assembly loop end, measure and mark shoulder restraint strap at 12-in. At 12-in. mark, cut and sear shoulder restraint strap webbing. Avoid forming sharp edges while hot knifing and searing.

g. Cut a new 14-in. length of webbing. Sears ends. Avoid forming sharp edges while hot knifing and searing.

h. Install shoulder harness fitting at center point of the 14-in. length of webbing.

i. Fold 14-in. length of webbing in half (7-in.).

j. Place folded 14-in. webbing 3 1/2-in. down each side of cut shoulder restaint strap. (The riser restraint strap (12-in. length) is sandwiched between the folded 14-in. webbing.) Ensure restrictor strap is located correctly and shoulder harness fitting offset is facing down. (If swivel shoulder release is used, offset is not applicable.)

k. Ensure total length of shoulder restraint webbing is 14 1/2-in. from loop end of riser release fitting assembly to end of shoulder restraint strap webbing.

l. Sew lengthwise with size 6 thread, using a 4-point cross-stitch pattern (WP 004 00), 5-in. long, 1/8-in. from edge.

m. Inspect for correct length of shoulder restraint strap, 14 1/2-in. ± 1/4-in. (Figure 4). (QA)

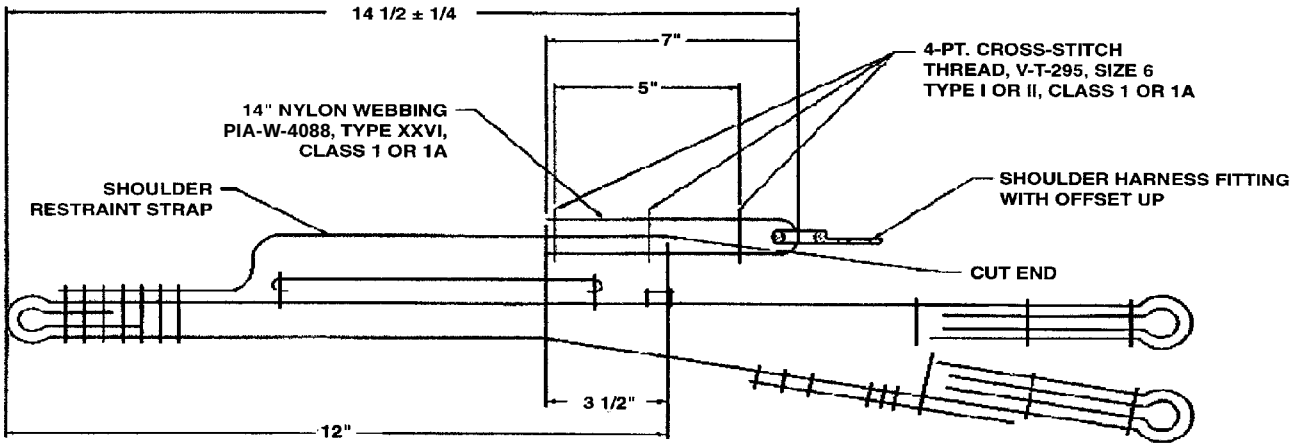

Figure 4. Modified Riser Length

n. Remove right hand riser from parachute canopy by:

(1) Remove connector link yoke and plate assemblies.

(2) Slide riser loops off connector link bars.

(3) Reinstall yoke and plate assemblies.

o. Remove release assembly from riser.

p. Repeat steps d through m. Step j, ensure that the shoulder harness fitting offset is facing up on the right hand riser. (If the swivel shoulder release fitting is used, offset is not applicable.) (Figure 5).

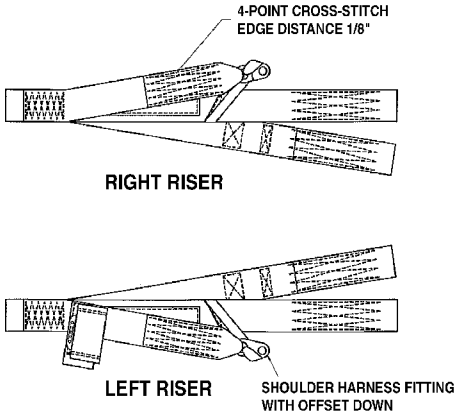

Figure 5. Harness Fitting Offset

9. REPAIR OF RIPCORD ASSEMBLY.

a. Repair of the ripcord assembly is limited to the following:

(1) Cleaning contaminated areas per WP 004 00.

(2) Replacement of loose or broken tackings per WP 020 01.

b. Replace ripcord assembly for any of the following:

(1) Bent, broken, or cracked locking pins.

(2) Corroded, frayed, or permanently bent cable.

(3) Loose cable swage ball or housing ferrule.

(4) Corroded, cracked, or bent handle or housing.

10. REPLACEMENT OF RIPCORD ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove ripcord assembly and tacking from webbing loop.

b. Insert and withdraw ripcord grip in ripcord retainer five times.

c. Inspect replacement ripcord assembly per WP 020 02.

d. Attach a spring scale to ripcord grip using a nylon cord.

e. Using a straight steady pull, remove grip from retainer. The force required to remove grip from retainer shall be 15 ±5 lbs. (QA)

NOTE

If not within limits, use pliers to adjust ripcord grip. (Ensure plier jaws are covered with protective material.)

f. Insert ripcord housing clip into webbing loop attached to riser and then ripcord grip into retainer (Figure 6).

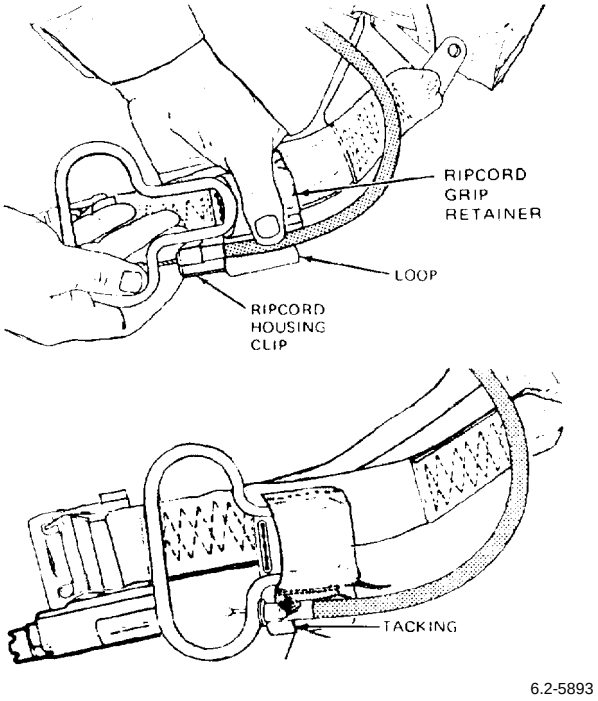

Figure 6. Ripcord Assembly Replacement

g. Tack thru loop and thru hole in ripcord housing clip with one turn of size E thread, single and waxed; tie off.

11. REPLACEMENT OF RIPCORD GRIP RETAINER.

Support Equipment Required

Part Number	Nomenclature
DPP-50	Scale, Spring

Materials Required

Specification or Part Number	Nomenclature
60A116C10-1	Retainer, Ripcord Grip
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove retainer cover stitching and expose ripcord grip retainer.

b. Remove ripcord grip retainer and stitching from riser.

c. Position replacement retainer is same location as removed retainer and handstitch to riser with size 6 thread, doubled and waxed; tie off.

d. Machine stitch retainer cover back to riser with size E thread.

e. Perform ripcord grip pull test as follows:

(1) Fully seat ripcord grip in ripcord retainer.

(2) Set scale to zero. Attach spring scale to ripcord grip using nylon cord.

(3) Using a straight steady pull, remove grip from retainer. The pull force required to remove grip from retainer shall be 15 ±5 lbs. (QA)

f. If pull force is not within limits, use a pliers to adjust ripcord grip retainers. Ensure plier jaws are covered with protective material. After adjustment, repeat ripcord grip pull test.

12. REPAIR OF CROSS-CONNECTOR STRAPS.

a. Repair of cross-connector straps is limited to cleaning of contaminated areas. Replace cross-connector straps if any other damage exists that may affect the safe operation of the parachute assembly.

13. REPLACEMENT OF CROSS-CONNECTOR STRAPS.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

For Double "L" Connector Link, refer to Paragraph 26 for disassembly, assembly, and inspection instructions.

a. Remove connector link yoke and plate assemblies.

b. Remove connector links from risers loops and then remove connector straps.

c. Inspect replacement cross-connector straps for contamination, cuts, fraying, burns, loose or broken stitching, and proper length 16 ±1/4-in. unattached.

d. Insert connector links thru loop in each end of connector strap and then thru loop in riser.

e. Reattach yoke and plate assemblies to connector links ensuring knurled portion of plate faces up and screwheads face outboard.

NOTE

Top right connector link will be torqued after attachment of spreading gun firing lanyard.

f. Tighten screws on top left and bottom connector links to a torque value of 20 to 25 in-lbs. (QA)

g. Apply torque seal to each connector link screwhead.

h. Mark date placed in service on identification and service life label. (QA)

14. ATTACHMENT OF RISERS AND CROSS-CONNECTOR STRAPS TO CONNECTOR LINKS.

NOTE

For Double "L" Connector Link, refer to Paragraph 26 for disassembly, assembly, and inspection instructions.

a. Lay out risers and cross-connector straps on packing table below connector links. Riser fasteners shall face up and riser assembly with ripcord assembly shall be on packer's side (Figure 7).

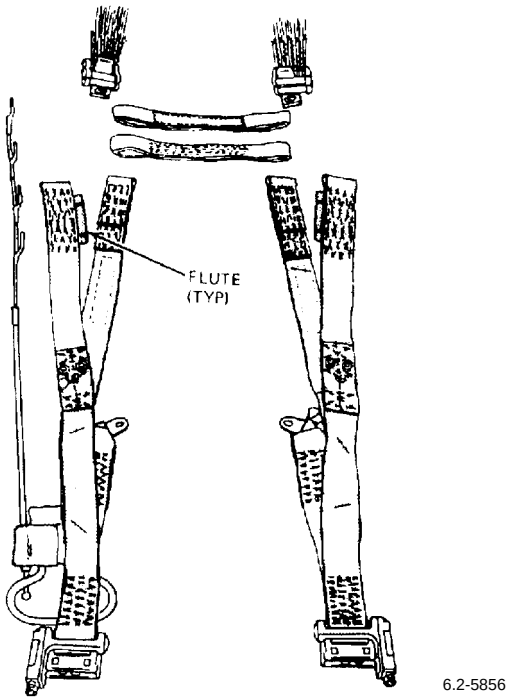

Figure 7. Attachment of Risers and Cross-Connector Straps to Connector Links

b. Remove connector links from tension hooks; then remove tension hooks from packing table.

c. Remove connector link yoke and plate assemblies from bottom connector links.

d. Insert bottom connector links thru respective loops in each cross-connector strap and then thru loops in bottom riser straps.

WARNING

Ensure that suspension line continuity is maintained at all times. Also ensure that the clove-hitch and half-hitch knots at ends of suspension lines have not separated during handling.

e. Reattach yoke and plate assemblies to bottom connector links with knurled plate portions facing up and screwheads facing outboard.

f. Remove connector link yoke and plate assemblies from top connector links.

g. Slide suspension lines onto a temporary locking pin or rod.

h. Insert top connector links thru loop in each end of connector strap and then thru loops in top risers.

i. Reinstall suspension lines 3 thru 7 and 26 thru 22 onto applicable connector link. (QA)

j. Reattach yoke and plate assemblies to top connector links with knurled portions facing up and screwheads facing outboard.

k. Check suspension line continuity on left side of gore 28. Packer shall grasp line 1 at skirt hem and raise to sufficient height to ensure that line is free of dips and twists. Continue procedure with lines 2 thru 14 (Figure 1). Helper shall be positioned at connector links to check lines selected by packer. (QA)

l. Check suspension line continuity on right side of gore 28. Packer shall grasp line 28 at skirt hem and raise to sufficient height to ensure that line is free of dips and twists. Continue procedure with lines 27 thru 15 (Figure 1). Helper shall be positioned at connector links to check lines selected by packer. (QA)

m. Tighten all connector link screwheads except top link on helper's side to a torque value of 20 to 25 in-lbs. (QA)

NOTE

Screwhead on top link of helper's side will be torqued after attachment of spreading gun firing lanyard.

n. Apply torque seal to each connector link screwhead.

15. REPAIR OF CONTAINER ASSEMBLY.

a. Repair of the container assembly is limited to the following:

(1) Cleaning of contaminated areas.

(2) Replacement of grommets, locking cones, snap fasteners, and eyes.

(3) Repair of loose or broken stitching, holes, tears, and seam separations.

b. Replace container for any of the following:

(1) Service/total life has expired per WP 020 02.

(2) Broken or distorted container stiffeners.

(3) Deterioration, fading, abrasion, or excessive contamination.

16. INSTALLATION OF AUTOMATIC PARACHUTE RIPCORD RELEASE POWER AND ARMING CABLE HOUSINGS AND ATTACHMENT OF RELEASE LANYARD.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Insert automatic ripcord release arming cable housing thru housing port in right side of ripcord release pocket and thru button-hole in container right side flap. Insert automatic ripcord release power cable housing thru right riser slot in end flap (Figure 8). (QA)

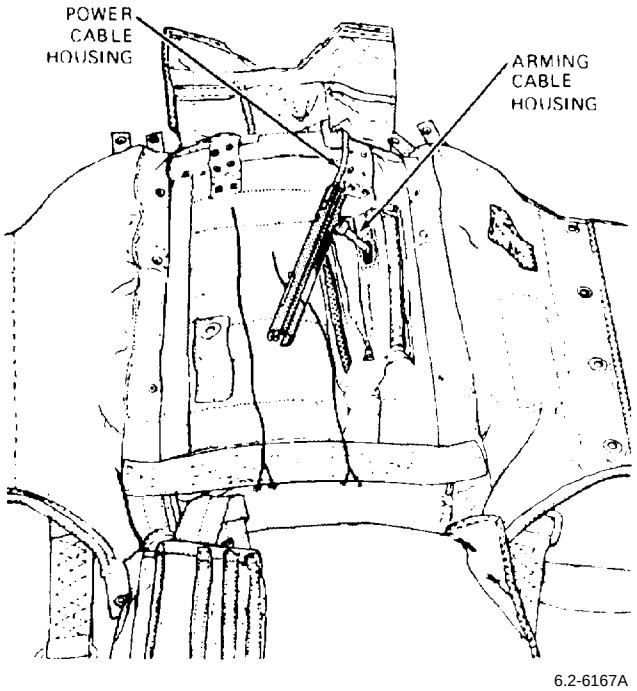

Figure 8. Insert Automatic Ripcord Release Arming Cable Housing

b. Fold top end flap onto container so base plate faces up.

c. Position large slotted end of dual base plate clamp under screwhead on base plate. Position manual ripcord housing and power cable housing under clamp with flat side of each housing positioned against base plate. Engage clamp in clamping groove of two housing ends. Position small slot of dual based plate clamp over base plate stud. Insert release lanyard locking pin into stud hole to secure clamp (Figure 9). (QA)

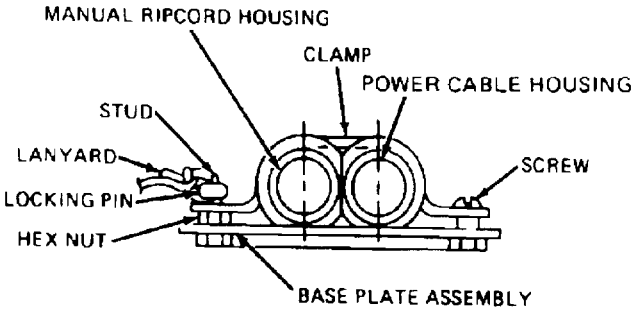

Figure 9. Position Large Slotted End of Dual Base Plate Clamp

d. Safety-tie clamp release lanyard pin to stud with one turn of size FF thread, single and waxed. Passing thread thru lanyard knot; tie off (Figure 10). (QA)

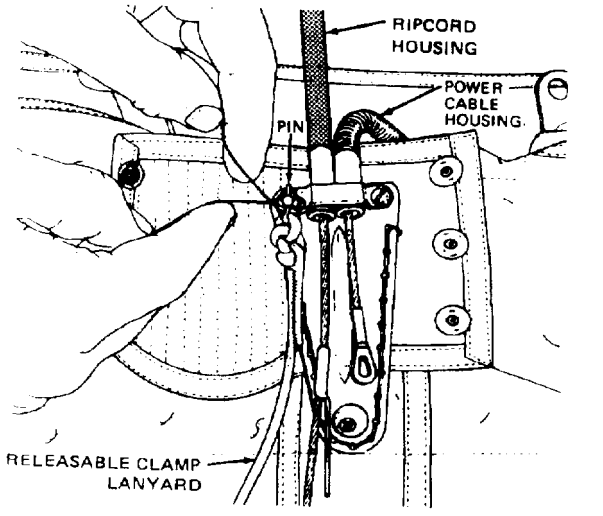

Figure 10. Safety-Tie Clamp Release Lanyard

e. Rotate container end flap with base plate onto packing table. Tack release lanyard to end flap at V with 1/8-in. slack in lanyard between locking pin and tacking. Tack around lanyard, not thru it, using one turn of size E thread, single and waxed; tie off (Figure 11).

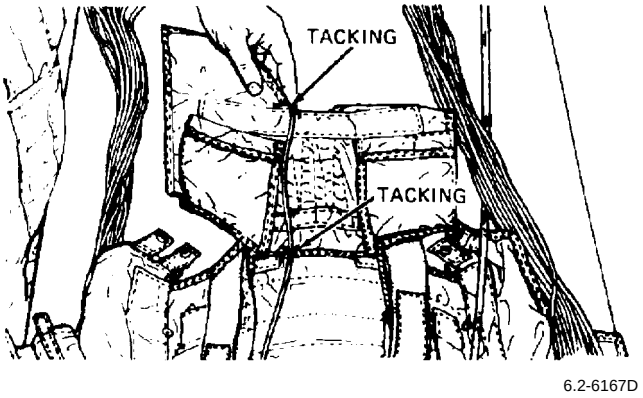

Figure 11. Rotate Container End Flap with Base Plate

f. Route release lanyard along inside of container end flap. Tack release lanyard to upper container edge about 1-in. from left riser slot. Tack around lanyard, not thru it, using one turn of size E thread, single and waxed; tie off.

17. REPLACEMENT OF CLAMP BASE ASSEMBLY AND/OR LOCKING CONE ON CONTAINER TOP FLAP.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Cut and remove stitching retaining base assembly and locking cone from top flap. Remove base assembly and locking cone.

b. If base assembly is to be replaced, remove clamp and screws and retain for reinstallation. If locking cone is to be replaced, leave clamp with ripcord housing/power cable housing attached to base assembly.

c. Using a sufficient length of size 6 thread, doubled and waxed, to complete repair, tie an overhand knot 3 to 4-in. from end of thread for tie-off when stitching is complete.

d. Position replacement base assembly/locking cone in exact location of damaged or missing base assembly/ locking cone. Ensure that ripcord locking pin hole is aligned in same direction as that removed.

e. Start handstitching from inside of container at widest end of base assembly, using a running stitch thru each hole in the base assembly and applicable holes in locking cone. Stitch to last hole in sequence; then stitch back around base assembly to starting hole. Tie off; Trim ends 1/2-in.

f. If base assembly was replaced, reinstall clamp and ripcord housing/power cable housing.

18. REPLACEMENT OF SLIDE FASTENER ON PARARAFT FLAP ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
814AS807-1	Slide Fastener

a. Carefully remove stitching holding damaged slide fastener to pararaft flap assembly.

b. Place replacement slide fastener on pararaft flap assembly in the same position as the one removed.

c. Starting with the bottom end of the slide fastener, align the slide fastener tape flush with the edge of the flap assembly and sew with three rows of stitching about 1/8-in. apart.

d. At the top stop end of the slide fastener remove any excess tape and sear.

19. REPLACEMENT OF CONTAINER.

Support Equipment Required

Part Number	Nomenclature
—	Hot Knife

a. Remove back pad and retain for reinstallation.

b. Inspect replacement container per WP 020 02.

WARNING

Do not allow hot nylon drippings or hot ends of nylon webbing to come in contact with skin or clothing.

c. Using a hot knife, cut open the buttonhole on right side of container for the ripcord release arming cable housing.

d. Mark date placed in service on identification and service life label.

e. Reinstall back pad.

20. REPLACEMENT OF LAP BELT ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. Mark existing lap belt location. Cautiously remove existing stitches which secure the lap belt assembly to the container assembly.

b. Remove lap belt release assembly hardware, and retain. Discard removed lap belt assembly.

c. Position replacement lap belt assembly in same location as that removed. Hand tack in place to hold position while machine stitching (Optional). Stitch in place with size 6 thread, using a 5-point cross-stitch pattern, 4-in. long, two places (Figure 12).

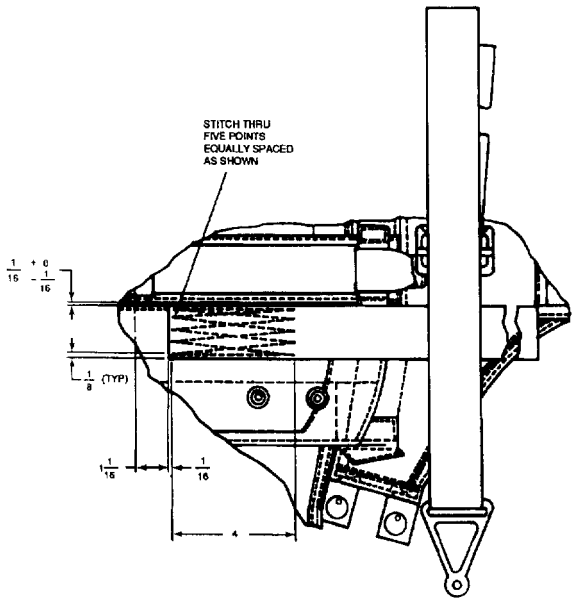

Figure 12. Replacement of Lap Belt Assembly

d. Install removed lap belt release hardware on replaced lap belt assembly. (QA)

21. INSTALLATION OF LAP BELT RELEASE ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
MIL-S-22473	Sealing, Compound, Grade H

a. Inspect release assembly for operation, corrosion, burrs, and sharp edges.

b. Insert pin thru lap belt webbing loop (Figure 13).

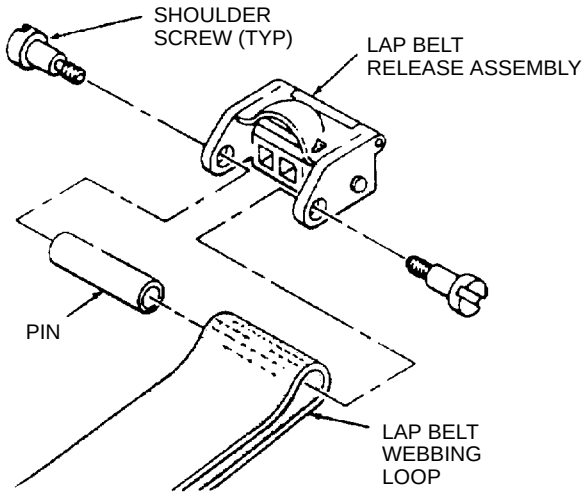

Figure 13. Installation of Lap Belt Release

c. Place lap belt release assembly on lap belt with actuating locking lever facing outboard (Figure 13).

d. Apply sealing compound to threads of two shoulder screws. Install screws thru holes in release assembly and into pin (Figure 13).

22. REPAIR OF BACK PAD.

a. Repair of the back pad is limited to the following:

(1) Cleaning contaminated areas per WP 004 00.

(2) Replacement of snap fasteners per WP 004 00.

(3) Repair of small holes, tears, and loose or broken stitching per WP 004 00.

b. Replace back pad for any holes, tears, or other damage deemed beyond repair.

23. ATTACHMENT OF BACK PAD.

a. Attach back pad to container by securing six back pad keepers to container fasteners.

24. INSTALLATION OF WARNING LABEL ON BACK PAD.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Measure 3 1/4-in. from either edge of back pad and mark.

b. Measure 4 1/2-in. from top and mark.

c. Fold all sides of label under 3/8-in.

d. Place top edge of label on 4 1/2-in. mark and side edge of label on 3 1/4-in. mark.

e. Sew one row of stitches around label 1/8-in. from edge.

f. Reidentify back pad as P/N 60A113D6-7.

25. REPLACEMENT OF SPREADING GUN ANTI-SQUID RETAINER CORD TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

a. Remove loose or broken tacking.

b. Tack 18 ±1 1/2-in. from end of sleeve and at end of loop. Use one turn of size FF thread single and waxed, tack thru sleeve anti-squid retainer cord and sleeve; tie off (Figure 14).

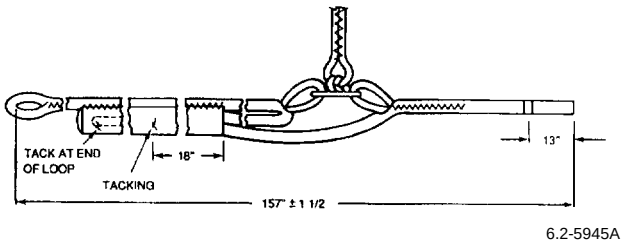

Figure 14. Retainer Cord Tacking

26. REPLACEMENT OF MS22021-1 CONNECTOR LINK (SPEED LINK) WITH MS22002-1 (DOUBLE ”L”) CONNECTOR LINK.

NOTE

New canopies received from supply may have the Double ’L” Connector Links installed.

Instructions for attachment of Firing Lanyards, PDVL’s, Four-Line Release Systems, etc., will remain the same and will be contained in the application parachute manual.

Materials Required

Specification or Nomenclature	Part Number
MS22002-1	Connector Link (Double ”L”)
F-900 Torque Seal (Color Optional)	Sealing Compound
—	Torque Screwdriver
MIL-S-43243 (See WP 002 00)	Separator, Link or Equivalent

a. Remove yoke and plate assembly from parachute connector link, P/N MS22021-1.

b. Slide suspension lines from connector link onto a temporary locking pin or rod.

c. Remove cross-connector strap.

d. Slide riser loop off connector link bar and dispose of connector link, P/N MS22021-1.

e. Remove screws from the double ”L” connector link, P/N MS22002-1 and separate the two halves of the link.

f. It may be necessary to use a separator device to separate the two halves of the connector link if a separator device is not available, loosen both screws of the connector link by four turns. Place a long bar between the connector link bars to hold the link in place. Using a rawhide or rubber mallet, tap one screw head and then the other screw head several times until the connector link bars separate.

g. Install suspension lines on the new connector link bar. The short leg of the ”L” connector is to be positioned to the inside (Figure 15).

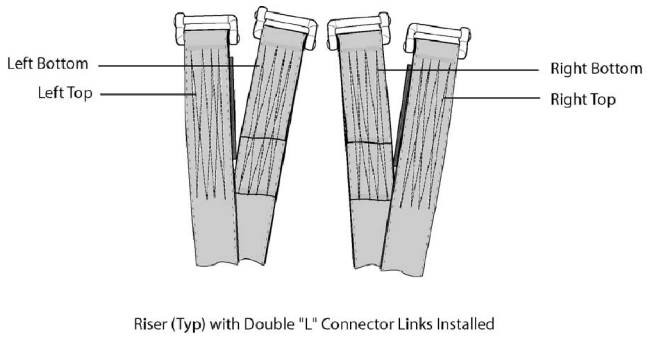

Figure 15. Double “L” Connector Link Layout

h. Install cross-connector strap.

i. Slide riser loop onto opposite connector link bar.

j. Mate both halves of the connector link together.

k. Install screws (2 each).

NOTE

Screws must make a minimum of 6 full turns prior to applying torque.

l. Check suspension line continuity. (QA)

m. Tighten screws to a torque value of 15 in-lbs. (QA)

WARNING

Care must be taken when tightening screws as screwdriver may slip and cause minor injury.

NOTE

It may be necessary to check the torque value on each screw more than once due to the interference fit design feature of the connector link.

n. Apply torque seal to both screw heads and allow to dry before proceeding with remainder of parachute packing.

o. Repeat steps a through l on each riser group.

p. Re-identify the parachute canopy by using an indelible black pen to cross out the existing part number and marking the new superceding part number per Illustrated Parts Breakdown (IPB) WP 020 04.

ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

NES-25A PERSONNEL PARACHUTE ASSEMBLY

PART NO. 926AS104-6

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1	11	2 thru 6	9				

Reference Material

Intermediate and Depot Maintenance, Packing Procedures, NES-25A Personnel Parachute Assembly ..... WP 020 02

Alphabetical Index

Introduction 1
Service/Total Life 1
Usable on Codes 1

List of Figures

Title	Page
NES-25A Personnel Parachute Assembly	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the NES-25A Personnel Parachute Assembly (Figure 1).

2. USABLE ON CODES.

a. The usable on codes in this WP refer to the aircraft applications for the NES-25A Personnel Parachute Assembly.

b. The following usable on codes apply to this WP.

A - T-2

3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in WP 020 02.

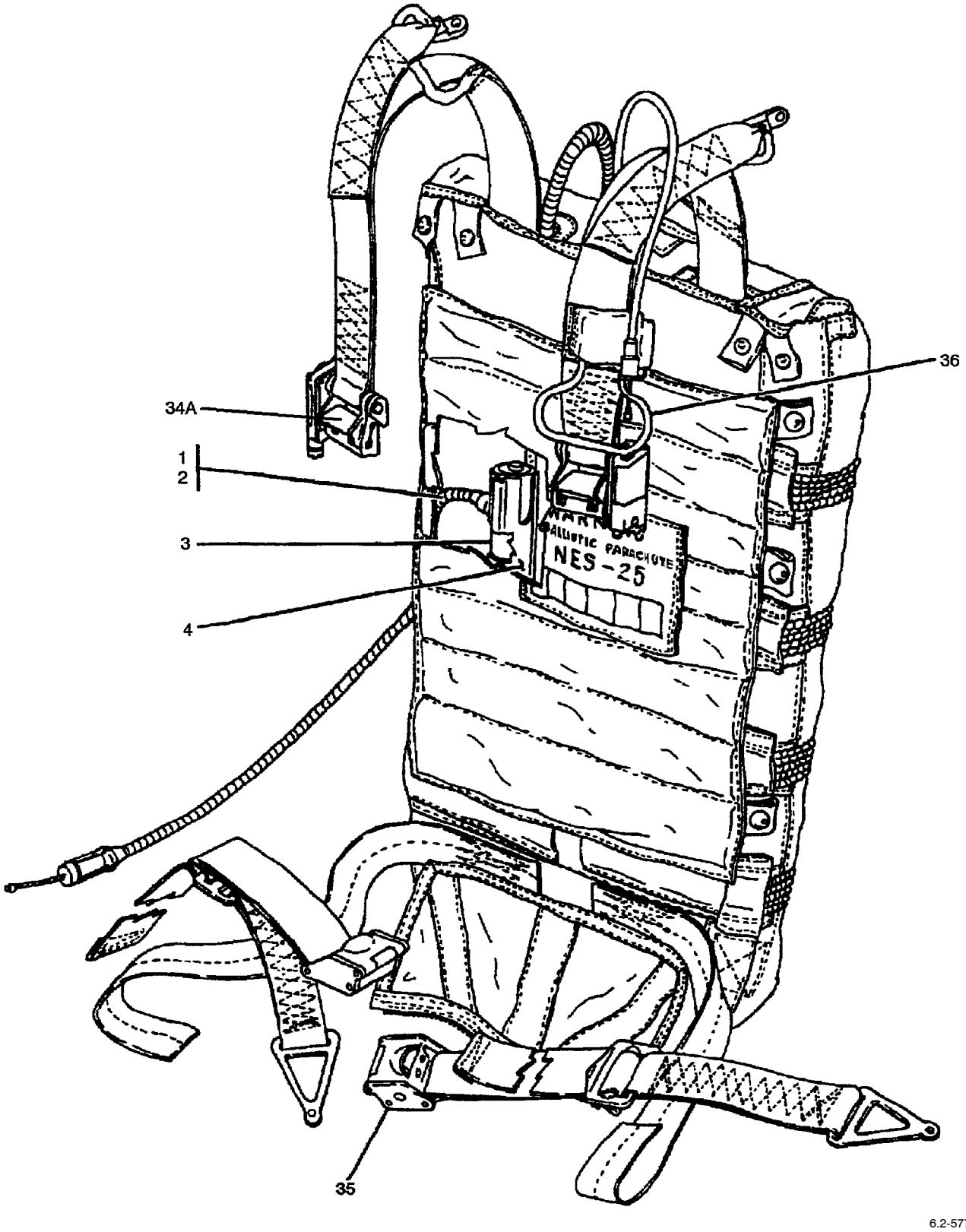

Figure 1. NES-25A Personnel Parachute Assembly (Sheet 1 of 5)

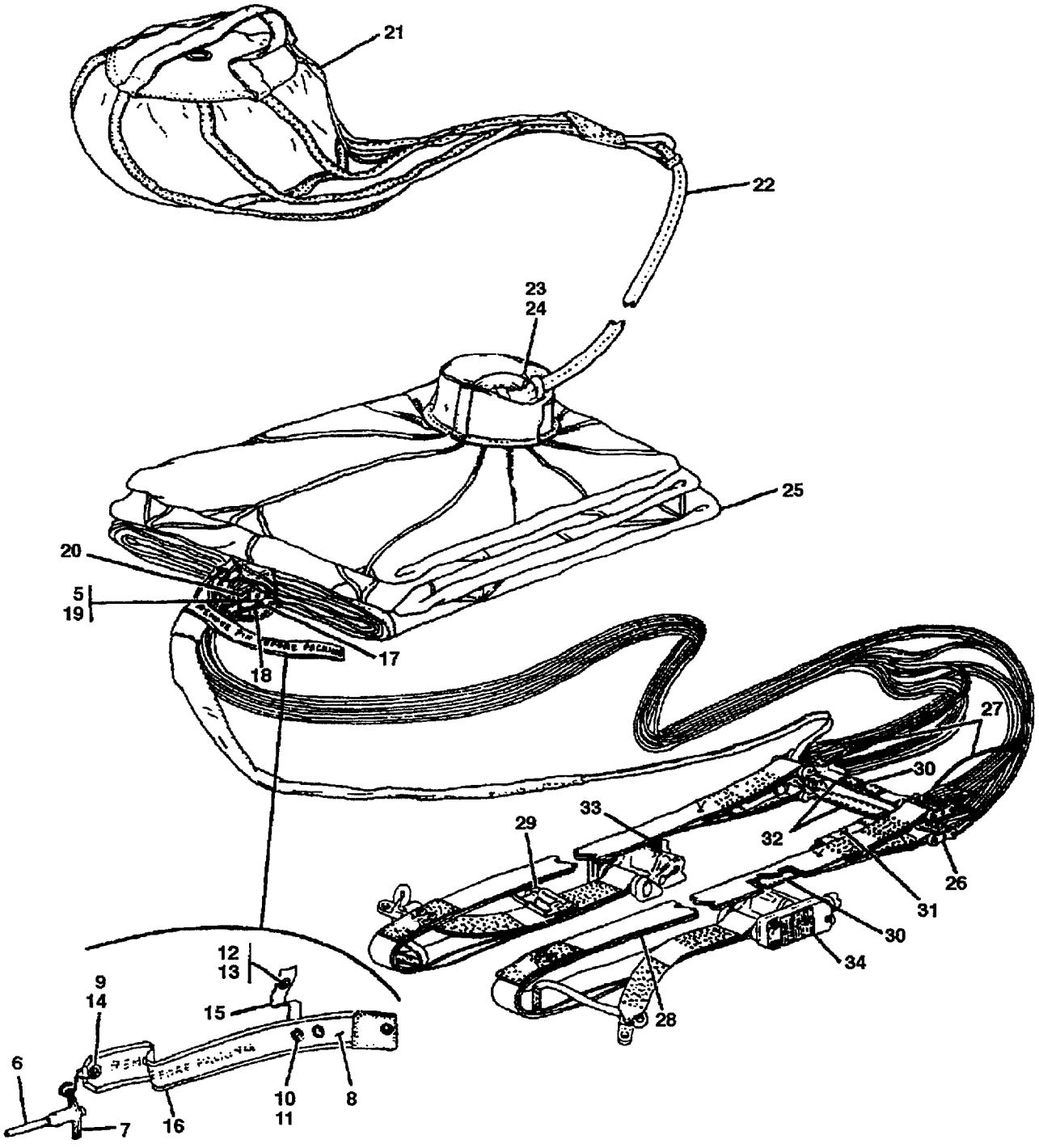

Figure 1. NES-25A Personnel Parachute Assembly (Sheet 2 of 5)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	926AS104-6	PARACHUTE ASSEMBLY, COMPLETE, NES-25A .	1	A	AGOGG
1	711-07025	. HOUSING, ARMING CABLE /52497/	1		PAGZZ
2	711-07026	. CABLE, ARMING /52497/	1		PAGZZ
3	851AS100	. CARTRIDGE, DELAY, CCU-59A (MF 37)	1		PCGZA
4	711-07022-34	. RELEASE, AUTOMATIC PARACHUTE . . . . . RIPCORD MOD 7000 /52497/	1		PAGDD
	711-07022-30	. RELEASE, AUTOMATIC PARACHUTE . . . . . RIPCORD MOD 7000 /52497/ (USE UNTIL EXHAUSTED)	1		PAGDD
5	SK86-0051-13	. GUN ASSEMBLY, SPREADING /24632/	1	*	PAGGD
	SK86-0051-11	. GUN ASSEMBLY, SPREADING /24632/ . . . . . (USE UNTIL EXHAUSTED)	1	*	PAGGD
6	SK86-0089-1	. . SAFETY PIN ASSEMBLY /24632/	1		PAGGG
7	CL3BLPT1005	. . . PIN, QUICK RELEASE /99862/	1	*	PAGZZ
	MS17985C310	. . . PIN, QUICK RELEASE	1	*	PAGZZ
8	39768	. . . FLAG ASSEMBLY /89771/	1		MGGGG
9	MS20230B10	. . . . GROMMET ASSEMBLY	1		PAGZZ
10	MS27983-4	. . . . EYELET	2		PAGZZ
11	MS27983-3	. . . . STUD	21		PAGZZ
12	MS27983-2N	. . . . SOCKET	14		PAGZZ
13	MS27983-1	. . . . BUTTON	14		PAGZZ
14	39768-3	. . . . WASHER /89771/	1		MGGZZ
15	39768-2	. . . . STRAP /89771/	1		MGGZZ
16	39768-1	. . . . FLAG /89771/	1		MGGZZ
17	472P215D017-7	. . MOUNT, CANOPY /24632/	14		PAGZZ
18	LKD7F52Z5	. . SCREW /26304/	28		PAGZZ
19	825AS100	. CARTRIDGE, IMPULSE CCU-33/B (MF-78)	1		PCGZA
20	MS16555-630	. PIN, STRAIGHT HEAD	1		PAGZZ
21	608AS110-1	. PARACHUTE ASSEMBLY, PILOT	1		PCGGG
22	926AS102-1	. BRIDLE ASSEMBLY, PILOT PARACHUTE	1		PCGZZ
23	702AS100-1	. SLEEVE/MAKE FROM M22129-01-N . . . . . /NOTE 1/	1		PCGZZ
24	SK128-001-013-2	. CORD, RETAINER, ANTI-SQUID /24632/	1		MDGZZ
25	107AS106-22	. CANOPY ASSEMBLY	1	*	PCGGG
	107AS106-24	. CANOPY ASSEMBLY (WITH DOUBLE "L" . . . . CONNECTOR LINK INSTALLED)	1	*	PCGGG
26	MS22021-1	. . LINK, REMOVABLE CONNECTOR	4	*	PAGZZ
	MS22002-1	. . CONNECTOR LINK (DOUBLE "L")	4	*	PAGZZ
27	666AS101-2	. . LANYARD, FOUR-LINE RELEASE	2		MGGZZ
28	60A116E7-16	. RISER ASSEMBLY	1		PCGGG
29	60A116C10-1	. . RETAINER, RIPCORD GRIP	1		PAGZZ
30	676AS100-1	. . LABEL	5		MDGZZ
31	666AS102-5	. . FLUTE, FOUR-LINE RELEASE . . . . . LANYARD	2		MGGZZ
32	677AS100-2	. STRAP, CONNECTOR	2		PCGGG
33	852AS117-3	SENSING RELEASE UNIT, PARACHUTE . . . . . HARNESS MXU-746/P LEFT SIDE	1		AGGGG
34	852AS117-4	SENSING RELEASE UNIT, PARACHUTE . . . . . HARNESS MXU-747/P RIGHT SIDE	1		AGGGG

Figure 1. NES-25A Personnel Parachute Assembly (Sheet 3 of 5)

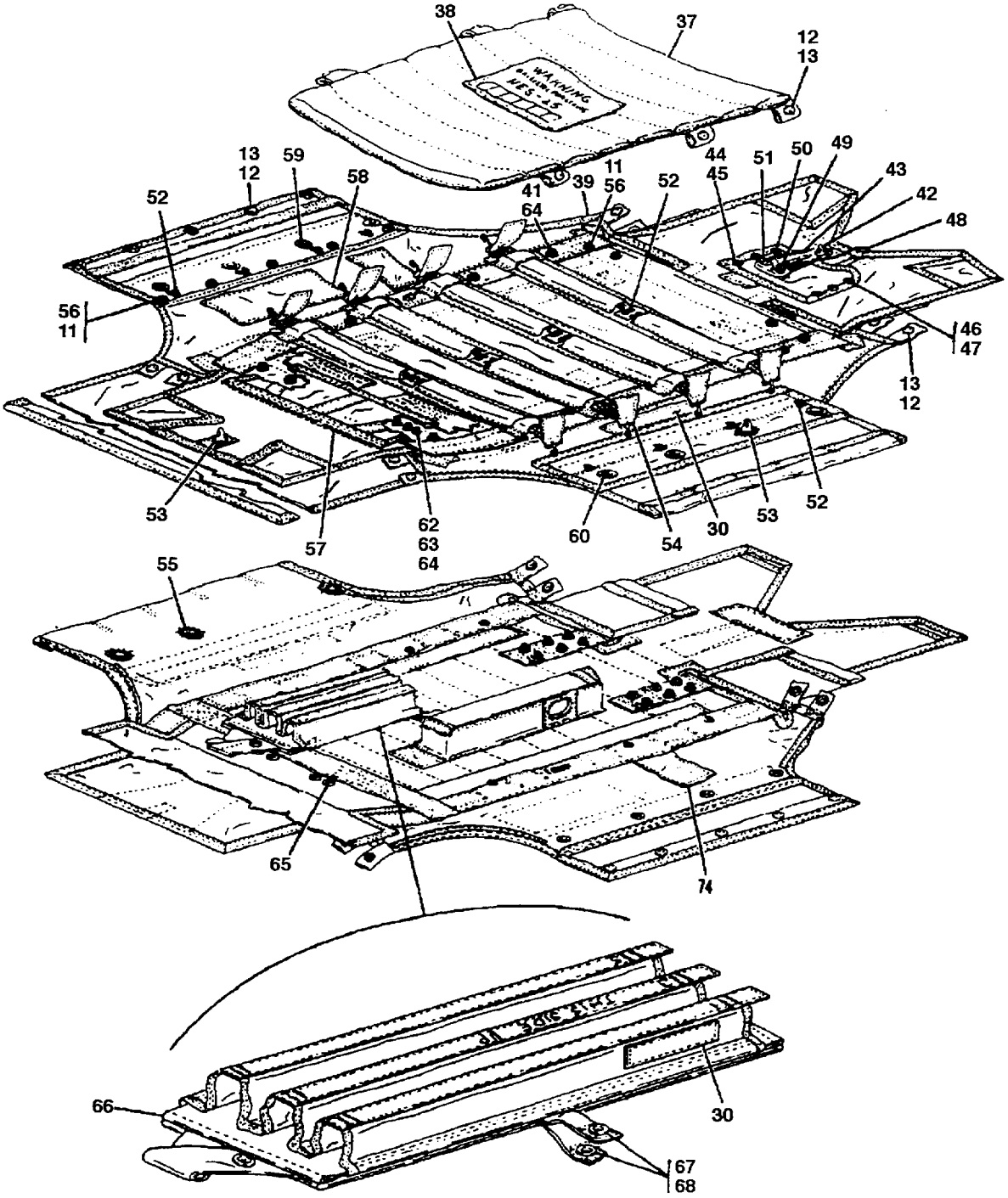

Figure 1. NES-25A Personnel Parachute Assembly (Sheet 4 of 5)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
34A	990055-1	. RELEASE ASSEMBLY, CANOPY /99449/	2	*	PAGZZ
	015-10307-5	. RELEASE ASSEMBLY, CANOPY /99449/ (USE UNTIL EXHAUSTED)	2	*	PAGZZ
35	1979AS826-1	. RELEASE ASSEMBLY, LAP BELT /30003/	2	*	PAOZZ
	990060-1	. RELEASE ASSEMBLY, LAP BELT /99449/	2	*	PAOZZ
	015-11365-1	. RELEASE ASSEMBLY, LAP BELT /99449/ USE UNTIL EXHAUSTED	2		PAOZZ
36	60A116C5-5	. RIPCORD ASSEMBLY, PARACHUTE	1		PAGZZ
37	60A113D6-1	. PAD ASSEMBLY, BACK	1		PAOGG
38	510AS126-3	. . LABEL, WARNING	1		MDGZZ
39	926AS101-55	. CONTAINER ASSEMBLY	1		PCGGG
49	60A116C12-6	. . LAP BELT ASSEMBLY	1		PCGZZ
41	MS27980-10B	. . FASTENER, EYELET	6		PAGZZ
42	60A113C24-1	. . CONE, 0.410 GRIP	1		PAGZZ
43	60A113D16-1	. . BASE ASSEMBLY, CLAMP	1		PAGZZ
44	MS27981-5B	. . FASTENER, EYELET	3		PAGZZ
45	MS27981-4B	. . FASTENER, STUD	3		PAGZZ
46	MS27981-1B	. . FASTENER, BUTTON	3		PAGZZ
47	MS27981-3B	. . FASTENER, SOCKET	3		PAGZZ
48	60A116D26-2	. . LANYARD	1		PCGGG
49	60A116C25-1	. . STUD	1		PAGZZ
50	60A116C27-1	. . CLAMP, DOUBLE	1		PAGZZ
51	60A116C28-1	. . SCREW, SHOULDER	1		PAGZZ
52	60A113C28-1	. . EYE	16		PAGZZ
53	60A113C31-1	. . CONE, 0.338 GRIP	2		PAGZZ
54	60A113C25-1	. . WASHER, GROMMET	3		PAGZZ
55	MS22048GC1	. . GROMMET	3		PAGZZ
56	MS27980-8B	. . FASTENER, EYELET	13		PAGZZ
57	814AS807-1	. . FASTENER, SLIDE	1		PAGZZ
58	585AS100-1	. . LABEL, PARACHUTE ASSEMBLY	1		MDGZZ
59	MS22048C2	. . GROMMET AND WASHER, PARACHUTE PACK	4		PAGZZ
60	60A113D11-3	. . SPRING ASSEMBLY, CONTAINER OPENING	2	*	PAOZZ
	MS70105-7	. . SPRING ASSEMBLY, CONTAINER OPENING	2	*	PAOZZ
61	107AS102-1	. . LABEL, WARNING	2		MDGZZ
62	AN3-4A	. . BOLT	2		PAGZZ
63	AN960C10L	. . WASHER, FLAT	2		PAGZZ
64	MS20364-1032A	. . NUT, SELF-LOCKING	2		PAGZZ
65	MS20230-BP20	. . GROMMET ASSEMBLY	4		PAGZZ
66	608AS104-1	. . SLEEVE, LINE STOWAGE ASSEMBLY	1		PAGGG
67	MS20230BG20	. . . GROMMET	3		PAGZZ
68	MS20230WB20	. . . WASHER	3		PAGZZ

NOTES: 1. Make from M22129-01-N insulation sleeving, NIIN 00-899-6650 (size 0.020-in. wall x 0.30-in. ID x 6.0-in. long).

Figure 1. NES-25A Personnel Parachute Assembly (Sheet 5 of 5)

ORGANIZATIONAL MAINTENANCE

REPAIR PROCEDURES

LS-1 DROGUE PARACHUTE ASSEMBLY

PART NO. 1.9083GR-3

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

None

Alphabetical Index

Title	Page
Container Assembly	2
Drogue Gun Withdrawal Line Safety Tie Replacement	2
Introduction	2
Repack Schedule	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

2. This work package (WP) contains instructions for organizational level repair to ensure that the drogue parachute assembly remains in ready-for-issue (RFI) status.

3. When performing repairs detailed in this WP, follow these guidelines:

a. Review all applicable instructions in this WP prior to starting repair.

b. Ensure that all necessary support equipment and materials required are available.

c. When required, remove enough material from its source for immediate use only. Ensure that the material identification ticket remains with the source material at all times. Material that cannot be identified will not be used.

d. To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

e. A quality assurance (QA) inspector shall examine the finished work.

4. CONTAINER ASSEMBLY.

5. DROGUE GUN WITHDRAWAL LINE SAFETY TIE REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size A, Type I or II, Class A

a. Completely remove loose or broken safety tie.

b. Safety-tie locking pin by looping a 12-in. length of size A thread, single and unwaxed, under pin. Tie off with four half-hitches (Figure 1).

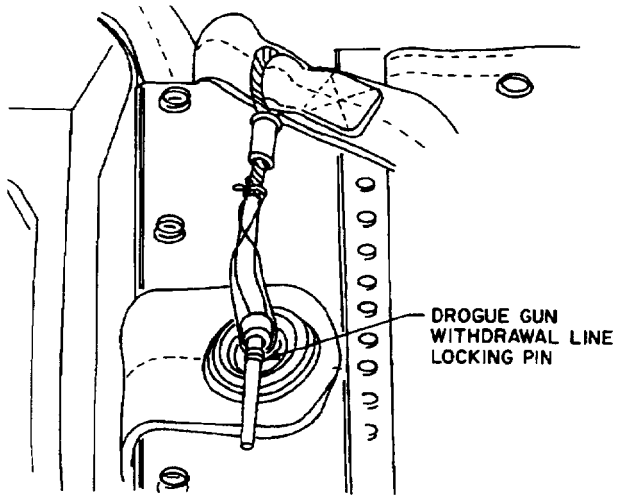

Figure 1. Replacement of Drogue Gun Withdrawal Line Safety Tie

c. Close protective cover, ensuring that withdrawal line exits cover at left side.

6. REPACK SCHEDULE.

a. Scheduled repack cycle is 448 days.

ORGANIZATIONAL MAINTENANCE

PACKING PROCEDURES

LS-1 DROGUE PARACHUTE ASSEMBLY

PART NO. 1.9083GR-3

List of Effective Work Package Pages

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2	9						

Reference Material

Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration . . . . . WP 003 00
Maintenance Instructions, Personnel Survival, Navy Model T-2B/T-2C Aircraft . . . . . NAVAIR 01-60GAB-2-2.2

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Service Life Check and Configuration Updating	2
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Packing	3
Attachment of Withdrawal Line to Vent Lines	3
Stowage of Risers and Canopy into Drogue Container	4
Preliminary Procedures	2

Record of Applicable Technical Directives

None

1. GENERAL.

a. Packing instructions are provided with the assumption that they will be carried out under ideal conditions in a parachute loft WP 003 00. When a drogue parachute assembly must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

b. In no case shall the packing procedures be interrupted after the operation has started. If the packing operation is interrupted due to unforeseen circumstances, the drogue parachute assembly shall be completely repacked as detailed in this Work Package (WP).

c. Quality Assurance (QA) points have been included in the procedures. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Witnessing of QA steps may be delayed by QA if their satisfactory completion is verified in later steps.

d. This WP provides packing procedures for both original issue and in-service drogue parachute assemblies. Packing procedures are the same for all assemblies.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
—	Dowel
—	Stamp Pad
	-or-
A-A-130	Adjustable Metal Stencil
	-or-
—	Rubber Stamp Kit
	-or-
Style No. 8	Printing Set
	-or-
GG-P-655	Printing Set

Materials Required

Specification or Part Number	Nomenclature
TT-I-1795	Ink, Marking, Black
MIL-I-6903	Ink, Marking, Light Blue
V-T-295	Thread, Nylon, Size A, Type I or II, Class A
MS20995CU20	Wire, Copper, 0.020 in.

a. Ensure that all support equipment and materials required are available prior to starting.

b. Inspect packing tools for nicks, burrs, or sharp edges which may cause damage to the parachute assembly.

c. Count and record number of packing tools.

d. Clean packing table.

3. LAYOUT OF DROGUE PARACHUTE ASSEMBLY.

a. Lay out drogue parachute assembly full length on packing table.

4. INSPECTION (SPECIAL).

a. Maximum scheduled repack cycle is 448 days.

5. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Parachute Harness Sensing Release Unit Cartridge) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be re-based if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Components without a service/total life shall be removed from service if the components do not pass inspection, as determined by Quality Assurance Representative (QAR) or Collateral Duty Inspector (CDI).

g. Check date placed in-service and date of manufacture on each parachute part for service/total life as follows:

Nomenclature	Service Life (Yr)	Total Life (Yr)
Drogue Parachute	None	10
Withdrawal Line	2	10

(1) Markings for completeness, legibility, and agreement with information on Parachute Record.

(2) Compare configuration of parachute assembly to that shown in NAVAIR 13-1-6.2 Record of Applicable Technical Directives, and Illustrated Parts Breakdown.

6. DROGUE ASSEMBLY.

a. Canopy fabric surface, seams, and suspension lines at canopy peak for contamination, mildew, cuts, tears, fraying, and loose or missing stitching.

b. Suspension lines from canopy skirt hem to confluence point for fraying, ruptures, contamination, presence of twists, and security of attachment at skirt hem.

c. Withdrawal line for contamination, curts, fraying, loose or broken stitching, and proper attachment to the drogue parachute. (QA)

d. Risers for contamination, cuts, fraying, burns, loose or broken stitching, and attachment of risers to suspension lines at confluence point. (QA)

e. Lanyard securing pin for nicks, burrs, dirt, corrosion, bends, and proper attachment to the lanyard.

f. Leather buffers for security of attachment, cuts, cracks, and fraying.

7. APPLICATION OF MARKINGS (ORIGINAL ISSUE).

a. When a parachute part is placed in service from stores, the month/year of opening manufacturer's individual shipping container shall be stenciled on it.

b. When using a stamp pad, moisten pad with ink. Pad must be evenly coated and free of clots.

c. Make a test impression to determine correctness of marking and inking.

NOTE

When stamping canopy material, place paper towels behind area to be stamped to prevent smearing or blotching.

d. Stamp marking on canopy skirt hem of drogue parachute assembly.

e. Stamp marking on withdrawal line.

f. Allow marking to dry for 20 to 30 min.

g. Verify correctness of all markings. (QA)

h. Make proper entries on Parachute Record (OPNAV 4790/101).

8. PACKING.

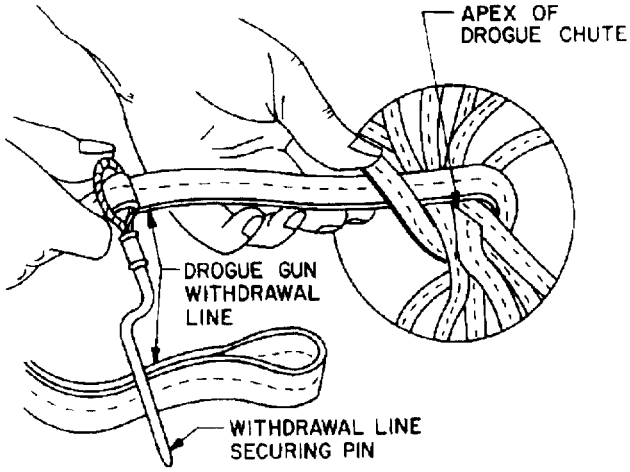
9. ATTACHMENT OF WITHDRAWAL LINE TO VENT LINES.

a. Stretch drogue canopy and risers full length on packing table.

b. Separate risers into two groups with long risers positioned on top of short risers. Separate suspension lines at skirt hem into two equal groups on each side of nameplate gore.

c. Suspension lines must run free from skirt hem to risers. Remove any tangles or twists.

d. Pass loop end of drogue gun withdrawal line closest to drogue container locking pin around vent lines at canopy peak. Pass opposite end of withdrawal line thru loop and pull tight, securing withdrawal line to vent lines (Figure 1). (QA)



6.2-5746

Figure 1. Attachment of Withdrawal Line to Vent Lines

10. STOWAGE OF RISERS AND CANOPY INTO DROGUE CONTAINER.

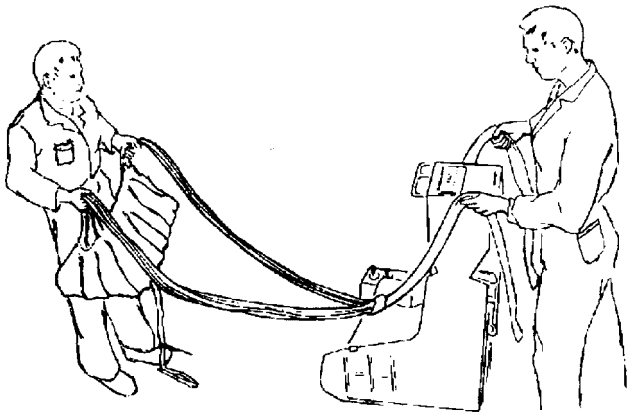
Support Equipment Required

Part Number	Nomenclature
—	Dowel

Materials Required

Specification or Part Number	Nomenclature
MS20995CU20	Wire, Copper 0.020-in.
V-T-295	Thread, Nylon, Size A, Type I or II, Class A

a. Helper shall grasp each group of suspension lines at skirt hem and lift drogue canopy, off packing table. Packer shall grasp each group of risers, long risers on top of short risers, and position them over back of ejection seat. Helper shall position drogue canopy in front of seat (Figure 2).



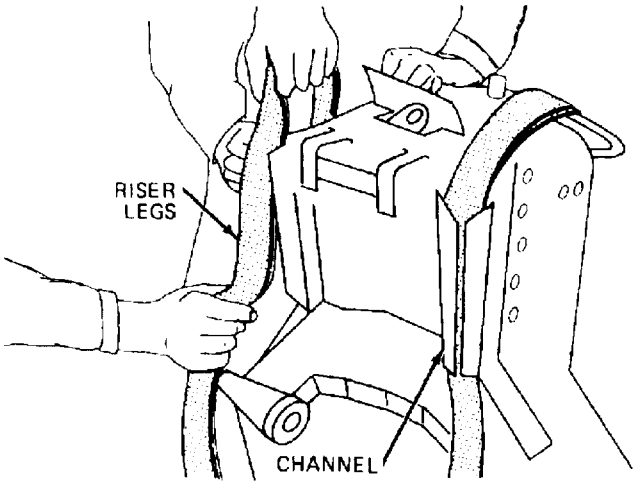
6.2-5747

Figure 2. Helper Shall Grasp Each Group

b. Attach long and short risers to ejection seat roller fitting on back of seat per instructions NAVAIR 01-60GAB-2-2.2.

c. Route each group of risers thru metal channels located on rear side of headrest (Figure 3).

d. With helper holding drogue canopy, in front of ejection seat, packer shall accordion fold left group of risers into forward position of drogue container, from left to right, until confluence point is at top of drogue container. Lay confluence point on top of risers. Packers shall accordion fold right group of risers into rear portion of drogue container in same manner (QA)



6.2-5747A

Figure 3. Route Each Group of Risers

e. Safety-wire risers and channels on all seats, using 0.020-in. copper wire (Figure 4). (QA)

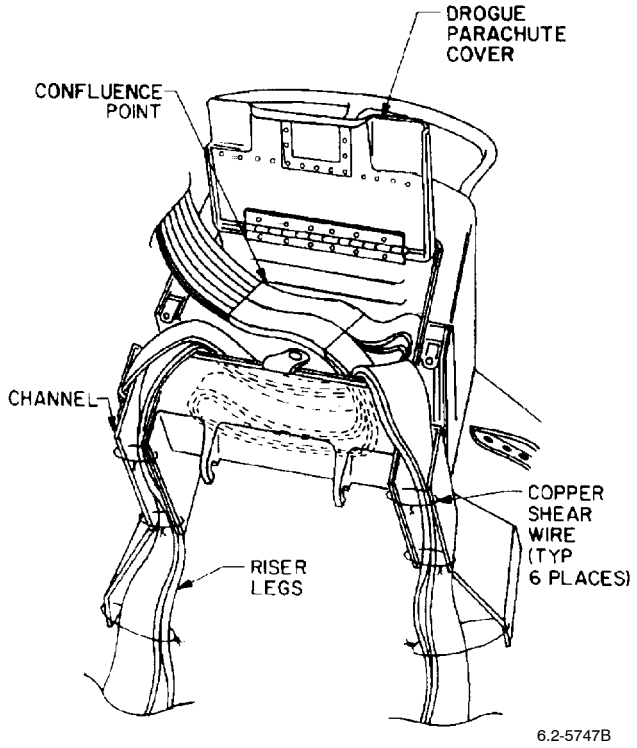


Figure 4. Safety-Wire Risers

f. Remove all twists in each group of suspension lines (Figure 5).

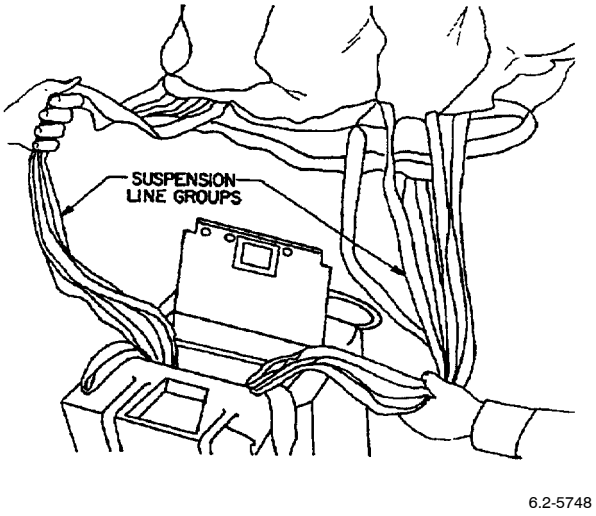


Figure 5. Remove All Twists

g. Helper shall hold drogue canopy above ejection seat. Packer shall accordion fold left group of suspension lines into forward portion of drogue container, from left to right. Packer shall accordion fold right group of suspension lines into rear portion of drogue container in same manner.

WARNING

Do not fold drogue canopy into container.

h. Helper shall lower canopy, skirt hem first, into drogue container (Figure 6).

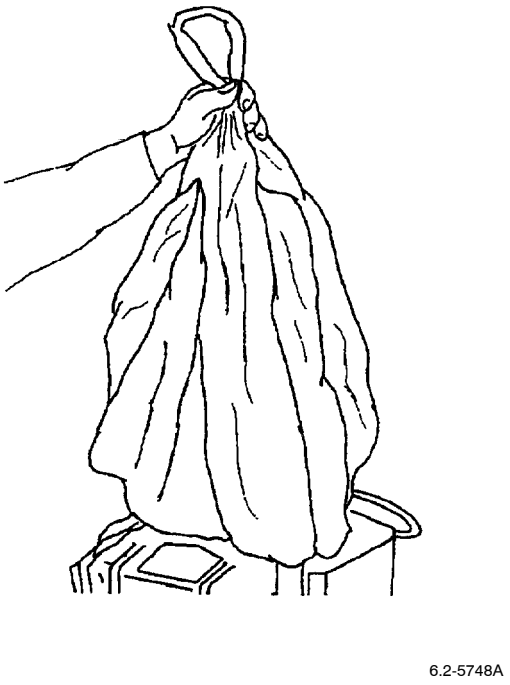


Figure 6. Helper Shall Lower Canopy

i. Packer shall press canopy straight down into container, with apex positioned on top, in center. Tuck canopy into corners of container using a 1-in. diameter round end dowel (Figure 7).

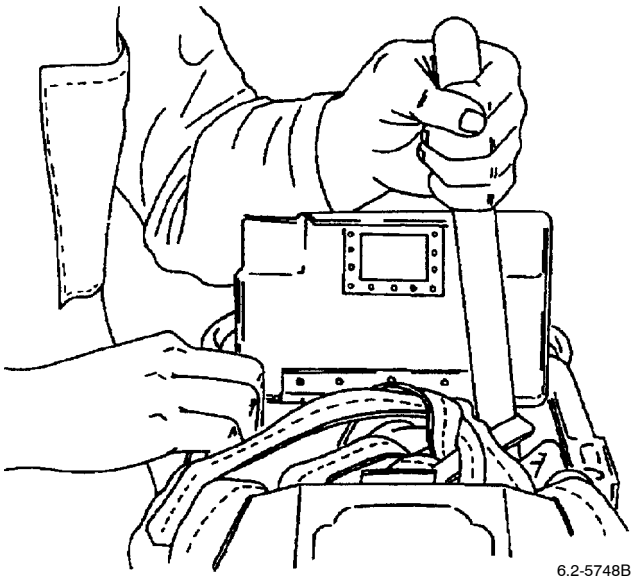


Figure 7. Press Canopy Straight Down

j. Route drogue gun withdrawal line out left rear corner of container. Close drogue container cover over locking cone. Ensure that drogue gun withdrawal line passes thru slot in left rear corner of cover (Figure 8).

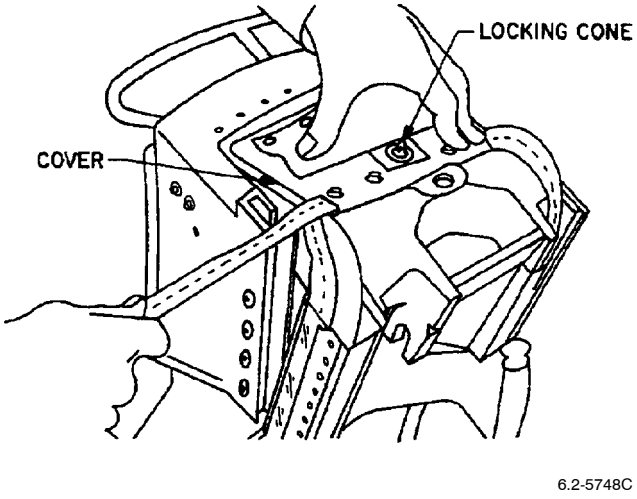


Figure 8. Route Drogue Gun Withdrawal Line

k. Hold container cover over locking cone and insert drogue gun withdrawal line locking pin. Insert approximately half of the locking pin into the locking cone. Locking pin shall not protrude past the protective cover. Adjust locking pin as necessary. Safety-tie locking pin by looping a 12-in. length of size A thread, single, under pin; tie off with four half-hitches (Figure 9).

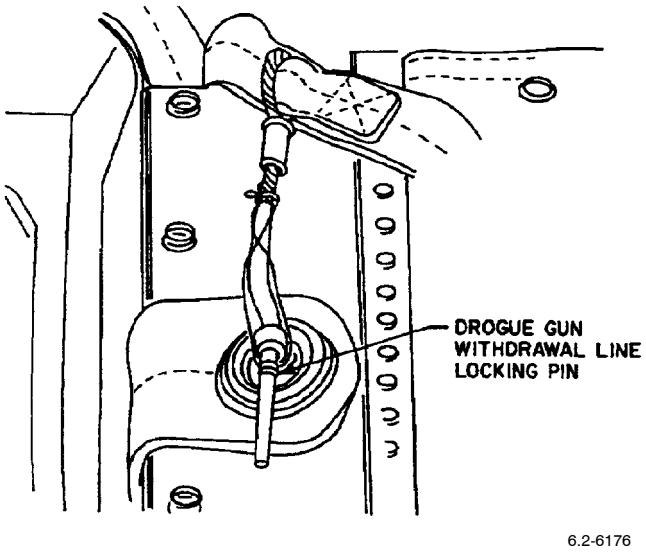


Figure 9. Hold Container Over Locking Cone

l. Attach loop in end of drogue gun withdrawal line to drogue gun (Figure 10).

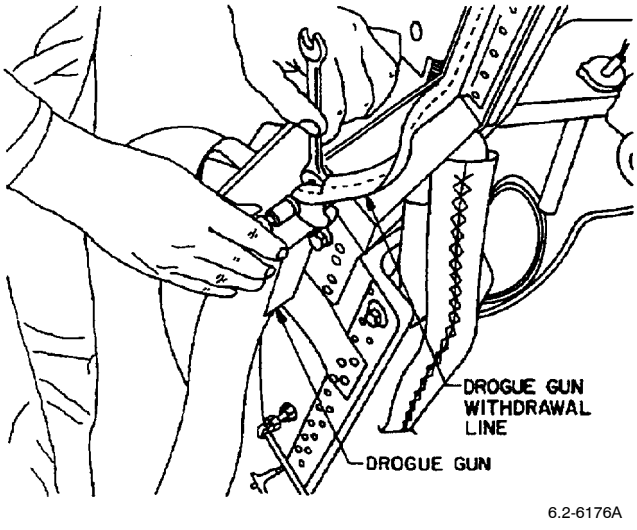


Figure 10. Attach Loop

m. Route drogue gun withdrawal line thru channel on rear left side of headrest. Insert two clear plastic strips into channel to retain withdrawal line in position (Figure 11). (QA)

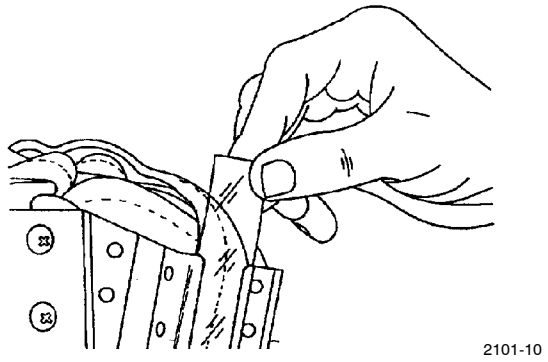


Figure 11. Routing of Drogue Gun Withdrawal Line

n. Fold withdrawal line over locking pin (Figure 12).

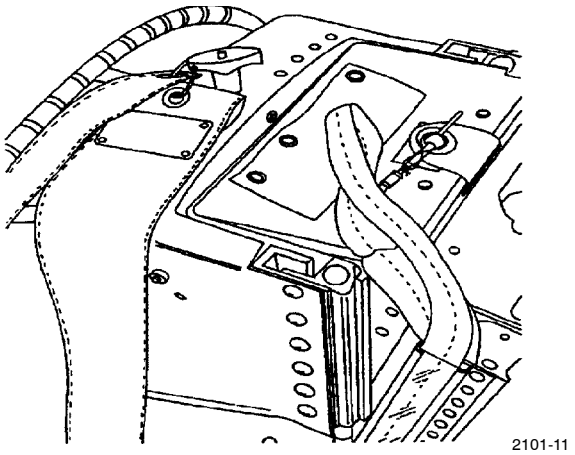


Figure 12. Folding of Withdrawal Line

o. Snap withdrawal line locking pin protective cover closed. Drogue gun withdrawal line shall exit protective cover at left side.

11. FINAL CHECKOUT.

a. Account for all packing tools.

b. Examine packed drogue parachute for general condition.

c. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA)

d. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

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INTERMEDIATE AND DEPOT MAINTENANCE

REPAIR PROCEDURES

LS-1 DROGUE PARACHUTE ASSEMBLY

PART NO. 1.9083GR-3

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Reference Material

Intermediate and Depot Maintenance, Common Repairs . . . . . WP 004 00
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration . . . . . WP 003 00

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Replacement of Riser Sleeves	2
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Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This work package (WP) contains instructions for the maintenance, repair, replacement, and fabrication of various drogue parachute parts or subassemblies to ensure that proper items of equipment remain in a ready-for-issue (RFI) status. Selected repairs shall be documented on Parachute Record (OPNAV 4790/101). For common repairs refer to WP 004 00.

2. DROGUE PARACHUTE ASSEMBLY REPAIRS.

3. GENERAL.

a. Repair of the drogue parachute assembly is limited to the following:

(1) Cleaning of contaminated areas.

(2) Replacement of drogue gun withdrawal line.

(3) Replacement of riser sleeves.

4. REPLACEMENT OF DROGUE GUN WITHDRAWAL LINE.

a. Remove defective drogue gun withdrawal line from vent lines.

b. Stretch drogue canopy and risers full length on packing table.

c. Separate risers into two groups with long risers positioned on top of short risers. Separate suspension lines at skirt hem into two equal groups on each side of nameplate gore.

d. Suspension lines must run free from skirt hem to risers. Remove any tangles or twists.

e. Pass loop end of drogue gun withdrawal line closest to drogue container locking pin around vent lines at canopy peak. Pass opposite end of withdrawal line thru loop and pull tight, securing withdrawal line to vent lines (Figure 1). (QA)

f. Mark date placed in service on withdrawal line.

g. Make proper enties on Parachute Record (OPNAV 4790/101).

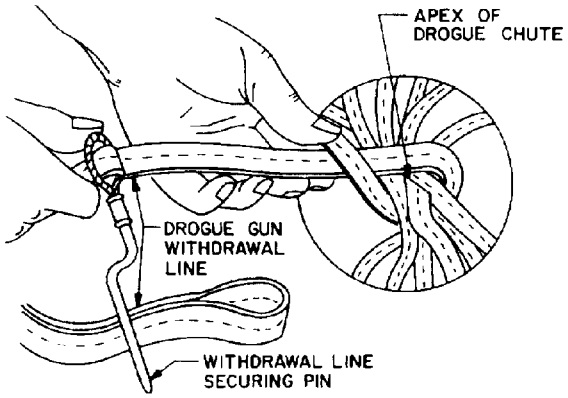

Figure 1. Replacement of Drogue Gun Withdrawal Line

5. REPLACEMENT OF RISER SLEEVES.

Materials Required

Specification or Part Number	Nomenclature
CCC-A-680	Artificial Leather, Treated A, C, Class II, Color Optional
CCC-C-700 (Alt)	Artificial Leather, Treated A, C, Class II
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove tacking securing riser sleeve to riser. Remove discrepant sleeve. Mark risers long sleeve and short sleeve locations.

b. Mark and cut 2 pieces 4 1/2-in. by 20 1/2-in. Mark and cut 2 pieces 4 1/2-in. by 41 1/2-in.

c. Fold cut pieces in half, lengthwise, finish side facing outside, using size E thread, sew together with two rows of stitching 3/32-in. from edges and 1/8-in. between rows of stitching (Figure 2).

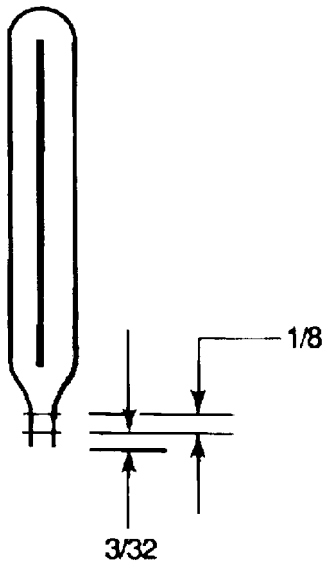

Figure 2. Sewing of Drogue Riser Sleeve

d. Slide sleeve over riser loop ensuring that short sleeves are installed where short sleeves were removed and long sleeves are installed where long sleeves were removed. All sleeve seams should lay along one edge of riser and face in same direction.

e. Riser sleeve shall overlap loop sleeve by 3/4-in. Tack 3/8-in. from sleeve end, in center with one turn of size 6 thread, doubled and waxed; tie off. Tacking shall pass through riser sleeve, riser, loop sleeve, riser and riser sleeve (Figure 3).

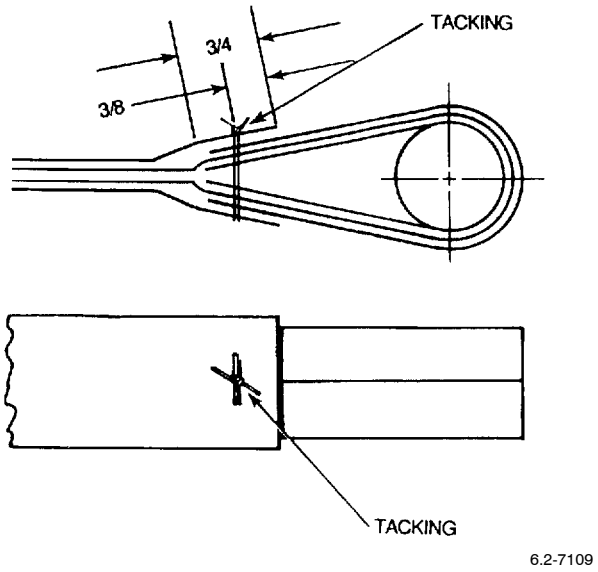

Figure 3. Tacking Drogue Riser Sleeve

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ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

LS-1 DROGUE PARACHUTE ASSEMBLY

PART NO. 1.9083GR-3

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1 thru 3	10						

Reference Material

Organizational Maintenance, Packing Procedures, LS-1 Drogue Parachute Assembly . . . . . WP 021 01

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Service/Total Life	1
Usable On Codes	1

List of Figures

Title	Page
LS-1 Drogue Parachute Assembly	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the LS-1 Drogue Parachute Assembly (Figure 1).

2. USABLE ON CODES.

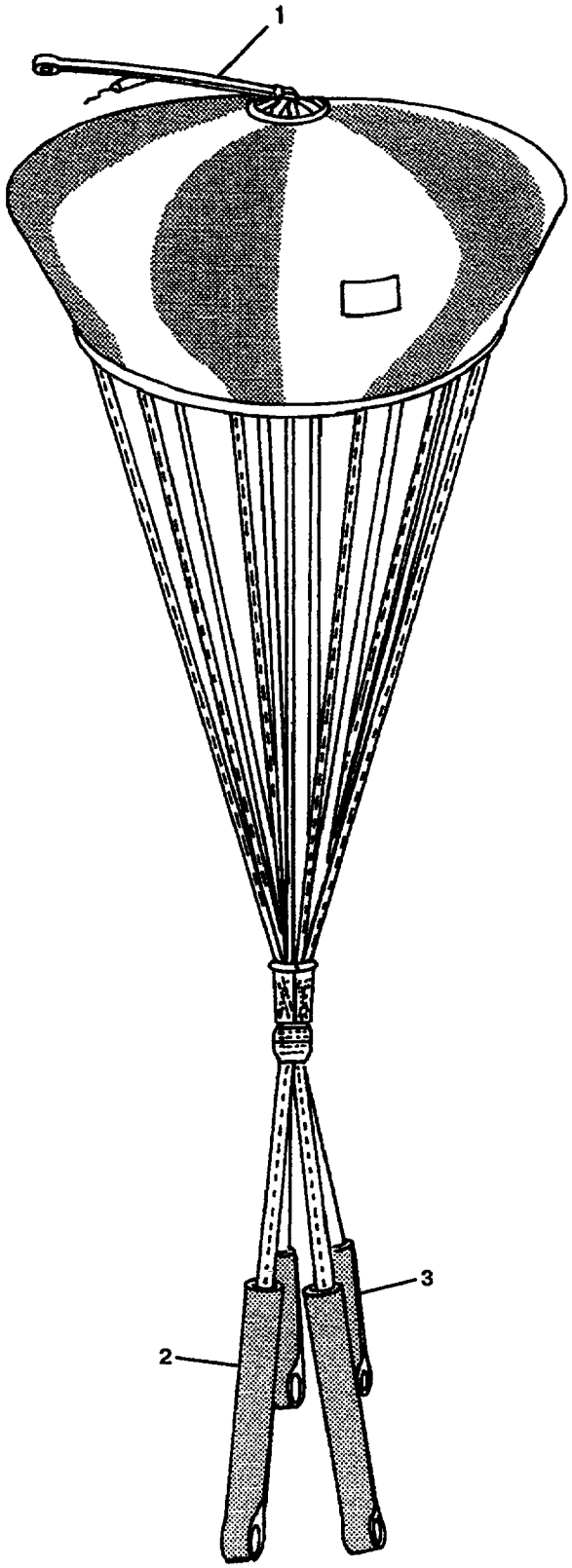
a. The usable on codes in this WP refer to the aircraft applications for the LS-1 Drogue Parachute Assembly.

b. The following usable on codes apply to this WP:

A – T-2

3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in WP 021 01.



6.2-5752A

Figure 1. LS-1 Drogue Parachute Assembly (Sheet 1 of 2)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	1.9083GR-3	DROGUE PARACHUTE ASSEMBLY, LS-1	REF	A	PCOGG
1	926AS111-1	. WITHDRAWAL LINE, DROGUE GUN	1		PAOZZ
2	3-7259-4	. SLEEVE ASSEMBLY, LONG	2		MGGZZ
3	3-7259-5	. SLEEVE ASSEMBLY, SHORT	2		MGGZZ

Figure 1. LS-1 Drogue Parachute Assembly (Sheet 2 of 2)

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ORGANIZATIONAL, INTERMEDIATE AND DEPOT MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

A/P28S-28, -30, and -31 HEADREST ASSEMBLY

PART NO. 14090-21, 14090-19, 14690-17, and 14090-3

PCU-29/A DROGUE/CONTAINER ASSEMBLY

PART NO. 14210-9

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1 thru 2	9	4	9	5	0	6 thru 8	9
3	0						

Reference Material

Illustrated Parts Breakdown, A/P28S-28, -30, -31 Headrest Assembly ..... WP 022 03
Illustrated Parts Breakdown, PCU-29/A Drogue/Container Assembly ..... WP 023 02

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Automatic Release	8
Ejection Seat Movement	2
Ejection Starting Sequence AV-8B Aircraft	2
Ejection Starting Sequence TAV-8B Aircraft	2
Ground Emergency Egress	8
Modes of Ejection Seat Operation	7
Personnel Parachute Deployment/Spreading	7
Seat Stabilization	7
Subassembly Configurations	2

Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 667, Part 2	11 Mar 02	A/P28S-28, A/P28S-30, A/P28S-31 Headrest Assemblies in TAV-8B AV-8B Aircraft, Installation of Four-Line Release System and Over-Inflation Control Line. (WUC1774O, WUC174AO, WUC1749O). ECP-16416.	1 Jun 02	31 Dec 2004

1. DESCRIPTION.

2. GENERAL.

a. The PCU-29/A Drogue/Container Assembly (Figure 1) is part of three assemblies, which are shown in (Figure 2): (1) the A/P28S-28 assembly is part of the SJU-4/A ejection seat used in AV-8B aircraft; (2) the A/P28S-30 assembly is part of SJU-14/A ejection seat; and (3) the A/P28S-31 assembly is part of SJU-13/A ejection seat used in TAV-8B aircraft. All assemblies are designed for use with the PCU-33/P or PCU-56/P parachute harness.

b. The PCU-29/A drogue parachute is used to decelerate and stabilize the ejection seat and at a predetermined time/altitude, to extract the personnel parachute from the container.

c. The drogue parachute is 39-in. in diameter and constructed of heat-resistant Kevlar fabric. The canopy consists of eight gores and eight suspension lines made of 5/8-in. tubular nylon webbing. The suspension lines are connected to a 9-ft. riser, which is attached to one end of the Wind Oriented Rocket Deployment (WORD) Motor. The drogue parachute is packed in a rigid container mounted at the top of the ejection seat.

d. The personnel parachute assembly is composed of a 28-ft. diameter, flat modified multicolored (white, olive green, international orange, and sand shade) nylon canopy with braided nylon suspension lines. The canopy is modified with water deflation pockets on alternate gores and with spreading gun loops. The canopy is packed in a rigid headbox assembly that is installed on the upper portion of the ejection seat. The aircrewmember risers (not part of the assembly) are attached to the connector links once the parachute is installed on the ejection seat.

3. CONFIGURATIONS.

a. The only authorized configurations for the drogue and personnel parachute assemblies are shown in (Figures 1 and 2). Refer to the Illustrated Parts Breakdown WP 022 03 and WP 023 02.

4. SUBASSEMBLY CONFIGURATIONS.

a. The subassemblies listed below make up the personnel parachute assemblies A/P28S-28, -30, and -31 and are shown in (Figure 3). Refer to WP 022 03 for detailed information on subassemblies.

Pilot Parachute

Pilot Parachute Bridle

Cross-Connector Straps and Connector Links

Canopy Assembly

Spreading Gun Assembly

Headbox Assembly

WORD Bridle

Parachute Harness Sensing Release Units (PHSRU)

5. PRINCIPLES OF OPERATION.

6. EJECTION STARTING SEQUENCE AV-8B AIRCRAFT.

a. The ejection sequence is initiated by pulling the ejection control located on the front seat bucket panel of the seat bucket. This fires two ejection initiators, which in turn fire the ejection seat catapult cartridge igniters. The ejection initiators also ignite an inertia reel gas generating initiator, an internal 0.4-sec. delay in the dual output time delay initiator, and a miniature detonating cord (MDC) thruster. The MDC thruster initiates canopy shattering and removes an altitude, airspeed sensor arming key. As the catapult cartridge is ignited, gas pressure acts upon locking pistons in the catapult tubes, forcing pistons to disengage locking balls, which in turn unlock inner and outer catapult tubes.

7. EJECTION STARTING SEQUENCE TAV-8B AIRCRAFT.

a. The ejection sequence is initiated by pulling the ejection control handle located on the front panel of the seat bucket. This fires two ejection initiators, which fire the inertia reel gas generator and two 0.4-sec. ballstic time delays. The catapult is ignited after the 0.4-sec. delay. The aircraft incorporates a signal transmission system (STS) to effect timely canopy transparency fracturing, and aft and forward seat initiation. The STS comprises shielded mild detonation cord (SMDC) line assemblies, one way transfer, time delays, a three mode selector device, and initiators. The sequences and mode selector vary conditions in which the crew maybe exposed to an emergency situation. At ejection seat tip-off two divergence rockets become effective for lateral separation between the two ejection seats. The aft seat diverges to the left and the forward seat diverges to the right.

8. EJECTION SEAT MOVEMENT.

a. The seat and outer catapult tubes travel along seat rails and are guided by six slipper assemblies. The AN/URT33A radio beacon and emergency oxygen system are automatically actuated via quick-disconnect fittings. The automatic oxygen release opens a metering valve within the emergency oxygen system pressure reducer, providing emergency oxygen flow to the aircrew. Should automatic

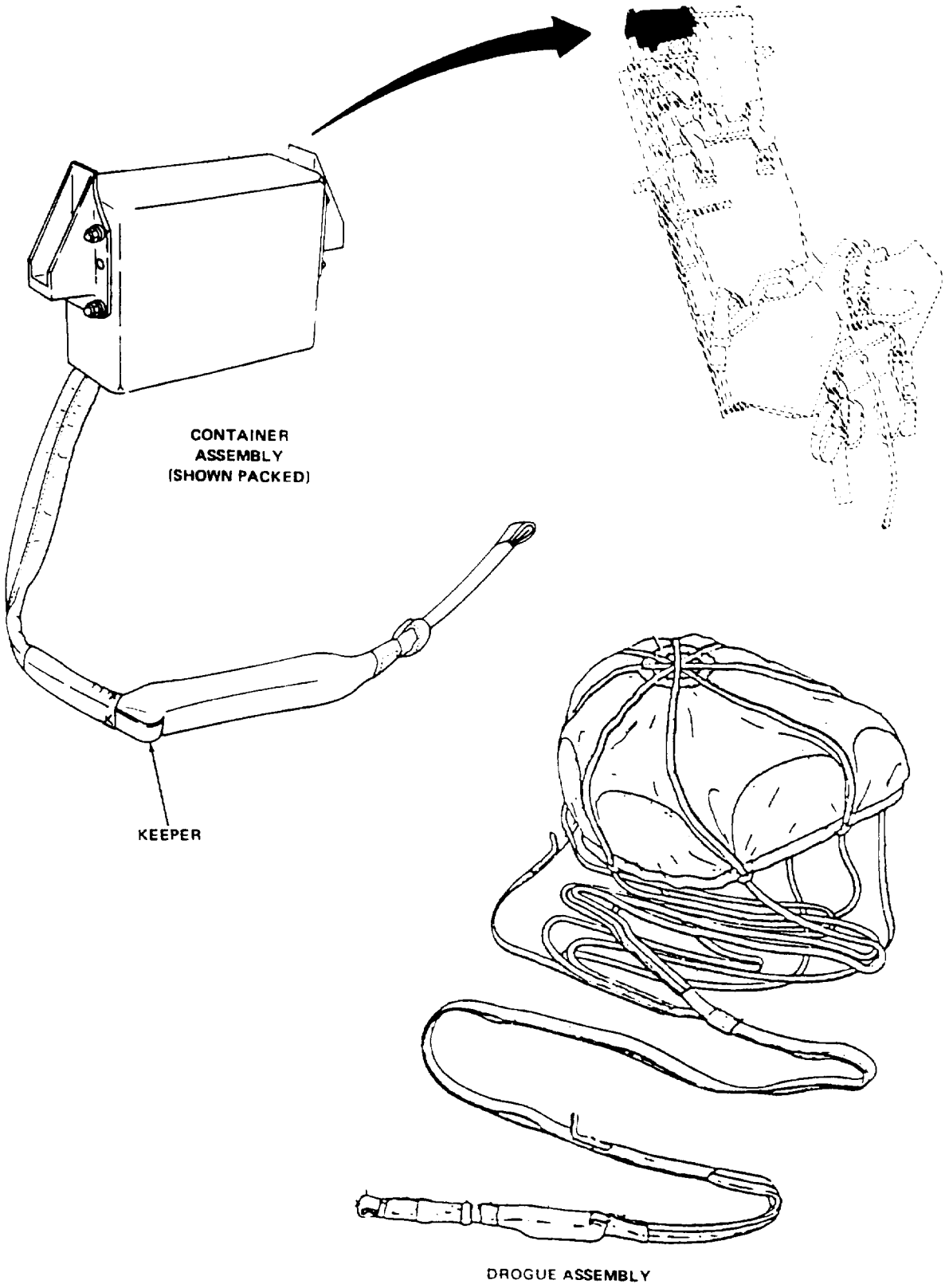


Figure 1. Drogue/Container Assembly, PCU-29/A

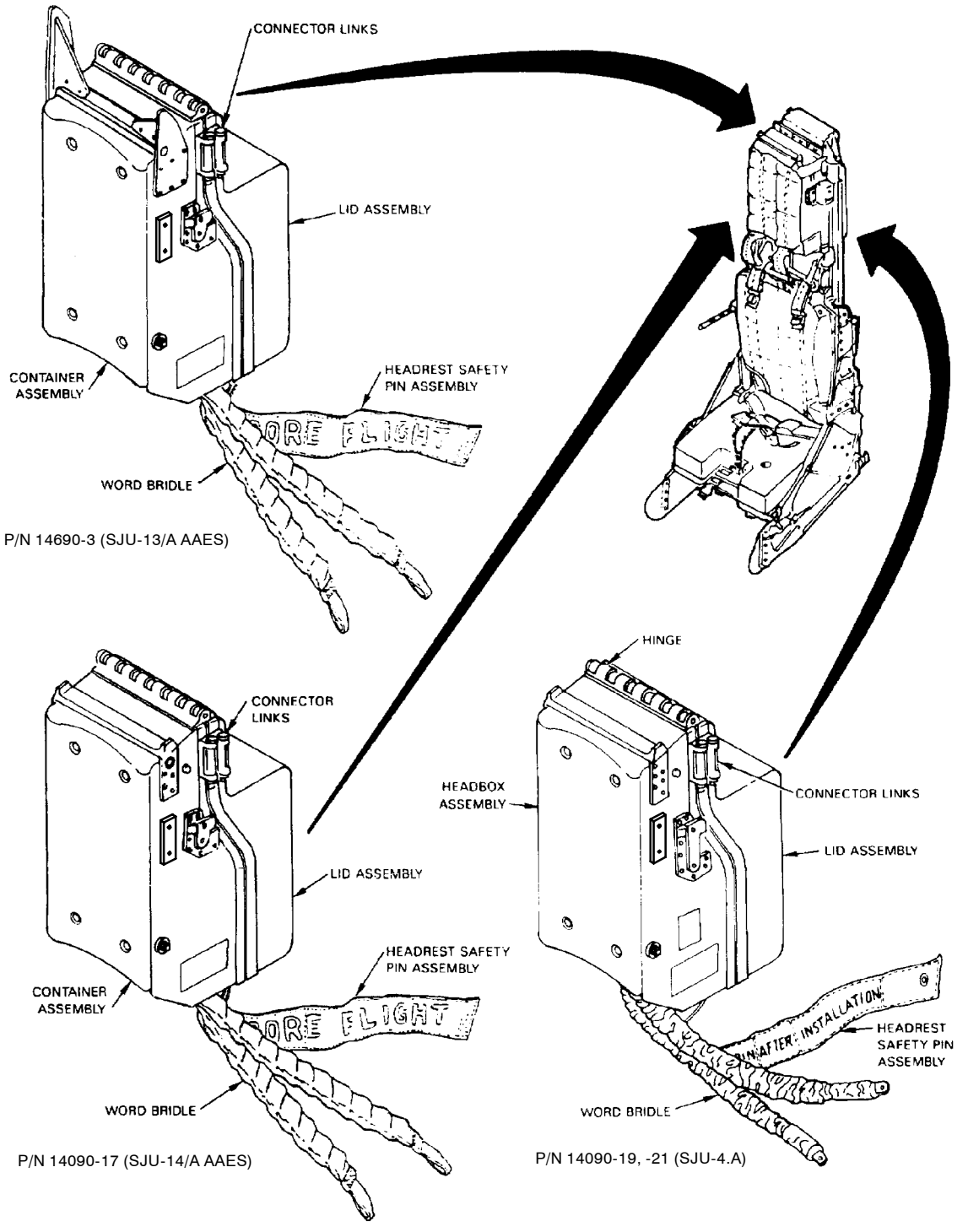
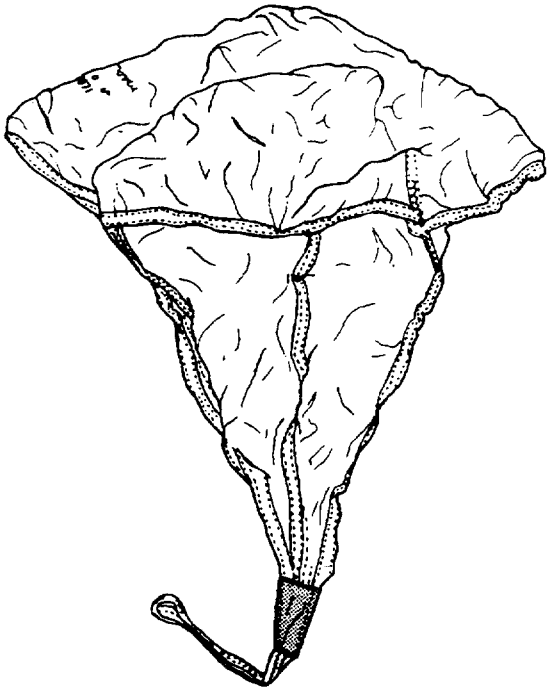
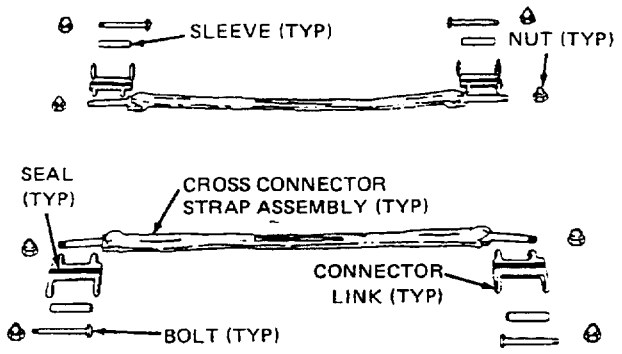


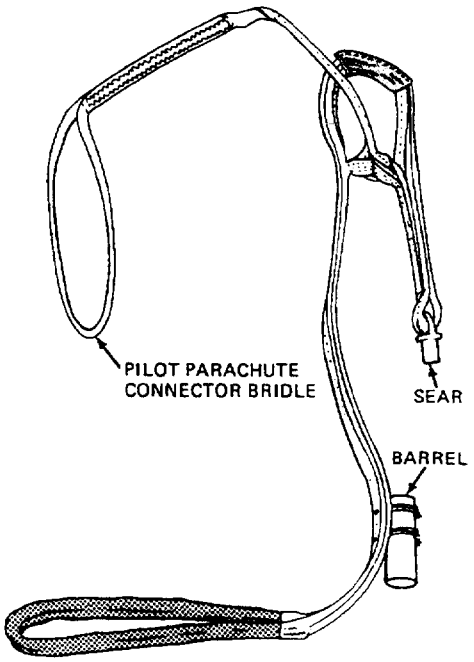
Figure 2. Headrest Assembly and Ejection Seat Assembly



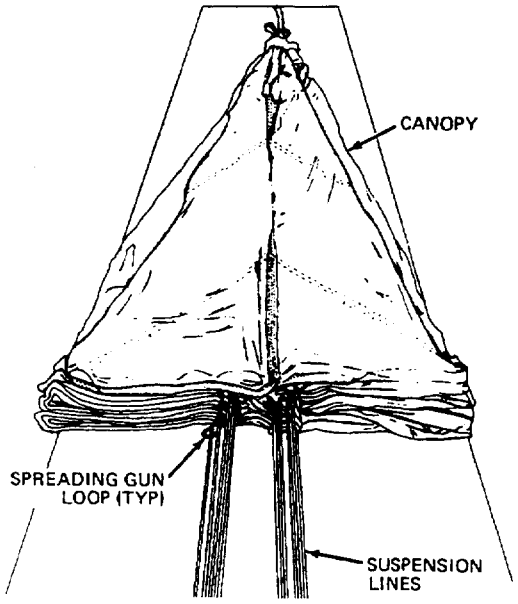
PILOT PARACHUTE ASSEMBLY



CROSS CONNECTOR STRAPS AND CONNECTOR LINKS



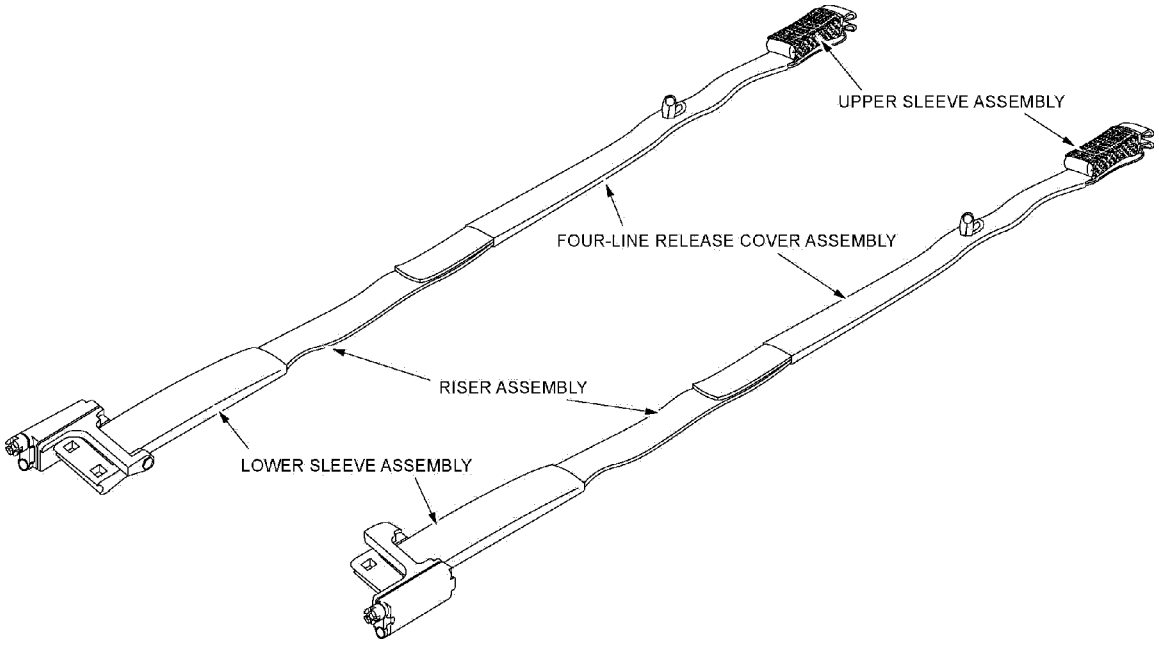
PILOT PARACHUTE BRIDLE



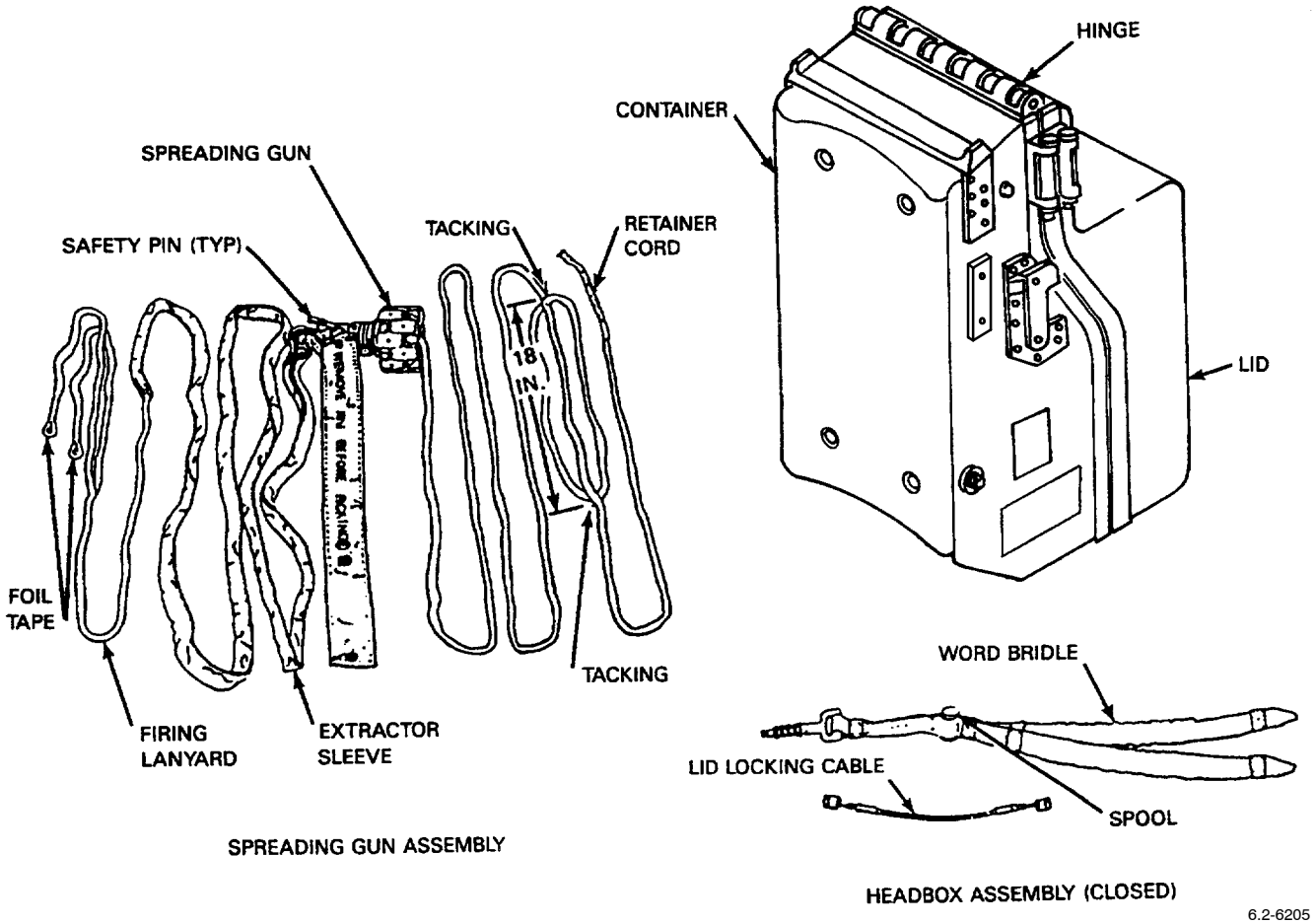
CANOPY ASSEMBLY

6.2-5426

Figure 3. Subassemblies, A/P28S-28, -30, -31 (Sheet 1 of 2)



RISER ASSEMBLY



SPREADING GUN ASSEMBLY

HEADBOX ASSEMBLY (CLOSED)

Figure 3. Subassemblies, A/P28S-28, -30, -31 (Sheet 2 of 2)

actuation fail, the aircrew may manually actuate the emergency oxygen system by pulling the green manual release located inboard of the aircrew's left knee. As the seat continues upward, the aircraft oxygen input hose and communication leads are pulled free from the aircraft at a quick-disconnect fitting. A check valve at the oxygen input connection point prevents emergency oxygen from venting to the atmosphere. After about 22-in. of seat travel, gas ports open and apply gas pressure to the drogue gun trigger rods in the catapult assemblies. This propels the drogue container from the seat. After about 31-in. of seat travel, gas pressure is ported to a 3.0-sec. delay initiator, a dual 0.10-sec. and 1.30-sec. delay initiator, and igniters of two seat back rocket motors and two seat divergence rocket motors.

9. MODES OF EJECTION SEAT OPERATION.

a. There are four modes of operation, depending on altitude and airspeed. Ejection starting sequence and post-ejection sequencing remain the same in all modes. The four modes are:

(1) Low speed/low altitude mode: below 225 ± 20 knots indicated air speed (KIAS) and below 7,000 ± 750-ft.

(2) High speed/low altitude mode: above 225 ± 20 KIAS and below 7,000 ± 750-ft.

(3) Intermediate altitude mode: between 7,000 and 14,000-ft.

(4) High altitude mode: above 14,000-ft.

b. The pilot may override the sequence of any mode by actuating the emergency restraint release handle, which fires the aircrew/seat separation initiator and provides ballistic gas to the inertia reel guillotine and actuates the WORD motor/drogue release assembly and parachute container opener.

10. SEAT STABILIZATION.

a. The drogue aligns the aircrew/seat combination in a face-to-line of flight attitude. The directional automatic realignment of the trajectory (DART) stabilization system provides aircrew/seat stabilization and control to correct any misalignment of aircrew/seat center of gravity versus the Seat Back Rocket thrust centerline. When the force on the DART lanyard reaches 200-lbs., the WORD strap retaining cables are withdrawn. With continued tension, the DART withdraws the bridle cables and restricts the arc of the DART. The lanyards then feed thru the brake assemblies. Brake assembly drag provides seat stabilization by controlling aircrew/seat pitch and roll rates.

11. PERSONNEL PARACHUTE DEPLOYMENT/ SPREADING.

a. When the parachute container opener is actuated, a piston moves a release lever on the headrest assembly, which unlocks a swaged ball on the end of the cable holding the headrest assembly closed. The headrest assembly springs open and canopy deployment begins, propelled by the WORD bridle or drogue parachute/WORD bridle, or if the WORD bridle fails, by the internal pilot parachute.

b. During main canopy deployment, while tension is applied to the pilot parachute and the main canopy by the WORD bridle, the override/disconnect will secure the WORD bridle to the parachute. If there is no tension in the WORD bridle because of a failure in the WORD/drogue parachute system and the pilot chute has over 10 pounds of drag, the override/disconnect will function to jettison the drogue parachute, drogue bridle, WORD motor, and WORD bridle.

c. Shortly before full canopy and suspension line extension, a spreading gun firing lanyard that exerts tension on a spring loaded firing pin in the ballistic spreading gun assembly is pulled. The pin strikes and fires dual parallel primers, igniting the spreading gun cartridge. Cartridge energy propels 14 pistons that propel 14 slugs, attached to alternate suspension lines, in a 360-degree pattern that spreads the main canopy skirt. If the spreading gun fails to fire, continued pull on the firing lanyard will remove a piston retaining band, freeing the pistons, slugs, and suspension lines to allow conventional canopy inflation.

d. During canopy inflation, the Over-Inflation Control Line routed around the skirt of the parachute canopy will permit the canopy to fully inflate, but will reduce post-inflation by preventing further inflation. The aircrew descends suspended from the canopy by the risers and the PCU-33/P or PCU-56/P parachute restraint harness. During descent, the aircrew may manually actuate the four-line release system which will reduce oscillation and allow the aircrew to maneuver the parachute to a less hazardous landing site. Upon landing, the aircrew disengages the canopy from the PCU-33/P or PCU-56/P parachute restraint harness by actuating the canopy release assemblies. The parachute harness sensing release units will provide an automatic backup method of releasing the risers after the aircrew makes a seawater entry.

12. AIRCREW/SEAT SEPARATION AND SURVIVAL KIT ASSEMBLY RELEASE.

a. Aircrew/seat separation and survival kit assembly release will occur automatically or can be accomplished manually after ejection. Manual release is used for ground emergency egress and release of survival gear for maintenance.

13. AUTOMATIC RELEASE.

a. As the personnel parachute inflates after the ejection sequence, both parachute risers exert a pull on the seat/man release lanyards, which rotate the seat pan release rod and fire the seat/man separation initiator. Gas pressure from the initiator then actuates the inertia reel strap guillotine. (Gas is also transmitted to the WORD motor/drogue release assembly and parachute container opener, but these devices will have operated previously.) Rotation of the seat release shaft releases the seat pan with the attached survival gear and disconnects the ejection control.

14. GROUND EMERGENCY EGRESS.

a. The emergency release control handle is pulled, which rotates the seat pan release rod, releasing the leg restraint straps and the seat pan with the attached survival gear from the seat, unlocking the personnel equipment connector block, and operating the linkage that fires the seat/man separation initiator. Initiator gases actuate the inertia reel strap guillotine, which severs the inertia reel straps. The aircrew can then disconnect his parachute canopy releases, stand up, and exit from the aircraft without encumbrance from his parachute. As the aircrew stands, the seat pan easily moves free from all restraint, and the personnel service leads pull free from their connections. In addition, activation of the seat/man separation initiator will ballistically release the WORD/drogue release and parachute container opener.

INTERMEDIATE AND DEPOT MAINTENANCE

PACKING PROCEDURES

A/P28S-28, -30, and -31 HEADREST ASSEMBLY

PART NO. 14090-21, 14090-19, 14690-17, and 14090-3

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7	10	16 thru 19	10	26	9	32	10
8	9	20 thru 22	9	27	10		

Reference Material

Cartridge Actuated Devices (CADS) and Propellant Actuated Devices (PADS) (IETM) . . . . . NAVAIR 11-100-1.1
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdowns, Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00
Organizational, Intermediate and Depot Maintenance, Illustrated Parts Breakdown, A/P28S-28, -30 and -31 Headrest Assembly . . . . . WP 022 03
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration . . . . . WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment . . . . . WP 005 00

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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 667, Part 2	11 Mar 02	A/P28S-28, A/P28S-30, A/P28S-31 Headrest Assemblies in TAV-8B AV-8B Aircraft, Installation of Four-Line Release System and Over-Inflation Control Line. (WUC1774O, WUC174AO, WUC1749O). ECP-16416.	1 Jun 02	31 Dec 2004

1. GENERAL.

a. Packing instructions are provided with the assumption that they will be carried out under ideal conditions in a parachute loft (WP 003 00). When a parachute assembly must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

b. In no case shall the packing procedure be interrupted after the operation has started. If the packing operation is interrupted due to unforeseen circumstances, the parachute assembly shall be completely repacked as detailed in this Work Package (WP).

c. Quality assurance (QA) points have been included in the packing procedures. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Witnessing of QA steps may be delayed by QA if their satisfactory completion is verified in later steps.

d. During packing procedures, packer shall be positioned on left side of packing table and helper on right side when viewed from riser end of table.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
—	Canopy Tie (4) -or- Shot Bag (4)
Refer to WP 005 00	
—	C-Clamp (2)
GGG-G-17	Gauge, Thickness, 0.002-in.
Refer to WP 005 00	Guide Tube
TMA2	Hex Head Driver 1/16-in. Bit
Refer to WP 005 00	Long Bar or Fid
Refer to WP 005 00	Modified Allen Wrench, 3/32-in.
FLUKE 77	Multimeter
Refer to WP 005 00	Packing Aid/Pull-up Cord
Refer to WP 005 00	Parachute Container Holding Fixture
472P950D053-1	Pin Assembly, Headrest
SK86-0089-1	Safety Pin Assembly (1)
—	Socket or Wrench, 1/2-in.
ST86-0064-3 or -5	Spreading Gun Test Fixture
Refer to WP 005 00	Temporary Locking Pin (1)
TQS6	Torque Meter
—	Wrench, 1/4-in., Open End
—	Wrench, 1/2-in., Open End
MS22021-1	Connector Link

Materials Required

Specification or Part Number	Nomenclature
O-E-760	Alcohol, Denatured
V-T-276	Thread, Nylon, Size 30/3, Red -or-
A-A-52094	Thread, Cotton Size 30/3, Red
PIA-C-5040	Cord, Nylon, Type I or IA
PIA-C-5040	Cord, Nylon, Type III
F-900 Torque Seal (Color Optional)	Sealing Compound
MIL-S-45180	Sealing Compound, Type II
MIL-S-46163	Sealing Compound, Type I, Grade K
1100/82	Spandex

a. Ensure that all support equipment and materials required are available prior to starting.

b. Inspect packing tools for nicks, burrs, or sharp edges which may cause damage to the parachute assembly.

c. Count and record number of packing tools.

d. Clean packing table.

3. LAYOUT OF RIGGED PARACHUTE ASSEMBLY.

WARNING

Use extreme caution. This parachute assembly incorporates a spreading gun.

a. Check proper operation of spreading gun safety pin by depressing button and ensuring ball bearings on top of pin depress only while button is engaged.

WARNING

Keep away from headbox assembly closure cable

b. Open headbox assembly as follows:

(1) Apply hand pressure to lid and then remove right locking pin of safety pin assembly and unlock right release.

(2) Rotate lid slightly upward and grasp pilot parachute, preventing it from springing from container.

(3) Continue rotation and remove lid from container.

(4) Remove left locking safety pin assembly, unlock left release, and remove cable assembly.

WARNING

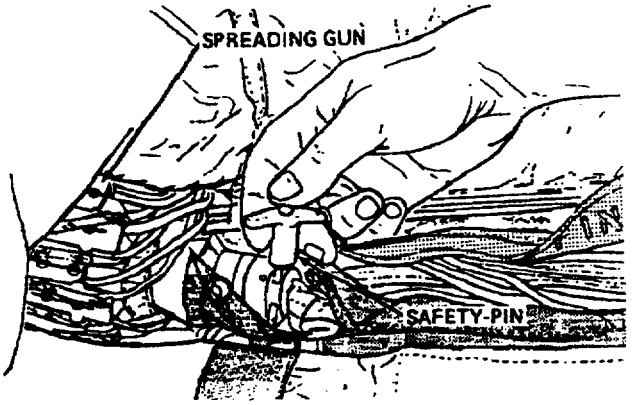
Do not remove folded canopy any more than necessary to install spreading gun safety pin.

c. Carefully remove folded canopy from container until spreading gun is accessible. Open fastener on extractor sleeve and fully insert safety pin into spreading gun. The safety pin button must be depressed to insert pin (Figure 1). (QA)

d. Remove remaining canopy and spreading gun from container.

WARNING

Firing lanyard must not remain attached to connector links.

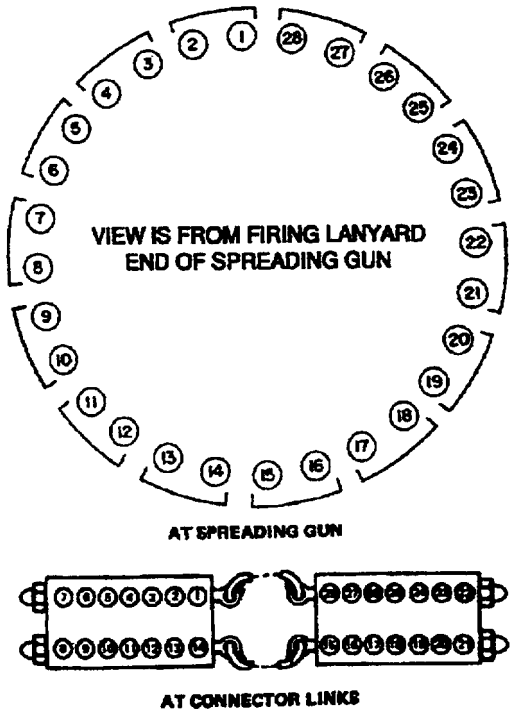


6.2-5520

Figure 1. Safety Pin Installation

e. Remove spreading gun firing lanyard from both bottom connector links, and connector links from container. Hold cross-connector strap bolt by using a 1/2-in. open end wrench and remove nut with 1/2-in. socket or wrench. Replace nut on bolt after removal of lanyard. (QA)

f. Stretch canopy and suspension lines full length on packing table. Rotate spreading gun so that suspension lines 1 and 28 are facing up and lines 14 and 15 are on bottom (Figure 2).



6.2-5428

Figure 2. Suspension Line Arrangement

g. Attach tension strap hook to apex lines.

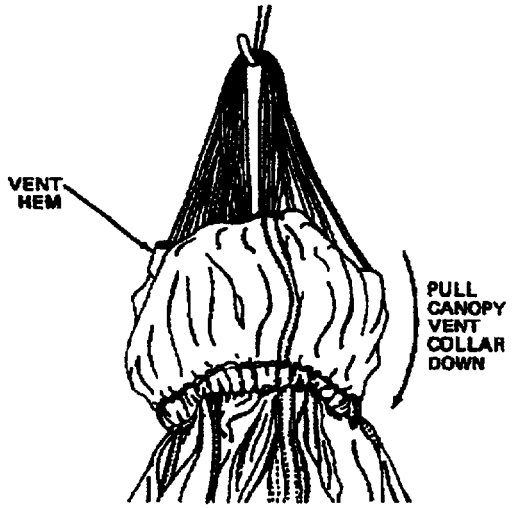
h. At spreading gun, separate suspension lines into four equal groups with lines 1 thru 7 and 8 thru 14 on packer's side and lines 15 thru 21 and 22 thru 28 on helper's side (Figure 2).

i. Grasp each group of lines and walk from skirt hem to connector links, removing any twists between groups.

j. Remove tackings on lower sleeves and slide sleeves up risers. Unfold lower portion of riser; place a connector link (MS22021-1 or equivalent) through loop in riser. Insert tension hooks into connector links and hook into table.

k. Apply tension to canopy until suspension lines are taut.

l. Pull vent collar down toward canopy. Align exposed vent hem (Figure 3).



6.2-5521

Figure 3. Vent Hem Adjustment

m. Pull vent collar back to original position. Release tension to canopy.

n. Open remainder of spreading gun extractor sleeve fasteners.

o. Release fastener securing stowage sleeve to extractor sleeve.

p. Remove stowage sleeve from extractor sleeve.

q. Remove all suspension line stow ties from container attachment points.

4. SPREADING GUN CARTRIDGE REMOVAL.

WARNING

The spreading gun employs an explosive cartridge. Failure to observe procedures in this paragraph could result in serious injury. Safety pin must be installed in spreading gun.

NOTE

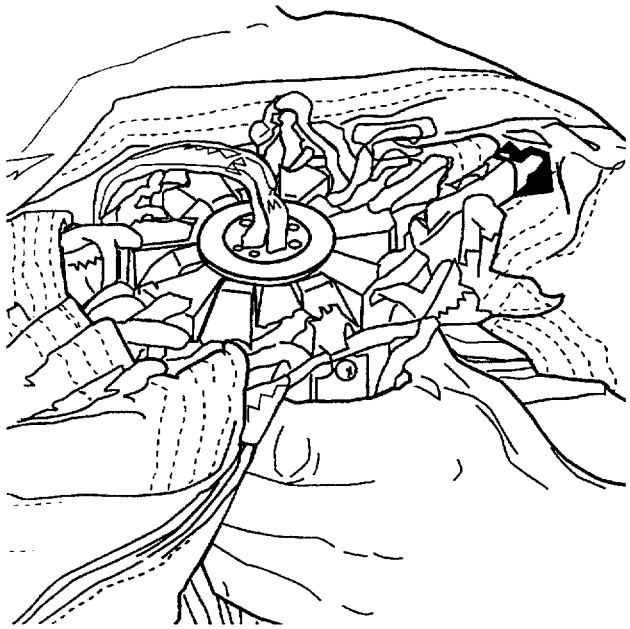
Use only special tool furnished for cartridge removal. A helper will assist the person doing the cartridge removal.

a. Ensure safety pin is installed in spreading gun. (QA)

CAUTION

Cartridge extractor wrench surface must mate with cartridge. Resurface wrench if required.

b. Helper will place spreading gun on packing table, with cartidge opening in upright position and hold (Figure 4).



6.2-5922A

Figure 4. Spreading Gun Position

c. Packer will place pins of cartridge extractor wrench in holes in cartridge. Loosen cartridge (Figure 5).

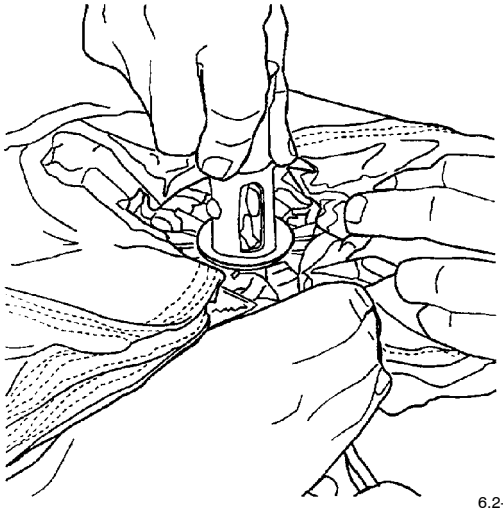


Figure 5. Spreading Gun Cartridge Removal

NOTE

Ensure that proper malfunction description code is recorded. If difficulty occurs in removal of cartridge using extractor wrench, request assistance from explosive ordnance disposal (EOD) personnel.

d. Manually unscrew and remove cartridge from chamber.

e. Remove cartridge from retainer cord by removing pin. Retain pin for reinstallation.

f. Store cartridge per NAVAIR 11-100-1.1.

g. Apply tension to canopy until suspension lines are taunt.

5. INSPECTION (SPECIAL).

a. Maximum scheduled repack cycle is 448 days.

6. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Parachute Harness Sensing Release Unit Cartridge) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be re-based if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Components without a service/total life shall be removed from service if the components do not pass inspection, as determined by Quality Assurance Representative (QAR) or Collateral Duty Inspector (CDI).

g. Spreading gun retainer cord is changed with the spreading gun.

h. The Over-Inflation Control Line shall be changed with the parachute canopy.

i. Check date placed in-service and date of manufacture on each parachute part for service/total life as follows:

Nomenclature	Service Life (Yr)	Total Life (Yr)
Battery	4	4
Canopy Assembly	None	15
Cartridge, Impulse MF-78	Refer to NAVAIR 11-100-1.1	
Cartridge MW19	Refer to NAVAIR 11-100-1.1	
Cross-Connector Strap	(See Note 1)	(See Note 1)
Electronics Package Assembly	None	8
Pilot Parachute		15
Pilot Parachute Bridle	None	15
Riser Assembly	None	10
Spreading Gun	None	11 1/2
Word Bridle	None	10

Note 1: Replace at Canopy Assembly replacement.

(1) Markings for completeness, legibility, and agreement with information on Parachute Record (OPNAV 4790/101).

(2) Compare configuration of parachute assembly to that shown in WP 022 03 Illustrated Parts Breakdown.

7. SPREADING GUN.

WARNING

Safety pin must be installed. Do not twist or pull on firing lanyard.

a. Extractor sleeve for contamination, fraying, loose or broken stitching, security and condition of fasteners, and security of attachment.

b. Decals and labels for presence and legibility.

c. Firing lanyard and stowage sleeve for contamination, twists, cuts, burns, fraying, security of attachment and condition of fasteners.

d. Spreading gun for corrosion, slugs properly held by shear band assembly, security of plates, condition of unbroken lock seal, and plate screws for presence and condition of torque seal, proper routing of Over-Inflation Control Line through spreading gun anchor loops.

e. Firing pin housing for security. Grasp around housing slug/plates with left hand. With right hand grasp safety pin and top of firing mechanism. In counterclockwise direction try to rotate firing mechanism. Any rotation of the firing mechanism is cause for rejection.

f. Retaining cord for proper attachment to the apex lines. (QA)

g. Retaining cord for 76 1/2-in. mark measured from lower end of connector link loop. This mark will indicate the location for tacking the over-inflation control line during parachute packing.

h. Firing lanyard for proper stowage in stowage sleeve channels and presence of tacking (Figure 6). (QA)

i. Over-Inflation Control Line for contamination, fraying, twists, cuts, loose or broken tackings, and security of attachment.

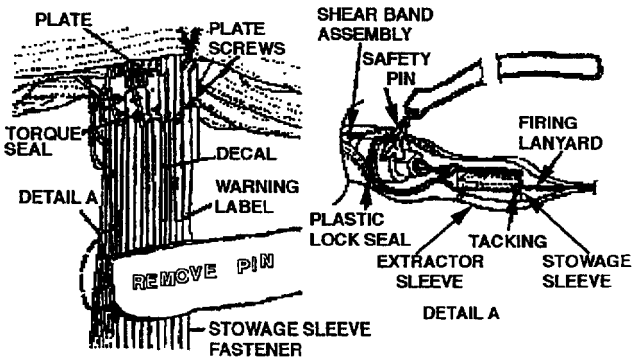


Figure 6. Firing Lanyard Stowage

8. INSTALLATION OF PULL FORCE CHECK AND SPREADING GUN CARTRIDGE.

a. Clamp spreading gun test fixture (Figure 7) to packing table, with one C-clamp.

b. Examine spreading gun chamber to ensure that no pistons are protruding into chamber and that no foreign matter is present.

c. Remove safety pin from spreading gun.

d. Slide spreading gun onto test fixture so that shaft butts against bottom of cartridge chamber (Figure 7).

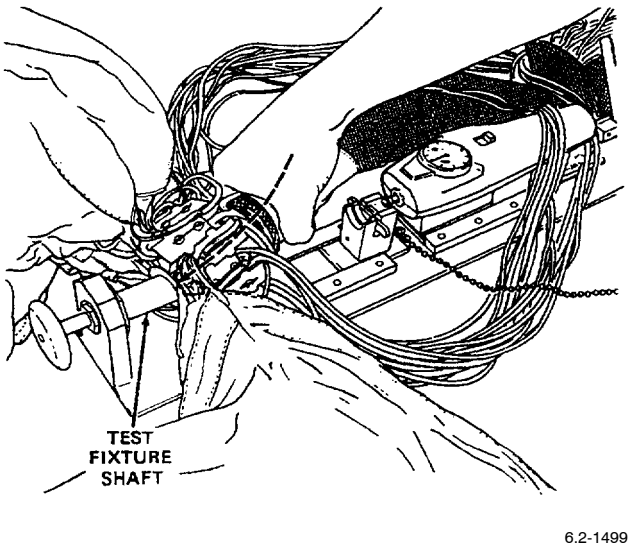


Figure 7. Spreading Gun Installation

e. Slide block assembly at center of test fixture under firing pin housing until block assembly pin slides into base plate hole. Align firing pin subassembly so that eye is horizontal and firing lanyard is located on top (Figure 8).

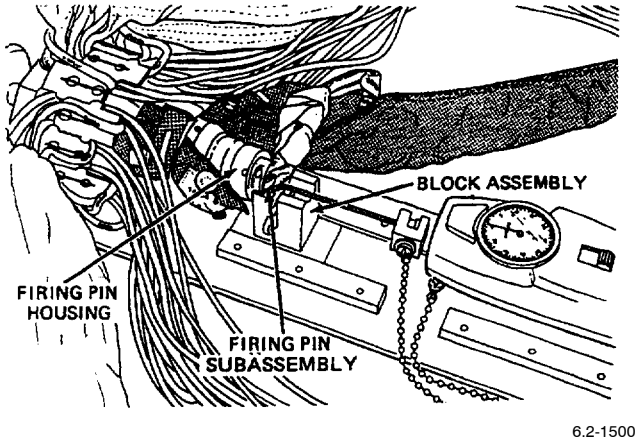


Figure 8. Spreading Gun Alignment

f. Attach hook assembly to firing pin eye and slide hook assembly block over nut attached to spring scale.

g. Move switch on spring scale to center position. Zero scale by rotating bezel. Move switch to full down position away from meter to observe pull force.

CAUTION

Do not withdraw firing pin subassembly further than distance needed for release of firing pin. Complete removal of firing pin is not required for this test. Complete removal would cause ball bearings to unseat, thus requiring depot overhaul.

h. Pull test fixture lever until firing pin subassembly releases. Verify pull force is 32 ± 6 in-lbs. If spreading gun fails first test it shall be tested twice more. Spreading gun must pass both retests. (QA)

NOTE

If spreading gun fails pull force check, do not place gun in service

i. After pull force measurement has been obtained, remove hook assembly from firing pin subassembly.

j. Push firing pin subassembly back into housing. Push control disc firmly inward, forcing firing pin subassembly out of housing. Apply inward hand pressure to firing pin subassembly as it moves out. Continue to move control disc inward, applying hand pressure to firing pin subassembly until it clicks into place. When click is heard, gun is cocked. Gently release control disc while still exerting pressure on firing pin subassembly.

k. Tug gently on firing pin subassembly until effect of spring loading is felt. If firing pin subassembly moves without spring tension, the gun is not cocked and steps k and l must be repeated. (QA)

l. Install safety pin in spreading gun. Remove spreading gun from test fixture as follows:

(1) Release block assembly by pulling pin out of hole in base plate and sliding away from spreading gun.

(2) Remove spreading gun from test fixture. Do not remove gun by pulling on firing lanyard.

(3) Remove test fixture from packing table.

NOTE

Putting finger into cartridge chamber to check for a protruding firing pin after cocking is another check for an uncocked gun. If using old cartridge, clean threads.

CAUTION

Do not allow alcohol to flow inside gun as this could damage O-rings and lubrication.

m. Clean cartridge chamber and threads with small amount of denatured alcohol. Ensure that old sealing compound and all foreign matter are removed. Gun shall be tilted to allow denatured alcohol to run out of gun. Allow a minimum 2 min. drying time for denatured alcohol to evaporate.

n. Enter Cartridge part number, Department of Defense Identification Code, lot number, container open date, service life expiration date and serial number on Parachute Record (OPNAV 4790/101). (QA)

o. Spreading gun cartridge. Mark in black ink, with characters no smaller than 1/16 in. and as large as practical, the CAGE Code, lot number, and month and year of can open/installation, on side of cartridge. On cartridge head, mark month and year of can open/installation, and service life expiration date (Figure 9).

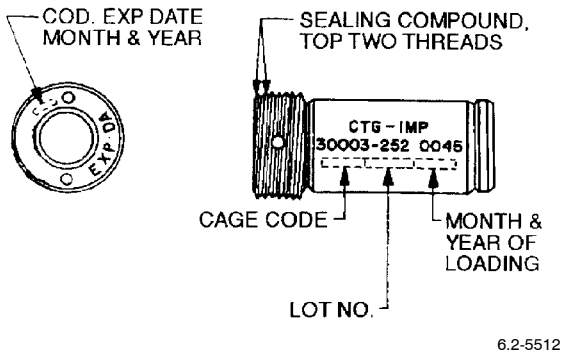


Figure 9. Spreading Gun Cartridge Marking

p. Apply MIL-S-45180 Type II sealing compound to top two threads of cartridge (Figure 10).

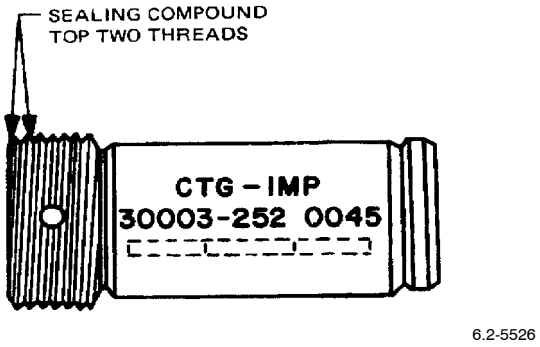


Figure 10. Spreading Gun Cartridge Installation

q. Ensure there are no knots in retaining cord. Attach cartridge to retainer cord by passing pin thru screw base of cartridge and loop in end of retainer cord (Figure 11).

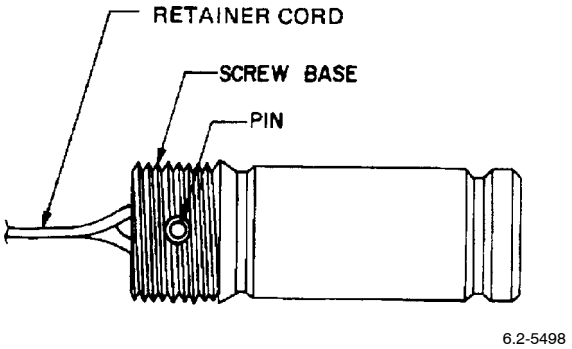


Figure 11. Retainer Cord Attachment

r. Helper will place spreading gun on packing table, with cartridge opening in upright position and hold (Figure 4).

WARNING

Do not force cartridge into chamber. Safety pin must be installed.

NOTE

Use only special tools furnished for cartridge installation. It is recommended that a helper assist the person performing cartridge installation by verifying procedures as each step is accomplished.

NOTE

When a cartridge is properly installed, base should be about even with top edge of chamber. If cartridge is more than one thread above edge, remove cartridge and check bottom of chamber for any obstruction, i.e., slug pistons.

CAUTION

Ensure that there are no twists in the retainer cord after installing Spreading Gun cartridge as this could interfere with the proper functioning of the Over-Inflation Control Line.

s. Insert cartridge into chamber. Manually tighten cartridge into chamber. If cartridge stops before threads are engaged, remove cartridge and check for protruding slug pistons; push back as necessary.

t. Place pins of cartridge extractor spanner into holes in cartridge and torque to a value of 84 ± 12 in-lbs. (QA)

9. SUSPENSION LINE CONTINUITY.

a. Ensure spreading gun with suspension lines 1 and 28 are facing up.

b. Lines to connector links and spreading gun for correct sequencing.

c. Suspension lines shall pass thru corresponding numbered slots in spreading gun slugs. Ensure that loops attached to odd-numbered suspension lines pass thru slots in odd-numbered slugs. (QA)

d. Suspension lines shall run free from skirt hem thru corresponding numbered slots in spreading gun slugs to connector links without dips or twists (Figure 12). (QA)

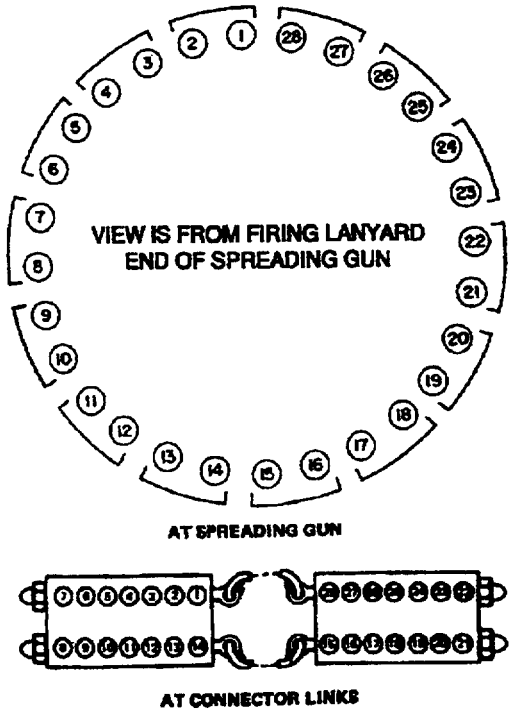


Figure 12. Suspension Line Arrangement

10. CANOPY ASSEMBLY.

a. Canopy skirt hem, fabric surface, diagonal seams, radical seams, vent hem, water deflation pockets, for cuts, holes, ruptures, contamination, deterioration, and loose or broken stitching.

b. Suspension lines and canopy apex lines for fraying, ruptures, protruding inner core lines, burns, contamination, and presence of twists.

c. Suspension line yarn for snags, loops, or filaments protruding outward from the main suspension line beyond 1/2 in.

d. Lines and spreading gun anchor loops for security of attachment at skirt hem.

e. Connector links for corrosion, distortion, bends, dents, nicks, burrs, sharp edges, and cracks.

f. Connector link rubber seals for damage and deterioration.

g. Cross-connector strap for contamination, cuts, fraying, burns, and loose or broken stitching.

h. Attachment of Four-Line Release anchor loops to suspension lines 3 and 26.

i. Attachment of Four-Line Release Lanyard to anchor loops on suspension lines 3 and 26.

j. Inspect Four-Line Release Lanyard for fraying, rupture, and cuts.

k. Activate the Four-Line Release System and reassemble per Paragraph 17. (QA)

11. PILOT PARACHUTE/BRIDLE AND WORD BRIDLE.

a. Pilot Parachute as follows:

(1) Fabric surfaces and seams for cuts, tears, fraying, and loose or broken stitching.

(2) Vane Material for cuts, tears, burns, fraying, and deterioration.

(3) Seam area at crown for seam separation.

(4) Spring assembly for distortion.

(5) Loose or broken tackings (4 places each) at bottom and top of coil spring.

(6) Cone and grommet for security and condition.

b. Pilot parachute bridle as follows:

(1) Bridle for contamination, cuts, fraying, burns, loose or broken stitching, and tacking of housing.

(2) Housing and sear for corrosion, distortion, dents, cracks, and nicks.

c. WORD bridle as follows:

(1) WORD bridle for contamination, cuts, fraying, burns, and loose or broken stitching, tacking, and elasticity of Spandex.

(2) Override disconnect release pin for corrosion, distortion, dents, bends, nicks or cracks; presence and security of spring.

(3) Spool for nicks, dents, distortion, and cracks.

12. HEADBOX CABLE ASSEMBLY AND SAFETY PIN.

a. Liner for tears, proper installation, damaged attachment points (stowage loops), and locking loops, or any other condition that will hamper or interfere with closing the container.

b. Liner plate for bends and distortion.

c. Container for sharp edges, cracks, splits, and holes.

d. Protector flap for holes, frayed, or broken stitching, and contamination.

e. Lid for warping and cracks; gasket, seal, and spacer for security of attachment, and condition.

f. Cable for corrosion, kinks, or fraying.

g. Safety pins for ease of operation, presence of two locking balls, and condition of flag.

13. RISERS.

a. Webbing for contamination, rust at points of contact with metal parts, cuts, twists, fading, wear, burns, fraying, abrasions, and loose or broken stitching.

b. Riser retainer strap, for loss of elasticity, unstretched length measured from snap to snap must not exceed 9-in.

c. Riser stowage pouch for security, broken stitches, torn or frayed closure flaps, and flaps for correct closure.

d. Riser four-line release cover assembly, upper sleeve assembly, and lower sleeve assembly for cuts, contamination, excessive wear, abrasions, extreme fadding, and loose or broken stitching.

e. Inertia reel straps for contamination, cuts, fading, wear, burns, and abrasions.

f. Seat release lanyards for damage, loss of elasticity, and security of attachment.

g. Four-Line Release Cover Assembly for excess contamination, cuts, fading, wear, burns abrasions. Ensure the two 6-cord tackings made on the lower end of the cover assembly near the parachute connector links are made properly and in place.

h. Inspect Lower Sleeve Assembly for excess contamination, cuts, fading, wear, burns, abrasions, and ensure that the two 6-cord tackings securing it to the riser are properly made an in place.

i. Ensure that the tab extension on the Lower Sleeve Assembly is properly wrapped around the riser webbing and tucked into itself to properly protect the riser webbing.

j. Inspect the slide fastener on the lower side of the riser covers to ensure that it has not become separated in places along the length of the riser. Ensure that the tackings on each end of the slide fastener are properly made and in place.

k. Inspect the Upper Sleeve Assembly for excess contamination, cuts, fading, wear, burns abrasions, and ensure that the four FF thread tackings securing it to the riser are properly made and in place.

l. Ensure that the Headrest Pouch Assembly Flaps are properly stowed between the upper and lower riser webbing and connector link sleeves. Bolts may rotate in connector link assemblies. Check for the torque seal on the bolt head area on each connector link.

14. PACKING.

15. INSTALLATION OF OVER-INFLATION CONTROL LINE.

a. Prior to installing spreading gun and after installation of upper retaining lanyard, install the Over-Inflation Control Line as follows:

(1) Cut off a minimum amount of the ends of the Over-Inflation Control Line to eliminate the seared ends.

(2) Measure 6-in. from each end of the Over-Inflation Control Line and mark with an indelible pen.

(3) Find the center of the Over-Inflation Control Line by holding the two marks made in the previous step and mark the center with an indelible pen.

(4) Divide the line into four equal sections by holding the three marks together that were made in the previous two steps and mark the two points with an indelible pen.

(5) Pull the Spreading Gun Assembly Upper Retaining Lanyard out from below the canopy skirt and measure 76 1/2-in. from its lower end and mark with an indelible pen. Pull the apex of the canopy back to the top of the packing table.

NOTE

Ensure that Spreading Gun anchor loops are not Twisted during installation of the Over-Inflation Control Line.

(6) Rig the Over-Inflation Control Line into the canopy by starting at the name plate gore and taking one end of the line and routing it through the inside of each suspension line and through each of the spreading gun assembly anchor loops in accordance with Figure 13. (QA)

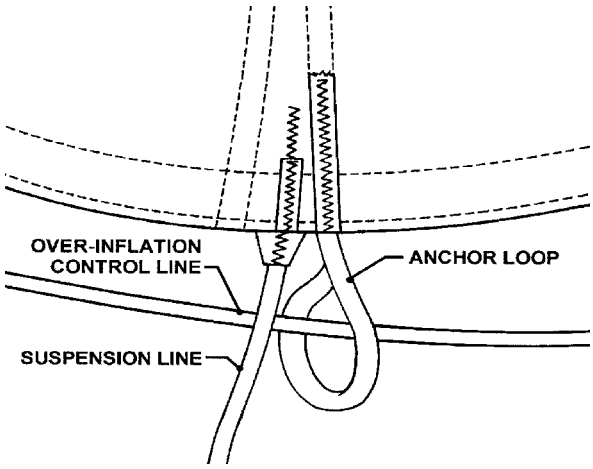


Figure 13. Over-Inflation Control Line Routing

NOTE

Ensure that the Over-Inflation Control Line is not wrapped around any of the Spreading Gun Assembly anchor loops or is routed outside of the suspension lines.

(7) After the Over-Inflation Control Line is routed through each Spreading Gun Assembly anchor loop, use a bodkin to finger trap each end of the control line into the opposite end a distance of 6-in. until the two marks meet (Figure 14). Using a needle and a piece of waxed single 6-cord nylon thread, secure the finger trappings in place with a running stitch approximately 6-in. long (2-4 stitches per inch). Tie off with a surgeon's knot followed by a square knot.

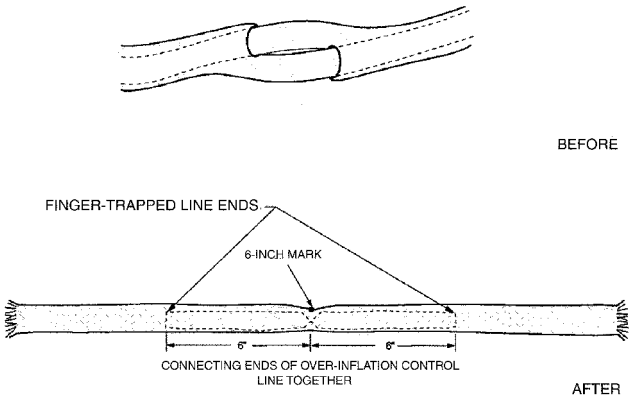


Figure 14. Finger Trapped Ends of the Over-Inflation Control Line

(8) Install Spreading Gun Assembly, Spreading Gun Assembly Cartridge and upper retaining lanyard to Spreading Gun Assembly.

16. TACKING OF OVER-INFLATION CONTROL LINE.

a. Pull upper retaining lanyard and canopy apex toward connector links until 76 1/2-in. mark on the lanyard is visible. (Upper portion of canopy will be inside out at this point).

b. Align the Over-Inflation Control Line bites from between slug plates 1 and 28 and 19 and 20 with the 76 1/2-in. mark made on the Spreading Gun Assembly retaining lanyard. Using a needle and a piece of nylon A-Thread (single, one-turn), run the needle and thread through the width of the Over-Inflation Control lines, then through the upper retaining lanyard and tie off with a surgeon's knot followed by a square knot (Figure 15). (QA)

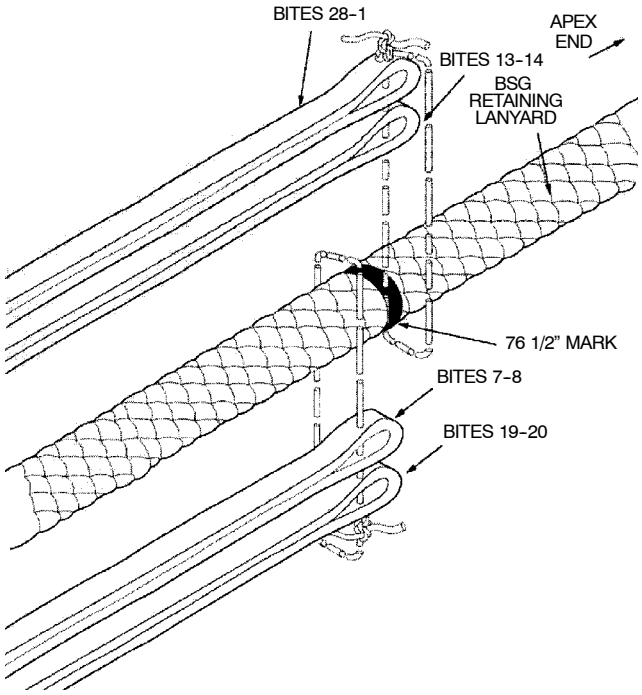


Figure 15. Over-Inflation Control Line Attachment

c. Align the Over-Inflation Control Line bites from between slug plates 7 and 8 and 13 and 14 with the 76 1/2-in. mark made on the Spreading Gun Assembly retaining lanyard. Using a needle and a piece of nylon A-Thread (single, one-turn), run the needle and thread through the width of the Over-Inflation Control lines, then through the upper retaining lanyard and tie off with a surgeon's knot followed by a square knot. (Figure 15). (QA)

d. Route upper portion of upper Spreading Gun Assembly retaining lanyard back between gores 1 and 8, up center of canopy until canopy is stretched out taking care not to break the A-thread tackings. (QA)

17. FOUR-LINE RELEASE LANYARD RIGGING.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Bodkin

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Place parachute canopy under slight tension on packing table.

b. Ensure that Four-Line Release Lanyards are properly routed through Daisy Chain Protection Covers.

c. Ensure that suspension lines 2/27 are properly routed through Daisy Chain Protection Cover and route them over and then under the cross-connector strap eyebolt so that the suspension line loop extends several inches from the eyebolt.

d. Ensure that suspension lines 1/28 are properly routed through the Daisy Chain Protection Cover and route them over and then under the cross-connector strap eyebolt so that the suspension line loop extends several inches from the eyebolt.

e. Turn connector link over towards the inside of the left and right-hand risers so that the loops on suspension lines 1/28 and 2/27 are facing up (Figure 16).

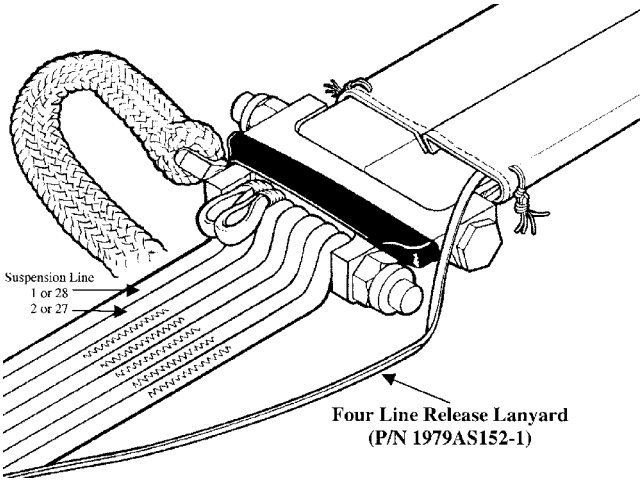


Figure 16. Suspension Line Routing (1 and 2 or 27 and 28)

f. Make loops in suspension lines 1/28 and 2/27. Pass loops made in suspension lines through telescoped loop at end of suspension lines (Figure 17).

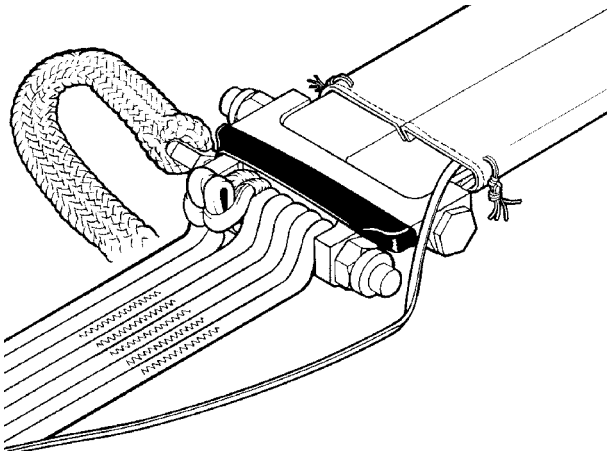


Figure 17. Loop in Suspension Line (1 and 2 or 27 and 28)

g. Hold loops and tighten suspension lines 1/28 and 2/27 against eyebolts.

h. Align the 35-in. mark and the 9-in. mark on the Four-Line Release Lanyard to make a 4 1/2-in. loop.

NOTE

Ensure loops are tight around the eyebolt.

i. Pass the 4 1/2-in. loop in the Four-Line Release Lanyard loop through the loops made in suspension lines 1/28 2/27. The release lanyard loop will enter through suspension line number 2/27 and exit through suspension line number 1/28. The 35-in. mark and the 9-in. mark should be aligned at the point where the release lanyard enters suspension line 2/27 (Figure 18).

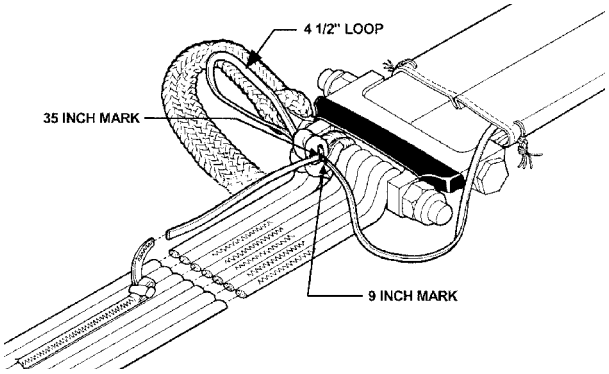


Figure 18. Four-Line Release Lanyard Routing

j. Pull the portion of the Four-Line Release Lanyard with the 9-in. mark (lower portion of the lanyard) back from its position a couple inches from the eyebolt where the two marks are aligned so that a 1/2-in. loop extends outward from suspension line 1/29 (Figure 19).

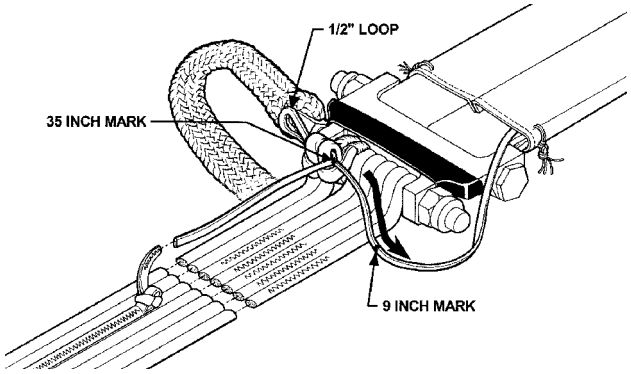


Figure 19. 1/2-inch Loop in Four-Line Release Lanyard

k. Make a loop in the lower section of the Four-Line Release Lanyard as it extends from suspension line 2/27 and pass this loop through the 1/2-in. loop made in step j.

NOTE

While tightening the loop in place, ensure that the 35-in. mark on the Four-Line Release Lanyard is aligned between suspension line 2/27 and 3/26.

l. Tighten both loops together.

m. Construct four more loops to form a daisy chain coupling within the 9-in. reference mark (five total). The 9-in. mark should be at the top of the final daisy chain loop (Figure 20). (QA)

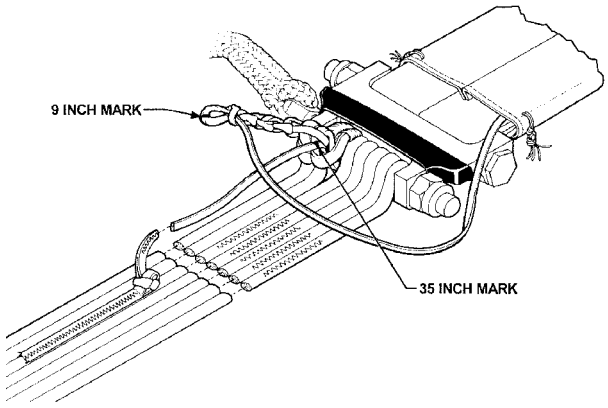


Figure 20. Daisy Chain With Five Loops

n. Mark 1 1/2-in. up from the end of the suspension line on line 3/26 and mark this measurement with an indelible pen. Lay daisy chain coupling completed in step 1 next to suspension line 3/26 and align the 9-in. mark on Four-Line Release Lanyard with the 1 1/2-in. mark on suspension line 3/26 (Figure 21).

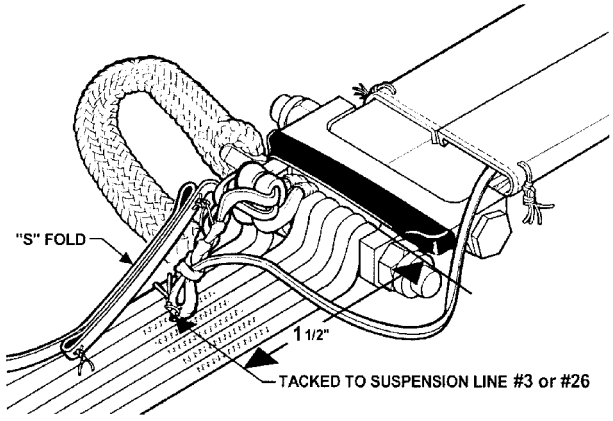


Figure 21. Daisy Chain Tacking and "S" Fold

NOTE

Ensure upper portion of Four-Line Release Lanyard is routed outboard of suspension line 3/26.

o. With a needle and a piece of waxed Size FF thread (single, one turn), route needle through suspension line 3/26 at the 1 1/2-in. mark and then through the Four-Line Release Lanyard (not around) at the 9-in. mark, and then return the needle back through suspension line 3/26 at the 1 1/2-in. mark. Tie off with a surgeon's knot followed by a square knot (Figure 21).

p. Apply tension to the suspension lines and conduct a line continuity check ensuring lines are not crossed beneath the Daisy Chain Protection Cover. (QA)

q. With tension on the risers and suspension lines, pull the Four-Line Release Handle with a pull gage and ensure the lines are released with less than 50-lbs of tension. (QA)

r. Inspect the released suspension lines and ensure proper release from the eyebolt.

s. With pile fastener on Four-Line Release Handle facing down, restow Four-Line Release Handle Assembly into sleeve by pulling four-line release lanyard from the top of the riser (at the connector link). Bottom edge of yellow tab on handle should be approximately 1-in. from the end of the pile fastener when handle is fully stowed within the riser assembly.

t. Re-rig the daisy chain formation in accordance with steps b thru p.

u. In order to reduce the slack in the Four-Line Release Lanyard between the 35-in. mark and the anchor loop, construct one S-fold approximately 2-in. long and tack to the release lanyard (itself), under the daisy chain coupling, at each end with A-thread (single, one turn) using a surgeon's knot followed by a square knot. Tie each thread end off with a binder knot (Figure 21). (QA)

NOTE

Ensure excess slack in the Four-Line Release Lanyard is tucked within the channel and not between the channel and cover.

v. After forming the daisy chain, there will be excess slack in the Four-Line Release Lanyard between the daisy chain and handle assembly. Pull excess slack out hole in cover where seat-man separation lanyard attachment point protrudes. Using a bodkin, insert it into the opening on each riser where the seat/man separation lanyard is attached and carefully push the excess lanyard down in the channels toward the Four-Line Release Handle in small bites (approximately 2 - 3 in.) until all slack is taken up. (QA)

w. Slide Daisy Chain Protective Cover down over the daisy chain such that it butts against the connector link cross bar.

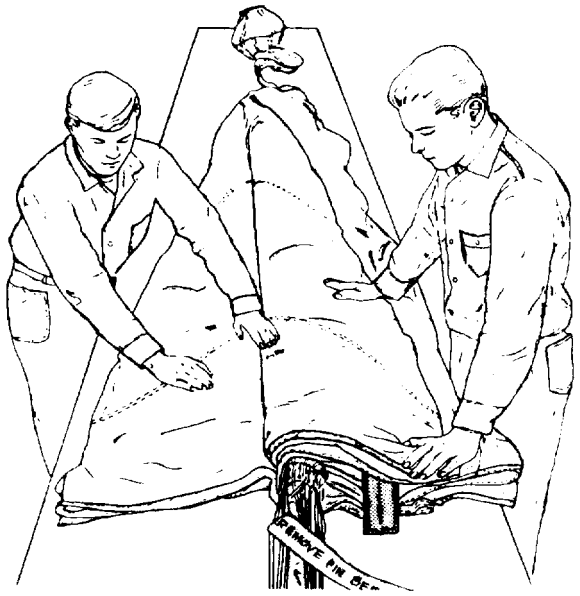
x. Using a needle and a piece of waxed Size FF nylon thread, (single, one turn) tack the cover in position in two places. At the end of the cover nearest the connector link, penetrate the cover only and route the thread around the connector link, back through the cover and tie off at the cover with a surgeon's knot followed be a square knot. At the upper end of the cover, the tacking should go through the cover and suspension line 3/26 before being tied off with a surgeon's knot followed by a square knot (Figure 21).

y. Repeat steps a thru x for the opposite riser.

18. STRAIGHTENING CANOPY GORES.

a. Apply tension to canopy. Helper shall place a shot bag on helper's side of skirt hem.

b. Packer shall rotate all gores on packer's side as a group, except bottom gore, over to helper's side of packing table. Packer shall straighten and smooth bottom gore on packer's side of table, throughout its length to apex (Figure 22).



6.2-6212

Figure 22. Straightening and Smoothing Gores

c. Packer shall return gores above shot bag on helper's side of packing table to packer's side one at a time. Each fold shall be straightened and smoothed.

d. Helper shall remove shot bag from canopy and place it on skirt hem of packer's side.

e. Helper shall rotate all gores on helper's side as a group; except bottom gore over to packer's side of packing table. Helper shall straighten and smooth gore on helper's side of table, throughout its length to apex.

f. Helper shall return gores above shot bag on packer's side of table to helper's side one at a time. Each fold shall be straightened and smoothed. Remove shot bag on packer's side.

g. Packer and helper shall grasp skirt hem at mid-sections of gores and rotate toward suspension lines (Figure 23).

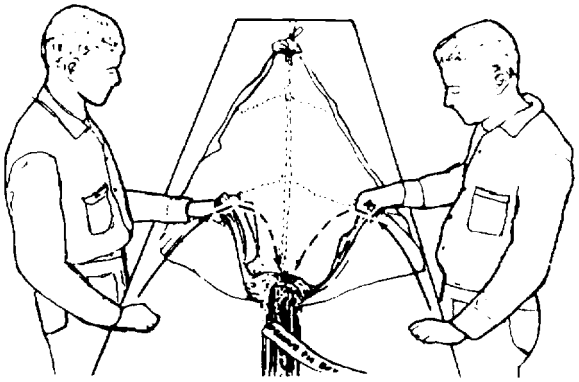


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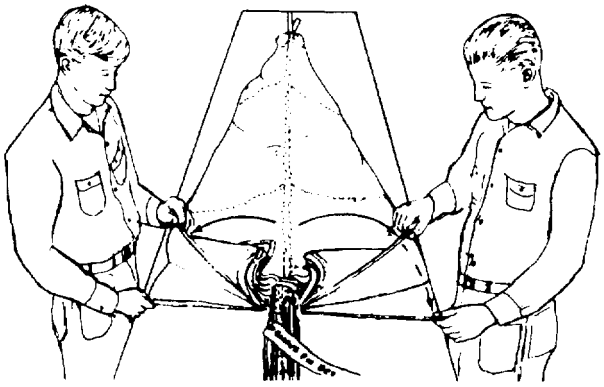
Figure 23. Rotate Skirt Hem to Suspension Lines

h. Each fold shall be aligned and counted when placed back onto table (Figure 24).



6.2-6212B

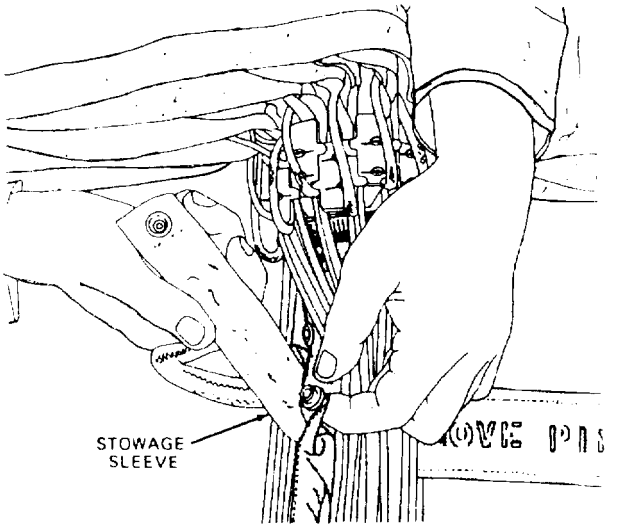
Figure 24. Align and Count Folds

i. Each group of folds on left and right of spreading gun shall contain 14 gores.

19. STOWAGE OF STOWAGE SLEEVE IN EXTRACTOR SLEEVE.

a. Ensure 1/2-in. tapes are not twisted around firing lanyard.

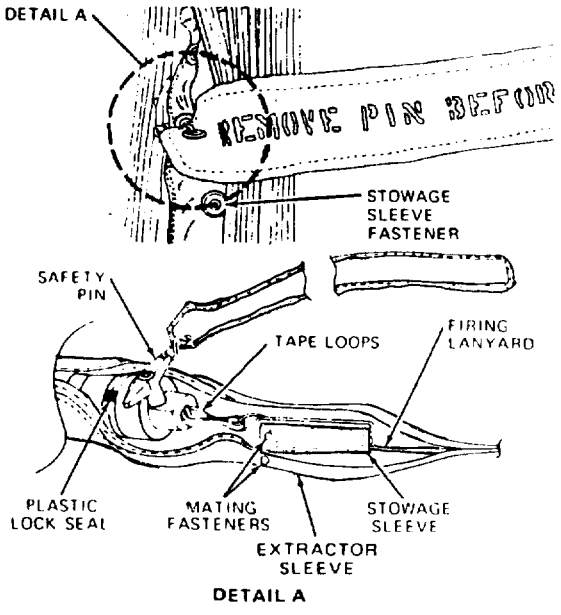
b. Insert stowage sleeve into extractor sleeve open end first (Figure 25).



6.2-5431

Figure 25. Insert Stowage Sleeve

c. Engage fastener on stowage sleeve to fastener on extractor sleeve. Engage extractor sleeve fasteners on each side of safety pin. Pull extractor sleeve straight, and gently pull slack from firing lanyard (Figure 26). (QA)



6.2-5431A

Figure 26. Attach Stowage Sleeve to Extractor Sleeve

20. FOLDING OF CANOPY GORES.

a. Fold skirt hem at a 45-degree angle to centerline of canopy (Figure 27).

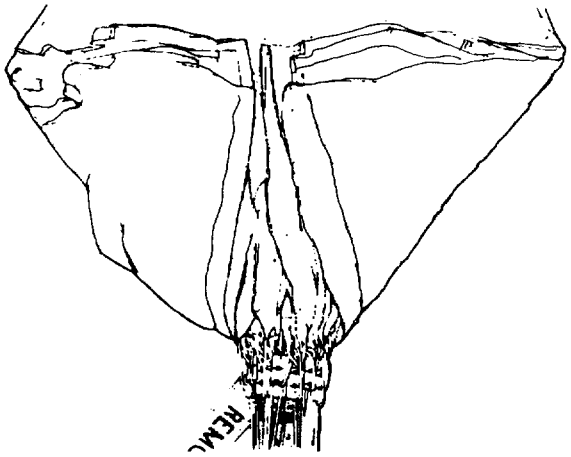


Figure 27. Fold Skirt Hem

b. Fold the outer edges of folded canopy over the center to a width of 8-in. Tie canopy in four places an equal distance apart, or lay four shot bags out on the folded canopy an equal distance apart (Figure 28).

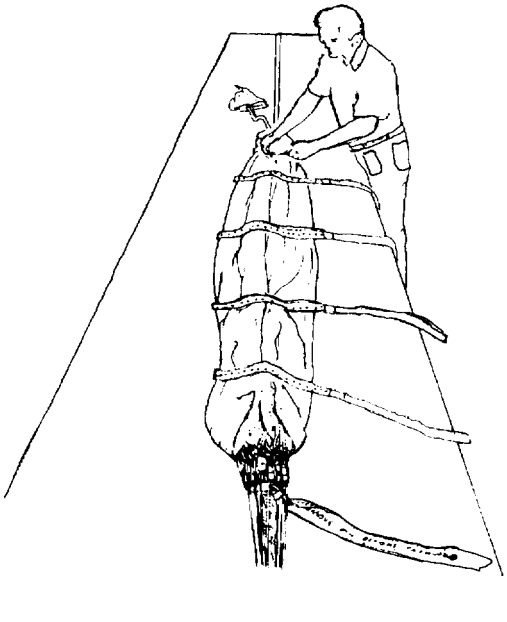


Figure 28. Fold Outer Edges

21. ATTACHMENT OF FIRING LANYARD TO CONNECTOR LINKS.

a. Remove tension strap from canopy apex.

b. Slide canopy towards connector links and form S-folds in suspension lines large enough to allow loops in end of firing lanyard to align with connector links (Figure 29).

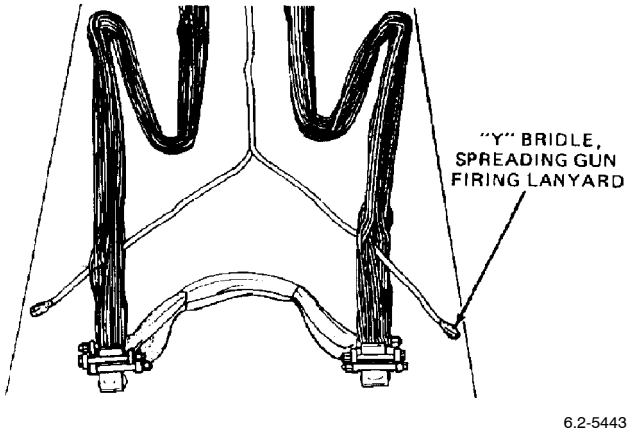


Figure 29. Attachment of Firing Lanyard

c. Pass one leg of firing lanyard under line group 1 thru 7 and other leg under line group 22 thru 28 (Figure 29).

d. While holding cross-connector strap bolt with a 5/16-in open-end wrench, remove nuts from bottom connector links containing line groups 8 through 14 and 15 through 21.

CAUTION

Do not allow the 5/16-in. open end wrench to rotate and contact the seal during tightening procedure as it will damage the seam.

e. Attach left leg outboard of line 8 and right leg outboard of line 21 (Figure 29).

f. Apply Sealing Compound, MIL-S-46163, Type I, Grade K to first two bolt threads, reinstall nuts, and tighten against link using a 5/16-in. open end wrench to hold cross-connector strap bolt and a 1/2-in. socket or wrench on nut. With flat surface of eyebolt bottomed against connector link, tighten down nut until it bottoms on fillet radius of connector link. Then back off nut about one-half turn so that eyebolt is free to turn within connector link. (QA)

22. INSTALLATION OF CONNECTOR LINK TIES.

a. Remove connector links from tension hooks.

b. Tie two left connector links together with an 18-in. length of Type I or IA nylon cord. Fold line in half, slip loop end thru link adjacent to lines 1 and 14, and form a Lark's head knot. Do not cut excess (Figure 30).

c. Tie two right connector links together with an 18 in. length of Type I or IA nylon cord. Fold line in half, slip loop end thru link adjacent to lines 15 and 28, and form a Lark's head knot. Do not cut excess (Figure 30).

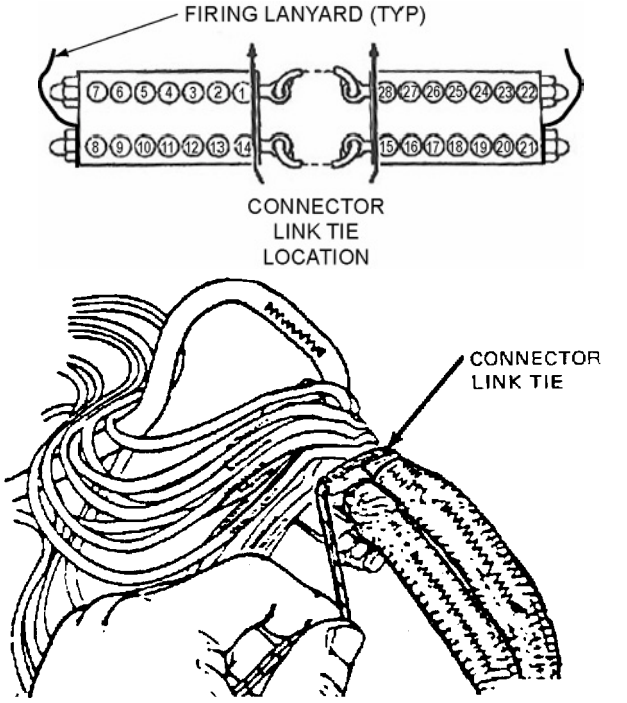


Figure 30. Connector Link Ties

23. INSTALLATION OF SUSPENSION LINE TIES TO CONTAINER ATTACHMENT POINTS.

a. Cut 12 lengths of size 30/3 red thread about 36-in.

b. Using a Lark's head knot, attach a single tie to attachment points 1, 2, 3, 4, 6, 12, 13, 14, 15, and 16 (Figure 31).

c. Using a Lark's head knot, attach another single tie to attachment points 1, and 15 (Figure 31).

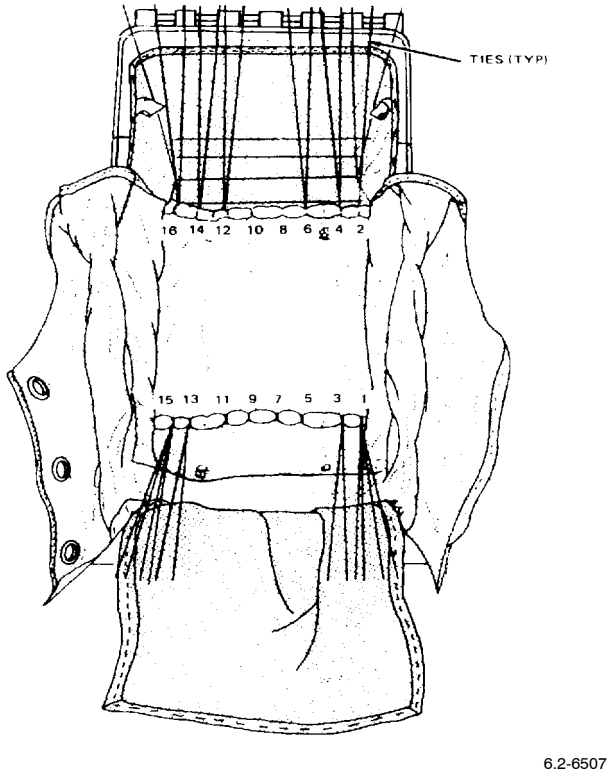


Figure 31. Suspension Line Ties

NOTE

Attachment points 5, 7, 8, 9, 10 and 11 are not used.

24. ATTACHMENT OF CONNECTOR LINKS TO CONTAINER.

a. Check for and remove any foreign materials from container.

b. Secure container in holding fixture. Position container hinge end towards canopy.

c. Position connector links on container side slots by rotating each set of connector links inboard so cross-connector straps are facing container opener end (Figure 32).

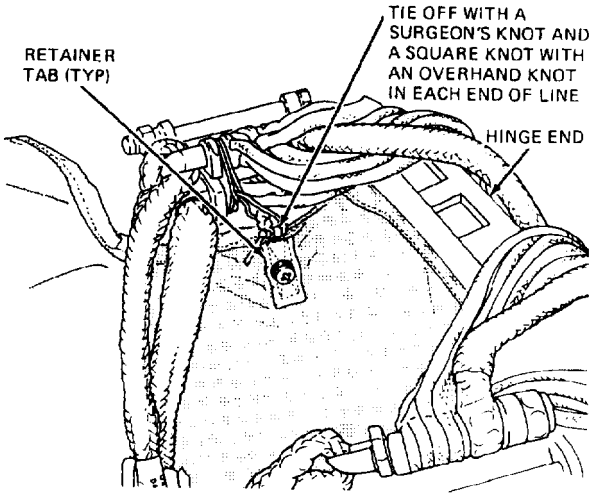


Figure 32. Connector Links Attachment

WARNING

Connector link tie cord must be routed thru both retainer tabs.

d. Route each end of connector link tie thru opposite ends of retainer tabs and tie off with a surgeon's knot a square knot with an overhand knot in each end of line and trim off excess cord. (QA)

e. Route cross-connector straps along bottom of container between line stows and container end.

25. STOWAGE OF SUSPENSION LINES.

WARNING

Suspension line ties must be snug around line stows and firing lanyard must be kept clear of lines during first four stows.

During stowing, lines must not become loose or rotated or left out of any stow.

WARNING

Lines must drop to bottom of container under connector links before running to first stow. Lines should be fully relaxed with slack under connector links.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Use the following illustration during stowage of lines as a reference as to location of attachment points (Figure 33).

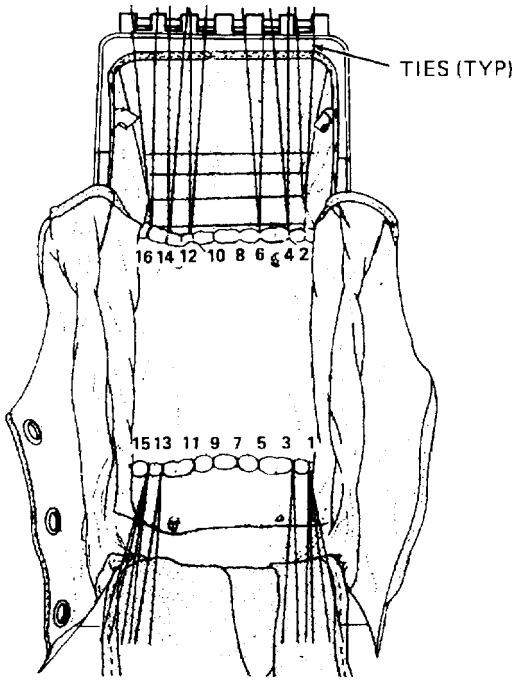
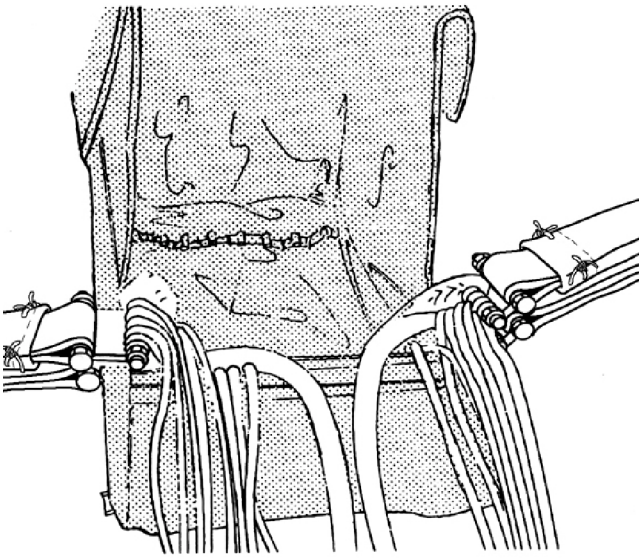


Figure 33. Suspension Line Stowage Reference

NOTE

Sleeve assembly 14652-1 not shown in following illustrations for clarity.

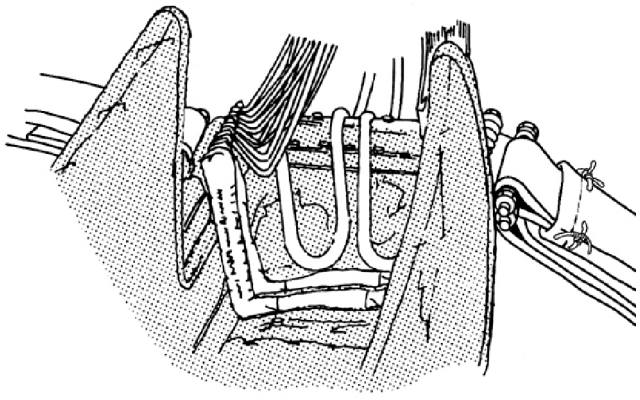
b. Starting at connector links, separate suspension lines from spreading gun firing lanyard on both sides of container (Figure 34).



6.2-6508A

Figure 34. Suspension Line Separation

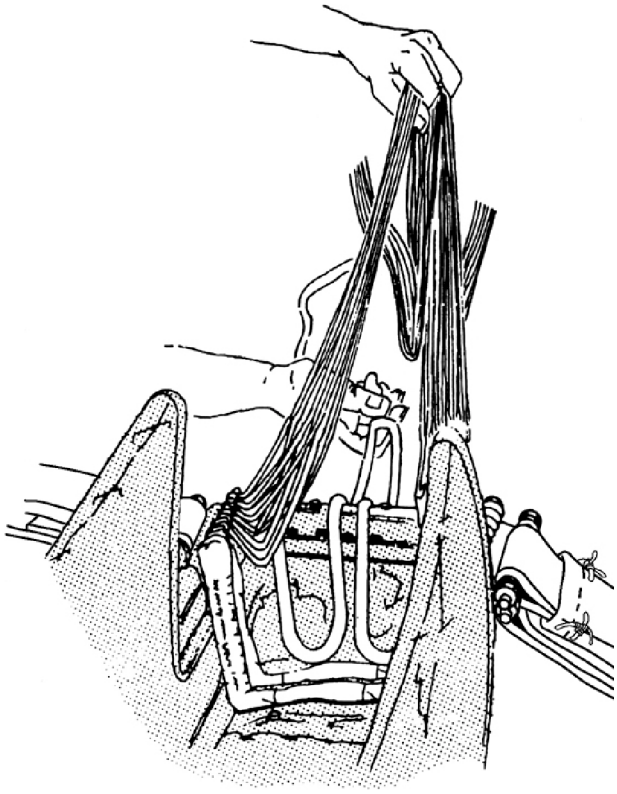
c. Place slack in spreading gun firing lanyard inside container evenly from connector links towards middle of container at hinged end (Figure 35).



6.2-6508

Figure 35. Placement of Spreading Gun Firing Lanyard Slack

d. Grasp suspension lines only with one hand to form first bight (17 +4 -2-in. from the connector link) and with the other hand, keep spreading gun firing lanyard separated and in place (Figure 36).



6.2-6508C

Figure 36. Grasp Suspension Lines

WARNING

Ensure spreading gun firing lanyard is separated from the suspension lines when making bights 1, 2, 3, and 4.

e. Form a bight in lines and adjust first bight so lines drop to bottom of container with slack under connector links. Tie bight to attachment point 1 using either single tie. All bites should extend to end of container (Figure 37).

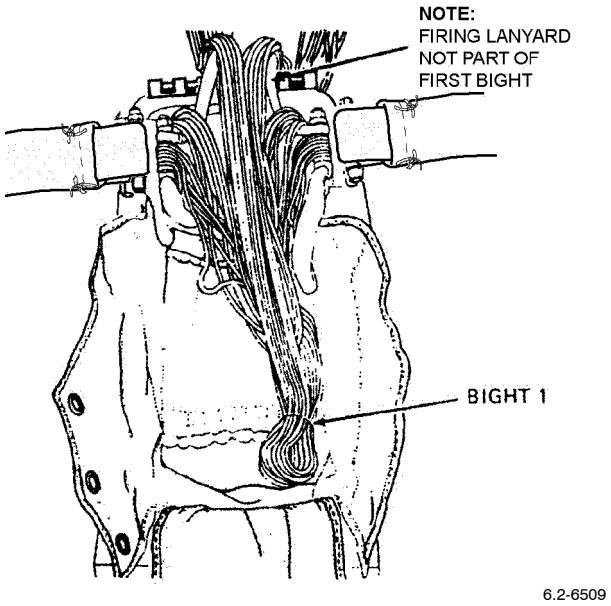


Figure 37. Form a Bight in Lines

f. Form and stow bight 2 using line tie at attachment point 2 (Figure 38).

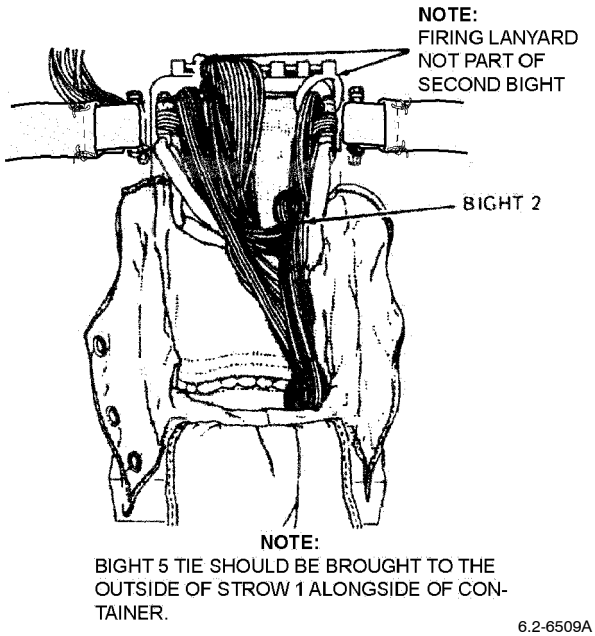


Figure 38. Form and Stow Bight 2

g. Form and stow bights 3 and 4 to respective attachment points 3 and 4. Commence to stow both firing lanyards with lines in bight 5 above bights 1 and 3 using second tie at attachment point 1. Ensure that firing lanyard is positioned toward bottom of container below connector links prior to stowage of bight 5. Any extra line should be neatly stowed on top of previous stows (Figure 39). (QA)

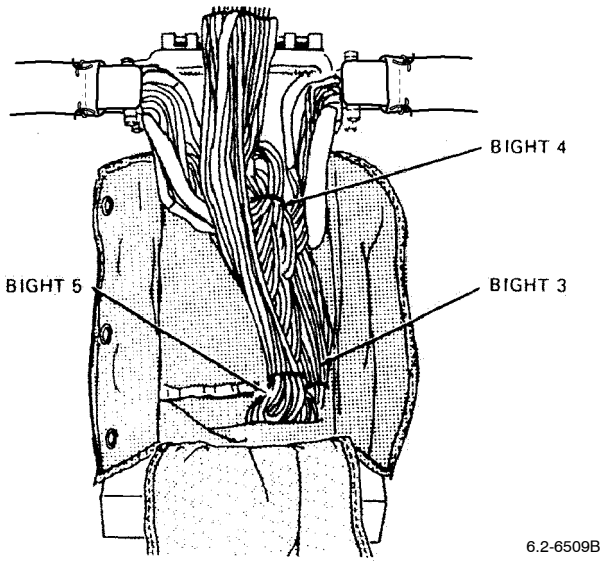


Figure 39. Form and Stow Bights 3, 4 and 5

h. Form and stow bight 6 using tie at attachment point 6 (Figure 40).

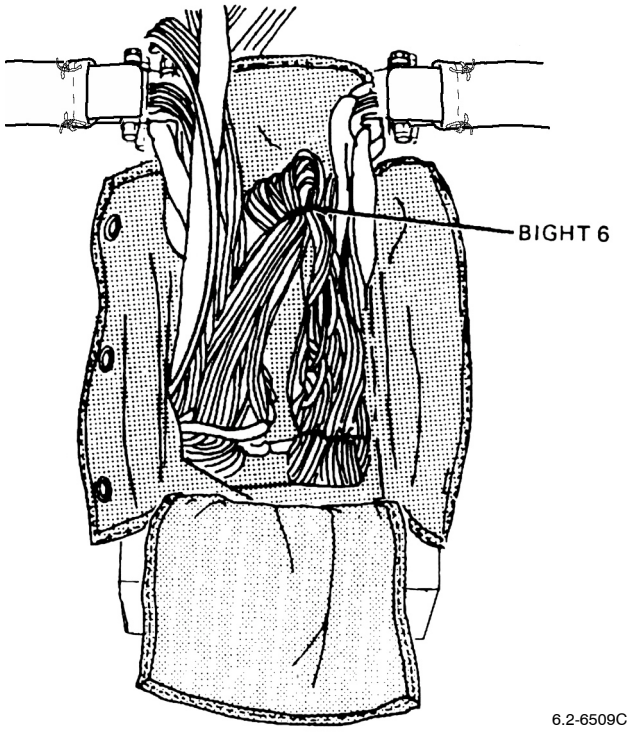


Figure 40. Form and Stow Bight 6

i. Form and stow bight 7 to attachment point 13 and bight 8 to attachment point 16 (Figure 41).

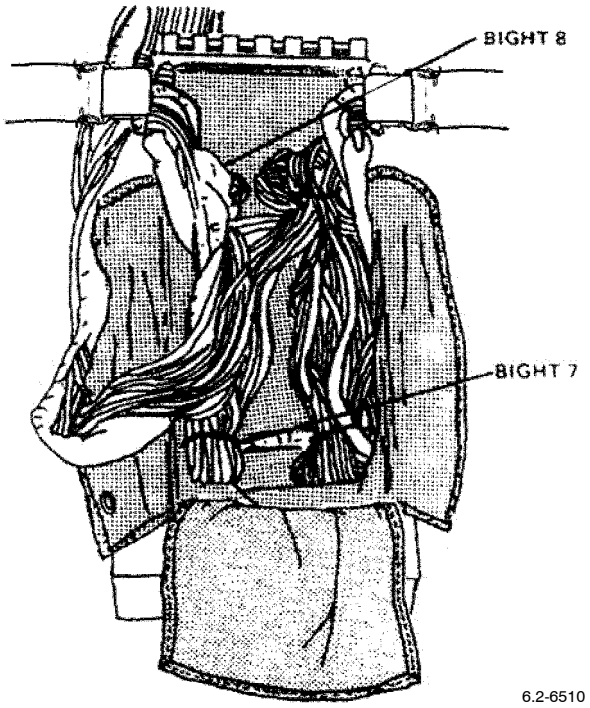


Figure 41. Form and Stow Bight 7 and 8

j. Form and stow bight 9 using tie at attachment point 15 (Figure 42).

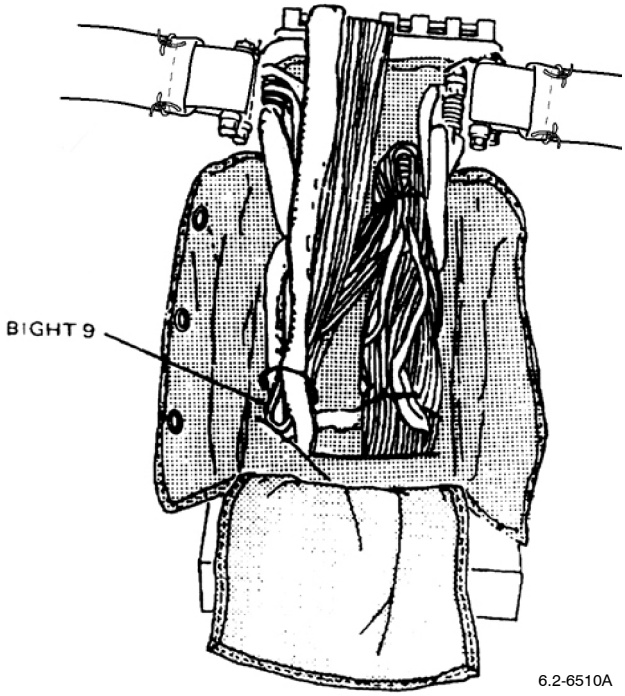


Figure 42. Form and Stow Bight 9

k. Form and stow bight 10 to attachment points 14 (Figure 43).

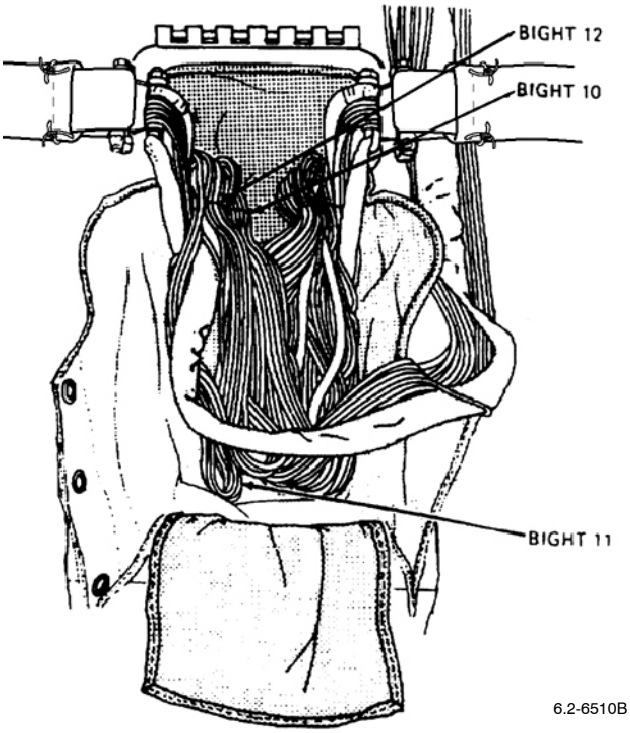


Figure 43. Form and Stow Bight 10

l. Form bight 11 using second tie at attachment point 15, the white index mark shall be no more than 5-in. from hinge end of container. Tie lines to attachment point 12 without forming a bight (Figure 44).

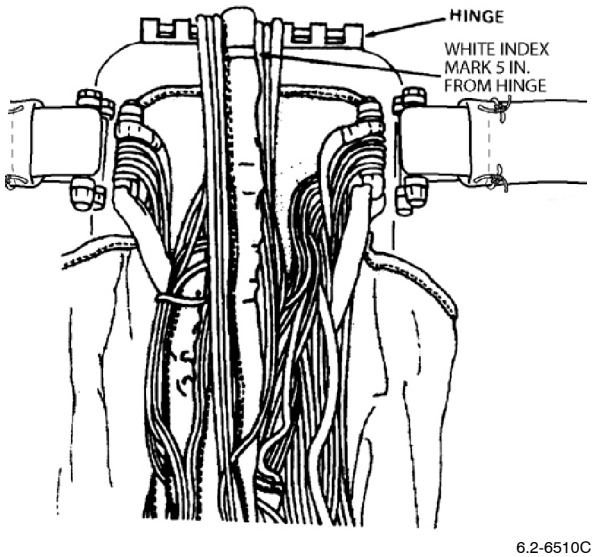


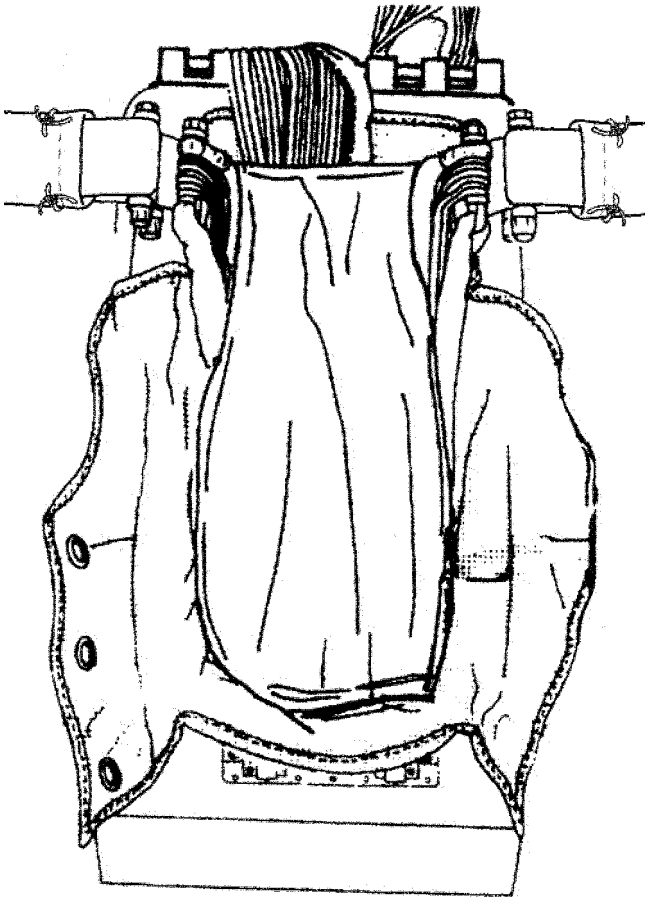
Figure 44. Form Bight 11

NOTE

The area at points 5, 7, 9, and 11 must be kept clear for spreading gun.

m. Check that no suspension line bights were stowed at attachment points 5, 7, 8, 9, 10, and 11.

n. Fold line flap over the suspension lines. This is required to keep spreading gun from entangling suspension lines (Figure 45).



6.2-6527

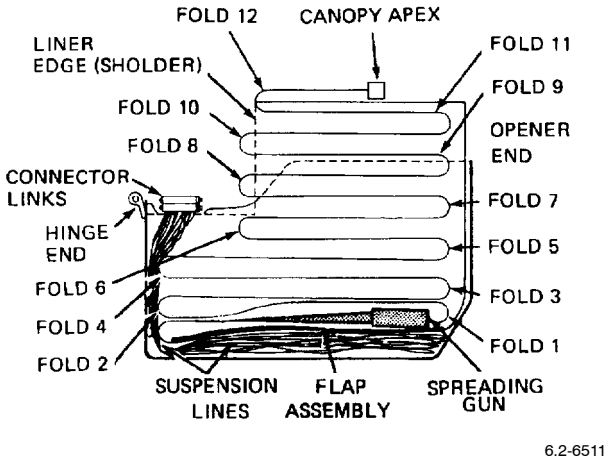
Figure 45. Line Flap Over Suspension Lines

26. STOWAGE OF CANOPY.

a. Folds 6, 8, and 10 should extend 1 1/2-in. past end of liner shoulder. Twelve folds shall be made when stowing the canopy. Use the following illustration as a guide while stowing canopy (Figure 46).

WARNING

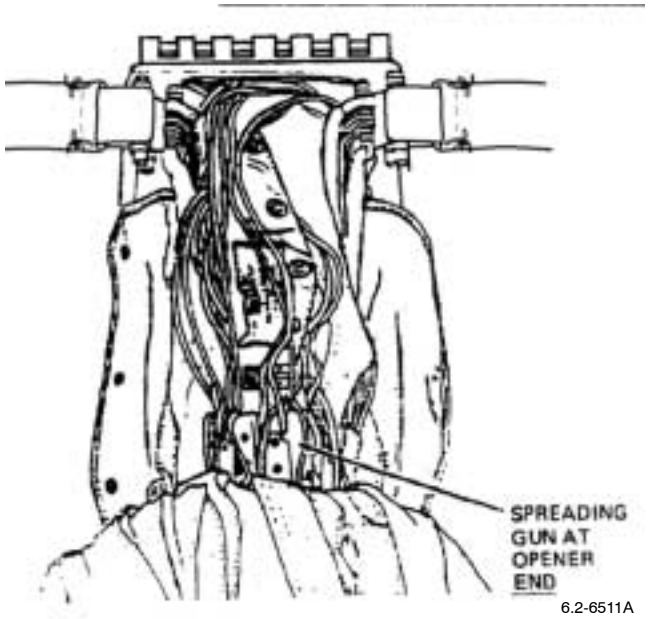
Safety pin must be removed from spreading gun after installation in container.



6.2-6511

Figure 46. Canopy Folds

b. Install spreading gun at opener end (first fold). Ensure spreading gun is firmly in place in empty area formed between suspension line stow bights. After spreading gun has been positioned, route skirt hem of canopy along side of container toward hinged end. Remove safety pin (Figure 47). (QA)



6.2-6511A

Figure 47. Spreading Gun Installation

NOTE

Spread skirt to sides of container to make flat along top even with spreader gun.

c. Remove first shot bag or canopy tie and place second fold of canopy back toward opener end. Work canopy down with long bar or fid along container sides and clear of connector links (Figure 48). (QA)

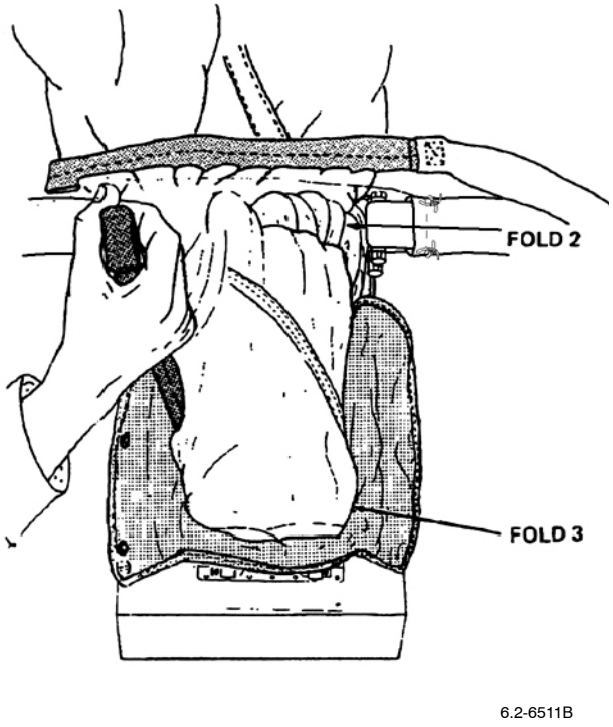


Figure 48. Remove First Shot Bag

d. Remove second shot bag or canopy tie and insert the third fold full length into the container. Using fingers work and tuck canopy into all available space.

NOTE

Care must be taken not to cause distortion of container sides. This condition could cause difficulty in closing the lid.

e. Remove third shot bag of canopy tie and insert fourth fold full length of container. Using a long bar or fid, work and tuck canopy in all available space (Figure 49). (QA)

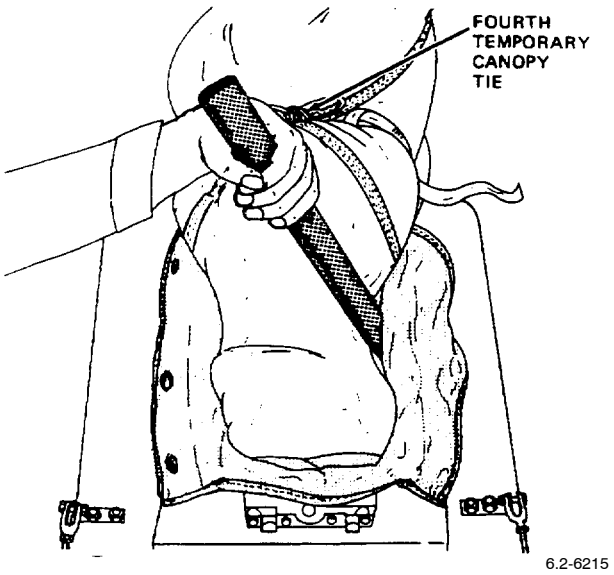


Figure 49. Remove Third Shot Bag

f. Insert fifth fold. This fold should extend about two-thirds length of container from open end. Using a long bar or fid, work and tuck canopy in all available space. (QA)

g. Remove fourth and final shot bag or canopy tie and stow remaining folds (Figure 46 and 50).

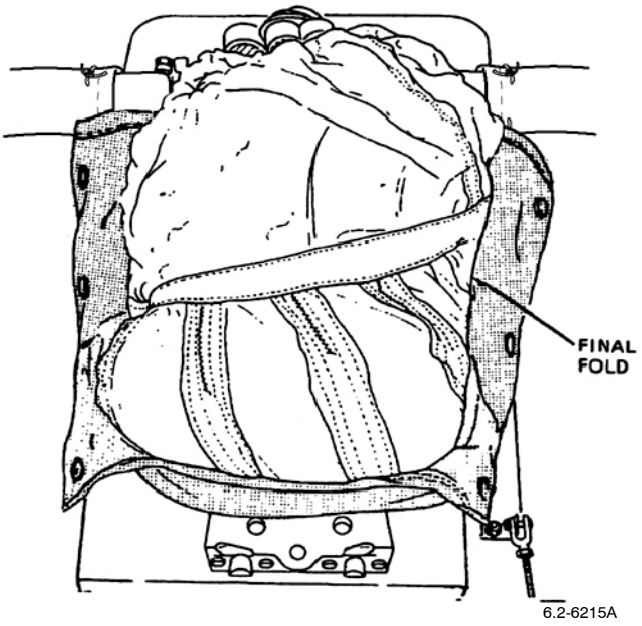


Figure 50. Remove Fourth and Final Shot Bag

h. Account for all shot bags. (QA)

i. Connect WORD bridle by inserting release pin and spring of WORD bridle into housing on pilot parachute bridle. Apply pressure to release pin and spring so tip of pin protrudes thru housing then mate sear and release pin. Ensure that center of override disconnect housing is centered on center grommet of inner flaps. Ensure bridle is free of twists (Figure 51). (QA)

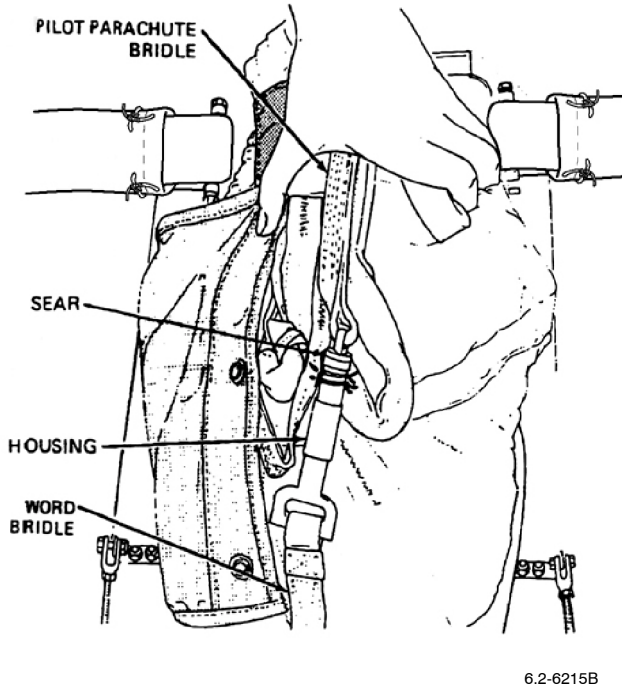


Figure 51. WORD Bridle Connection

j. S-fold pilot parachute bridle assembly to confluent point. Pilot parachute shall exit liner flaps at hinge end of container.

27. STOWAGE OF PILOT PARACHUTE.

a. Ensure that spool fitting on WORD bridle extends slightly past liner flaps on opener end of container and that confluence end of pilot parachute bridle extends slightly beyond liner flaps at hinge end of container.

b. Cut and lightly wax three 20 in. lengths of Type I or IA nylon cord to be used as pullup cords and one 48 in. length of Type III nylon cord to be used as a temporary flap lock.

c. Insert pullup cords thru each of three closing loops, forming upper rows of loops. Keeping override disconnect WORD bridle and pilot parachute bridle in position, pass pullup cords thru grommets on adjacent liner flap. Draw loops thru grommets in flaps and insert a piece of Type III nylon cord doubled to act as a temporary flap lock (Figure 52).

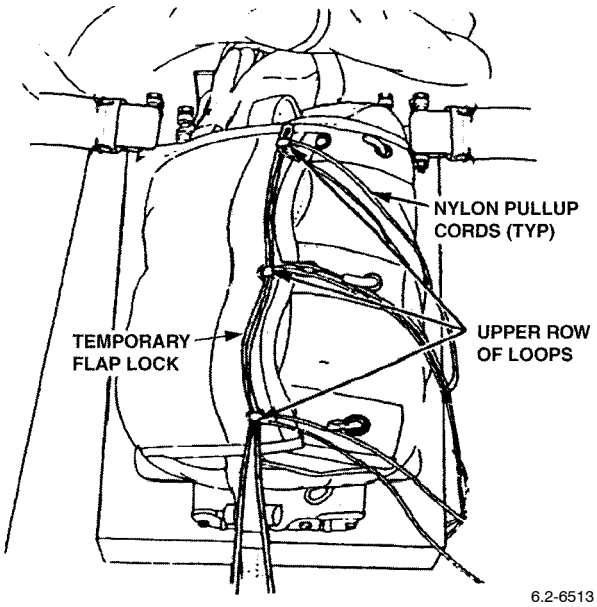


Figure 52. Insert Pullup Cords and Temporary Flap Lock

CAUTION

Rapid removal of pullup cord can cause damage to loops.

d. Slowly remove pullup cords from upper row of pullup loops. Insert pullup cords thru lower row of pullup loops.

e. Position pilot parachute vertically on table and insert guide tube into grommet in crown of pilot parachute. Guide tube shall extend to bottom of pilot parachute and be positioned over locking cone on spring base plate (Figure 53).

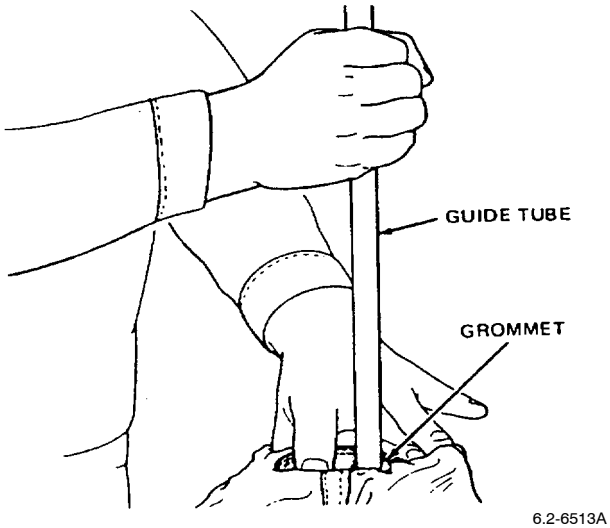


Figure 53. Guide Tube Insertion

WARNING

Ensure that pilot parachute cloth is not twisted around or entangled in compressed pilot parachute spring.

f. Compress pilot parachute spring and remove guide tube from locking cone. Locking cone shall protrude thru grommet. Insert temporary locking pin into top hole of locking cone (Figure 54).

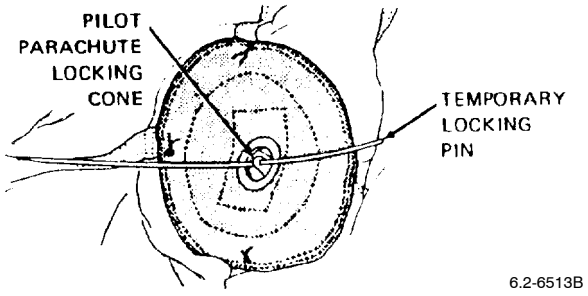


Figure 54. Temporary Locking Pin Insertion

g. Remove any pilot parachute cloth twisted around or entangled in compressed spring.

h. Remove temporary locking tie from locking loop in container liner flap. Insert both ends of proper pullup cord and draw locking loop thru grommet. Insert temporary flap lock. Repeat process for remaining two lower locking loops. Slowly remove pullup cords (Figure 55).

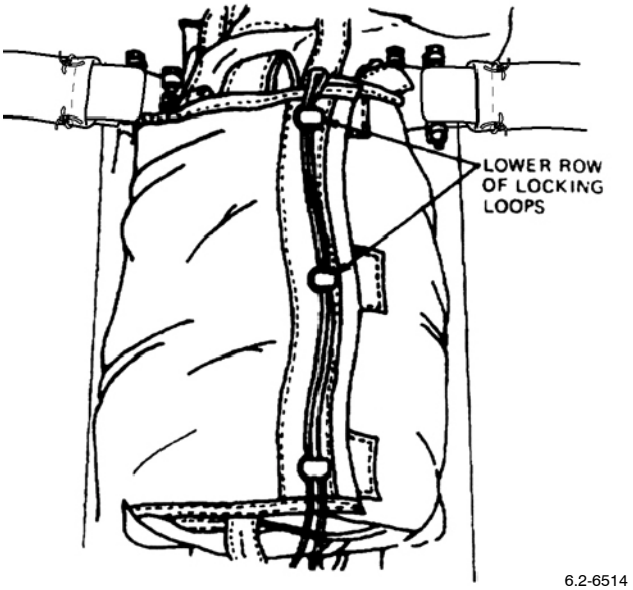


Figure 55. Temporary Flap Lock

i. Stow pilot parachute with crown down on top of container liner flaps on helper's side, centered between two grommets on opener end (Figure 56).

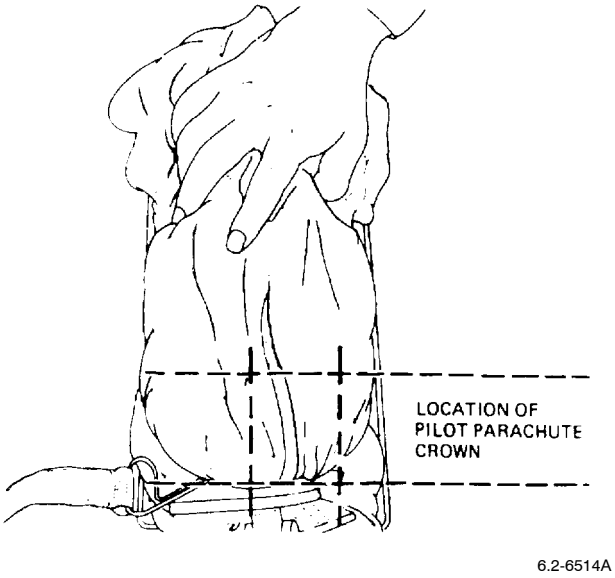


Figure 56. Pilot Parachute Stowage

j. Route pilot parachute material toward hinge end of container. Stow excess pilot parachute material on top on container liner flaps.

WARNING

All packing tools and aids must be accounted for before positioning lid on container.

k. Account for all tools and aids.

l. Inspect V-Ring strap and ratchet assembly for cuts, fraying, etc., prior to use.

m. Ensure that WORD bridle spool fitting is located inside container. Position lid on container mating hinge of lid with hinge of container. Extend ratchets and pass the heavy nylon strap over lid. Attach hold-down cords around hinge end to stabilize headbox assembly in holding fixture (Figure 57).

NOTE

When attaching lid, assure that lid is inserted firmly into hinge, container and lid channels are aligned and no material is caught between lid and container.

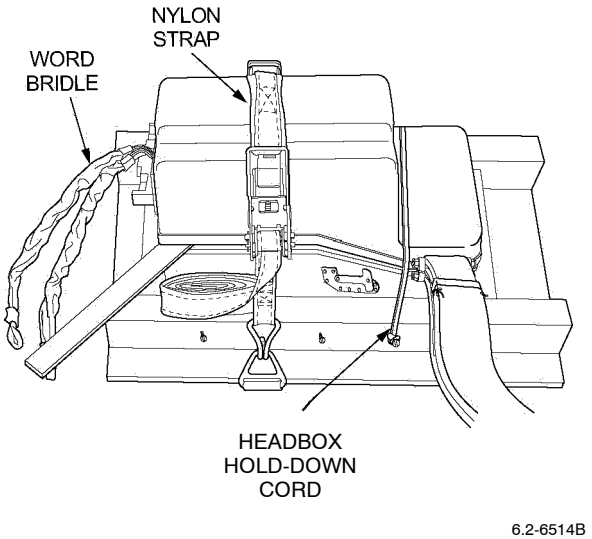


Figure 57. Attach Hold-Down Cord

28. CLOSING HEADBOX LID.

NOTE

During closing procedure, connector links must remain in alignment with seals. Ratchets must be tightened evenly on each side while tucking material into headbox assembly. Do not attempt to completely close with temporary locking cords and pilot parachute pin installed.

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Secure lid to container by using a length of Type III nylon cord at opener end of headbox. Pass cord through holes in retainers, around lid portion of opener, pull tight and tie off (Figure 58).

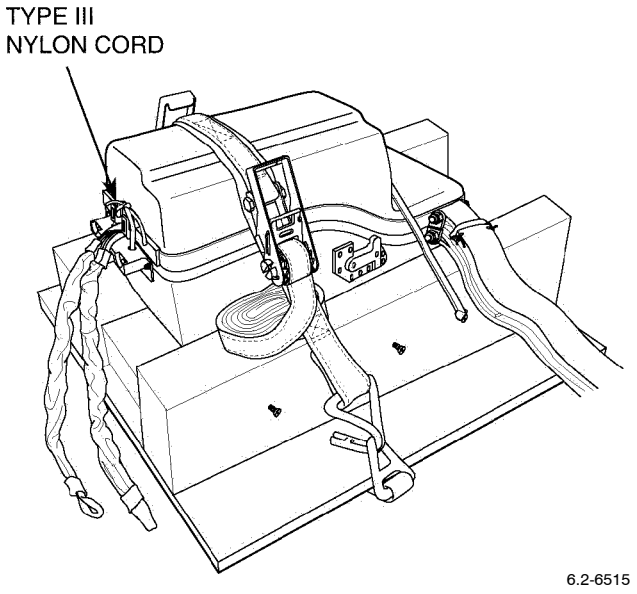


Figure 58. Secure Lid to Container

b. Locate V-Ring strap under base plate between the 5 1/2 and 7 1/2-in. marks (Figure 59).

c. Extend ratchets as needed to attach hooks to "V" ring strap. Center ratchets on lid, take up any slack on the ratchets ensuring hinge is properly engaged. Slowly tighten ratchets, keeping both sides even as the lid is being closed. As lid is worked down, temporary flap lock and pilot chute pin must be removed. Open knot in cord holding lid on headbox. Pull tight and retie (Figure 59). (QA)

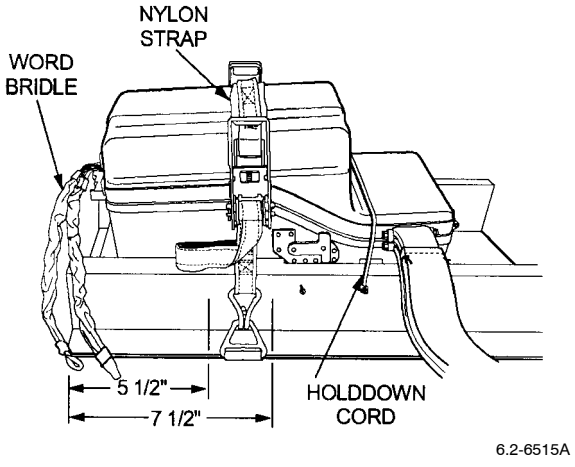


Figure 59. Tighten Ratchets

d. Continue closing lid, exercising great care not to trap material between lid and container.

WARNING

While tightening and tucking material into headbox the WORD Bridle must remain in position at point of exit from the headbox. The spool must be inside the head box.

e. Remove cord holding lid and container together. Install one end of cable assembly into locking tab and lock in place. Install other end of cable assembly in remaining locking tab and lock in place. Insert both safety pins into locking tabs (Figure 60).

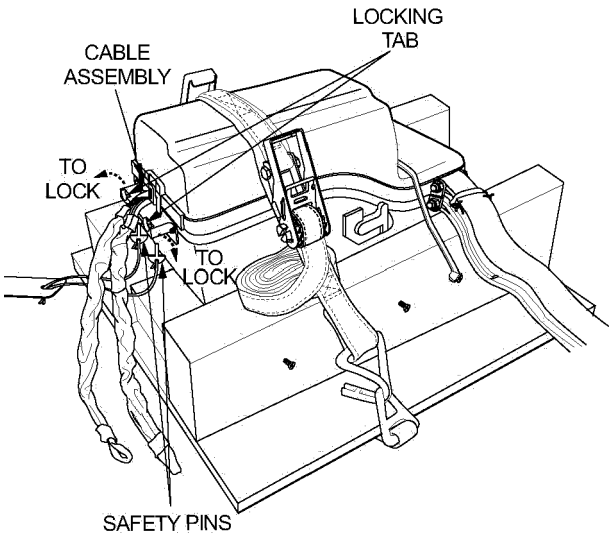


Figure 60. Safety Pin Insertion

f. Using 3/32-in. Allen modified wrench, adjust setscrews on each side to achieve a 0.06 to 0.18 measurement between the lid and container at closure end (Figure 61). (QA)

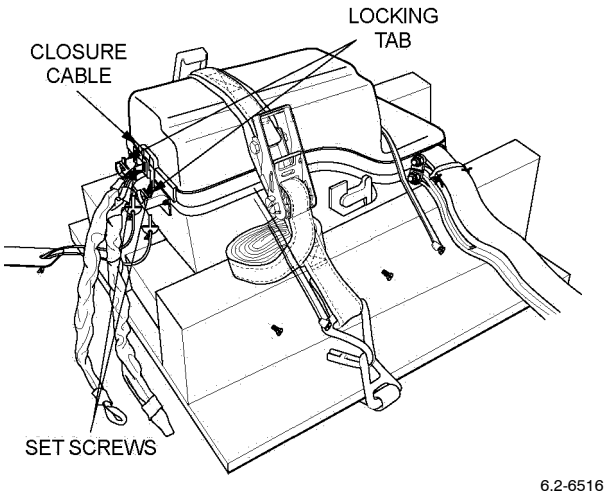


Figure 61. Set Screw Adjustment

g. Using locking lever, release ratchet and remove ratchet assembly. Cut headbox holdown card from hinge and remove headrest assembly from holding fixture (Figure 62).

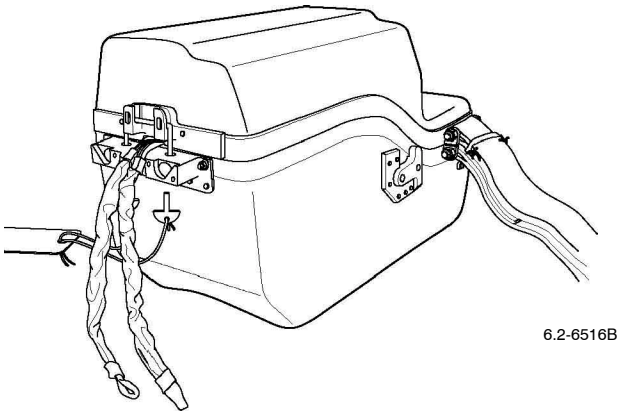


Figure 62. Remove Ratchet Assembly

h. Route headrest assembly to NDI/X-Ray facility for final X-ray inspection. Headrest assemblies found with correct word bridle release pin connection shall have X-ray attached to the parachute record and returned to service.

i. Make proper entries on Parachute Record (OPNAV 4790/101).

29. STOWAGE OF RISERS IN STOWAGE SLEEVE AND RISER TACKING.

a. S-fold the risers as shown in Figure 63.

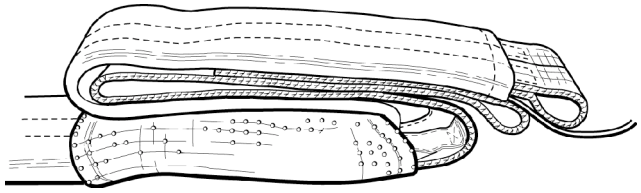


Figure 63. Riser S-Fold

b. Cut a 2-foot length of cord (preferably PIA-C-5040) that will be used as a packing aid to secure the upper riser sleeve in place. First route one end of packing aid through the upper riser sleeve, around the uppermost fold in the riser, then back down and through the upper riser sleeve as shown in Figure 64.

Figure 64. Install S-Fold in Upper Riser Sleeve

c. While packer grabs upper end of riser sleeve and pulls over S-fold, helper shall maintain pressure on the cord to ensure that the riser webbings are properly aligned.

d. Packer shall continue to "work" the sleeve up the riser S-folds until the upper S-fold is completely covered and there is approximately 1 3/4-in. from the end of the riser to the sleeve as shown in Figure 65. Remove packing aid (cord).

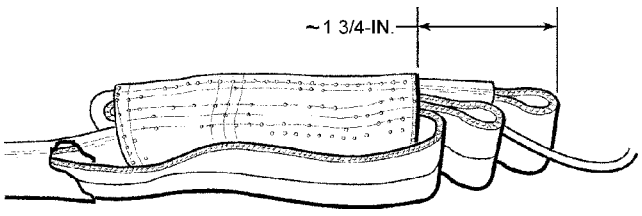


Figure 65. Riser Installed in Riser Sleeve

e. Tack the cover in place on the riser in two places (four total) at each end with V-T-295, Size FF thread doubled one turn using a surgeon's knot followed by a square knot (Figure 66).

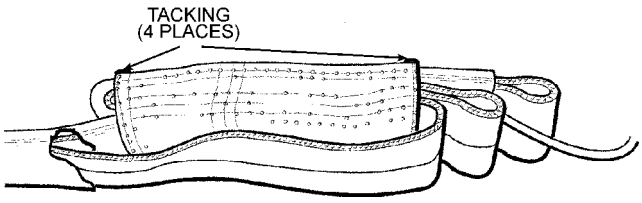


Figure 66. Riser Cover Tackings

f. Route inertia reel strap retainer on cover.

g. Fold lower portion of riser as illustrated in Figure 67. Stow riser into lower sleeve with sleeve hem on the side of the riser.

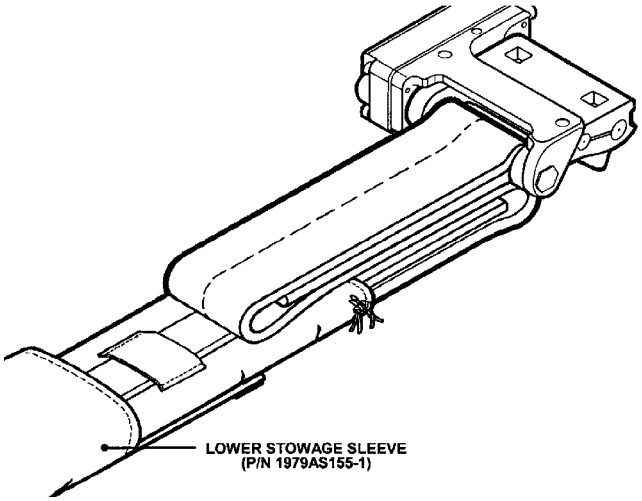


Figure 67. Fold Lower Section of Riser Assembly

h. Route lower sleeve flap around end of riser webbing (beneath Parachute Harness Sensing Release Unit) and tuck beneath itself on opposite side. See Figure 68.

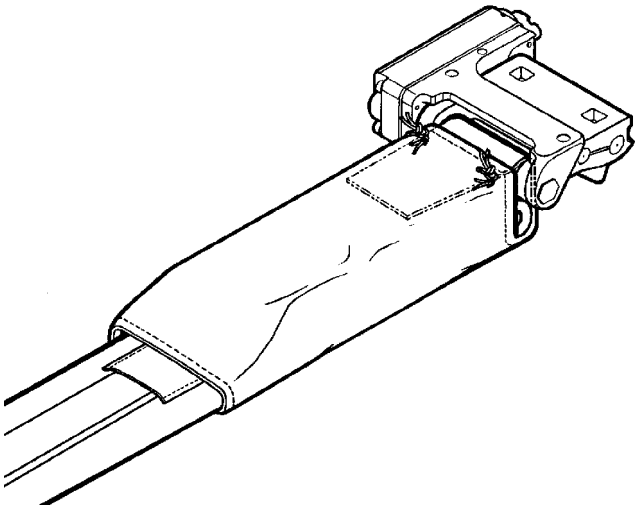


Figure 68. Installation of Lower Stowage Sleeve (P/N 1979AS155-1)

i. Tack lower sleeve and flap in place on the riser in two places at the lower canopy release fitting leg with waxed 6-cord thread (doubled, one turn) tied with a surgeon's knot followed by a square knot. Finally, tie off each end of the 6-cord with an overhand locking knot (Figure 68).

j. Repeat steps a thru i for the opposite riser.

k. Position riser stowage pouch assembly on headrest assembly and secure with snaps.

l. Fold risers into riser stowage pouch assembly as illustrated in Figure 69. Snap the riser to the stowage pouch assembly, and secure the pouch around the riser assembly.

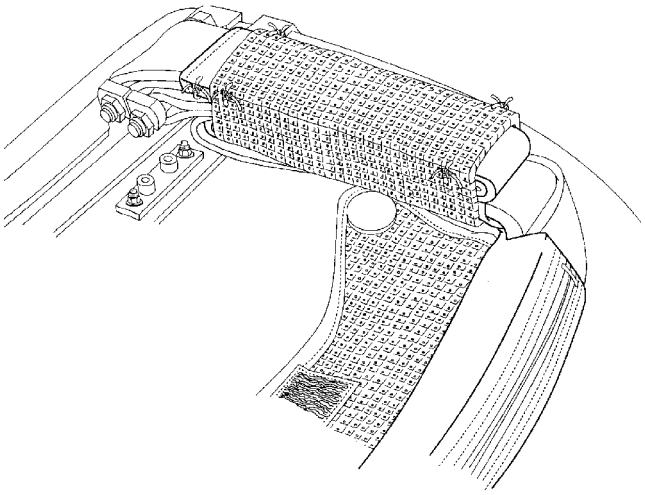


Figure 69. Stow Riser in Headrest Pouch Assembly

m. Remove aft connector link bolts, and stow riser stowage pouch assembly flaps behind connector link bolt as illustrated in Figure 70.

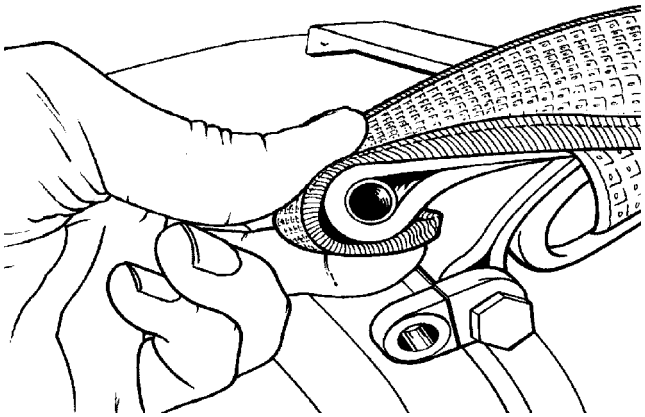


Figure 70. Stow Headrest Pouch Assemby Flap

Sealing Compound, MIL-S-46163 12

n. Install connector link bolts. Apply Sealing Compound MIL-S-46163, Type I, Grade K, to first two bolt threads. Reinstall nuts (P/N F42NKE-054) and tighten against link using a 1/2-in. open end wrench to hold cross-connector strap bolt and a 1/2-in. socket or wrench on nut. Torque nuts 70-90 in.-lbs. Apply torque seal to center of bolt heads. Bolts may rotate in connector link assemblies. Figure 71 shows the final packed assembly when the headrest is installed on the ejection seat and the beam.

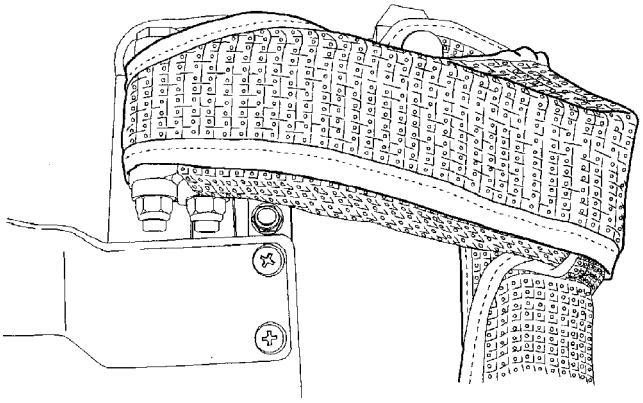


Figure 71. Final Stowage as Installed on Ejection Seat

30. PARACHUTE HARNESS SENSING RELEASE UNIT (PHSRU), MXU-746/P AND MXU-747/P.

a. Measure the knurled actuating lever torque as follows:

(1) Hold locking lever in the open position and insert the torque meter with 1/16-in. hex head driver into actuating lever cavity.

(2) Rotate actuating lever to just prior to contact with body. Acceptable torque values are 28 to 50 in.-oz. (Figure 72). (QA)

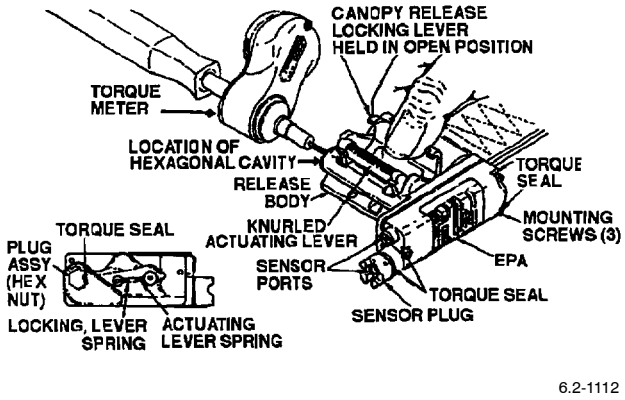


Figure 72. Rotate Actuating Lever

b. Check battery voltage as follows:

(1) Install test leads in multimeter observing proper polarity.

(2) Select VDC and scale exceeding 26 VDC.

CAUTION

Avoid touching the meter probes together when making this test. Firing of the PHSRU may result.

(3) Contact negative (black) probe to sensor plug assembly center conductor. Contact positive (red) probe to EPA sensor center conductor.

(4) Reading of +22.5 volts DC or greater indicates PHSRU is serviceable. (QA)

c. If plug assembly was removed, perform the following:

(1) Forward complete packed parachute assembly to either non-destructive inspection lab or medical facility for X-ray.

(2) From review of X-ray (Figure 73), if plug assembly is suspected or known to be partially or fully recessed, the unit shall have a shear pin integrity check per WP 024 02.

(3) Record inspection on Parachute Record (OPNAV 4790/101).

(4) Attach X-rays to the Parachute Record (OPNAV 4790/101).

(5) If voltage is below +22.5 volts DC, replace battery per WP 024 02.

(6) Record voltage for each EPA in the Local Use Block on the Parachute Record (OPNAV 4790/101).

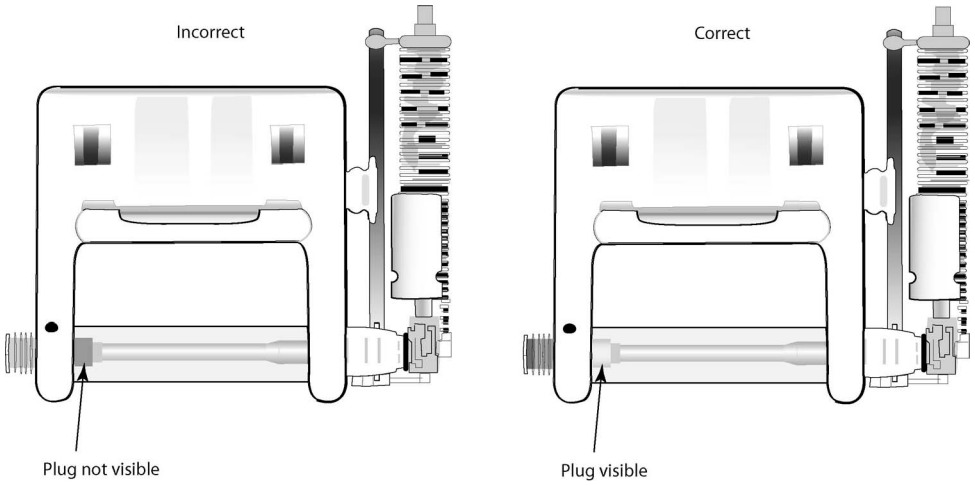


Figure 73. PHSRU X-Ray

31. FINAL CHECKOUT.

a. Account for all packing tools and spreading gun safety pin. (QA)

b. Examine packed parachute for general condition, and verify installation of both safety pin assembly pins. (QA)

c. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA)

d. QA inspector shall examine completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

e. QA inspector shall sign Parachute Record (OPNAV 4790/101).

f. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

INTERMEDIATE AND DEPOT MAINTENANCE

REPAIR PROCEDURES

A/P28S-28, -30, and -31 HEADREST ASSEMBLY

PART NO. 14090-21, 14090-19, 14690-17, and 14090-3

List of Effective Work Package Pages

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2 thru 4	10	11	9	17 thru 18	11	22 thru 25	9
5 thru 9	9	12	11	19 thru 20	9		

Reference Material

Intermediate and Depot Maintenance Common Repair Procedures . . . . . WP 004 00
Intermediate and Depot Maintenance, Maintenance Procedures, Parachute Harness Sensing Release Units (PHSRU) MXU-746/P and MXU-747P . . . . . WP 024 02
Intermediate and Depot Maintenance, Packing Procedures, A/P28S-28, -30 and -31 Headrest Assembly . . . . . WP 022 01
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdowns, Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration . . . . . WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment . . . . . WP 005 00

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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 667, Part 2	11 Mar 02	A/P28S-28, A/P28S-30, A/P28S-31 Headrest Assemblies in TAV-8B AV-8B Aircraft, Installation of Four-Line Release System and Over-Inflation Control Line. (WUC1774O, WUC174AO, WUC1749O). ECP-16416.	1 Jun 02	31 Dec 2004

1. INTRODUCTION.

2. This Work Package (WP) contains instructions for the maintenance, repair, replacement, and fabrication of various parachute parts or subassemblies to ensure that proper items of equipment remain in a Ready-For-Issue (RFI) status. Selected repairs shall be documented on the Parachute Record. For common repairs refer to WP 004 00.

3. REPAIR OF PILOT PARACHUTE.

4. Repair of the pilot parachute is limited to the following:

a. Cleaning of contaminated areas.

b. Replacement of loose or broken tacking.

c. Repair of holes or tears up to 1-in. in diameter with a single patch.

5. Replace pilot parachute for any of the following:

a. Service/total life has expired per WP 022 01.

b. Seam separations and loose or broken stitching (yard separation is acceptable) that may affect the safe operation of the parachute assembly.

c. Holes or tears over 1-in. in diameter and more than five holes or tears per pilot parachute.

d. Pilot parachute spring is broken or distorted.

e. Pilot parachute locking cone or grommet is loose or damaged.

6. REPLACEMENT OF PILOT PARACHUTE LOOSE OR BROKEN TACKING (PLATE ASSEMBLY).

Material Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove loose or broken tacking.

NOTE

The plate assembly is attached at the base of the coil spring.

b. Locate the four holes in the plate assembly within the pilot parachute fabric.

c. Tack thru holes with two turns of size 6 thread, doubled and waxed; tie off.

7. REPLACEMENT OF PILOT PARACHUTE.

a. Remove bridle line from pilot parachute loop.

b. Inspect replacement pilot parachute per WP 022 01.

c. Attach replacement pilot parachute to bridle by passing loop on bridle thru loop on pilot parachute. Form a Lark's head knot by passing pilot parachute thru loop on bridle and pulling tight (Figure 1). (QA)

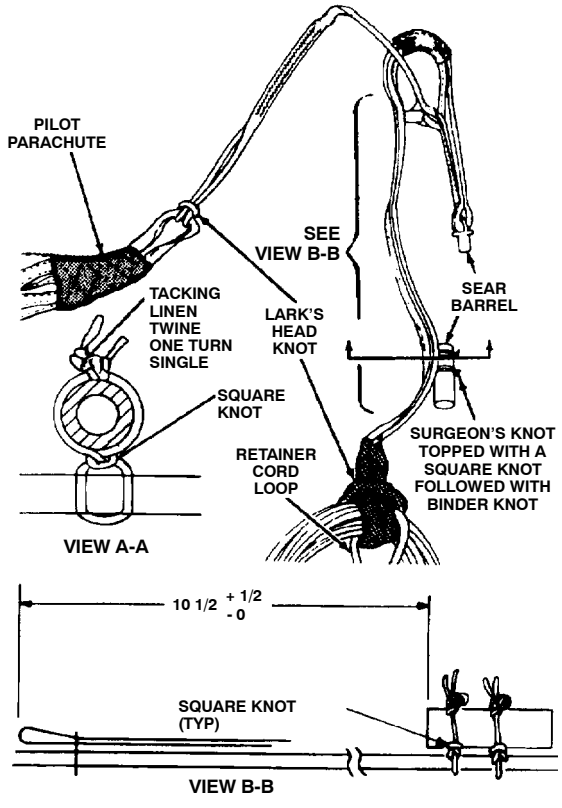


Figure 1. Pilot Parachute and Bridle Line Replacement

d. Mark date placed in service on pilot parachute per WP 004 00. (QA)

8. REPAIR OF PILOT PARACHUTE HOLES OR TEARS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MIL-C-7020	Cloth, Parachute, Nylon, Type I, Color-As Required

NOTE

Repair of pilot parachute is limited to five holes (and/or patches).

a. Remove bridle line from pilot parachute.

b. For pilot parachute fabric with holes or tears up to 1-in., patch per WP 004 00.

c. Upon completion of repairs, inspect pilot parachute per WP 022 01.

d. Reinstall pilot parachute per Paragraph 7. (QA)

9. REPAIR OF PILOT PARACHUTE BRIDLE ASSEMBLY. Repair of the pilot parachute bridle assembly is limited to cleaning of contaminated areas and replacement of override disconnect tackings. Replace the pilot parachute bridle assembly if the service/total life has expired per WP 022 01, or if there are any cuts, thread separation, dents, or distortion of sear, or any other damage that may affect the safe operation of the parachute assembly.

10. REPLACEMENT OF PILOT PARACHUTE BRIDLE ASSEMBLY.

a. Remove pilot parachute bridle from pilot parachute loop.

b. Remove WORD bridle from override disconnect.

c. Remove pilot parachute bridle from vent lines and spreading gun retaining cord loop.

d. Inspect replacement pilot parachute bridle per WP 022 01.

e. Route end of replacement pilot parachute bridle with cover thru loop in spreading gun retainer cord and then around vent lines. Form a lark's head knot by passing uncovered end thru loop in other end and pulling tight (Figure 1).

f. Install bridle on pilot parachute with a Lark's head knot.

g. Reconnect WORD bridle to override disconnect.

h. Mark date placed in service on pilot parachute bridle per WP 004 00. (QA)

11. REPLACEMENT OF OVERRIDE DISCONNECT (ORD) TACKINGS.

Materials Required

Specification or Part Number	Nomenclature
MIL-T-2520	Twine, Linen, Type I, 6-Ply

a. Remove worn or damaged tacking. Inspect pilot parachute bridle and ORD barrel for suitability for reuse.

b. Position ORD barrel on bridle line with grooved end 10 1/2 +1/2, -0-in. from end of loop assembly (Figure 1).

c. Tack ORD barrel to bridle in two places at grooved end with one turn of linen twine, single. Form a square knot between bridle and barrel. Bring ends about barrel and tie off using a surgeon's knot topped with a square knot, followed with binder knot. Trim off excess leaving 1/2-in. (Figure 1).

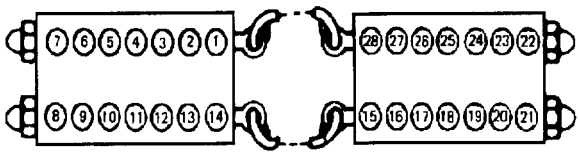
12. REPAIR OF CANOPY ASSEMBLY.

13. REMOVAL AND INSTALLATION OF SUSPENSION LINES FOR PROPER SEQUENCING.

a. Remove nut on connector link.

b. Slide bolt out and simultaneously slide suspension lines onto a temporary locking pin or rod.

c. Sequence lines per (Figure 2).



6.2-5475

Figure 2. Arrangement and Orientation of Suspension Lines on Connector Links

d. Reinstall lines by sliding bolt thru hole in connector link and simultaneously placing lines on bolt.

e. Reinstall nut on bolt handtight.

f. Check suspension line continuity (Figure 2). (QA)

14. REPLACEMENT OF CONNECTOR LINK AND CONNECTOR STRAP.

NOTE

The connector strap and connector links are not designed to be replaced separately. The complete assembly must be replaced if damage is detected.

a. Remove nut on connector links.

b. Slide bolt out and simultaneously slide suspension lines onto a temporary locking pin or rod.

c. Reinstall lines on new connector link by sliding bolt thru hole in connector link and simultaneously placing lines on bolt.

d. Reinstall nuts on bolts handtight.

e. Check suspension line continuity (Figure 2).

15. REPLACEMENT OF CONNECTOR LINK SEAL.

Materials Required

Specification or Part Number	Nomenclature
12059-11	Seal

a. Remove nut from link assembly bolt.

b. Slide bolt out of link; sleeve will drop out.

c. Slide seal off connector link.

d. Slide replacement seal onto connector link.

e. Reinstall bolt and sleeve in connector link and reinstall nut handtight.

16. REPLACEMENT OF CANOPY ASSEMBLY.

a. Remove pilot parachute, bridle line, and WORD bridle from canopy apex.

b. Remove spreading gun retainer cord from canopy apex.

WARNING

Safety pin must be installed in spreading gun.

c. Remove spreading gun per WP 004 00.

d. Dispose of canopy assembly per current supply directives.

e. Lay out replacement canopy assembly and stretch it to its full length on packing table.

f. Attach tension strap hook to canopy vent lines.

g. Locate gore 28 (nameplate gore) and place it uppermost in center of packing table.

h. At skirt hem, separate suspension lines into two equal groups with lines 1 thru 14 on packer's side and 28 thru 15 on helper's side (Figure 2). Grasping each group of lines, walk from skirt hem to connector links, removing any dips and twists between the two groups.

i. Place connector link holding lines 1 thru 7 on top of connector link holding lines 8 thru 14. Place connector link holding lines 28 thru 22 on top of connector link holding lines 15 thru 21. Insert tension hooks into connector links and insert hooks into packing table.

j. Apply tension to canopy.

k. Pull vent collar toward canopy and align exposed upper lateral band.

l. Pull vent collar back to its original position.

m. Check suspension line continuity on left side of gore 28. Packer shall grasp line 1 at skirt hem and raise to a sufficient height to ensure that line is free of dips and twists. Continue this procedure with lines 2 thru 14 (Figure 2). Helper shall be positioned at connector links to check lines selected by packer.

n. Check suspension line continuity on right side of gore 28. Packer shall grasp line 28 at skirt hem and raise to sufficient height to ensure that line is free of dips and twists. Continue this procedure with lines 27 thru 15 (Figure 2). Helper shall be positioned at connector links to check lines selected by packer.

o. Inspect the canopy assembly per WP 022 01.

p. Record any damage on canopy damage chart per WP 003 00. (QA)

q. Reattach spreading gun to canopy per WP 004 00.

r. Reattach pilot parachute, bridle assembly and WORD bridle per Paragraph 10.

17. REPAIR OF RISER ASSEMBLY.

a. Repair of risers is limited to the following:

(1) Cleaning of contaminated areas.

(2) Repair of stitching if less than three stitches are loose or broken. (Not applicable to peel stitch holding inertia reel strap to riser.)

(3) Removal/replacement of riser protection sheath, riser retainer strap and seat release lanyards.

b. Replace risers for any of the following:

(1) Service/total life has expired.

(2) Cuts, tears, or holes in webbing.

(3) Loose or broken stitching in excess of three stitches.

(4) Twists, fading, fusing, fraying, burns, contamination, or abrasion.

18. REPLACEMENT OF RISER ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
Wrench	Open End, 1/2-in.
TQS6	Torque Meter

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Remove parachute harness sensing release units (PHSRU) from risers per WP 024 02.

b. Remove connector link nuts securing riser to connector link.

c. Slide riser loops off connector link bar.

d. Inspect replacement risers per WP 022 01.

e. Lay out replacement riser on packing table with riser strap loops toward connector link.

f. Install sleeves in riser assembly loops.

g. Install short riser assembly strap on forward connector link assembly, and long riser assembly strap on aft connector link assembly. (QA)

h. Install new connector link nuts securing risers to connector links. Torque nuts 70 to 90 in-lbs. Apply torque seal to center of bolt heads. Bolts will rotate in connector link assemblies. (QA)

i. Install riser cover assemblies.

j. Reinstall Parachute Harness Sensing Release Units (PHSRU) per WP 024 02. (QA)

k. Mark date placed in service on identification and service life label. Make required entries on Parachute Record (OPNAV 4790/101).

19. STOWAGE OF RISERS IN STOWAGE SLEEVE AND RISER TACKING.

a. S-fold the risers as shown in Figure 3.

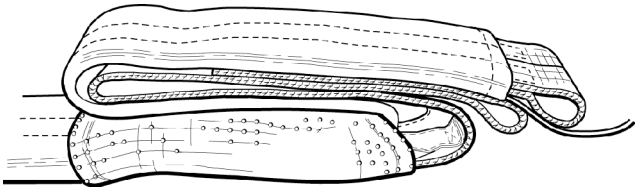


Figure 3. S-Fold the Risers

b. Cut a 2-foot length of cord (preferably MIL-C-5040) that will be used as a packing aid to secure the upper riser sleeve in place. First route one end of packing aid through the upper riser sleeve, around the uppermost fold in the riser, then back down and through the upper riser sleeve as shown in Figure 4.

Figure 4. Install S-Fold in Upper Riser Sleeve

c. While packer grabs upper end of riser sleeve and pulls over S-fold, helper shall maintain pressure on the cord to ensure that the riser webbings are properly aligned.

d. Packer shall continue to "work" the sleeve up the riser S-folds until the upper S-fold is completely covered and there is approximately 1 3/4-in. from the end of the riser to the sleeve as shown in Figure 5. Remove packing aid (cord).

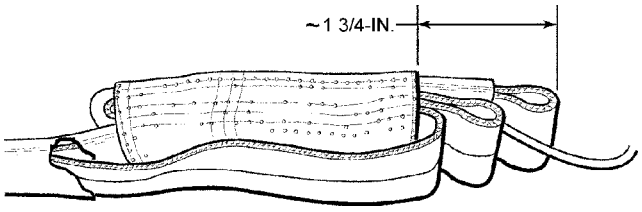


Figure 5. Riser Installed in Riser Sleeve

e. Tack the cover in place on the riser in two places (four total) at each end with V-T-295, Size FF thread doubled one turn using a surgeon's knot followed by a square knot (Figure 6).

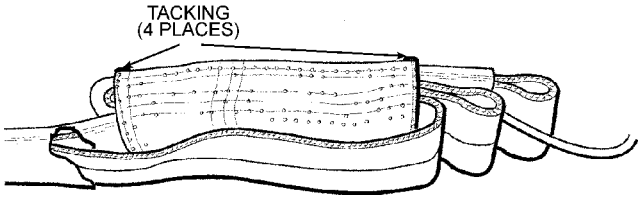


Figure 6. Riser Cover Tackings

f. Secure the headpad flaps between the aft connector link and bolt.

g. Stow riser into lower sleeve with sleeve hem on the same side as the seat man separation lanyard attachment point.

20. REPAIR OF SPREADING GUN.

21. FABRICATION OF RETAINER CORD.

Support Equipment Required

Part Number	Nomenclature
DPP-50	Spring, Scale

Materials Required

Specification or Part Number	Nomenclature
MIL-C-7515	Cord, Nylon, Type V
TT-I-1795	Ink, Red, Waterproof
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

a. Place nylon cord flat on table under 10 ±2 lb. tension. Mark and cut as shown in (Figure 7). Use red ink for marking.

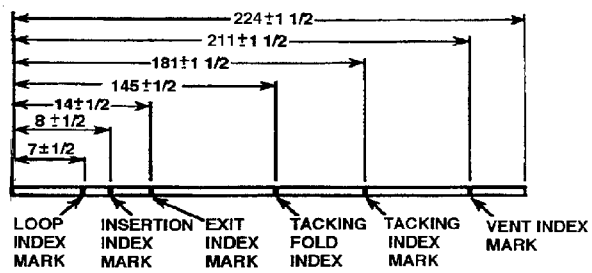


Figure 7. Retainer Cord Layout

b. Form a 3/8 in. loop at the 7-in. mark.

c. Insert bodkin at 14-in. mark and exit bodkin at 8-in. mark. Pull cord thru for an insertion length of 6 ± 1/2-in. If necessary, trim excess.

d. Machine stitch cord per WP 004 00 for a length of 2 ± 1/2-in. (Figure 8).

e. Measure 76 1/2-in. from top of loop formed in step c, and mark with an indelible pen. This mark will indicate the location for tacking the over-inflation control line during parachute packing (Figure 8).

22. REPLACEMENT OF RETAINER CORD TACKINGS.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or IA, Class A

WARNING

Safety pin must be installed.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Ensure safety pin is installed in spreading gun. (QA)

b. Completely remove loose or broken tackings.

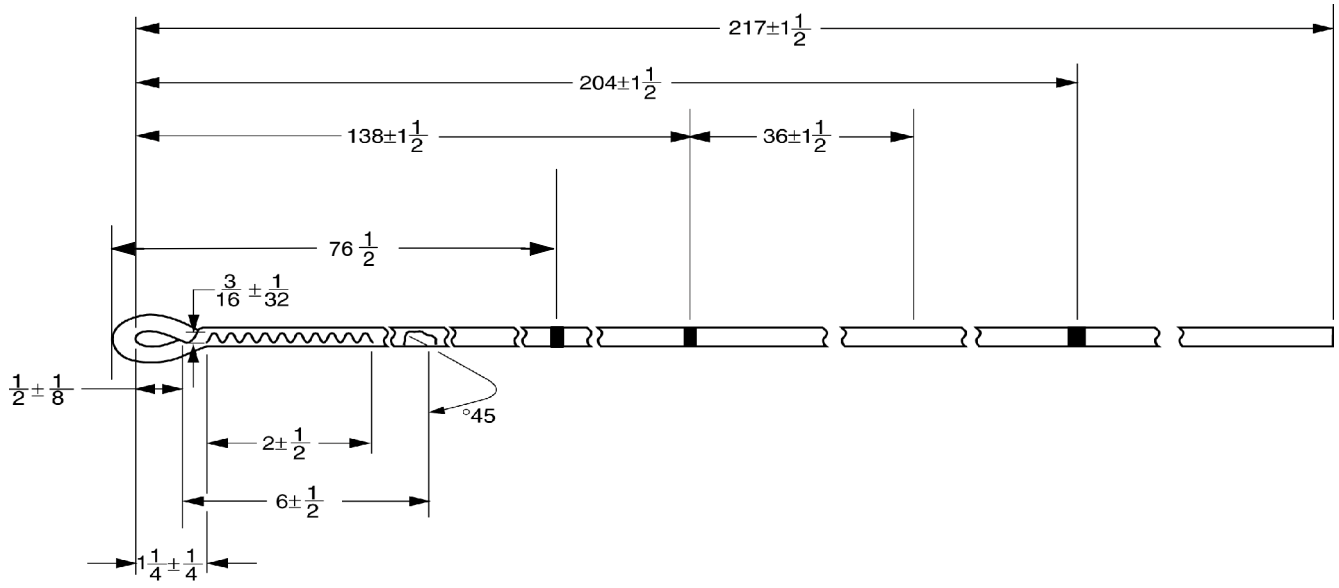


Figure 8. Retainer Cord Fabrication

c. Starting at 138-in. mark, form an 18-in. bight in retainer cord (Figure 9).

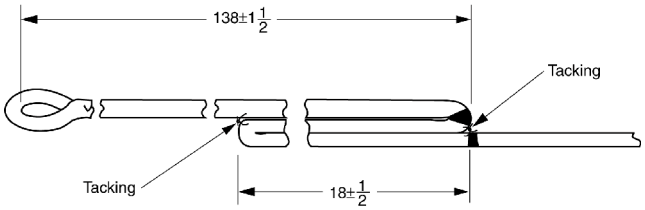


Figure 9. Retainer Cord Tackings

d. Tack retainer cord at each end of bight with one turn of size 6 thread, single and waxed; tie off. (QA)

23. INSPECTION OF SUSPENSION LINE AND SPREADING GUN FIRING LANYARD LENGTH DIFFERENTIAL.

a. Remove suspension lines 6, 7, 8, 9, 20, 21, 22, and 23 from connector links.

CAUTION

Do not apply tension for more than 30-sec.

b. Apply a 10 ±2 lb. tension to each removed line and while holding tension, measure and record distance from skirt hem to inside of line attachment loop. (QA)

c. Calculate and record average length of measured suspension lines.

d. Apply a 10 ±2-lb. tension to firing lanyard and while holding tension, measure and record distance from skirt hem to inside of lanyard connector link attachment loop. (QA)

e. Compare length of firing lanyard to average length of suspension lines. Verify that firing lanyard length is 20 to 28-in. shorter than average length of suspension lines. (QA)

WARNING

Do not place in service any spreading gun canopy assembly that does not meet needs of differential inspection.

f. Reattach suspension lines 6, 7, 8, 9, 20, 21, 22, and 23 to connector links. (QA)

g. Check suspension line continuity (Figure 2).

24. STOWAGE OF FIRING LANYARD.

Materials Required

Specification or Part Number	Nomenclature
MIL-C-5040	Cord, Nylon, Type I or IA
V-T-276	Thread, Cotton, Size 30/3, Red
	-or-
A-A-52094	Thread, Nylon, Size 30/3, Red

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Cut a 30-in. length of Type I or IA nylon cord to use as a stowage aid. Beeswax may be lightly applied to cord as a lubricant.

b. Starting at 7-in. mark on firing lanyard, form a bight in lanyard the length of stowage sleeve. Position stowage sleeve end with pull-the-dot fastener facing connector links. The fastener socket faces the table (Figure 10).

c. With button on stowage sleeve facing up, route stowage aid thru bight in firing lanyard. Draw stowage aid thru left stowage sleeve channel with a bodkin from end opposite snap fastener to end with snap fastener (Figure 10).

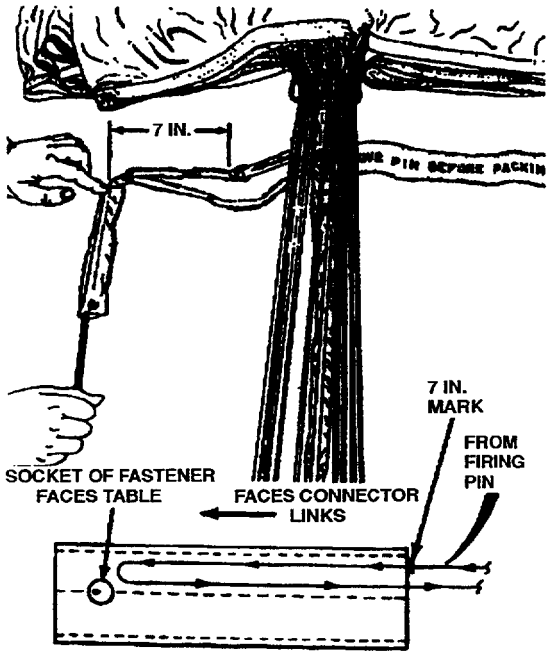


Figure 10. Stowage of Firing Lanyard

d. Draw firing lanyard thru stowage channel to bottom using stowage aid (Figure 10).

CAUTION

Rapid removal of stowage aid from firing lanyard bight could damage lanyard.

e. Slowly remove stowage aid from firing lanyard bight.

f. Form an 8-in. bight in firing lanyard and stow in remaining stowage sleeve channel.

g. Tack second stow of firing lanyard to stowage sleeve at end opposite snap fastener with one turn of size A thread or one turn cotton 30/3 thread; tie off (Figure 11). (QA)

WARNING

The 9/16-in. tapes must not be twisted around firing lanyard.

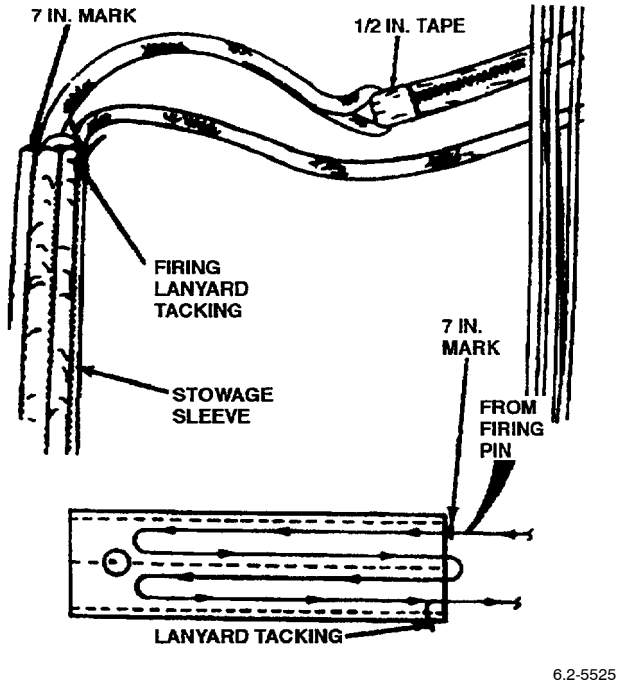


Figure 11. Tacking Firing Lanyard to Stowage Sleeve

h. Ensure 9/16 in. tapes are not twisted around firing lanyard.

25. REPLACEMENT OF WORD BRIDLE.

a. Disconnect release pin and spring on WORD bridle from sear on pilot parachute bridle and then remove WORD bridle from pilot parachute bridle.

b. Inspect replacement WORD bridle per WP 022 01.

c. Connect replacement WORD bridle to pilot parachute bridle by pushing release pin into barrel until it protrudes from opposite end.

d. Engage sear on pilot parachute bridle with release pin and then release tension on spring, allowing sear and release pin to become fully engaged inside barrel.

e. Mark date placed in service on WORD bridle per WP 004 00. (QA)

26. FABRICATION OF WORD BRIDLE SPANDEX SLEEVE .

Materials Required

Specification or Part Number	Nomenclature
1100/82	Spandex
MIL-W-4088	Webbing, Nylon, 9/16-in. Wide, Type I, Class 1, 1A or 2
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Upon request, spandex fabric will be furnished by NAVAIRWARCENWPNDIV, Code 461000D, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

a. Lay out and cut two pieces of spandex fabric 8 3/8 by 2 5/8-in. Ensure that fabric weave of material runs lengthwise. When installed it will run parallel to the Kevlar webbing.

b. Fold spandex fabric to measure about 8 3/8 by 1 1/4-in. Sew a 1/8-in. wide zigzag stitch 1/8-in. along the lengthwise cut edge of the material per WP 004 00.

c. Turn inside out and slide new spandex sleeve over existing spandex sleeve, locating one end of spandex sleeve 1/4-in. from inside edge of installed 9/16-in. webbing wrap. Ensure that seam on new spandex sleeve is centered lengthwise on bridle assembly.

d. Cut four 3-in. lengths of 9/16-in. webbing; sear ends.

e. Place one piece of 9/16-in. webbing next to existing webbing wrap on sleeve side. Ensure that the webbing is on the outside of the new spandex sleeve.

f. Use same procedure for opposite end. (QA)

27. REPAIR OF HEADBOX ASSEMBLY.

a. Repair of the container and lid assembly is limited to the following:

(1) Cleaning of contaminated areas.

(2) Repair of holes and cracks less than 3-in. in length or width.

(3) Replacement of damaged attachment points.

b. Replace container and lid assembly for any of the following:

(1) Holes or cracks in excess of 3 in. in length or width.

(2) Damage (cracks, splits, etc.) extending into seals, mounting bosses, or into corners having less than 1 in. radius.

28. REPAIR OF CONTAINER AND LID ASSEMBLY SURFACE SCRATCHES OR CRACKS. To repair surface scratches or cracks that penetrate but do not go thru first ply of laminate and do not affect strength of container, do as follows:

WARNING

All solutions used in repair of containers are toxic. Avoid skin contact and use only in a well ventilated area. If spilled on skin surfaces, wash off immediately with mild soap and water.

Materials Required

Specification or Part Number	Nomenclature
MIL-R-9300	Epoxy Resin (Epon 828)
O-D-1271	Hardener (Diethylene Triamine)
MIL-C-9084	Glass Cloth, Type VIII, Class 2
MIL-E-5558	Wrinkle-Finish Enamel, Lusterless, Type II, Black
BMS10-11K	Epoxy Primer
MIL-L-81352	Acrylic Lacquer, Color No. 37038
LP00370	Cellophane
O-A-51	Technical Acetone
PC451	Aluminum Oxide Paper (240 Grit)
—	Milled Glass Fibers (Glass Floc), 1/32 in.

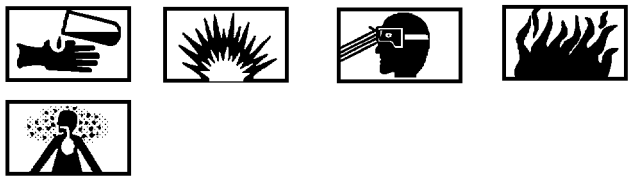
Technical Acetone, O-A-51 **1**

a. Clean damaged area with technical acetone, using a clean cotton cloth. Clean about 2 in. past damaged area in all directions.

Diethylene Triamine, O-D-271 **4**

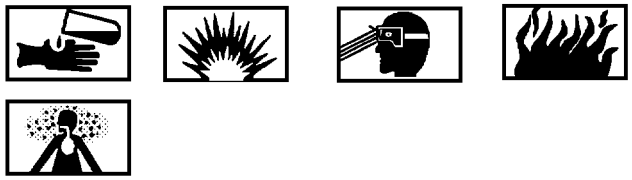
NOTE

Mix 100 parts of Epon 828 (resin) to 10 parts Diethylene Triamine (hardener). Do not mix more than can be used in 25 min.



Epoxy Resin, MIL-R-9300 **6**

b. Paint cleaned area with one or more coats of resin (number of coats to be applied depends on severity of damage).



Epoxy Resin, MIL-R-9300 **6**

c. Fill any small fractures with a mixture of Epon 828 and milled glass fibers, (mix to a putty consistency).

d. Over coated surface, apply a sheet of cellophane extending 2 to 3-in. beyond the treated surface. Remove all entrapped air bubbles either by hand or with a rubber roller.

e. Allow resin to cure overnight at room temperature. If necessary, a 212-degrees F oven can be used to reduce cure time.

WARNING

Sanding operations on containers produce a fine dust that may cause irritation to the skin or respiratory system. Protection shall be provided for the hands, face, and breathing passages.

Aluminum Oxide, PC 451 **2**

f. After resin has cured, remove cellophane sheet and lightly sand off any excess resin down to the original surface of container. Clean sanded area with a clean cotton cloth.

Epoxy Primer, MIL-P-23377 **5**

g. Refinish surface with one coat of epoxy primer and two coats of camouflage black acrylic lacquer.

h. Upon completion of repair, return container to service.

29. REPAIR OF CONTAINER AND LID ASSEMBLY CRACKS, HOLES, AND SCRATCHES. To repair cracks, holes, and scratches that penetrate thru one or more plies of laminate (but not thru surface opposite to that which is damaged) and that do not affect strength of container, do as follows:

WARNING

All solutions used in repair of containers are toxic. Avoid skin contact and use only in a well-ventilated area. If spilled on skin surfaces, wash off immediately with mild soap and water.

Materials Required

Specification or Part Number	Nomenclature
MIL-R-9300	Epoxy Resin (Epon 828)
O-D-1271	Hardener (Diethylene Triamene)
MIL-C-9084	Glass Cloth, Type VIII, Class 2

Materials Required

MIL-E-5558	Wrinkle-Finish Enamel, Lusterless, Type II, Black
LP00370	Cellophane
O-A-51	Technical Acetone
PC451	Aluminum Oxide, Paper (240 Grit)
BMS10-11K	Epoxy Primer
MIL-L-81352	Acrylic Lacquer, Color No. 37038

WARNING

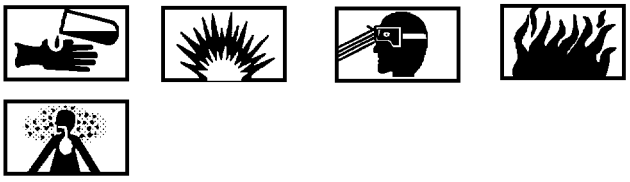
Sanding operations on containers produce a fine dust that may cause irritation to the skin or respiratory system. Protection shall be provided for the hands, face, and breathing passages.

a. Sand any damaged areas lightly either by hand or machine to a smooth contour.

Technical Acetone, O-A-51 **1**

b. Clean sanded area with technical acetone, using a clean cotton cloth. Clean about 2-in. past sanded area in all directions.

Diethylene Triamine, O-D-271 **4**



Epoxy Resin, MIL-R-9300 **6**

NOTE

Mix 100 parts of Epon 828 (resin) to 10 parts Diethylene Triamine (hardener). Do not mix more than can be used in 25 min.

c. Paint sanded area with one coat of resin.

d. Cut any required sections of glass fabric to shape of damaged area. Soak cut sections in resin until a resin content of about 50 percent has been achieved.

e. Place soaked sections of glass fabric in the sanded depression area per (Figure 12).

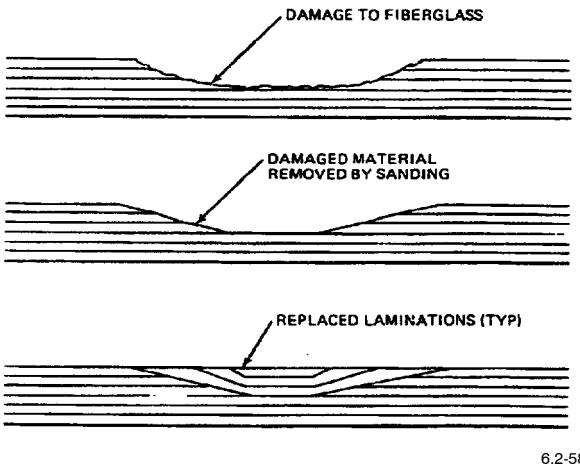


Figure 12. Repair of Container and Lid Assembly Cracks, Holes and Scratches

f. Place a sheet of cellophane over the repaired area and work out any excess resin.

g. Allow resin to cure overnight at room temperature. If necessary, a 212-degrees F oven can be used to reduce cure time.

WARNING

Sanding operations on containers produce a fine dust that may cause irritation to the skin or respiratory system. Protection shall be provided for the hands, face, and breathing passages.

Aluminum Oxide, PC 451 **2**

h. After resin has cured, remove cellophane sheet and hand or machine sand surface of repaired area to original surface of facing. Clean sanded area with a clean cotton cloth.

Epoxy Primer, MIL-P-23377 **5**

i. Refinish surface with one coat of epoxy primer and two coats of camouflage black acrylic lacquer.

j. Upon completion of repair, return container to service.

30. REPAIR OF CONTAINER AND LID ASSEMBLY CRACKS OR HOLES. To repair cracks or holes that penetrate container wall, perform the following:

WARNING

All solutions used in repair of containers are toxic. Avoid skin contact and use only in a well ventilated area. If spilled on skin surfaces wash off immediately with mild soap and water.

Materials Required

Specification or Part Number	Nomenclature
MIL-R-9300	Epoxy Resin (Epon 828)
O-D-1271	Hardener (Diethylene Triamene)
MIL-C-9084	Glass Cloth, Type VIII, Class 2
MIL-E-5558	Wrinkle-Finish Enamel, Lusterless, Type II, Black
LP00370	Cellophane
O-A-51	Technical Acetone
PC451	Aluminum Oxide Paper (240 Grit)
A-11 or	Plastic Hydrocal
B-11	(Locally Purchased)
MIL-P-265	Polyvinyl Alcohol (Locally Purchased)
BMS10-11K	Epoxy Primer
MIL-L-81352	Acrylic Lacquer, Color No. 37038

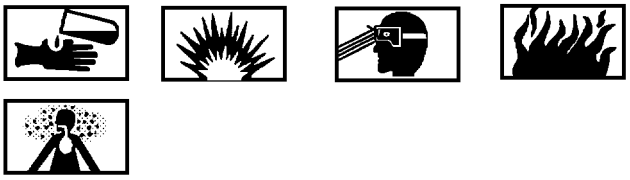
NOTE

To repair extensively damaged containers, a mold must be used in forming/shaping the replacement part to the proper curvature. Plaster molds formed of materials such as Hydrocal A-11 or B-11 have proven satisfactory. Steps a thru e pertain to fabrication of molds, and steps f thru q pertain to container repairs.

Technical Acetone, O-A-51 **1**

a. Clean sanded area with technical acetone, using a clean cotton cloth. Clean about 2-in. past sanded area in all directions.

b. Construct a suitable wood frame or container that roughly follows the contour of the convex side of parachute container. This frame will hold the soft plaster mold material.



Polyvinyl Alcohol, MIL-P-265 **7**

c. After plaster has been applied to this frame, coat a similar undamaged area on parachute container with a release agent (paste wax, polyvinyl alcohol, vinyl film, or cellophane), then embed container in soft plaster to form a surface of required size and shape.

d. After plaster has hardened, remove container and allow the mold to dry for 12 to 15 hrs at room temperature. Another option is to oven dry at about 220-degrees F for several hours.

e. Carefully hand sand the mold surface with fine sandpaper; while mold is still warm, coat it with DC-4 silicone grease.

f. After any excess grease has been removed, spray or brush the mold surface with two or three coats of releasing lacquer (Garalease 915 or XD-481). When these coats of releasing lacquer are completely dry, apply an additional coat of DC-4 silicone grease and rub off any excess. The mold is now ready for use.

g. Carefully cut out the damaged portion carefully to either a circular or oval shape.

WARNING

Sanding operations on containers produce a fine dust that may cause irritation to the skin or respiratory system. Protection shall be provided for the hands, face, and breathing passages.

h. Carefully sand damaged area either by hand or machine. This enlarged and smoothed area should be at least 25 times the thickness of the container wall (Figure 13).

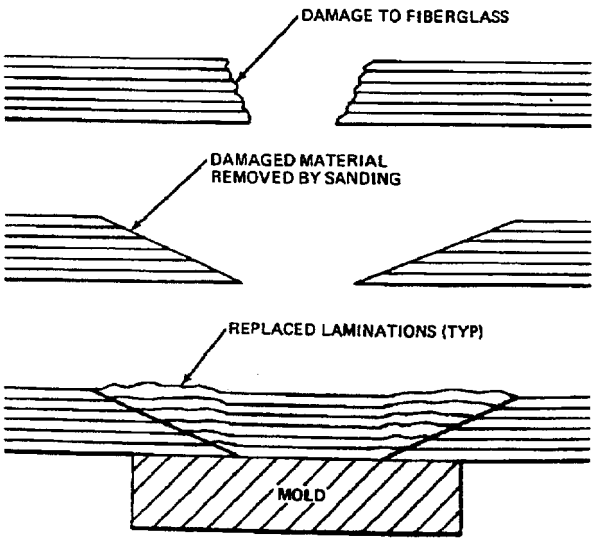
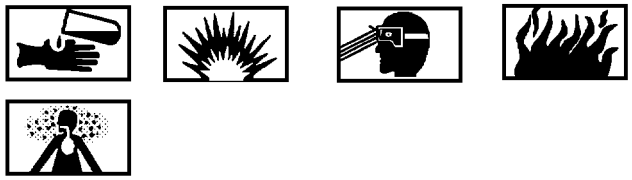


Figure 13. Repair of Container and Lid Assembly Cracks or Holes

i. Prepare glass-fabric laminations for repairing container wall by cutting largest piece of fabric to exact outer shape of sanded surface.

j. Cut smallest piece so that it overlaps scarfed area a proportionate distance, depending upon number of plies in the repair. Cut intermediate size pieces so that they overlap equally.

Diethylene Triamine, O-D-271 **4**

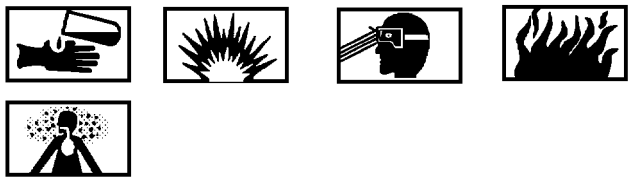


Epoxy Resin, MIL-R-9300 **6**

NOTE

Mix 100 parts of Epon 828 (resin) to 10 parts Diethylene Triamine (hardener). Do not mix more than can be used in 25 min.

k. A convenient way to prepare these laminations is to brush-spread resin on them and then sandwich the spread fabric between two sheets of colored cellophane. Sections of glass fabric can then be cut to shape without becoming frayed at edges. The resin content of all applied fabric should be about 50 percent.



Polyvinyl Alcohol, MIL-P-265 **7**

NOTE

When it is necessary to use a mold to rebuild part of a container wall, surface of mold must be treated to prevent sticking (adhesion of the resin). One or more coats of the following release agents may be applied: heavy duty paste wax, polyvinyl alcohol, vinyl film, polyester film, or cellophane.

l. (If Required) Place required mold inside container.

m. Lay/spread prepared sections of glass fabric into place by first removing cellophane sheet from one side of fabric, placing exposed fabric into position over the damaged area, and then removing second sheet of cellophane (Figure 13).

n. Cover entire repaired area with a sheet of cellophane and carefully work surface to remove as much excess resin as possible.

o. Allow resin to cure overnight at room temperature. If necessary, a 212-degrees F oven can be used to reduce cure time.

WARNING

Protection shall be provided for the hands, face, and breathing passages when sanding.

Aluminum Oxide, PC 451 **2**

p. After resin has cured, remove cellophane sheet and lightly sand off any excess resin down to the original surface of container. Clean sanded area with a clean cotton cloth.

Epoxy Primer, MIL-P-23377 **5**

q. Refinish surface with one coat of epoxy primer and two coats of camouflage black acrylic lacquer.

r. Upon completion of repair, return container to service.

31. REPLACEMENT OF CONTAINER ASSEMBLY.

a. Inspect replacement container per WP 022 01.

b. Replace container at proper time during packing procedures.

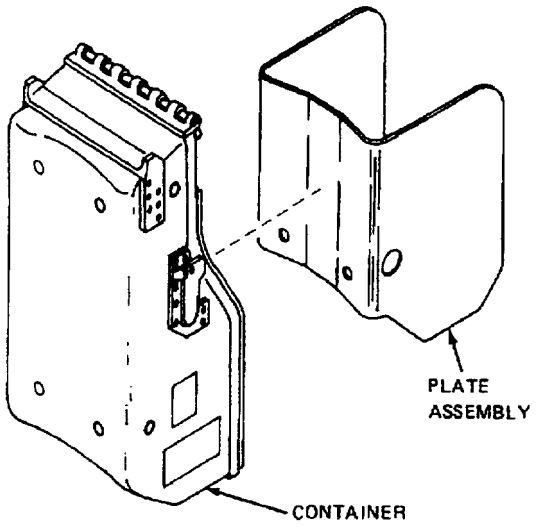
32. REPLACEMENT OF LID ASSEMBLY.

a. Inspect replacement lid per WP 022 01.

b. Replace lid at proper time during packing procedures.

33. ATTACHMENT OF CONTAINER ASSEMBLY TO LINER ASSEMBLY.

a. Insert plate assembly into container assembly (Figure 14).



6.2-6547

Figure 14. Insert Plate Assembly

b. Insert two screws thru studs and container sides. Install a washer and nut on each screw and tighten (Figure 15).

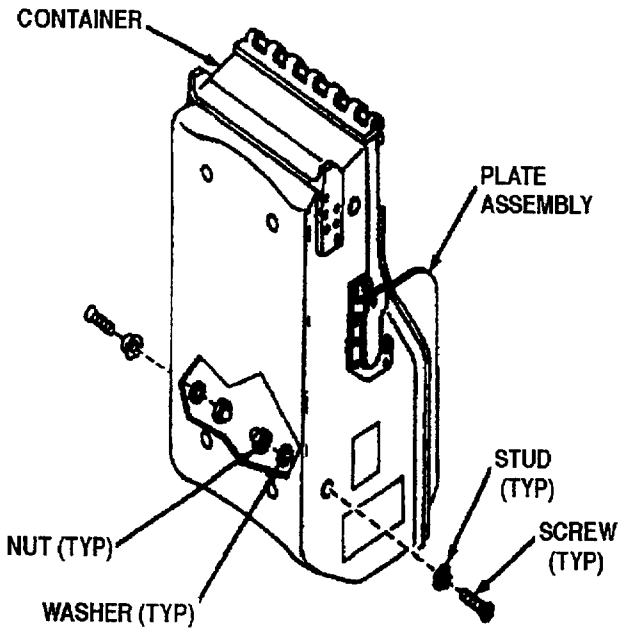


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Figure 15. Insert Two Screws Thru Studs

c. Place liner assembly into container inserting plate assembly into openings in liner assembly (Figure 16).

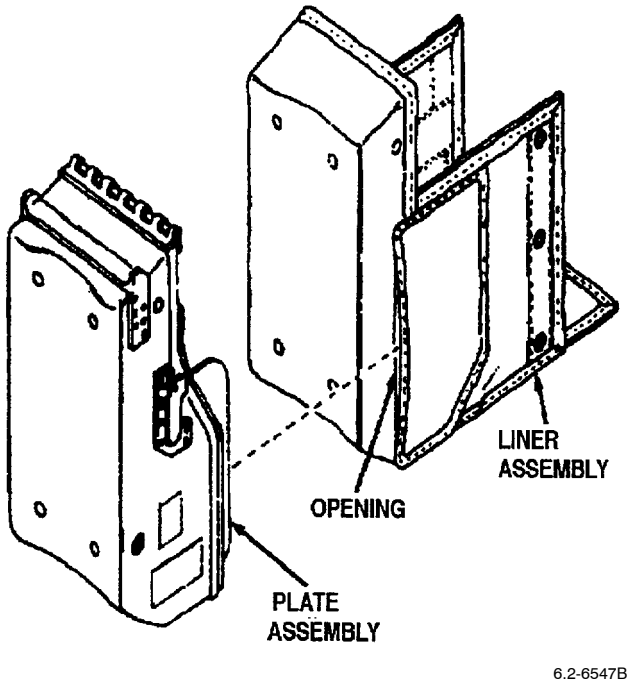

Figure 16. Place Liner Assembly in Container

d. Insert four screws thru studs, bottom of container, and grommets in bottom of liner assembly. Install a washer and nut on each screw from inside liner assembly and tighten (Figure 17).

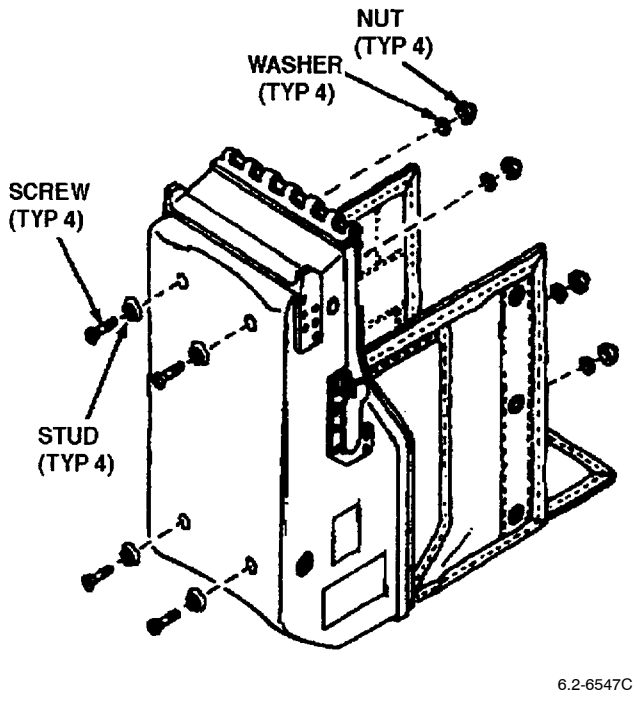

Figure 17. Insert Four Screws Thru Studs

e. Insert two screws thru grommets in connector link attachment loops inside liner assembly and out thru container (Figure 18).

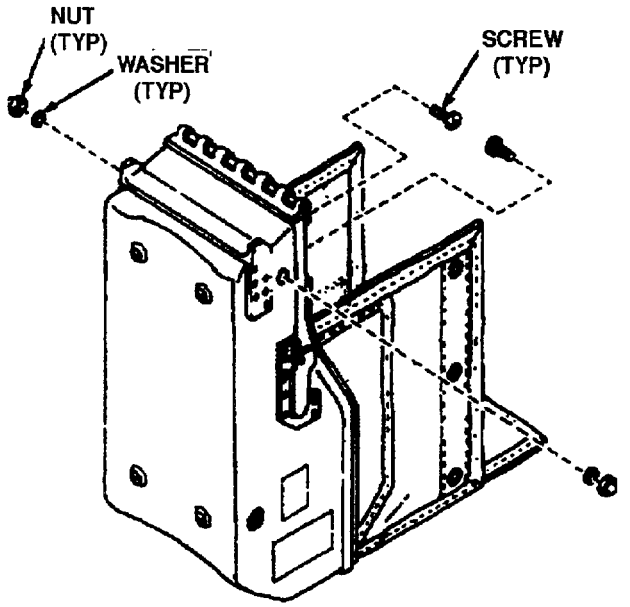

Figure 18. Insert Two Screws Thru Grommets

f. Install a washer and nut onto each screw on outside of container and tighten.

34. REPLACEMENT OF OVER-INFLATION CONTROL LINE AND TACKINGS.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Bodkin

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6 Type I, Class A
PIA-C-7515	Cord, Nylon, Type II, Olive Drab

a. With parachute canopy stretched out on the packing table, carefully cut the two A-thread tackings securing the four bites of Over-Inflation Control Line to the Spreading Gun Assembly retainer cord.

b. Remove the Spreading Gun Assembly from the canopy and disconnect the retainer cord from the Spreading Gun Assembly.

NOTE

Retainer cord will still be attached to the canopy apex at this point.

c. Cut through the Over-Inflation Control Line anywhere along its circumference and gently pull the line the anchor loops and remove it from the canopy.

d. Obtain a replacement Over-Inflation Control Line and cut off a minimum amount from each end to eliminate the seared ends. If a replacement Over-Inflation Control Line is not available, use scissors to cut a 55 ft. +2, -0 inches length of PIA-C-7515 nylon cord.

e. Measure 6-in. from each end of the Over-Inflation Control Line and mark with an indelible pen.

f. Find the center of the Over-Inflation Control Line by holding the two marks made in the previous step together and mark the center with an indelible pen.

g. Divide the line into four equal sections by holding the three marks made in the previous two steps and mark the two points with an indelible pen.

h. Measure 76 1/2-in. from the lower end of the Spreading Gun Assembly retainer cord and mark with an indelible pen.

NOTE

Ensure Spreading Gun Assembly anchor loops are not twisted during installation of the over-inflation control line.

i. Rig the Over-Inflation Control Line into the canopy by starting at the name plate gore and taking one end of the line and routing it through the inside of each suspension line and through each of the Spreading Gun Assembly anchor loops in accordance with Figure 19. (QA)

NOTE

Ensure that the Over-Inflation Control Line is not wrapped around any of the Spreading Gun Assembly anchor loops or is routed outside of the suspension lines.

j. After the Over-Inflation Control Line is routed through each Spreading Gun Assembly anchor loop, use a bodkin to finger trap each end of the control into the opposite end a distance of 6 inches until the two marks meet as shown in Figure 20. Using a needle and a piece of waxed single 6-cord nylon thread, secure the finger trappings in place with a running stitch approximately 6-in. long (2-4 stitches/inch). Tie off with surgeon's knot followed by a square knot.

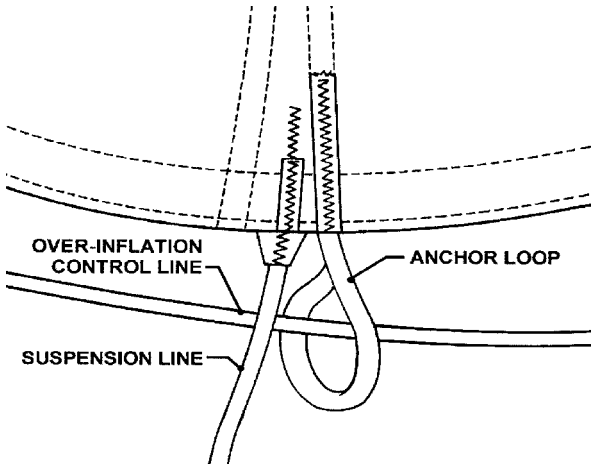

Figure 19. Routing of Over-Inflation Control Line

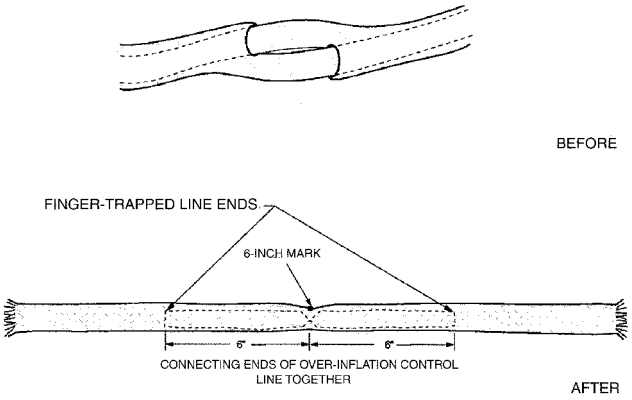

Figure 20. Finger Trap Each End of the Over-Inflation Control Line

k. Install Spreading Gun Assembly, Spreading Gun Assembly cartridge and upper retaining lanyard to Spreading Gun Assembly in accordance with WP 022 01.

l. Pull upper retaining lanyard and canopy apex toward connector links until 76 1/2-in. mark on lanyard is visible. (Upper portion of canopy will be inside out at this point).

m. Align the Over-Inflation control line bites from between slug plates 1 and 28 and 7 and 8 with the 76 1/2-in. mark made on the Spreading Gun Assembly retaining lanyard. Using a needle and a piece of nylon A-thread (single, one turn), run the needle and thread through the width of the Over-Inflation control lines, then through the upper retaining lanyard and tie off with a surgeon's knot followed by a square knot (Figure 21). (QA)

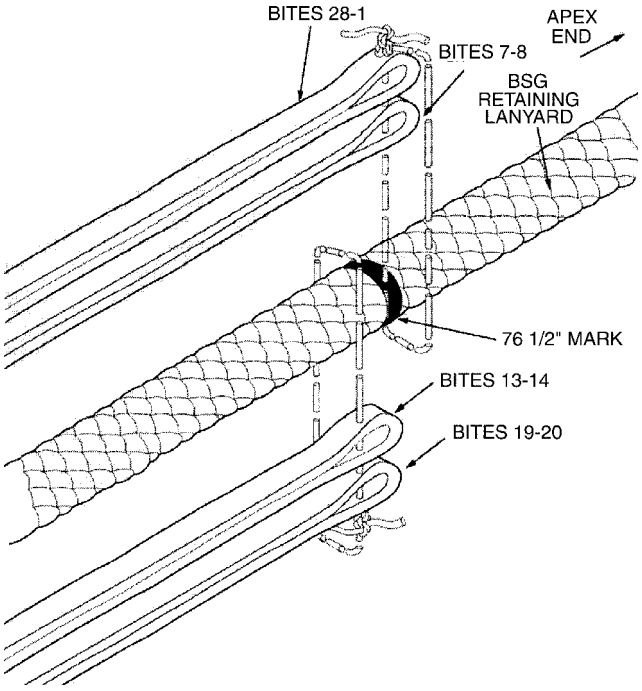

Figure 21. Attachment of OCL to BSG Retaining Lanyard

n. Align the Over-Inflation control line bites from between slug plates 13 and 14 and 19 and 20 with the 76 1/2-in. mark made on the Spreading Gun Assembly retaining lanyard. Using a needle and a piece of nylon A-thread (single, one turn), run the needle and thread through the width of the Over-inflation control lines, then through the upper retaining lanyard and tie off with a surgeon's knot followed by a square knot (Figure 21). (QA)

o. Route upper portion of upper Spreading Gun Assembly retaining lanyard back between gore 1 and 8, up center of canopy until canopy is stretched out taking care not to break the A-thread tackings. (QA)

p. Straighten canopy gores, stow extraction sleeve, and fold canopy gores in accordance with WP 022 01, Paragraphs 18 thru 20.

35. FOUR-LINE RELEASE LANYARD REMOVAL, INSTALLATION, REPLACEMENT.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Bodkin

Materials Required

Specification or Part Number	Nomenclature
1979AS152-1	Lanyard, Four-Line Release
Spectra, braided cord, 600-lb. minimum tensile strength, 66-in. length, natural color	Routing Cord

a. Carefully remove defective Four-Line Release Lanyard from anchor loop by first releasing the Four-Line Release "daisy chain" coupling and removing Four-Line Release Handle Assembly, P/N 1979AS154-1, from lower end of Four-Line Release Lanyard.

b. Take one end of the Spectra routing cord and insert it through the loop on the lower end of the Four-Line Release Lanyard. Using a bodkin, finger trap approximately two inches of the Spectra routing cord into itself to attach the Spectra routing cord to the Four-Line Release Lanyard.

c. Grasp the opposite end of the Four-Line Release Lanyard near the anchor loop and gently pull up so that the Four-Line Release Lanyard and attached Spectra routing cord is pulled through the riser webbing and the entire length of the Four-Line Release Cover Assembly (P/N 1979AS157-1) and the ballistic cloth channel under the cover.

d. After the Spectra routing lanyard is pulled past the end of the Four-Line Release Cover Assembly, undo the finger trap securing the Spectra routing cord to the Four-Line Release Lanyard.

e. With Spectra routing lanyard in place on the riser, route Four-Line Release Lanyard back through Daisy Chain Protection Cover, P/N 1979AS151-1, so that it is no longer covered and undo the lark's head knot that secures the Four-Line Release Lanyard to the anchor loop to completely remove the Four-Line Release Lanyard from the parachute canopy.

f. Attach new Four-Line Release Lanyard, P/N 1979AS152-1, to anchor loop by inserting the loop on the end of the release lanyard through the anchor loop. Take opposite end of release lanyard and insert it through the loop end passed through the anchor loop. Pull tight to form a Lark's head knot.

g. Route new Four-Line Release Lanyard through Daisy Chain Protection Cover.

h. Take end of Spectra routing cord and insert it through the loop on the end of the Four-Line Release Lanyard that extends down from the Four-Line Release Anchor Loop. Using a bodkin, finger trap approximately two inches of the Spectra routing cord into itself to attach the Spectra routing cord to the Four-Line Release Lanyard.

i. Grasp opposite end of Spectra routing cord near bottom of riser and gently pull down so that the Four-Line Release Lanyard is pulled through the riser webbing and the entire length of the Four-Line Release Cover Assembly and the ballistic cloth channel under the cover.

j. After the Four-Line Release Lanyard is pulled past the end of the Four-Line Release Cover Assembly, undo the finger trap securing the Spectra routing cord to the Four-Line release Lanyard.

k. Take the Four-Line Release Handle and insert the loop on the end of the Four-Line Release Lanyard through the small looped end on the end of the handle.

l. Next, insert end of yellow tab through loop on the end of the Four-Line Release Lanyard and pull it completely down so that a lark's head knot is formed to attach the handle to the Four-Line Release lanyard.

NOTE

Plastic square portion on handle assembly will Bottom out on stitching when fully pulled within the riser.

m. With pile fastener on Four-Line Release Handle facing down, pull Four-Line Release Handle into sleeve by pulling Four-Line Release Lanyard from the top of the riser (at the connector link). Bottom edge of yellow tab on handle should be approximately one inch from the bottom end of the pile fastener when the handle is fully stowed within the riser assembly.

36. FOUR-LINE RELEASE LANYARD RIGGING.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Bodkin

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Place parachute canopy under slight tension on packing table.

b. Route Four-Line Release Lanyards through Daisy Chain Protection Covers.

c. From the upper end of the Four-Line Release Lanyards, near the anchor loops, measure down 35-in. and mark this measurement on the Four-Line Release Lanyards with an indelible pen.

d. Measure downward an additional 9-in. on both release lanyards and mark this measurement with an indelible pen. These marks will be used to determine the length of the formed daisy chain coupling.

NOTE

Suspension lines can be slid onto a locking pin or similar rod to ensure proper orientation and position during re-assembly.

e. From the AFT/rear connector links, remove suspension lines 1 through 7 and 22 through 28.

f. Route suspension lines 3 and 26 through each of the two Daisy Chain Protection Covers.

NOTE

Do not attach the Ballistic Spreader Gun-firing lanyard to the top connector links and do not torque the nuts.

g. Reattach suspension lines 3 through 7 and 22 through 26 to their respective connector links. Install new nuts onto connector link bolts and tighten only these two nuts.

h. Route suspension line 2/27 through the daisy chain cover and route over and then under the cross-connector strap eyebolt so that the suspension line loop extends several inches from the eyebolt.

i. Route suspension line 1/28 through the daisy chain cover and route over and under the cross-connector strap eyebolt so that the suspension line loop extends several inches from the eyebolt.

j. Turn connector link over towards the inside of the left and right-hand risers so that the loops on suspension lines 1/28 and 2/27 are facing up (Figure 22).

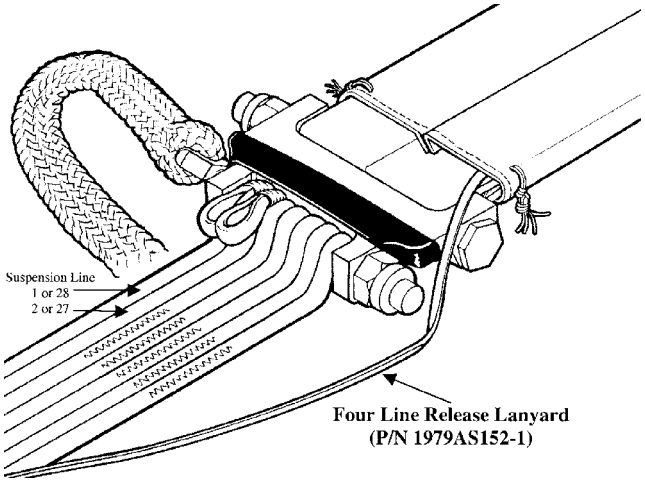

Figure 22. Route Suspension Line 1 and 2 or 27 and 28

k. Make loops in suspension lines 1/28 and 2/27. Pass loops made in suspension lines through telescoped loop at end of suspension lines (Figure 23).

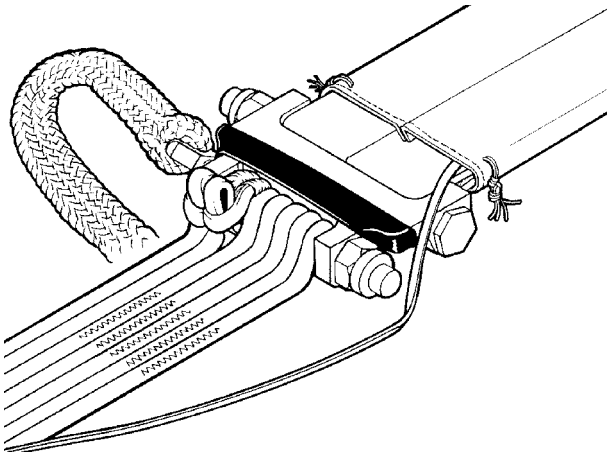

Figure 23. Construct Loop in Suspension Line 1 and 2 or 27 and 28

l. Hold loops and tighten suspension lines 1/28 and 2/27 against eyebolts.

m. Align the 35-in. mark and the 9-in. mark on the Four-Line Release Lanyard to make a 4 1/2-in. loop.

NOTE

Ensure loops are tight around the eyebolt.

n. Pass the 4 1/2-in. loop in the Four-Line Release Lanyard loop through the loops made in suspension lines 1/28 and 2/27. The release lanyard loop will enter through suspension line number 2/27 and exit through suspension line number 1/28. The 35-in. mark and the 9-in. mark should be aligned at the point where the release lanyard enters suspension line 2/27 (Figure 24).

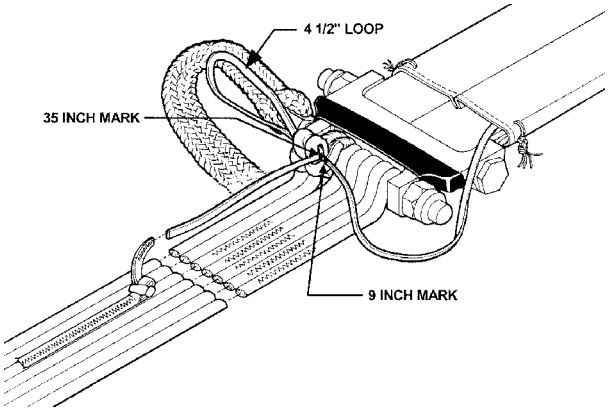

Figure 24. Route Four-Line Release Lanyard

o. Pull the portion of the Four-Line Release Lanyard with the 9-in. mark (lower portion of the lanyard) back from its position a couple inches from the eyebolt where the two marks are aligned so that a 1/2-in. loop extends outward from suspension line 1/28 (Figure 25).

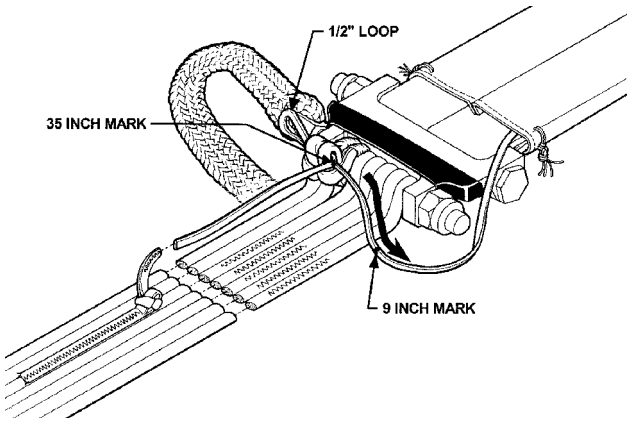

Figure 25. Form 1/2-inch Loop in Four-Line Release Lanyard

p. Make a loop in the lower section of the Four-Line Release Lanyard as it extends from suspension line 2/27 and pass this loop through the 1/2-in. loop made in step o.

NOTE

While tightening the loop in place, ensure that the 35-in. mark on the Four-Line Release Lanyard is aligned between suspension line 2/27 and 3/26.

q. Tighten both loops together.

r. Construct four more loops to form a daisy chain coupling within the 9-in. reference mark (five total). The 9-in. mark should be at the top of the final daisy chain loop (Figure 26). (QA)

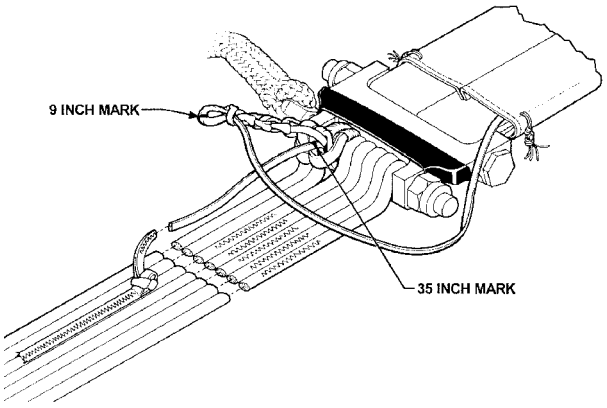

Figure 26. Construct Daisy Chain With Five Loops

s. Mark 1 1/2-in. up from the end of the suspension line on line 3/26 and mark this measurement with an indelible pen. Lay daisy chain coupling completed in step n next to suspension line 3/26 and align the 9-in. mark on Four-Line Release Lanyard with the 1 1/2-in. mark on suspension line 3/26 (Figure 27).

NOTE

Ensure upper portion of four-line release lanyard is routed outboard of suspension line 3/26.

t. With a needle and a piece of waxed Size F-F thread (single, one turn), route needle through suspension line 3/26 at the 1 1/2-in. mark and then through the Four-Line Release Lanyard (not around) at the 9-in. mark, and then return the needle back through suspension line 3/26 at the 1 1/2-in. mark. Tie off with a surgeon's knot followed by a square knot (Figure 27).

u. Apply tension to the suspension lines and conduct a line continuity check ensuring that the lines are not crossed beneath the Daisy Chain Protection Cover. (QA)

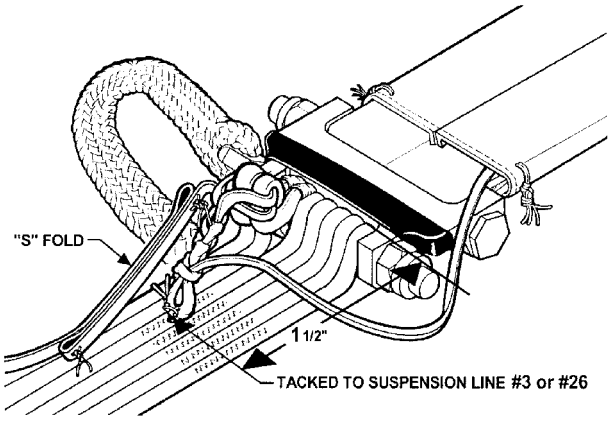

Figure 27. Tack Daisy Chain and "S" Fold Slack in Upper Portion of Lanyard

v. With tension on the risers and suspension lines, pull the Four-Line Release Handle with a pull gage and ensure the lines are released with less than 50 lbs of tension.

w. Inspect the released suspension lines and ensure proper release from the eyebolt.

x. Re-rig the daisy chain formation in accordance with steps b through t.

y. In order to reduce the slack in the Four-Line Release Lanyard between the 35-in. mark and the anchor loop, construct one S-fold approximately two inches long and tack to the release lanyard (itself), under the daisy chain coupling, at each end with A-thread (single, one turn) using a surgeon's knot followed by a square knot. Tie each thread end off with a binder knot (Figure 27). (QA)

NOTE

Ensure excess slack in the four-line release lanyard is tucked within the channel and not between the channel and cover.

z. After forming the daisy chain, there will be excess slack in the Four-Line Release Lanyard between the daisy chain and handle assembly. Pull excess slack out hole in cover where seat-man separation lanyard attachment point protrudes. Using a bodkin, insert it into the opening on each riser where the seat/man separation lanyard is attached and carefully push the excess lanyard down in the channels toward the Four-Line Release Handle in small bites (approximately 2-3 in.) until all slack is taken up. (QA)

aa. Repeat steps a through v for the opposite riser.

37. REPLACEMENT OF FOUR-LINE RELEASE COVER ASSEMBLY, UPPER AND LOWER SLEEVE ASSEMBLIES.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Bodkin
5CN DFBL SLS EP	Slide Fastener

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
Spectra, braided cord, 600-lb. minimum tensile strength, 66-in. length, natural color	Routing Cord

a. With parachute canopy and riser stretched out on packing table, activate Four-Line Release System by pulling downward on Four-Line Release Handle.

b. Carefully remove Four-Line Release Handle Assembly, P/N 1979AS154-1, from lower end of Four-Line Release Lanyard.

c. Take one end of the Spectra routing cord and insert it through the loop on the lower end of the Four-Line Release Lanyard. Using a bodkin, finger trap approximately two inches of the Spectra routing cord into itself to attach the Spectra routing cord to the Four-Line Release Lanyard.

d. Grasp the opposite end of the Four-Line Release Lanyard near the connector links and gently pull up so that the Four-Line Release Lanyard and attached Spectra routing cord is pulled through the riser webbing and the entire length of the Four-Line Release Cover Assembly (P/N 1979AS157-1) and the ballistic cloth channel under the cover.

e. After the Spectra routing lanyard is pulled past the end of the Four-Line Release Cover Assembly, undo the finger trap securing the Spectra routing cord to the Four-Line Release Lanyard, but ensure the routing lanyard is kept in place.

f. Carefully cut four F-F tackings securing Upper Stowage Sleeve, P/N 1979AS158-1, to riser webbing near parachute canopy connector links.

g. Carefully cut two 6-cord tackings securing Lower Stowage Sleeve, P/N 1979AS155-1, to riser webbing near parachute canopy release assembly.

h. Carefully cut six 6-cord tackings securing the Four-Line Release Cover Assembly to the riser webbing.

i. Remove connector link nuts securing aft riser leg to connector link.

j. Slide aft riser loop off connector link bar.

k. Remove Upper Stowage Sleeve from riser assembly.

l. Move Lower Stowage Sleeve downward so that it does not cover the Four-Line Release Cover Assembly.

m. Undo slide fastener on Four-Line Release Cover Assembly, and remove cover from risers.

NOTE

Ensure seam of upper flute on the cover assembly is in the center of the riser. Do not remove routing lanyard from the risers.

n. Install upper flute of replacement Four-Line Release Cover Assembly onto short/aft leg of riser assembly.

o. Undo slide fastener on cover (if applicable) and wrap lower portion of cover around riser. Ensure seatman separation lanyard attachment point protrudes through hole in cover and is centered within hole.

p. Use slide fastener (P/N 5CN DFBL SLS EP) to close slide fastener on cover.

q. After closing cover, remove slide fastener.

r. Slide Upper Stowage Sleeve over short/aft leg of riser and cover combination.

s. Attach short/aft leg of riser to aft connector link (suspension lines 1 through 7 or 22 through 28).

t. Install nuts (P/N F42NKE-054) on short/aft leg of riser connector link bolts and finger tighten.

u. Slide Lower Sleeve Assembly, P/N 1979AS155-1, over lower end of riser and cover combination with the flap towards end of riser (Figure 28).

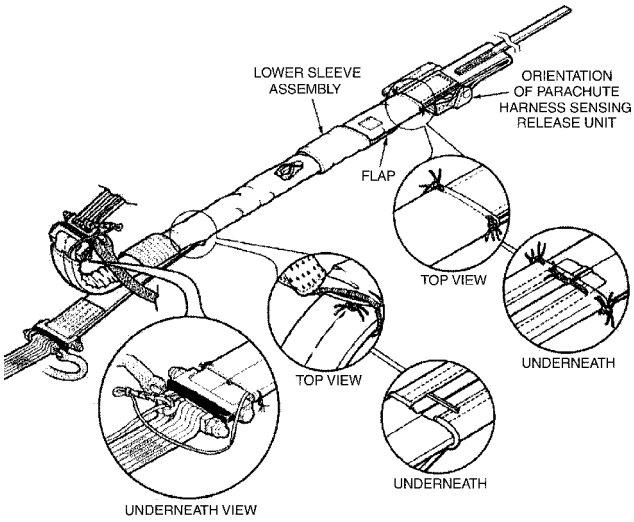

Figure 28. Attachment of Riser Cover

v. Perform the following tackings to secure the Four-Line Release Cover Assembly. All tackings use waxed 6-cord thread (doubled, one turn) tied with a surgeon's knot followed by a square knot and then tie-off each end with an overhand knot. (QA)

NOTE

Ensure Spectra routing cord traveling within riser is not tacked to the riser while tacking the cover to the riser.

(1) Near the parachute connector links, approximately 1/4-in. from the end of the cover, tack each end of the cover, tack each end of the cover to the riser.

NOTE

Ensure tackings passing around the slide fastener are through the Cover material and not only the slide fastener material.

(2) On the middle portion of the riser assembly where the two webbings converge to a single riser, secure the slide fastener together by passing the needle from a point beneath the unprotected riser (front riser webbing) up through the riser (approximately 1/4-in. from the edge of the cover) and through the protection cover on one side of the slide fastener. Bring the needle over the slide fastener and then down through the cover and riser to the middle of the two riser webbings (Figure 28).

(3) At the bottom end of the protection cover, approximately 1/4-in. from the end of the cover, secure the ends of the slide fastener together by passing a needle and through the cover on one side of the fastener. Bring needle under cover to opposite side of slide fastener making sure not to penetrate the riser webbing. Finally, bring needle up through cover (Figure 28).

(4) Near the bottom of the risers where the protection covers end, approximately 1/4-in. from the end of cover, secure each end of the covers to the risers (Figure 22).

w. Take end of Spectra routing cord near connector link and insert it through the loop on the end of the Four-Line Release Lanyard that extends down from the Four-Line Release Anchor Loop. Using a bodkin, finger trap approximately two inches of the Spectra routing cord into itself to attach the Spectra routing cord to the Four-Line Release Lanyard.

x. Grasp opposite end of Spectra routing cord near bottom of riser and gently pull down so that the Four-Line Release Lanyard is pulled through the riser webbing and the entire length of the Four-Line Release Cover Assembly and the ballistic cloth channel under the cover.

y. After the Four-Line Release Lanyard is pulled past the end of the Four-Line Release Cover Assembly, undo the finger trap securing the Spectra routing cord to the Four-Line Release Lanyard.

NOTE

Ensure Four-Line Release Lanyard is not wrapped around Suspension lines.

z. Take the Four-Line Release Handle and insert the loop on the end of the Four-Line Release Lanyard through the small looped end on the end of the handle.

aa. Next, insert end of yellow tab through loop on the end of the Four-Line Release Lanyard and pull it completely down so that a lark's head knot is formed to attach the handle to the Four-Line Release Lanyard.

NOTE

Plastic square portion on handle assembly will bottom out on stitching when fully pulled within the riser.

ab. With pile fastener on Four-Line Release Handle facing down, pull Four-Line Release Handle into sleeve by pulling four-line release lanyard from the top of the riser (at the connector link). Bottom edge of yellow tab on handle should be approximately one inch from the bottom end of the pile fastener when the handle is fully stowed within the riser assembly.

38. FABRICATION OF DAISY CHAIN COVER.

Materials Required

Specification or Part Number	Nomenclature
MIL-W-5625	Webbing, Nylon, Tubular, 1-in. wide, Natural Color
—	Sergene

a. Using scissors, cut a piece of nylon webbing 3 1/2-in. long.

b. To prevent the ends from unraveling, apply sergene to 1/8-in. of each end.

c. With a black indelible marking pen, write the part number of the cover (1979AS151-1) on one side of the cover in 1/4-in. high letters.

39. ATTACHMENT OF BRACKET SUPPORT AND DOUBLER. Attach the Support Assembly Bracket, P/N 14125-1, and Doubler Support, P/N 14126-11, to the headrest assembly as follows:

Support Equipment Required

Part Number	Nomenclature
T14137-1	Template, Drill Bit, Number 11 (.191 in.)

Materials Required

Specification or Part Number	Nomenclature
14125-1	Bracket Support
14126-11	Doubler Support
MIL-A-46146	Adhesive/Sealant, Non-corrosive, Silicone RTV, Group I/II/II, Type I or Group I, Type II
NAS 603-9P	Screw
AN960KD10LL	Washer
22NKTM-02	Nut
22NKTM-82	Nut

a. Remove riser stowage pouch assembly, P/N (14689-1). Open headreast container and remove contents in accordance with WP 022 01.

b. Remove two screws (MS27039-0807), washers (AN960KD8L) and nuts (22NKTM-82) holding the upper section of liner and connector link attachment loops, and pull back the edges of the liner assembly, on the side of the headrest nearest the top, to expose the fiberglass shell. Retain the screws and washers. Dispose of nuts in accordance with locally established procedures.

NOTE

End of template with drill holes should face top of headrest.

c. Align template, P/N T14137-1, on one side of headrest using the existing holes on headrest for seat attachment (Figure 29).

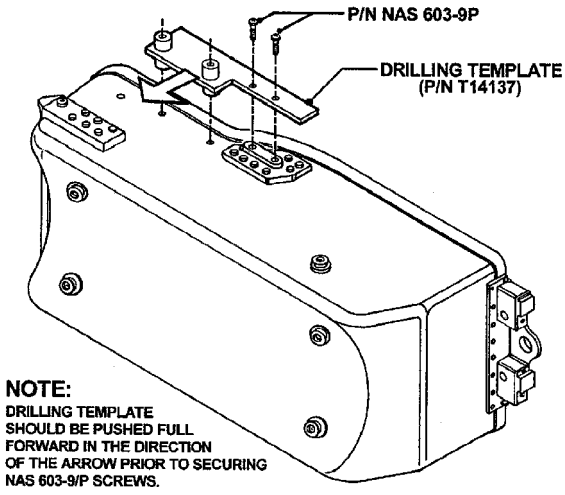

Figure 29. Drilling Headrest Assembly

d. With template in full forward position towards face of headrest, secure template to headrest with two 10-32 screws (NAS 603-9P) in accordance with Figure 29. (QA)

e. Fold a piece of ordnance tape similar at a ninety-degree angle and place on the inner sides of the headrest under the location of the holes to be drilled such that the adhesive portion of the tape will catch the fiberglass shavings.

CAUTION

Ensure headrest liner will not be damaged during drilling and drilling debris will not impact other maintenance operations in the shop.

f. Using a number 11 (.191-in.) drill bit and the guide holes, drill two holes completely through the fiberglass shell of the headrest.

g. Remove template and repeat steps c thru f on the opposite side of the headrest.

h. Clean the area around the holes and remove fiberglass shavings and ordnance tape from the headrest container.

Adhesive/Sealant, MIL-A-46146 **12**

CAUTION

Ensure MIL-A-46146 Adhesive/Sealant is not inserted into middle two holes of P/N 14125-1.

i. Seal all headrest contacting surfaces of the Support Assembly Bracket, P/N 14125-1, and Doubler Support, P/N 14126-11, with MIL-A-46146, Adhesive/Sealant.

j. Position the Doubler Support, P/N 14126-11, on the inside of the headrest and the Support Assembly Bracket, P/N14125-1, on the outside of the headrest.

k. Attach Doubler Support and Support Assembly Bracket to headrest using two pan head screws, P/N NAS603-9P, with the screw heads on the inside of the headrest. Install fasteners wet in accordance with MIL-STD-403, utilizing MIL-A-46146 vice TT-P-1757 (Figure 30).

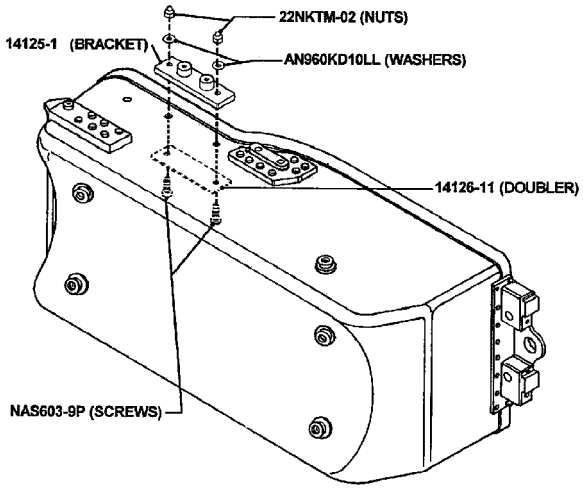

Figure 30. Installation of Bracket Assembly (P/N 14125-1)

l. Place one washer each, P/N AN960KD10LL, over the threaded portions of the screws on the outside of the headrest.

m. Secure the Doubler Support and Support Bracket Assembly in place with two self-locking nuts, P/N 22NKTM-02 and tighten.

n. Repeat steps i thru m for the opposite side of the headrest.

o. Clean excess sealant from interior and exterior of headrest.

p. Fold back edges of liner over installed Doubler Support and install fasteners and washers removed in step b with a new locking nut, P/N 22NKTM-82.

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ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

A/P28S-28, -30, and -31 HEADREST ASSEMBLY

PART NO. 14090-21, 14090-19, 14690-17, and 14090-3

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

Organizational, Intermediate and Depot Maintenance, Illustrated Parts Breakdown,
A/P28S-28, -30 and -31 Headrest Assembly . . . . . WP 022 01

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Service/Total Life	1
Usable on Codes	1

List of Figures

Title	Page
A/P28S-28, -30, -31 Headrest Assembly	2

Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 667, Part 2	11 Mar 02	A/P28S-28, A/P28S-30, A/P28S-31 Headrest Assemblies in TAV-8B AV-8B Aircraft, Installation of Four-Line Release System and Over-Inflation Control Line. (WUC1774O, WUC174AO, WUC1749O). ECP-16416.	1 Jun 02	31 Dec 2004

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the A/P28S-28, -30, -31 Headrest Assembly (Figure 1).

2. USABLE ON CODES.

a. The usable on codes in this WP refer to the aircraft applications for the A/P28S-28, -30, -31 Headrest Assembly.

b. The following usable on codes apply this WP:

A - AV-8B

B - TAV-8B Forward Seat

C - TAV-8B Rear Seat

3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in WP 022 01.

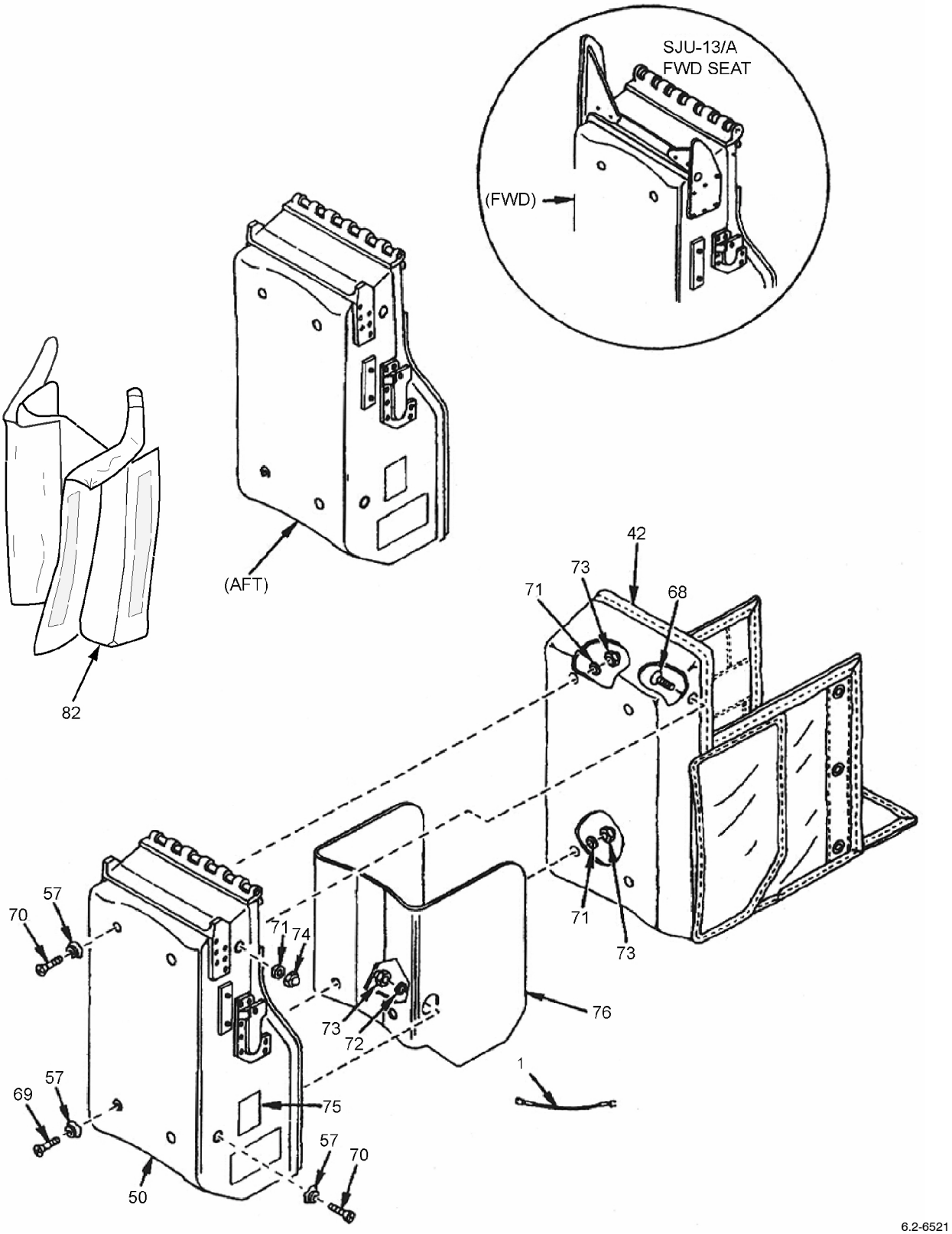

Figure 1. A/P28S-28, -30, -31 Headrest Assembly (Sheet 1 of 9)

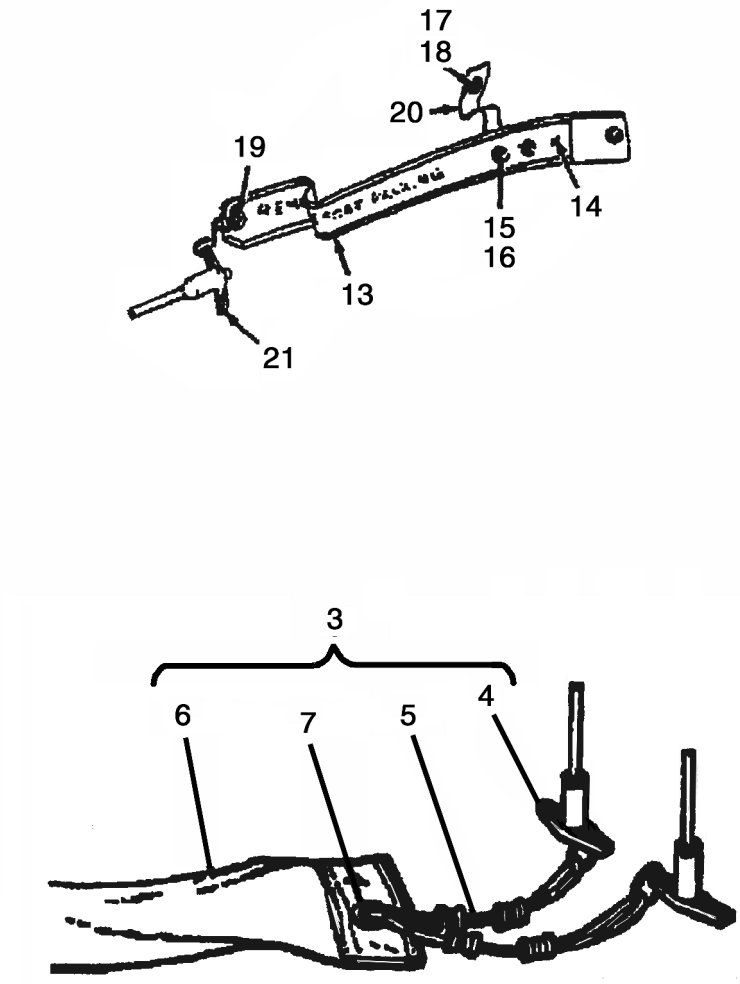

Figure 1. A/P28S-28, -30, -31 Headrest Assembly (Sheet 2 of 9)

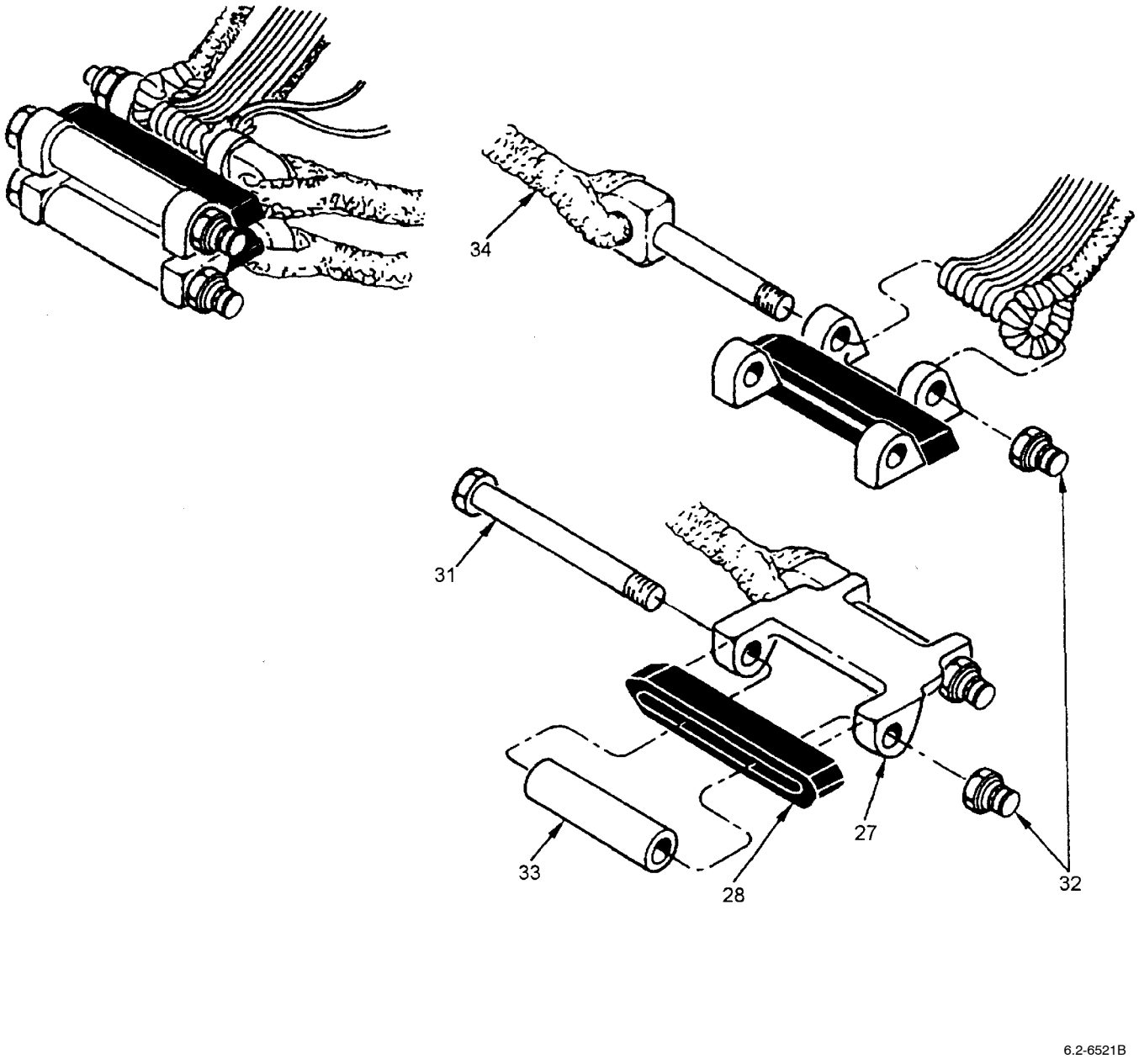

Figure 1. A/P28S-28, -30, -31 Headrest Assembly (Sheet 3 of 9)

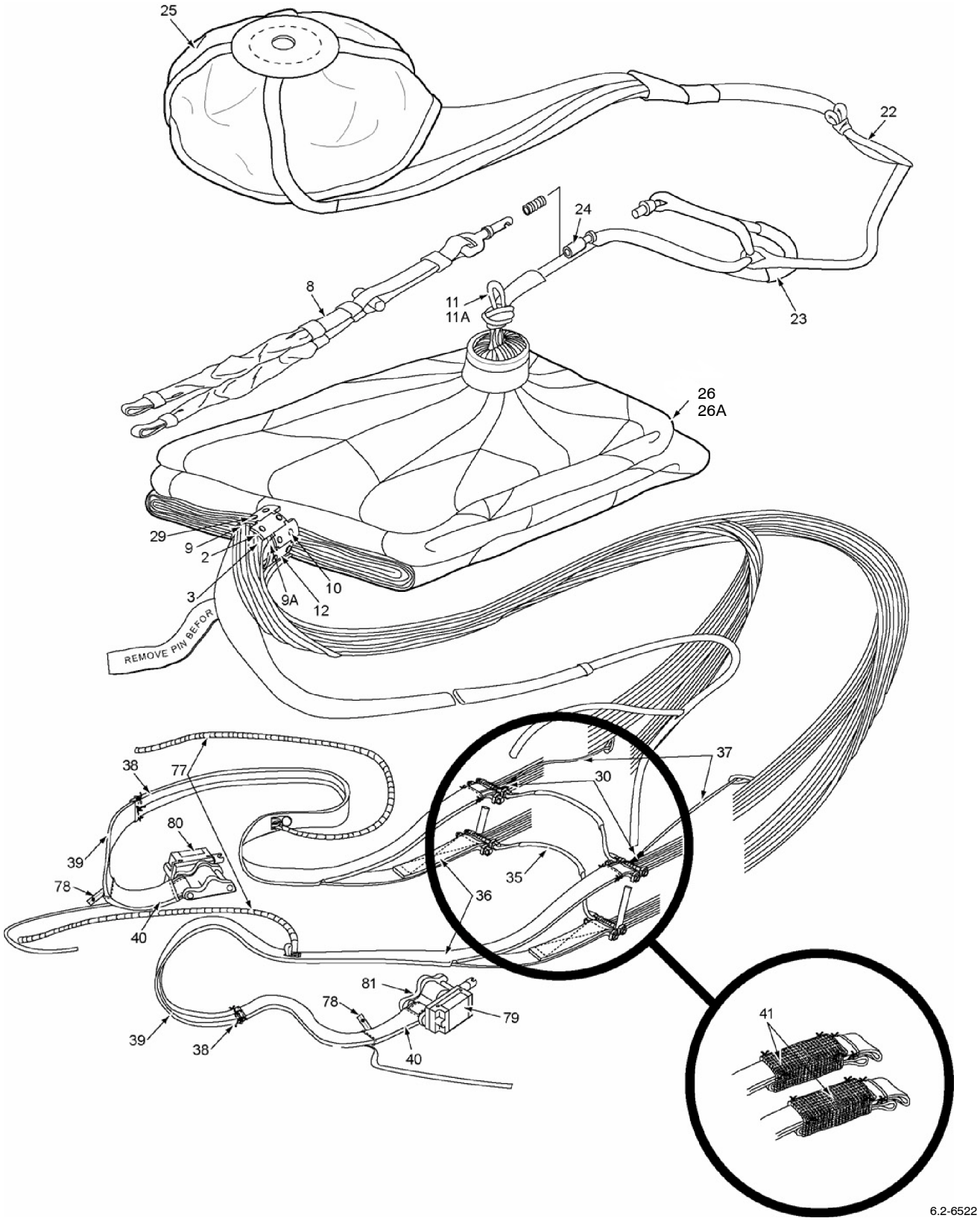

Figure 1. A/P28, -30, -31 Headrest Assembly (Sheet 4 of 9)

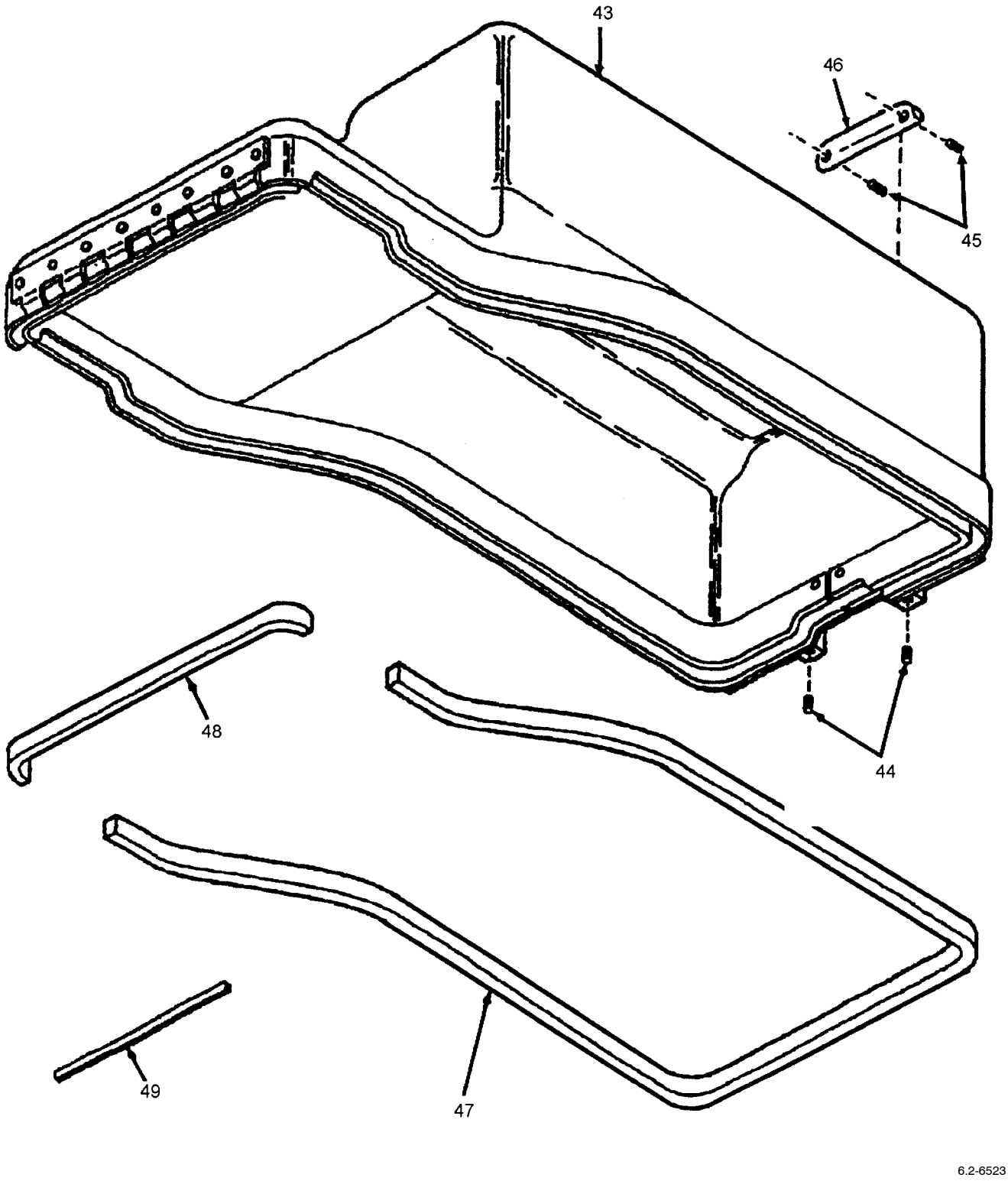

Figure 1. A/P28S-28, -30, -31 Headrest Assembly (Sheet 5 of 9)

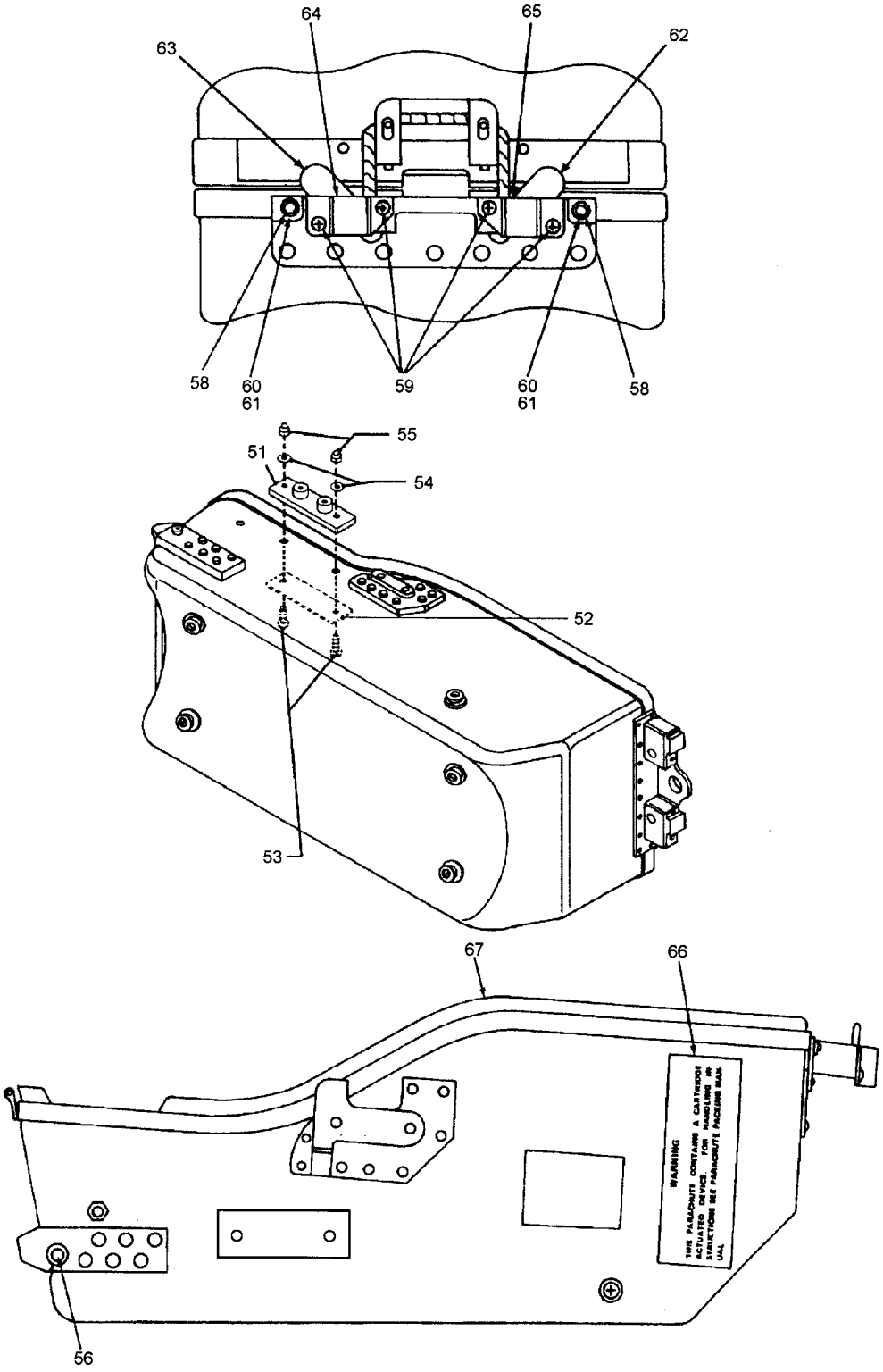

Figure 1. A/P28S-28, -30, -31 Headrest Assembly (Sheet 6 of 9)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	14090-21	HEADREST ASSEMBLY (A/P28S-28A)	REF	A	AGOGD
	14090-19	HEADREST ASSEMBLY (A/P28S-28A) (USE UNTIL EXHAUSTED)	1	A	AGOGD
	14090-17	HEADREST ASSEMBLY (A/P28S-30A)	1	C	AGOGD
	14690-3	HEADREST ASSEMBLY (A/P28S-31A)	1	B	AGOGD
1	472P201C001-1	. CABLE ASSEMBLY	1		PAGZZ
2	825AS100	. CARTRIDGE IMPULSE, CCU33/A	1		PAGZA
3	472P950D053-1	. PIN ASSEMBLY, SAFETY	1		PAOZZ
4	BL53TA155C03	. . PIN, BALL LOCK			PAGZZ
5	472P950D053-7	. . CORD	2		MGGZZ
6	779P521E024-11	. . STREAMER	1		MGGGG
7	MS20230B10	. . . GROMMET ASSEMBLY	2		PAGZZ
8	12220-1	. WORD BRIDLE	1		PAGZZ
9	SK86-0051-9	. SPREADING GUN ASSEMBLY	1		PAGGD
9A	MS16555-630	. . PIN, STRAIGHT HEAD	1		PAGZZ
10	LKD7F52Z5	. . SCREW /26304/	28		PAGZZ
11	472P210D027-1	. . RETAINER LINE	1		MGGZZ
11A	702AS100-1	. . . SLEEVE, TEFLON /MAKE FROM MIL-I-22129/	1		MGGZZ
12	472P215D017-7	. . CANOPY MOUNT	14		PAGZZ
13	SK86-0089-1	. . SAFETY PIN ASSEMBLY	1		PAGGG
14	39768	. . . FLAG ASSEMBLY	1		MGGGG
15	MS27983-4	. . . . EYELET	2		PAGZZ
16	MS27983-3	. . . . STUD	2		PAGZZ
17	MS27983-2N	. . . . SOCKET	2		PAGZZ
18	MS27983-1	. . . . BUTTON	2		PAGZZ
19	MS20230B10	. . . . GROMMET ASSEMBLY	1		PAGZZ
20	39768-2	. . . . STRAP	1		MGGZZ
21	MS17985C310	. . . PIN, QUICK RELEASE	1		PAOZZ
22	472P224E001-1	. BRIDLE ASSEMBLY, PILOT PARACHUTE	1		PAGGG
23	676AS100-2	. . LABEL/NOTE 3/	1		XBGZZ
24	472P224D002-7	. . HOUSING	1		XBGZZ
25	472P223E001-1	. PARACHUTE ASSEMBLY, PILOT	1		PAGGG
26	472P211E001-51	. CANOPY ASSEMBLY/NOTE 4/	1		PAGGG
26A	472P211E001-7	. . CANOPY	1		XAGGG
27	472P214D002-3	. . LINK ASSEMBLY, CONNECTOR	4		PAGZZ
28	12059-11	. . . SEAL	4		PAGZZ
29	1979AS150-1	. . OVER-INFLATION CONTROL LINE	1		MGGZZ
30	1979AS151-1	. . DAISY CHAIN COVER SLEEVE	2		MGGZZ
31	NAS6205-38	. . BOLT	4	*	PAGZZ
	NAS1105-38	. . BOLT	4		PAGZZ
32	F42NKE-054	. . NUT	4	*	PAGZZ
	42NKE-054	. . NUT	4		PAGZZ
33	12258-11	. . SLEEVE	4		PAGZZ
34	472P211E001-3	. . STRAP ASSEMBLY, CROSS CONNECTOR	2		PAGGG

Figure 1. A/P28S-28, -30, -31 Headrest Assembly (Sheet 7 of 9)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
35	676AS100-2	. . . LABEL/NOTE 3/	2		XBGZZ
36	14650-5	. RISER ASSEMBLY	2		PCGGZ
37	1979AS152-1	. FOUR-LINE RELEASE LANYARD	2		PAGZZ
38	1979AS157-1	. FOUR-LINE RELEASE COVER ASSEMBLY	2		PAGZZ
39	1979AS154-1	. FOUR-LINE RELEASE HANDLE ASSEMBLY	2		PAGZZ
40	1979AS155-1	. LOWER SLEEVE ASSEMBLY	2		PAGZZ
41	1979AS158-1	. UPPER SLEEVE ASSEMBLY	2		PAGZZ
42	14109-1	. LINER ASSEMBLY	1		PAGGG
43	14094-1	. LID ASSEMBLY	1		PAGGD
44	MS5165-10	. . SET SCREW	2		PAGZZ
45	MS18065-36	. . SET SCREW	2		PAGZZ
46	472P230C005-7	. . INSERT	1		PAGZZ
47	25023-13	. . GASKET /SEE NOTE 1/	1		MGGZZ
48	25023-11	. . GASKET /SEE NOTE 2/	1		MGGZZ
49	472P230C017-7	. . SPACER	1		PAGZZ
50	14093-9	. CONTAINER	1	A,C	PAGGD
	14693-7	. CONTAINER	1	A	PAGGD
	14693-5	. CONTAINER	1	B	PAGGD
51	14125-1	. . BRACKET SUPPORT	2		PAGZZ
52	14126-11	. . DOUBLER SUPPORT	2		PAGZZ
53	NAS603-9P	. . SCREW	4		PAGZZ
54	AN960KD10LL	. . WASHER	4		PAGZZ
55	22NKTM-02	. . NUT	4		PAGZZ
56	MS24693-S49	. . SCREW	2	A,C	PAGZZ
	MS24693-S48	. . SCREW	2	B	PAGZZ
57	MS27983-3	. . STUD	10		PAGZZ
58	NAS1202-5	. . SCREW	2		PAGZZ
59	MS21090-620	. . SCREW	4		PAGZZ
60	MS21042-08	. . NUT	2		PAGZZ
61	AN960PD8	. . WASHER	2		PAGZZ
62	472P220C004-8	. . RELEASE	1		PAGZZ
63	472P220C004-7	. . RELEASE	1		PAGZZ
64	472P220C005-7	. . RETAINER, CONTAINER ASSEMBLY, LH	1		PAGZZ
65	472P220C005-8	. . RETAINER, CONTAINER ASSEMBLY, RH	1		PAGZZ
66	472P200C004-7	. . LABEL, WARNING	2		MDGZZ
67	14097-11	. . SEAL	1		PAGZZ
68	MS27039-0807	. SCREW	2		PAGZZ
69	MS24693-S52	. SCREW	2		PAGZZ
70	MS24693-S51	. SCREW	4		PAGZZ
71	AN960KD8L	. WASHER	4		PAGZZ
72	AN960KD8	. WASHER	4		PAGZZ
73	22NKM-82	. NUT	2		PAGZZ
74	22NKTM-82	. NUT	4		PAGZZ
75	12382-11	. PLATE, IDENTIFICATION	1		MDGZZ
76	14088-11	. PLATE ASSEMBLY	1		PAGZZ

Figure 1. A/P28S-28, -30, -31 Headrest Assembly (Sheet 8 of 9)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
77	1615-030	. SEAT RELEASE LANYARD	2		PCOZZ
78	14110-1	. RETAINER STRAP ASSEMBLY- RISER	2		PCOZZ
79	852AS117-3	. SENSING RELEASE UNIT, PARACHUTE . . . . . HARNESS MXU-746/P LEFT SIDE	1		AGGGG
80	852AS117-4	. SENSING RELEASE UNIT, PARACHUTE . . . . HARNESS MXU-747/P RIGHT SIDE	1		AGGGG
81	990055-1	. . RELEASE ASSEMBLY, CANOPY/99449/ . . .	2	*	PAGZZ
	015-10307-5	. . RELEASE ASSEMBLY, CANOPY/99449/ . . .	2	*	PAGZZ
82	14689-1	. RISER POUCH ASSEMBLY	1		PAOOO

NOTES:
1. Make from vinyl 0.25 x 0.25 x 38.0.
2. Make from vinyl 0.12 x 0.25 x 8.0.
3. Available from the In-Service Support Team (ISST).
4. New canopies received from supply may be marked as a -5 part number. This part number is comprised of a -7 parachute canopy and attached connector link assemblies. Upon incorporation of the Four-Line Release Modification, the Parachute Canopy Assembly is redesignated as a -51.

Figure 1. A/P28S-28, -30, -31 Headrest Assembly (Sheet 9 of 9)

ORGANIZATIONAL MAINTENANCE

REPAIR PROCEDURES

A/P28S-28 -30, and -31 HEADREST ASSEMBLY

PART NO. 14090-19, 14690-3, and 14090-17

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

None

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Title	Page
Introduction	2
Parachute Harness Sensing Release Unit (PHSRU)	2
PHSRU Batttery and Sensor Plug Replacement	2
PHSRU Torque Seal Replacement	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

2. This work package (WP) contains instructions for organizational level repair to ensure that the parachute assembly remains in ready-for-issue (RFI) status.

3. When performing repairs detailed in this WP, follow these guidelines:

a. Review all applicable instructions prior to starting repair.

b. Ensure that all necessary support equipment and materials required are available prior to starting repair.

c. When required, remove enough material from its source for immediate use only. Ensure that the material identification ticket remains with the source material at all times. Material that cannot be identified will not be used.

d. To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

e. A quality assurance (QA) inspector shall examine the finished work.

4. PARACHUTE HARNESS SENSING RELEASE UNIT (PHSRU).

5. PHSRU TORQUE SEAL REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Torque loose screws to a value of 11 to 13 in-lbs.

b. Apply torque seal to the plug assembly, sensor plug and electronics package assembly attaching screws (Figure 1).

6. PHSRU BATTERY AND SENSOR PLUG REPLACEMENT.

Support Equipment Required

Specification or Part Number	Nomenclature
FLUKE-77	Multimeter
SA852AS112	Torque Driver
SA852AS113	Torque Tool, Sensor Plug
GGG-W-641	Socket Handle, 1/4-in. Drive
3405AS101-2	Socket, Special 7/16 x 1/4-in. Drive

a. Perform PHSRU Organizational Level Maintenance in accordance with WP 024 02 for the following tasks:

(1) Removal of battery.

(2) Installation of battery.

(a) Conduct the following:

1) Battery voltage check.

2) Battery polarity check.

3) Battery installation.

4) Final check.

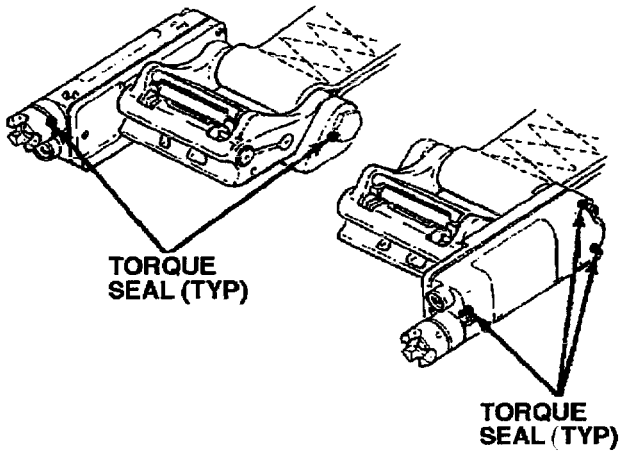
(3) Removal of sensor plug.

(4) Installation of sensor plug.

(a) Conduct the following:

1) Sensor plug resistance check.

2) Final check.



6.2-6716

Figure 1. Replacement of Torque Seal on PHSRU

INTERMEDIATE AND DEPOT MAINTENANCE

PACKING PROCEDURES

PCU-29/A DROGUE/CONTAINER ASSEMBLY

PART NO. 14210-9

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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2	9	4 thru 5	9				

Reference Material

Organizational, Intermediate, and Depot Maintenance, Parachute Loft Requirements/Administration ..... WP 003 00

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Drogue Assembly	3
Service Life Check and Configuration Updating	2
Layout of Drogue Parachute Assembly	2
Packing	3
Folding of Canopy	4
Installation of Drogue Container Into Packing Fixture	3
Stowing of Drogue Canopy and Risers Into Container	5
Preliminary Procedures	2

Record of Applicable Technical Directives

None

1. GENERAL.

a. Packing instructions are provided with assumption that they will be carried out under ideal conditions in a parachute loft (WP 003 00). When a drogue parachute assembly must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

b. In no case shall packing of a drogue parachute assembly be interrupted after packing operation has been started. If packing operation is interrupted due to unforeseen circumstances, parachute assembly shall be completely repacked per instructions contained in this Work Package (WP).

c. Quality Assurance (QA) points have been included in the procedures. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Witnessing of (QA) steps may be delayed by (QA) if their satisfactory completion is verified in later steps.

d. Packing of the PCU-29/A Drogue/Container Assembly is a one-person operation. During packing procedures, packer and helper sides are used only as reference points.

e. This WP provides packing procedures for both original issue and inservice drogue parachute assemblies. Packing procedures are same for all assemblies.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Fixture, Holding, Drogue Parachute Container
—	C-Clamp
Refer to WP 005 00	Fid
—	Yard Stick
—	Stamp Pad
	-or-
—	Adjustable Metal Stencil
	-or-
—	Rubber Stamp Kit
	-or-
Style No. 8	Printing Set
	-or-
GG-P-655	Printing Set

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type I or IA
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
MIL-I-6903	Ink, Marking, Light Blue
TT-I-1795	Ink, Marking, Black

a. Ensure that all support equipment and materials required are available prior to starting.

b. Inspect packing tools for nicks, burrs, or sharp edges which may cause damage to the parachute assembly.

c. Count and record number of packing tools.

d. Clean packing table.

3. LAYOUT OF DROGUE PARACHUTE ASSEMBLY.

a. Lay out drogue parachute assembly full length on packing table.

4. INSPECTION (SPECIAL).

a. Maximum scheduled repack cycle is 448 days.

5. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Parachute Harness Sensing Release Unit Cartridge) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be re-based if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Components without a service/total life shall be removed from service if the components do not pass inspection, as determined by Quality Assurance Representative (QAR) or Collateral Duty Inspector (CDI).

g. Drogue parachute for date placed in-service and date of manufacture on each parachute part for service/total life as follows:

Nomenclature	Service Life (Yr)	Total Life (Yr)
Drogue Parachute	Deleted	6

NOTE

The inner fabric liner and all metal parts shall remain in-service until they fail to meet the inspection criteria.

(1) Markings for completeness, legibility, and agreement with information on Parachute Record (OPNAV 4790/101).

(2) Compare configuration of parachute assembly to that shown in NAVAIR 13-1-6.2 Record of Applicable Technical Directives, and Illustrated Parts Breakdown.

6. DROGUE ASSEMBLY.

a. Canopy, suspension lines, riser, inner and outer closure flaps for contamination, mildew, cuts, tears, burns, fraying, and loose or missing stitching.

b. Suspension lines for twists and security of attachment at the skirt hem and riser.

c. Riser for twists and proper attachment to suspension lines. (QA)

d. Presence of tacking holding drogue riser retainer clip to riser. (QA)

e. Riser metal keeper sleeve location. Measure from cut end of riser locking tab toward metal keeper sleeve. Measurement should be 20 1/2-in ± 1/4 in. (under hand tension) (Figure 1). (QA)

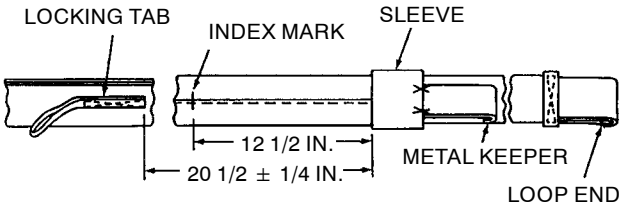


Figure 1. Index Markings

f. Presence of riser index mark and location. Measure from end of metal keeper sleeve toward canopy to index mark. Measurement should be 12 1/2 in. ± 1/4 in. (QA)

g. Inner and outer container closure flaps for security of attachment to container. (QA)

h. Container for cracks, sharp edges, breaks, dents, nicks, burrs, corrosion, and distortion.

7. PACKING.

8. INSTALLATION OF DROGUE CONTAINER INTO PACKING FIXTURE.

NOTE

Drogue parachute container holding fixture may be secured to packing table with bolts or C-clamps with back of container facing packer's side. An additional C-clamp may be snugged up to outside of packing fixture to ensure adequate support.

a. Position drogue container assembly into holding fixture with locking loop side of flaps orientated toward packer's right side (Figure 2).

b. Position and tie back inner and outer closure flaps, using temporary ties (nylon cord) (Figure 2).

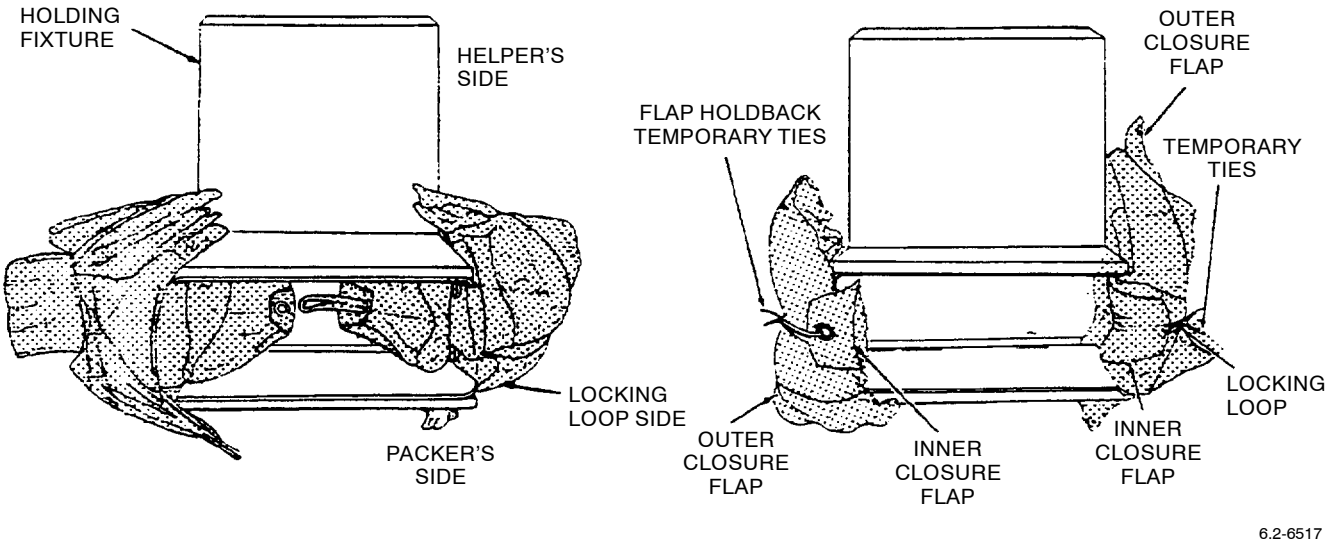


Figure 2. Installation of Drogue Container Into Packing Fixture

9. FOLDING OF CANOPY.

a. Position drogue parachute on packing table full length so that canopy apex is on packer's left-hand side of container and nameplate is facing down (Figure 3).

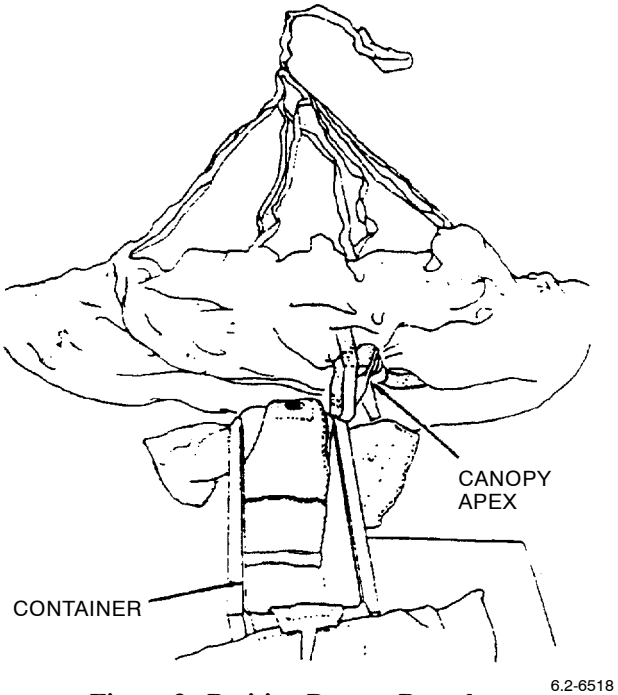


Figure 3. Position Drogue Parachute

NOTE

If the riser index mark is faded or missing, remark with marking ink.

b. Straighten folds on canopy and ensure that there are no dips or twists in suspension lines from skirt to confluence point.

c. Ensure that V-tabs are aligned so that gores 8, 1, 2, and 3 form one group leading to confluence point of one riser with gore 3 on top of 8 and gore 2 on top of 1. With gore 4 on top of 7 and gore 5 on top of 6, form another group leading to the confluence point of other riser. Straighten and smooth skirt and canopy (Figure 4).

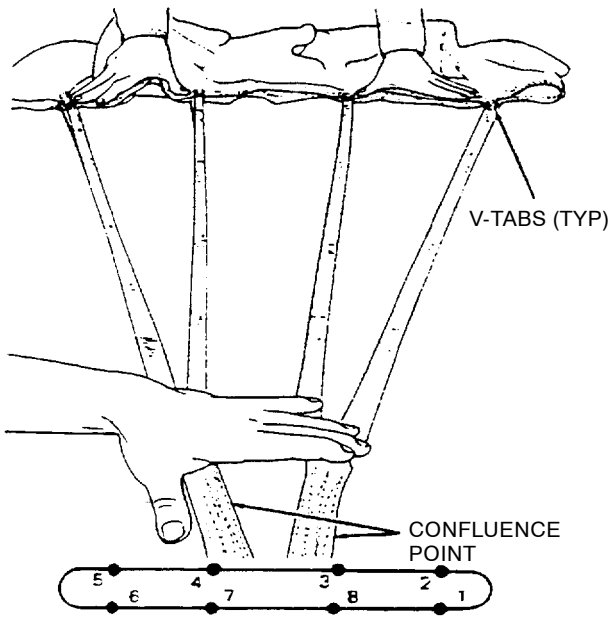


Figure 4. Ensure V-Tabs are Aligned

d. Fold and align gores 1 and 2 over gores 3 and 8; then fold gores 6 and 5 over gores 4 and 7 (Figure 5).

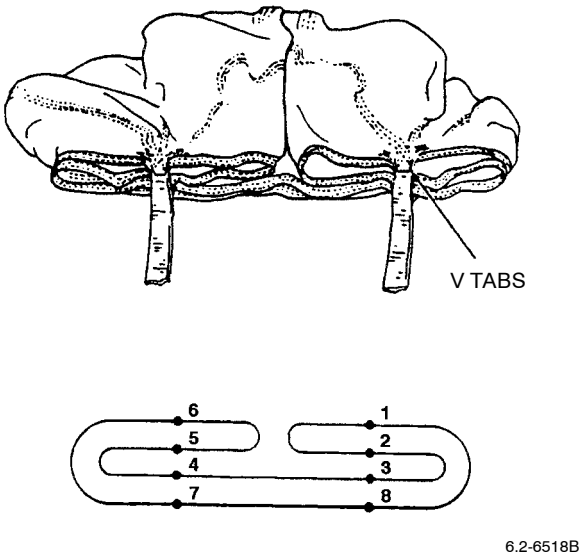


Figure 5. Fold and Align Gores

e. Holding suspension lines at v-tabs, lift canopy and fold gores 6, 5, 4 and 7 under gores 1, 2, 3, and 8. Lay out suspension lines so locking tab is on top (Figure 6).

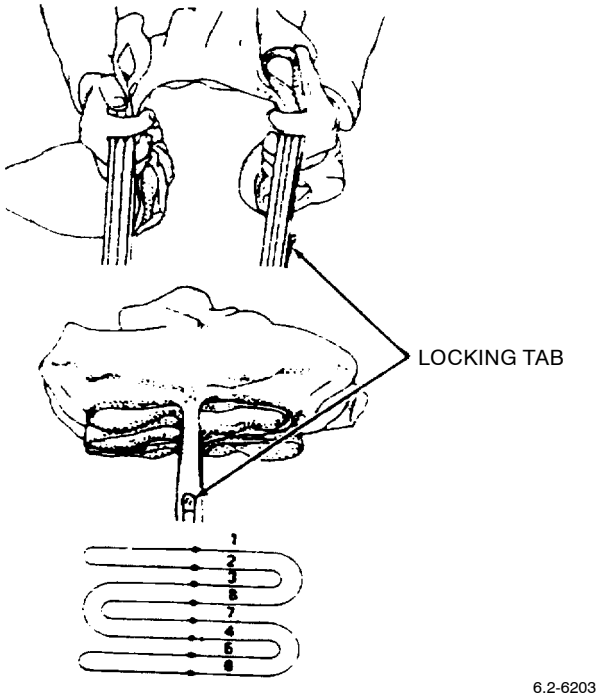


Figure 6. Lift Canopy and Fold Gores

f. Ensure that all gores are folded properly and hem is straight (Figure 7). (QA)

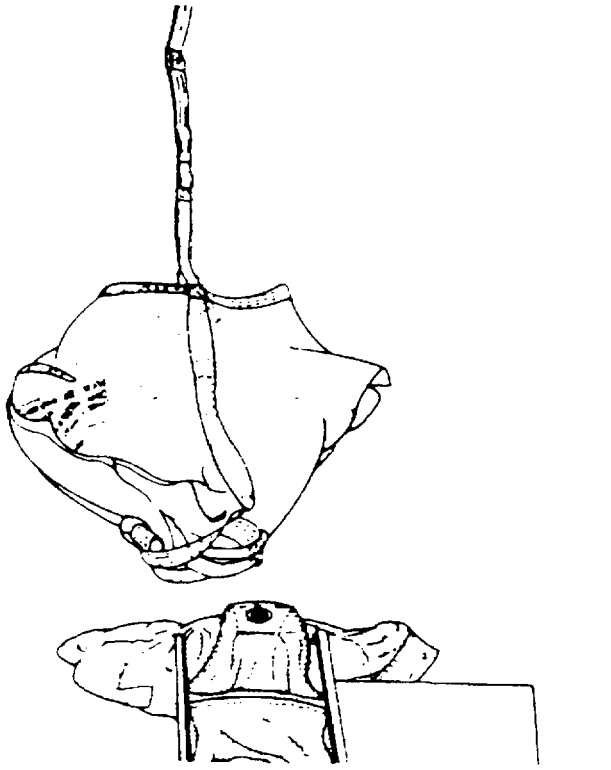


Figure 7. Ensure Gores Folded Properly

10. STOWING OF DROGUE CANOPY AND RISERS INTO CONTAINER.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Insert canopy apex into bottom packer's right-hand side of drogue container. Evenly fold and distribute remaining canopy material into drogue container. (QA)

NOTE

As skirt is inserted into drogue container, fan out V-tabs across width of container.

b. Using packing aid, carefully depress and arrange canopy material deep enough so that inner closure flaps can be closed. Suspension lines must exit on grommet end of container (Figure 8).

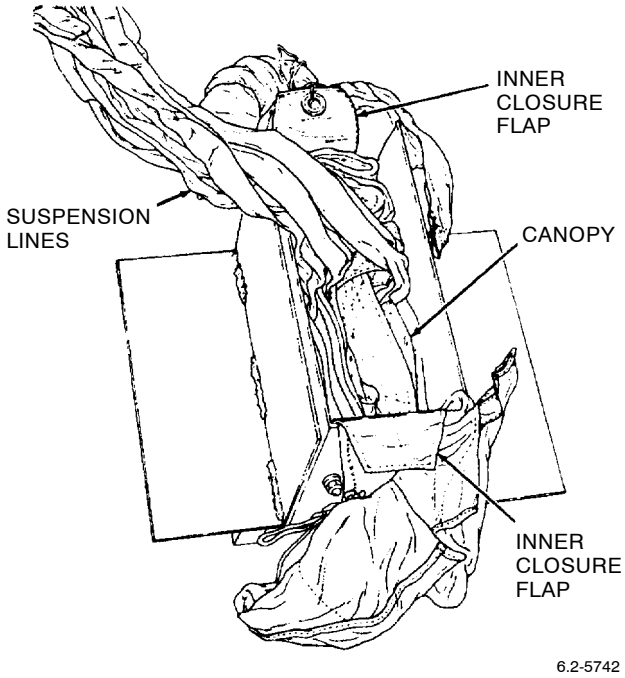


Figure 8. Carefully Depress and Arrange Canopy

c. Remove and discard both temporary tie cords from inner closure flaps. Insert one end of pull-up cord thru locking loop. Thread both ends thru grommet on opposite flap (Figure 9).

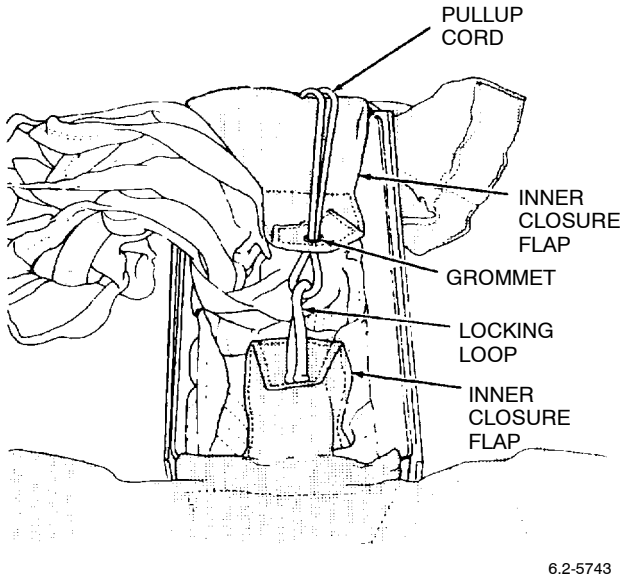


Figure 9. Remove and Discard Temporary Tie Cords

CAUTION

Rapid removal of pull-up cord can cause damage to locking loop.

NOTE

Beeswax may be lightly applied to the pull-up cord as a lubricant.

d. Pull locking loop thru grommet on opposite flap with pull-up cord. Insert locking tab on suspension line 1/2-in. thru locking loop from packer's left to right. Carefully remove pull-up cord (Figure 10). (QA)

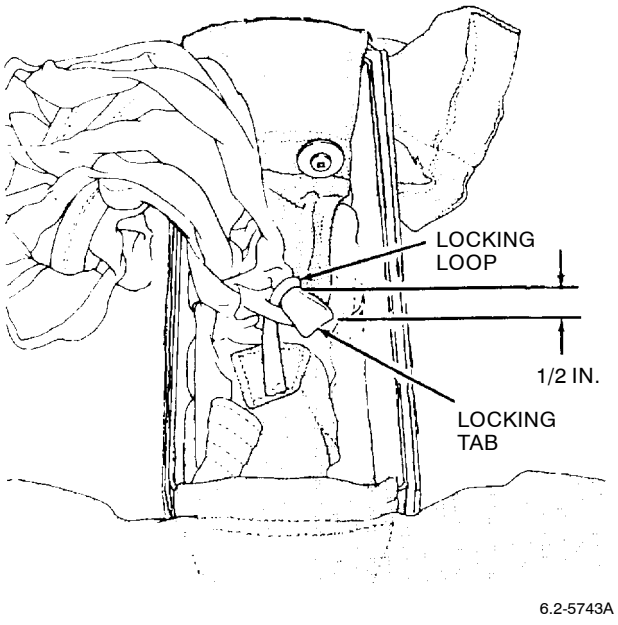
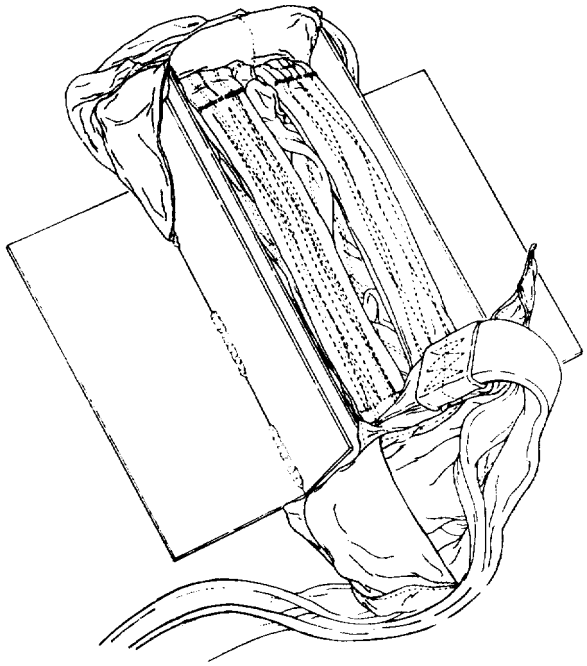


Figure 10. Pull Locking Loop Thru Grommet

e. Evenly stow suspension lines on top of inner flaps beginning with first stow on packer's right-hand side. First stow shall contain slack of suspension line from confluence point.

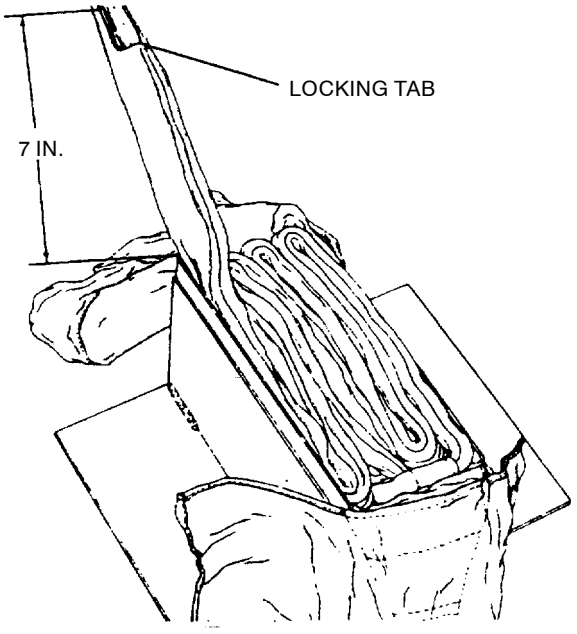
f. Stow confluence point (riser legs) flat across top of suspension line stows and depress into container with packing aid (Figure 11).



6.2-5743B

Figure 11. Stow Confluence Point

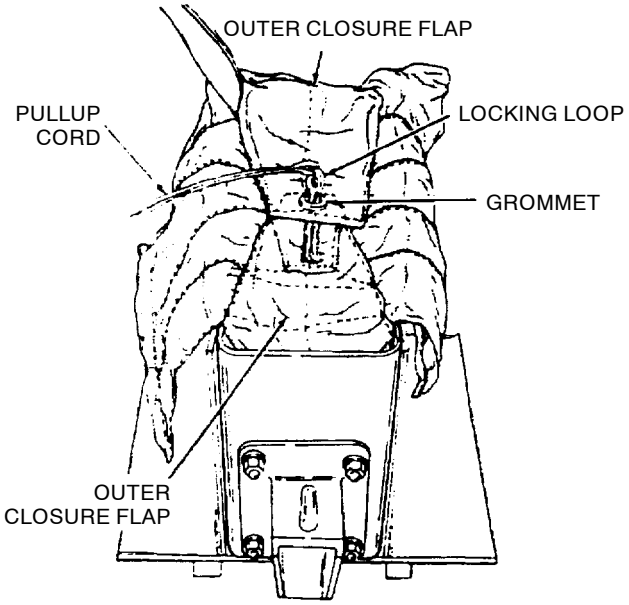
g. Using S-folds stow riser evenly until locking tab is about 7-in. from packer's left-hand side of container edge. The remaining 7-in. of riser material with locking tab shall exit container from packer's left-hand side closest to packer (Figure 12).



6.2-6204

Figure 12. Using S-Folds Stow Riser Evenly

h. Remove and discard temporary outer closure flap tie cords. Insert one end of pull-up cord thru locking loop. Thread both ends thru grommet on opposite flap (Figure 13).



6.2-6204A

Figure 13. Remove and Discard Temporary Outer Closure Flap Tie

CAUTION

Rapid removal of pull-up cord can cause damage to locking loop.

NOTE

Beeswax may be lightly applied to the pull-up cord as a lubricant.

i. With pull-up cord, pull locking loop thru grommet on opposite flap. Insert locking tab on riser 1/2-in. thru locking loop from packer's left to right. (QA)

j. Carefully remove pull-up cord. Riser exits flaps from packer's left-hand corner.

k. Using a packing fid, stow side panels of outer closure flaps (locking loop portion) into sides of container. Ensure riser exits from packer's left-hand side closest to packer (Figure 14).

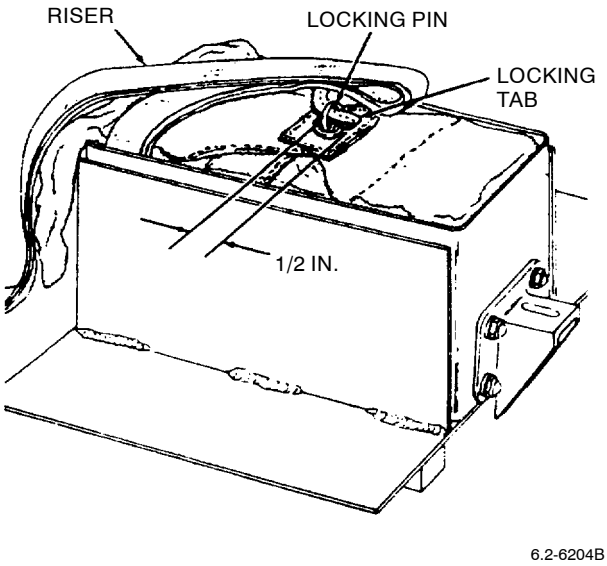


Figure 14. With a Packing Fid Stow Side Panels

l. Stow remaining riser on top of closure flap and route riser so index mark exits container 1 1/4-in. from end of container on packer's right-hand side (long piercer side) away from packer (Figure 15).

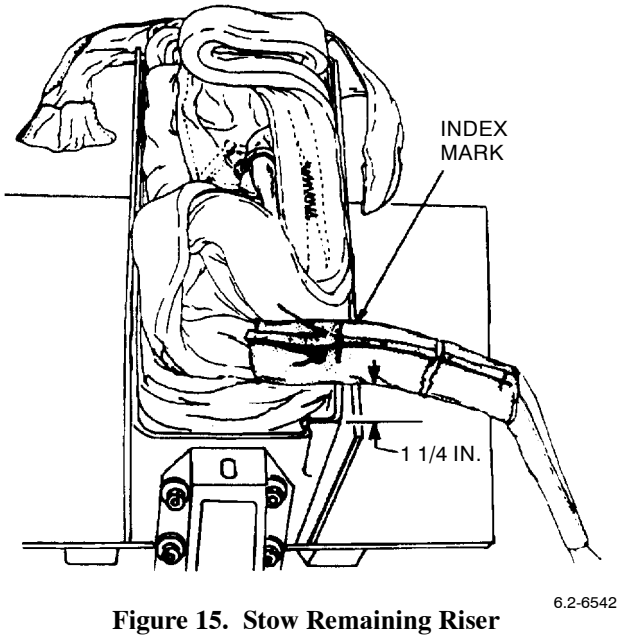


Figure 15. Stow Remaining Riser

m. Tack both sides of riser to outer closure flap on helper's side, using one turn of size FF thread, single and waxed. Tie off and trim off excess. The drogue riser retainer clip shall be on top of riser. If clip is on the wrong side of riser, cut tackings, remove and tack to opposite side. (QA)

n. Position pocketed flap over stowed and tacked riser. Insert flaps with packing fid downward between packed material and container inside surface. Handstitch flap 2 to 4 stitches per inch using size E thread, single (Figure 16).

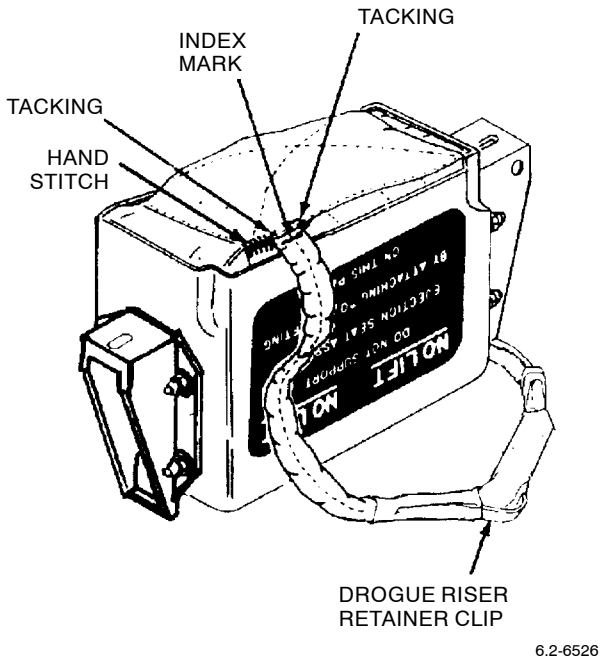


Figure 16. Position Pocketed Flap

o. Remove packed drogue assembly from holding fixture.

p. Using nylon cord, secure packed drogue assembly into container by tying a bowline knot at one end of cord. Wrap tie about center of container, holding bowline knot in desired location on side of container. Pass bitter end thru bowline knot and draw snug. Holding bight snug, form two half-hitches and an overhand knot. Trim off excess cord. Repeat this procedure with two additional tie cords on either side of the center tie (Figure 17).

11. FINAL CHECKOUT.

a. Account for all packing tools.

b. Examine packed drogue parachute for general condition.

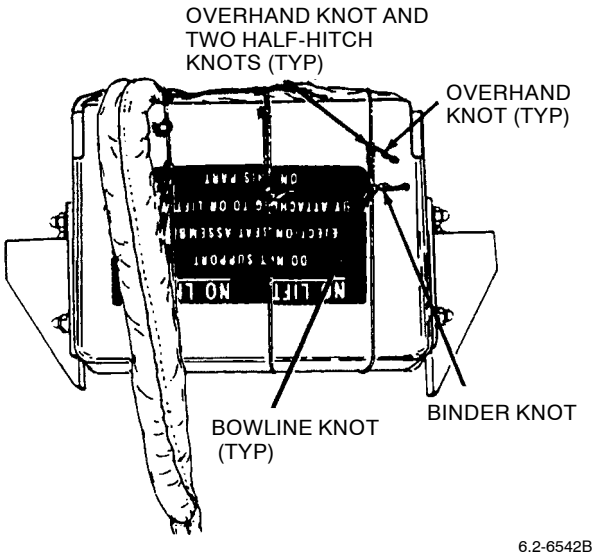


Figure 17. Secure Packed Drogue

c. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA).

d. QA inspector shall examine completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

e. QA inspector shall sign Parachute Record (OPNAV 4790/101).

f. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPN DIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

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INTERMEDIATE AND DEPOT MAINTENANCE

REPAIR PROCEDURES

PCU-29/A DROGUE/CONTAINER ASSEMBLY

PART NO. 14210-9

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

Common Repairs . . . . . WP 004 00

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Fabrication and Installation of Drogue Riser Assembly Spandex Sleeve	3
Replacement of Container Assembly	2
Replacement of Drogue Parachute Riser Keeper	2
Replacement of Index Marking on Riser	2
Introduction	2
Installation of Riser Keeper Shielding	4
Repair of Drogue Riser Assembly	4

Record of Applicable Technical Directives

None

1. **INTRODUCTION.**

a. This Work Package (WP) contains instructions for maintenance, repair, replacement and fabrication of various drogue parachute parts or subassemblies to ensure that proper items of equipment remain in a Ready-For-Issue (RFI) status. Selected repairs shall be documented on Parachute Record (OPNAV 4790/101). For common repairs refer to WP 004 00.

2. DROGUE PARACHUTE/CONTAINER ASSEMBLY REPAIRS.

a. Repair of the drogue parachute is limited to the following:

(1) Replacement of index marking on riser.

(2) Cleaning of contaminated areas.

(3) Replacement of container assembly.

3. REPLACEMENT OF INDEX MARKING ON RISER.

Support Equipment Required

Part Number	Nomenclature
MIL-I-6903	Ink, Marking, Light Blue (Or Any Contrasting Color)

a. With riser under hand tension, measure from end of metal keeper sleeve toward canopy 12 1/2-in. ± 1/4-in. and apply index mark (Figure 1).

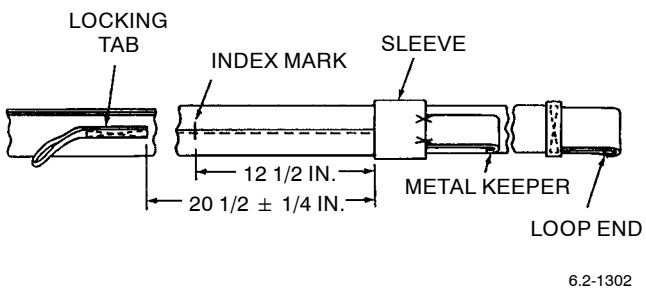

Figure 1. Replacement of Index Marking on Riser

b. Allow marking ink to dry for 20 to 30 min.

c. Verify correctness of marking. (QA)

4. REPLACEMENT OF CONTAINER ASSEMBLY.

a. Inspect replacement container per WP 004 00.

5. REPLACEMENT OF DROGUE PARACHUTE RISER KEEPER.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
MIL-C-81706	Chemical Conversion Coating, Class 1A
M23053/1-104-0	Sleeving
QQ-A-250/11	6061 TG Aluminum Alloy 0.06 x 0.75 x 4.0 in.

a. Remove tacking securing keeper to drogue riser.

b. Remove damaged keeper.

c. Fabricate new keeper using aluminum alloy of 0.06 thickness (Figure 2).

d. Treat aluminum keeper with MIL-C-81706 chemical conversion coating per NAVAIR 01-1A-509.

e. Slide keeper into a 1.50 in. length of sleeving material.

f. Using a heat gun, shrink sleeving material around curved end of keeper.

g. Trim excess sleeving from ends of keeper. Ensure that holes in keeper are accessable.

h. Slide new aluminum keeper under nylon keeper.

i. Hand tack thru nylon keeper and holes in aluminum keeper with size FF thread; tie off (Figure 2).

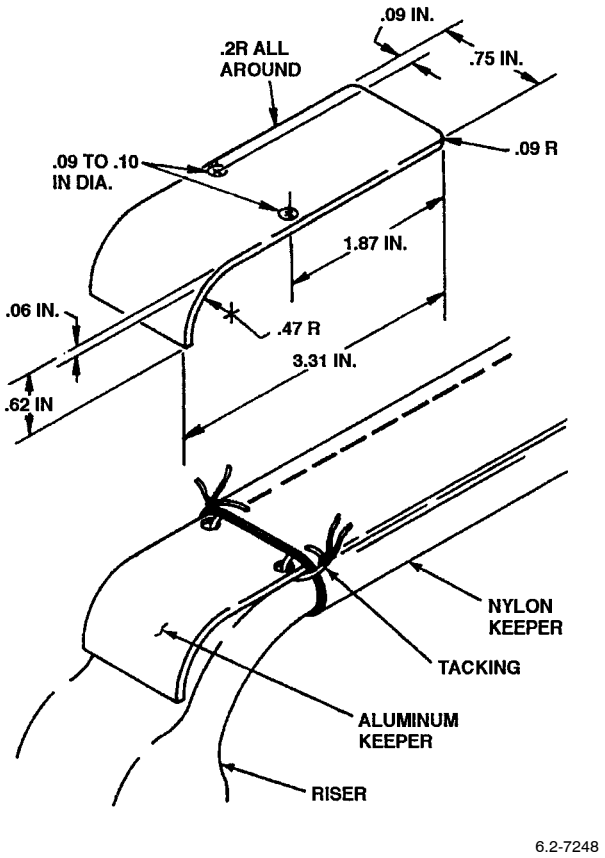

Figure 2. Riser Keeper Replacement

6. FABRICATION AND INSTALLATION OF DROGUE RISER ASSEMBLY SPANDEX SLEEVE.

Materials Required

Specification or Part Number	Nomenclature
1100/82	Spandex Fabric, Olive Drab
PIA-T-5038	Tape, Type III, 3 in., Sage Green or Olive Drab
PIA-W-4088	Webbing, 3 in., Type IV, (OD) Class 1, 1A or 2
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Deleted.

a. Lay out and cut two pieces of spandex fabric 9 3/4-in. by 4 1/2-in. Cut four corners per Figure 3. Ensure that fabric weave of material runs lengthwise. When installed it will run parallel to the riser assembly.

b. Lay one cut fabric sleeve on top of second cut fabric sleeve. Fold spandex sleeves in half. Sew 1/8-in. wide zig-zag stitch 1/8-in. from cut edge per Figure 3. Turn inside out.

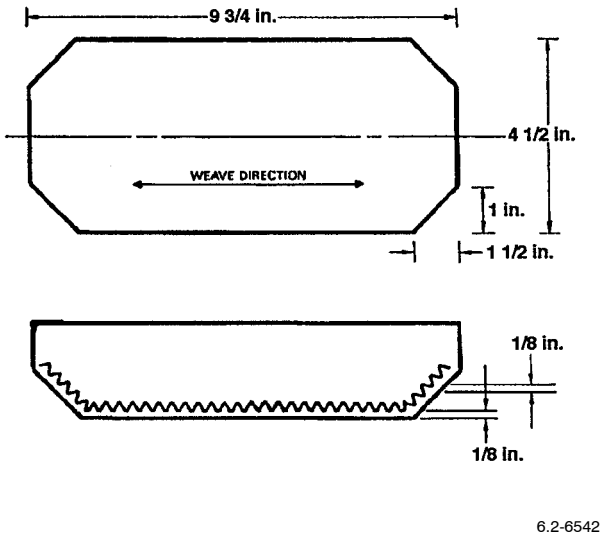

Figure 3. Spandex Sleeve Fabrication

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

c. Remove stitching securing lower keeper over spandex sleeve assembly to riser. Mark spandex sleeve location on lower sleeve. Cut stitching securing spandex sleeve to riser. Remove lower keeper. Retain lower keeper for reinstallation.

d. Remove tackings that secure metal keeper to upper keeper. Remove and retain metal keeper.

e. Mark upper keeper location on riser. Cut stitching securing upper keeper to riser. Remove upper keeper from riser and retain.

f. Mark spandex sleeve location on upper sleeve. Cut stitching securing spandex sleeve to riser. Remove spandex sleeve from riser and discard.

g. Slide replacement spandex sleeve on riser. Ensure seam and angled edge of spandex sleeve is facing edge of riser.

h. Use existing folds in riser, "S" fold riser in spandex sleeve.

i. Place upper end of spandex sleeve on upper spandex sleeve mark made during spandex sleeve removal.

j. Secure spandex sleeve to riser with one row of stitching.

k. Place lower end of spandex sleeve on lower sleeve mark made during spandex sleeve removal.

l. Secure spandex sleeve to riser with one row of stitching.

m. Reinstall upper keeper on mark made during removal.

n. Wrap upper keeper around riser, matching previous stitch pattern. Ensure treated end faces outboard. Secure with one row of stitching.

o. Install lower keeper over end of spandex sleeve, around riser. Follow stitch pattern (box stitch) on removed keeper. Secure with one row of stitching.

p. Install metal keeper into upper keeper. Metal keeper must be installed with curve portion facing toward riser loop end with tip of curve portion pressing against spandex sleeve and "S" folds on same side as riser locking loop and inserted until tack holes on metal keeper are even with lower edge of upper keeper.

q. Hand tack thru upper keeper, hole in metal keeper and riser with size FF thread, one turn single and waxed, repeat for opposite side.

7. INSTALLATION OF RISER KEEPER SHIELDING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A,
M23053/1-10-104-0	Sleeving, Heat Shrink

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove tacking securing keeper to drogue riser.

b. Remove keeper.

c. Slide keeper into a 1 1/2-in. length of sleeving material around curved end of keeper.

d. Using a heat gun, shrink sleeving material around curved end of keeper.

e. Trim excess sleeving from ends of keeper. Ensure that holes in keeper are accessible.

f. Slide covered keeper back into place under nylon keeper on drogue bridle.

g. Hand tack thru nylon keeper and holes in covered keeper with size FF thread, single and waxed; tie off.

8. REPAIR OF DROGUE RISER ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon Type IV, 3 in. Wide Class 1, 1A or 2
V-T-295	Thread, Nylon Size E, Type I or II Class A

NOTE

Do not remove installed cotton duck cover.

a. Cut a 13-in. length of 3-in. nylon webbing.

b. Starting at end of metal keeper sleeve, wrap webbing around riser lengthwise, with outside edge laying on center of riser.

c. Sew webbing to riser with one row of stitches securing both edges of webbing to center of riser.

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ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

PCU-29/A DROGUE CONTAINER ASSEMBLY

PART NO. 14210-9

List of Effective Work Package Pages

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Reference Material

Intermediate and Depot Maintenance, Packing Procedures, PCU-29A Drogue/Container Assembly ..... WP 023 00

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Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the PCU-29/A Drogue Container Assembly (Figure 1).

2. USABLE ON CODES.

a. The usable on codes in this WP refer to aircraft applications for the PCU-29/A Drogue Container Assembly.

b. The following usable on codes apply to this (WP):

A - AV-8B, TAV-8B

3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in WP 023 00.

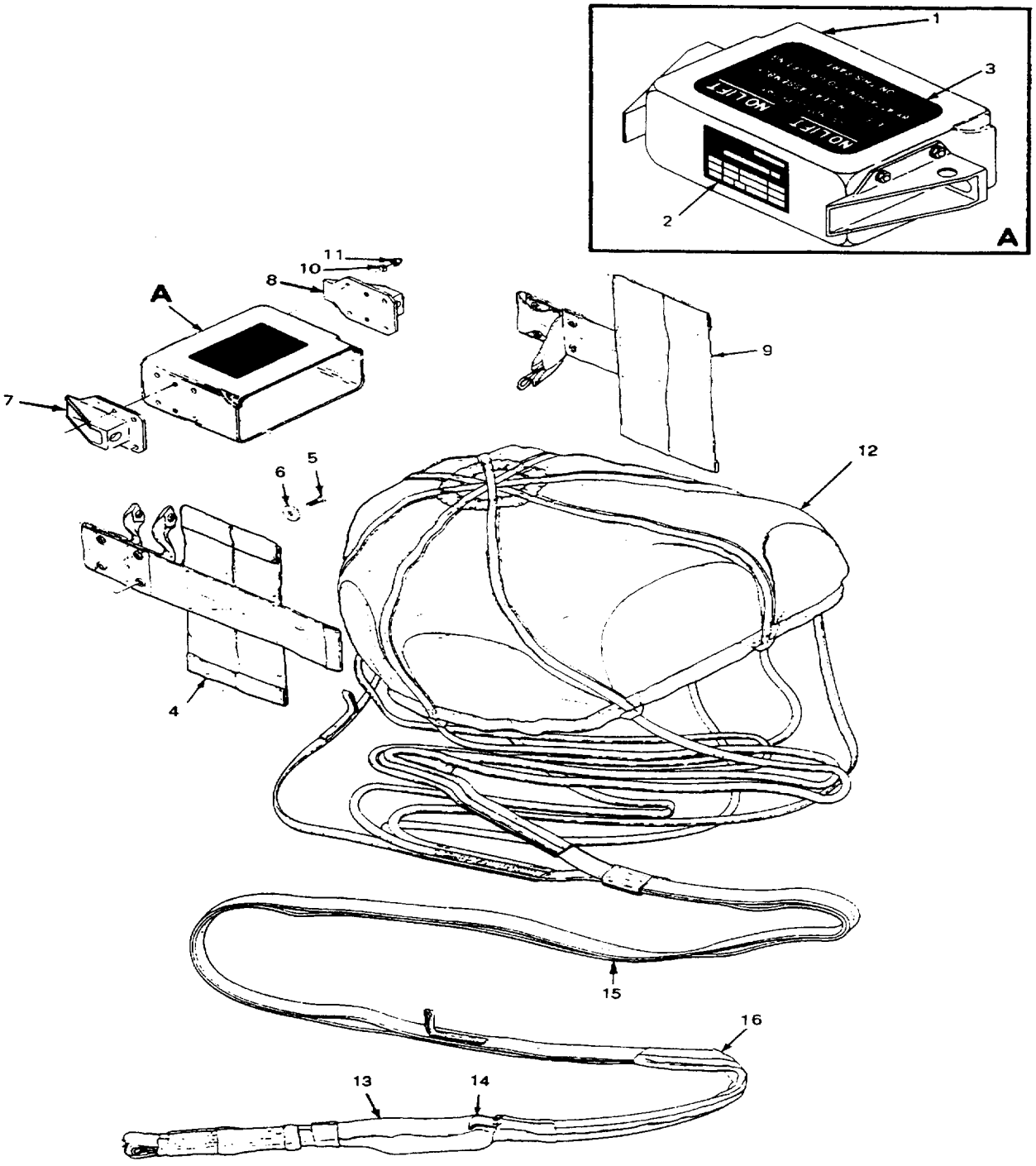

Figure 1. PCU-29/A Drogue/Container Assembly (Sheet 1 of 2)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	14210-9	DROGUE/CONTAINER ASSEMBLY	1	A	AGOGG
1	14210-19	. CONTAINER ASSEMBLY	1		PAGGG
2	586AS100-1	. . LABEL, PARACHUTE ASSEMBLY	1		MDDZZ
3	472P340C018-7	. . DECAL	1		PAGZZ
4	12353-3	. . OUTER FLAP ASSEMBLY	1		PAGZZ
		/ATTACHING PARTS/			
5	MS27039-1-11	. . BOLT	8		PAGZZ
6	AN970-3	. . WASHER	8		PAGZZ
7	14214-19	. . PIERCER (HELPER)	1		PAGZZ
8	14214-21	. . PIERCER	1		PAGZZ
		---*---			
9	12352-1	. . INNER FLAP ASSEMBLY	1		PAGZZ
		/ATTACHING PARTS/			
10	AN960PD10	. . WASHER	8		PAGZZ
11	12484-010	. . NUT	8		PAGZZ
		---*---			
12	12632-1	. DROGUE CANOPY	1		PCGGG
13	12632-13	. . SLEEVE ASSEMBLY	1		XAGZZ
14	12633-11	. . KEEPER	1		MGGZZ
15	12632-31	. . RISER	1		XAGZZ
16	12632-41	. . . COVER, MAKE FROM M23053/1-104-0	1		MGGZZ
		SLEEVING			

Figure 1. PCU-29/A Drogue/Container Assembly (Sheet 2 of 2)

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INTERMEDIATE AND DEPOT MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

PARACHUTE HARNESS SENSING RELEASE UNITS (PHSRU) MXU-746/P and MXU-747/P

PART NO. 852AS117-3 and 852AS117-4

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1 thru 2	10	3 thru 4	0				

Reference Material

Intermediate and Depot Maintenance, Illustrated Parts Breakdown, Parachute Harness Sensing Release Units (PHSRU), MXU-746/P and MXU-747/P . . . . . WP 024 03

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General	2
Subassembly Configurations	2
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Record of Applicable Technical Directives

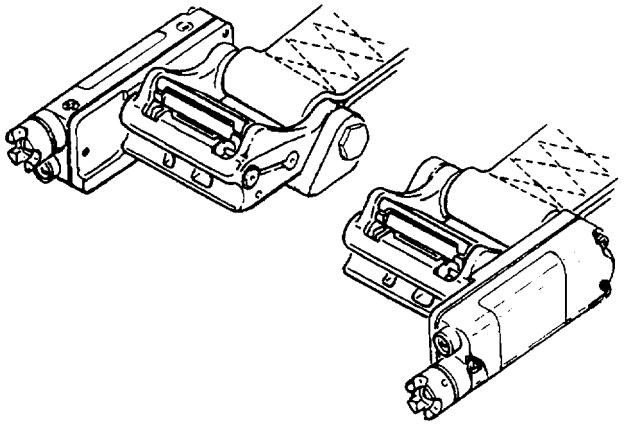
Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date

None

1. DESCRIPTION.

2. GENERAL.

a. The Parachute Harness Sensing Release Unit (PHSRU) is a sea water activated release system that provides a backup automatic mode of separating the parachute from the aircrew. Manually activating the canopy release assembly is the primary mode of separating the risers from the aircrew. Automatic release is intended for disabled aircrews or when there is insufficient time to manually activate the release. The PHSRU is designed to release within 2 sec. after seawater entry. Immersion in fresh water will not activate the PHSRU (Figure 1).



6.2-6539

Figure 1. Parachute Harness Sensing Release Units, MXU-746/P, MXU-747/P

3. CONFIGURATIONS.

a. The seawater activated release system consists of two PHSRUs, both fitted to each set of parachute risers. The PHSRUs are designated MXU-746/P for the left set of risers and MXU-747/P for the right set of risers.

4. SUBASSEMBLY CONFIGURATIONS.

a. The subassemblies listed below and shown in (Figure 2) make up the right and left configurations of the PHSRU. The right and left unit parts have commonality except the adapter plate. Refer to Work Package (WP) (WP 024 03) for detailed information on subassemblies.

Canopy Release Assembly

Electronics Package Assembly (EPA)

Battery

Cartridge Assembly

Mechanical Parts

5. PRINCIPLES OF OPERATION.

6. MANUAL OPERATION.

a. Upon landing the aircrew disengages the parachute assembly from the PCU-33/P or PCU-56/P parachute restraint harness by actuating the canopy release assembly.

7. AUTOMATIC OPERATION.

a. Within two sec. after the aircrew enters sea water, immersing the PHSRU, the following functions take place assuming the aircrew does not manually activate the canopy release assembly (Figure 3).

(1) An electron current path is established between the two sensors on the electronic package assembly (EPA).

(2) The conductive path is sufficient in seawater to allow the firing capacitors within the EPA to charge to a pre-determined voltage that will result in the capacitors discharging thru the bridge wire within the explosive cartridge.

(3) The release piston is driven by the gas released from the explosive cartridge compressing the plug assembly, thereby releasing the sleeve and the riser assembly.

(4) Subparagraphs a thru c will occur simultaneously.

(5) Immersion in fresh water or water of lesser conductivity will not allow for an adequate charge on the capacitor to result in capacitive discharge across the bridge wire.

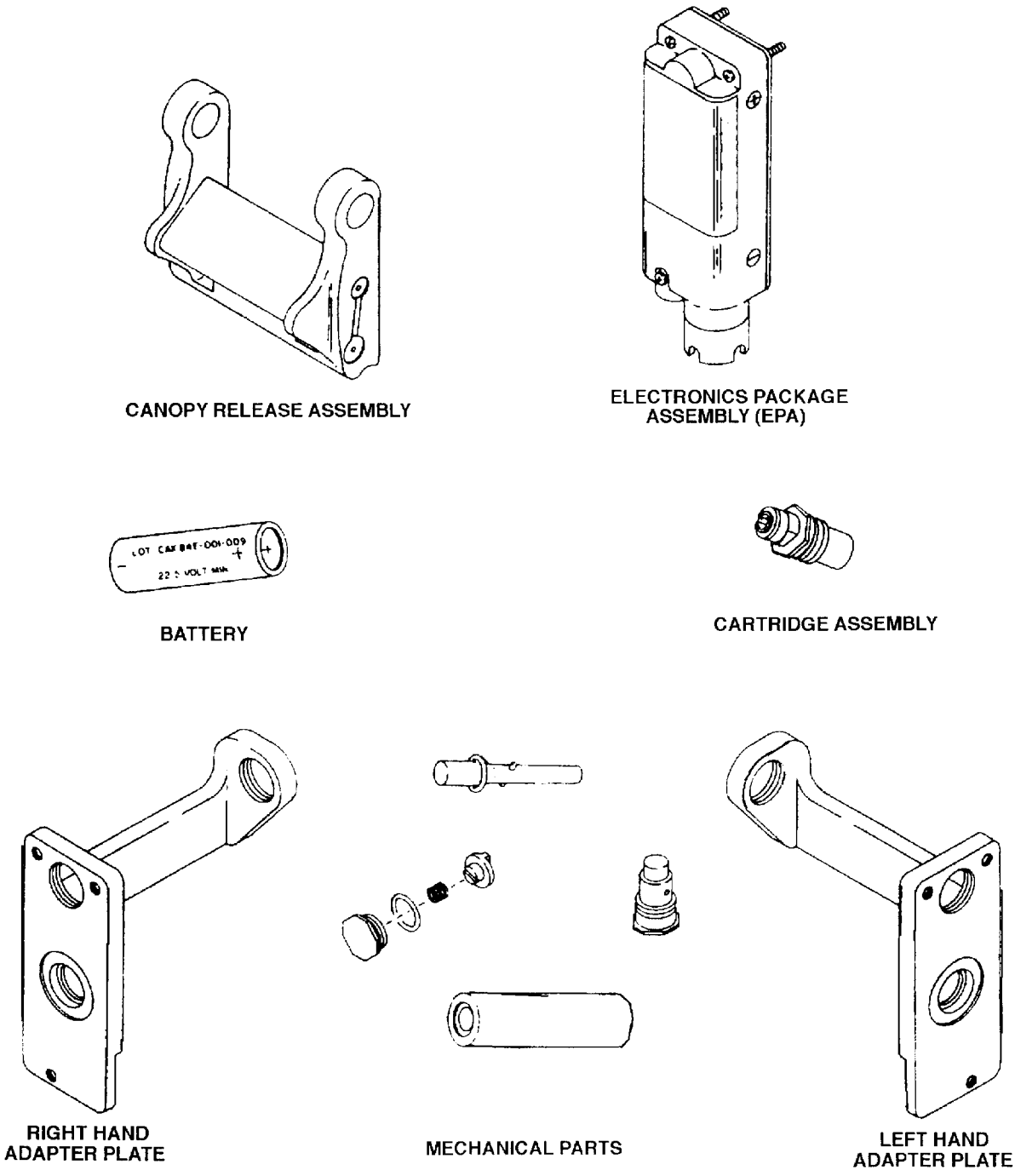


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Figure 2. Subassemblies, PHSRU

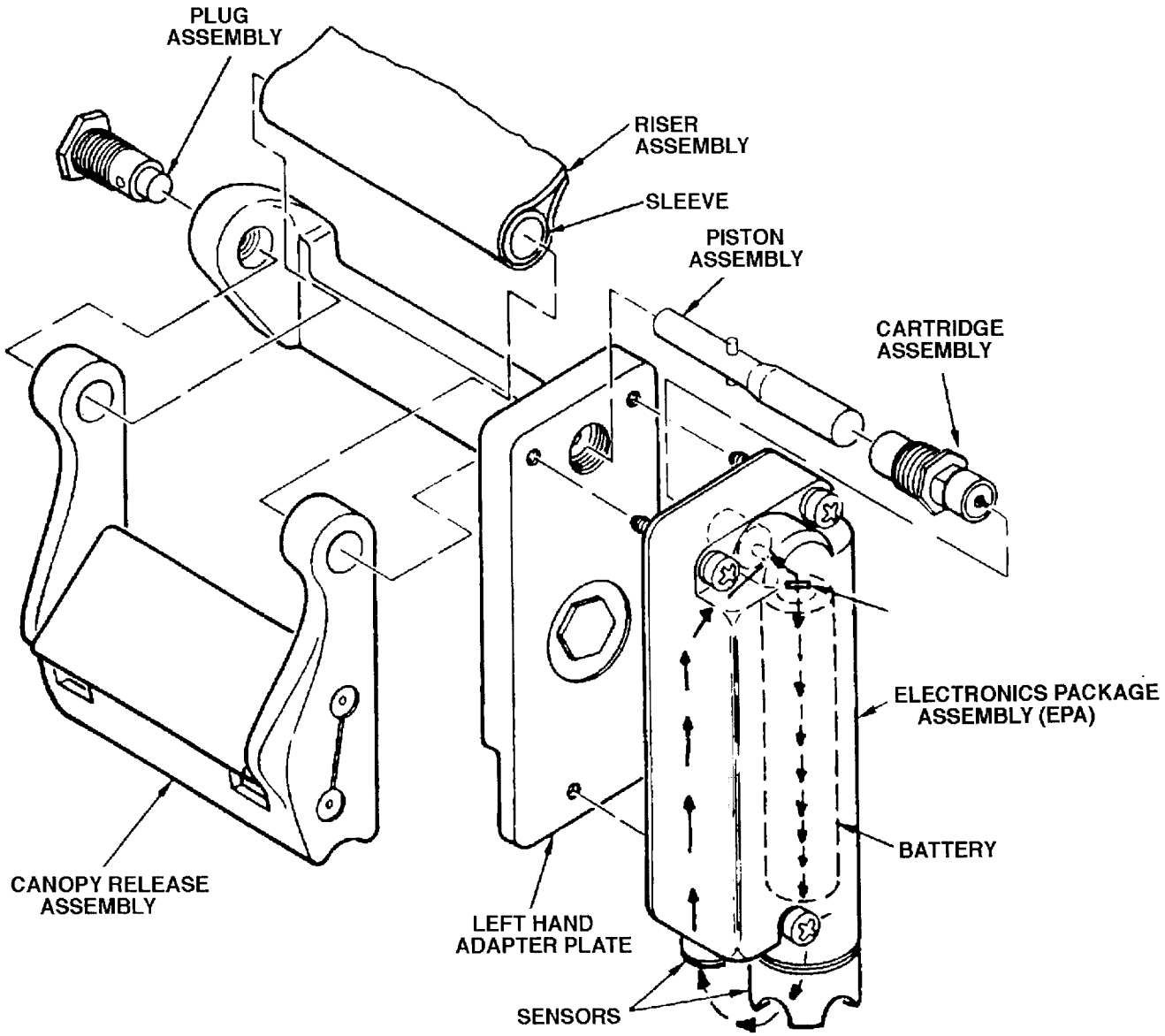

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Figure 3. Automatic Operations

INTERMEDIATE AND DEPOT MAINTENANCE

ORIGINAL ISSUE RIGGING PROCEDURES

PARACHUTE HARNESS SENSING RELEASE UNITS (PHSRU) MXU-746/P and MXU-747/P

PART NO. 852AS117-3 and 852AS117-4

List of Effective Work Package Pages

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1 thru 3	11	8	11	9 thru 17	9	18	11
4 thru 7	9						

Reference Material

Cartridge Activated Devices (CADS) and Propellant Actuated Devices (PADS) (IETM) . . . . . NAVAIR 11-100-1.1
Intermediate and Depot Maintenance, Illustrated Parts Breakdown, Parachute Harness Sensing Release Units (PHSRU), MXU-746/P and MXU-747/P . . . . . WP 024 03
Intermediate and Depot Maintenance, Illustrated Parts Breakdown, Parachute Harness Sensing Release Units (PHSRU), MXU-746/P and MXU-747/P, Special Tool Set . . . . . WP 024 04
Intermediate and Depot Maintenance Procedures, Parachute Harness Sensing Release Units (PHSRU), MXU-746/P and MXU-747/P . . . . . WP 024 02
Parachute Loft Requirements/Administration . . . . . WP 003 00

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Record of Applicable Technical Directives

None

1. GENERAL.

a. This Work Package (WP) provides assembly for original issue of Parachute Harness Sensing Release Units (PHSRU). Assembly instructions are provided with the assumption that they will be carried out under ideal conditions in a parachute loft (WP 003 00). If unfavorable conditions exist, provisions must be made to protect unit from possible damage.

b. The primary concern in rigging any assembly is ensuring that basic structural integrity designed into assembly is maintained. When performing installation procedures detailed in this WP, follow these guidelines:

(1) Review and follow applicable instructions in this WP prior to starting work.

(2) Ensure that all necessary support equipment and materials required are available.

(3) All work shall be carefully inspected and compared to applicable instructions at completion of work to ensure conformity.

(4) Parts not meeting acceptable inspection criteria, accidentally fired/actuated, or found as unserviceable will be shipped to Cognizant Field Activity (CFA) by traceable means. Explosive Mishaps reports are required only for fired/actuated PHSRU's. Ship to following address:

Commander
Code 461000D
NAVAIRWARCENWPNDIV
1900 N. Knox Road Stop 6206
China Lake, CA 93555-6106

(5) A quality assurance (QA) inspector shall witness all application of torque values and electrical checks, and shall examine all designated QA tasks and finished work.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
990055-1 -or- 015-710001-1	Adapter, Canopy Release
TMA (CAGE 55719)	Driver, Hex Head 1/16-in. Bit
MIL-H-45193	Heater, Gun Type
TQS-050 or TQ56	Meter, Torque (CAGE 55719)
—	Micrometer, 0-1-in. Outside
—	Micrometer, 0-8-in. Depth
FLUKE-77	Multimeter
PX-0 (06383) or	Pen, Marking
—	Pencil, Indelible
SA852AS105-1	Tool Set, Special

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
MIL-I-23053/5	Insulation Sleeving, Electrical
MIL-S-8660	Compound, Silicone
MIL-S-22473	Primer, Form R, Grade T
MIL-S-22473	Compound, Sealing, Grade H
—	Swab, Cotton
O-E-760	Alcohol, Denatured

a. To prepare the PHSRU for original issue assembly, perform the following:

(1) Ensure that all support equipment and materials required are available prior to starting.

(2) Inspect tools for nicks, burrs, or sharp edges which may cause damage to the parachute assembly or PHSRU.

(3) Count and record number of assembly tools.

(4) Clean assembly table.

3. MULTIMETER PROBE MODIFICATION.

a. Remove dirt and grease from exposed metal end of probes with soft cloth dampened with denatured alcohol.

b. Cut two pieces of heat shrink tubing approximately 1-in. in length.

c. Place the 1-in. lengths of tubing over exposed metal end of each probe.

d. Using heat gun, shrink tubing until a snug fit is obtained.

e. Trim off excess tubing, exposing approximately 1/8-in. of probe.

Denatured Alcohol **9**

4. CANOPY RELEASE ASSEMBLY INSPECTION.

a. Inspect release body for broken springs, corrosion, dents, dirt or sharp edges. Inspect the release lever left and right arms for cracks.

b. Measure torque of knurled actuating lever as follows:

(1) Hold locking lever in open position and insert torque meter into either hexagonal cavity.

(2) Rotate actuating lever to point just prior to contact with body. The allowable torque is 28 to 50 in-oz.

c. Inspect replacement canopy release assembly for proper locking as follows:

(1) Engage canopy release adapter (with trapezoidal notch) with canopy release assembly (Figure 1).

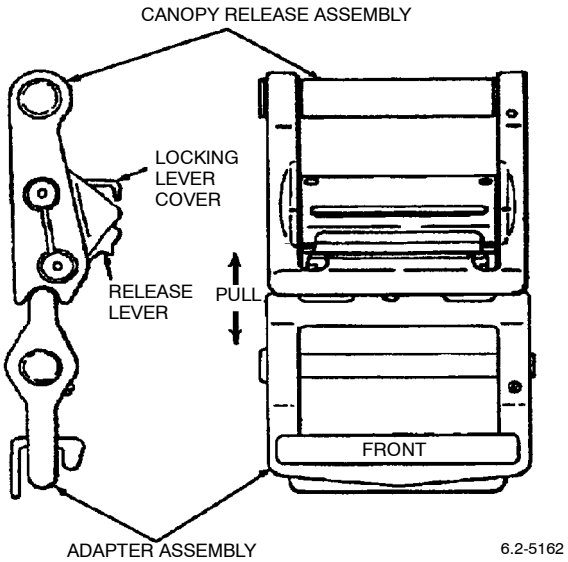


Figure 1. Canopy Release Assembly Inspection

(2) Verify full locking of canopy release assembly by lifting locking lever and attempting to disengage adapter from canopy release assembly.

NOTE

Any free movement of actuating lever without spring tension is cause for rejection of canopy release assembly.

5. DISASSEMBLY OF CANOPY RELEASE ASSEMBLY.

a. Remove and discard setscrew.

b. Extract and discard pin.

c. Separate riser and canopy release assembly.

d. Extract sleeve from riser (Figure 2).

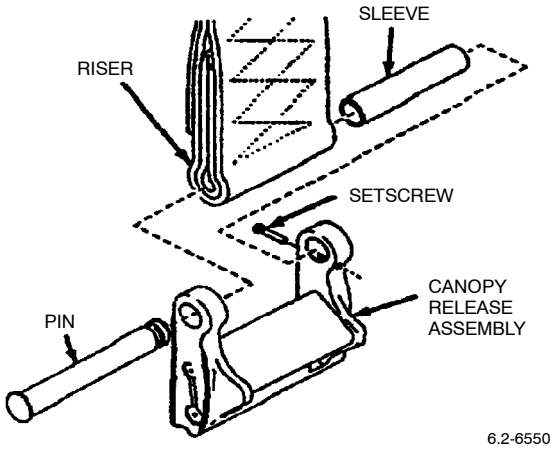


Figure 2. Disassembly of Canopy Release Assembly

6. VITAL COMPONENTS PREASSEMBLY INSPECTION.

a. Parts required for assembly (Figure 3).

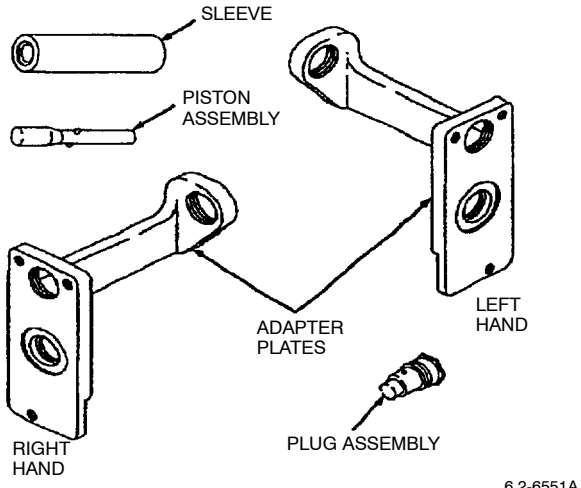


Figure 3. Parts Required

(1) Sleeve.

(2) Piston assembly.

(3) Adapter plate as applicable.

(4) Plug assembly.

b. Trial fit piston assembly into sleeve. Piston assembly should slide easily into sleeve allowing 1/8-in. of piston assembly to protrude (Figure 4).

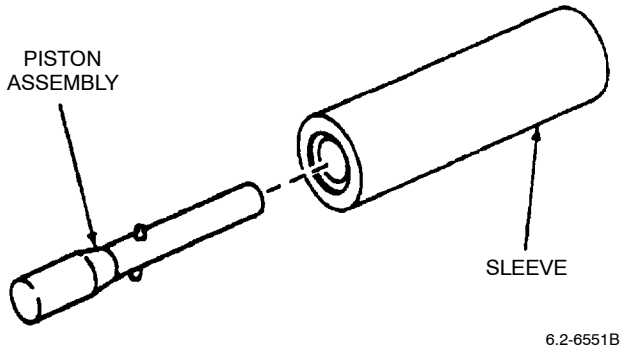


Figure 4. Trial Fit of Piston Assembly

c. Trial fit plug into opposite end of sleeve assembly. Plug must insert without force or restriction up to shoulder (Figure 5).

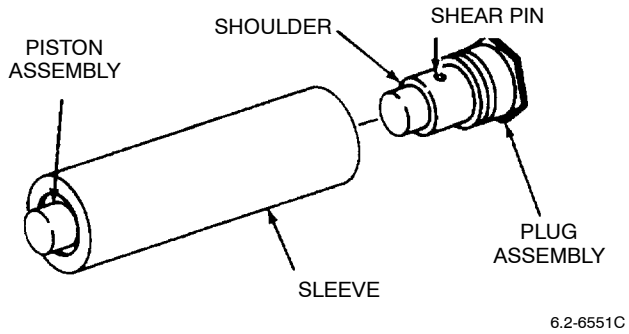


Figure 5. Trial Fit Plug

d. Remove plug and piston assembly from sleeve.

WARNING

Install finger tight only, use no hand tools.

e. Trial fit plug by screwing finger tight into small arm of adapter plate until thread locking ring contacts adapter plate (Figure 6).

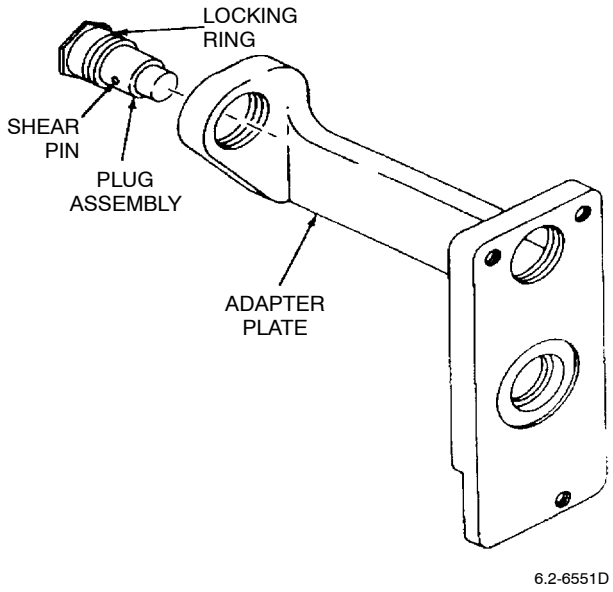


Figure 6. Trial Fit Plug Finger Tight

f. Remove plug from the adapter plate. Check for shear pin in plug.

g. Measure overall length of plug. Replace plug if total length is less than 0.706-in. (Figure 7). (QA)

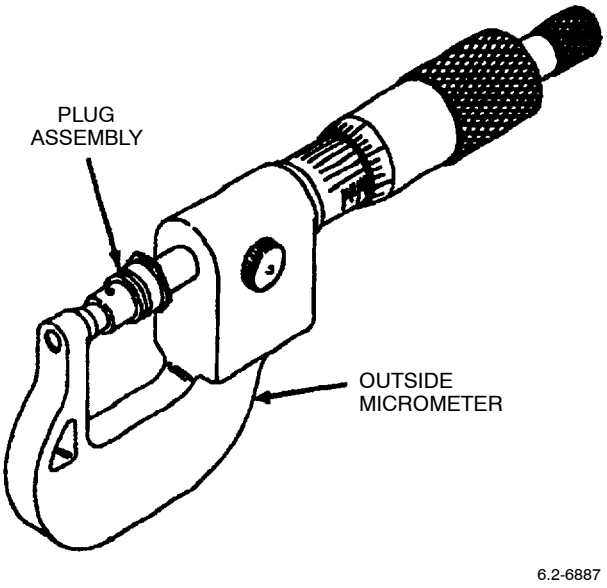


Figure 7. Measure Overall Length of Plug

h. Trial fit sleeve between arms of canopy release. Sleeve must not show evidence of binding or restriction of movement (Figure 8).

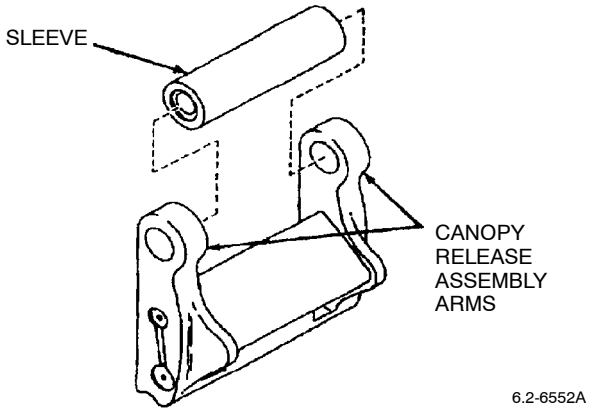


Figure 8. Trial Fit Sleeve

i. Remove sleeve from canopy release.

j. Trial fit sleeve alignment tool into holes in ends of release. If any of above trial fit procedures should fail use another canopy release and repeat steps until proper fit is achieved (Figure 9).

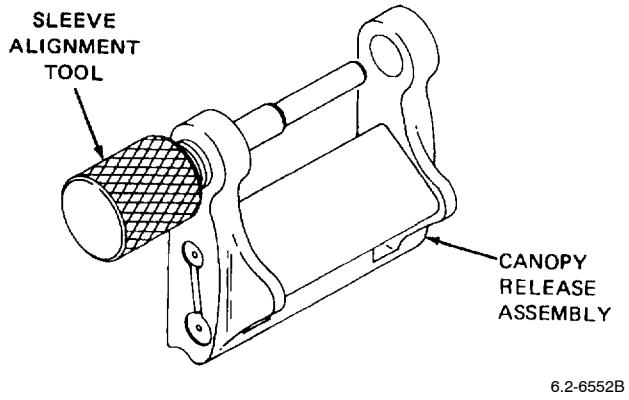


Figure 9. Trial Fit Sleeve Alignment Tool

WARNING

When handling cartridge assembly always point away from body to prevent injury in event of inadvertent firing.

Foil and protective cap or shorting cap plug shall remain installed on cartridge assembly to prevent inadvertent firing.

k. Remove cartridge safety guard from cartridge (Figure 10).

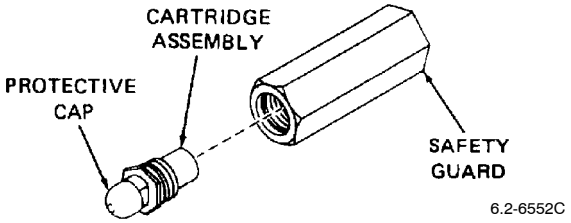


Figure 10. Remove Cartridge

l. Trial fit large end of release piston into cartridge. Release piston shall fit freely into cartridge (Figure 11).

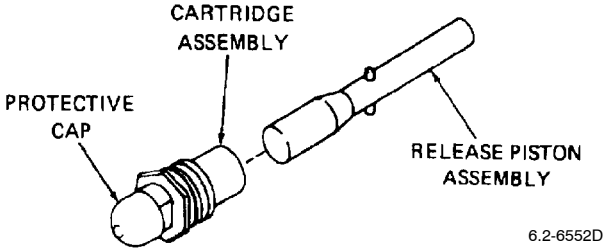


Figure 11. Trial Fit Large End of Release Piston

m. Remove piston from cartridge and install cartridge in guard. Verify presence of white pressure disc in cartridge using inspection mirror (Figure 12). (QA)

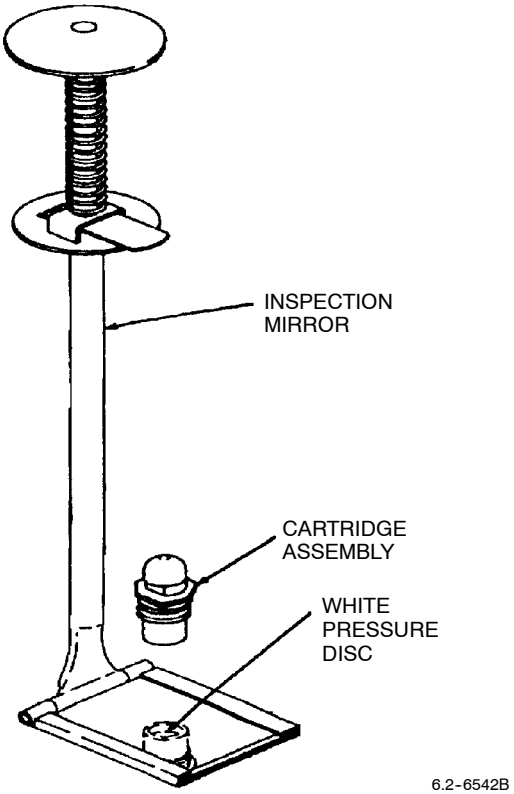


Figure 12. Verify Presence of White Pressure Disc

n. Verify presence of packing on cartridge (Figure 13).

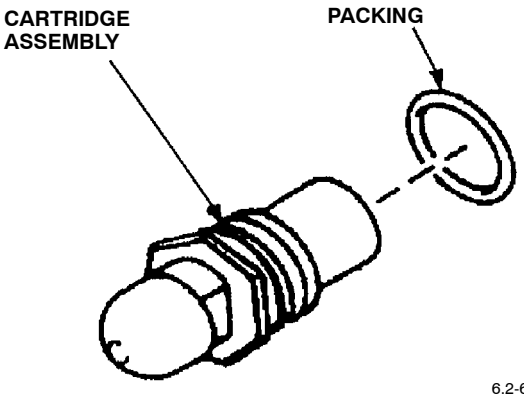


Figure 13. Verify Presence of Packing

7. SENSOR PLUG ASSEMBLY AND ELECTRONICS PACKAGE ASSEMBLY RESISTANCE CHECK.

a. Sensor plug assembly must pass resistance check before installation.

CAUTION

Do not use tester probes unless they have been modified. Inadvertent actuation may result.

b. Remove sensor plug assembly from EPA.

c. Select multimeter resistance scale (Figure 14).

WARNING

When performing the resistance check for Generation III EPA's, the FLUKE-77 meter leads must be positioned with the positive lead (red) on the fixed sensor and the negative lead (black) on the EPA housing. Failure to place leads correctly will result in a failure.

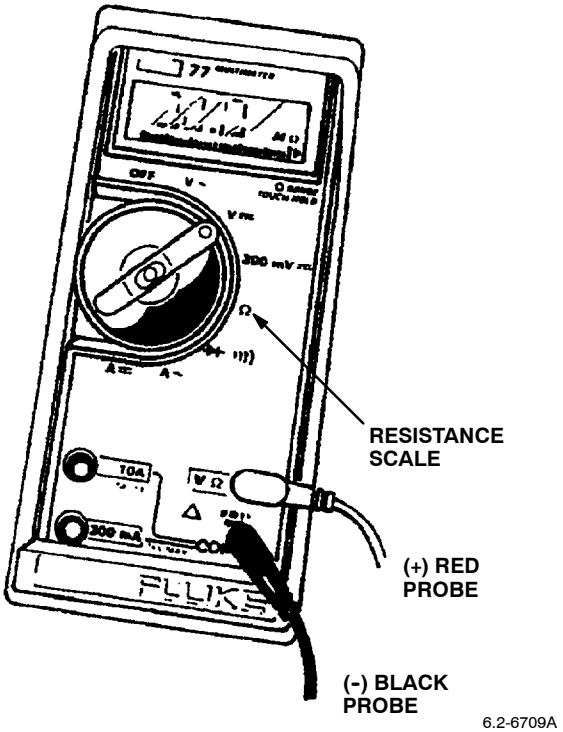


Figure 14. Select Multimeter

d. Contact probes to sensor plug assembly center conductor and sensor plug assembly metal threads (Figure 15).

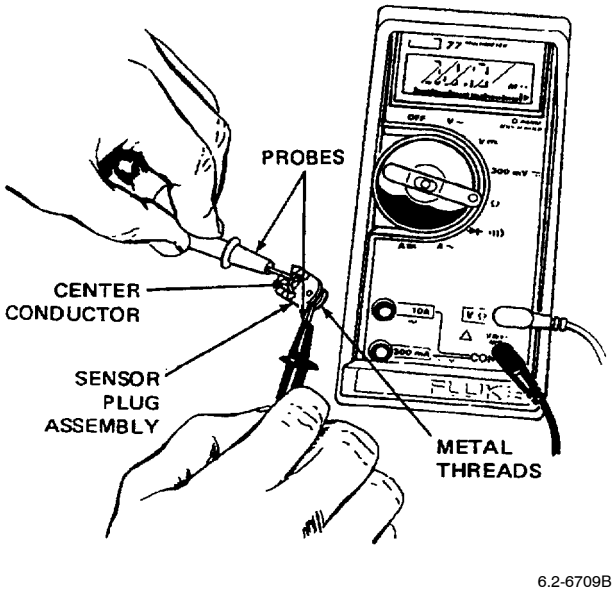


Figure 15. Contact Probes to Sensor Plug

e. Read resistance on multimeter. If reading is greater than 20 megohms, or over limit (OL), the sensor plug is deemed serviceable. If less than 20 megohms, the sensor plug has failed to pass resistance check and will be tagged unserviceable. Obtain another sensor plug and repeat steps d and e. (QA)

f. Perform EPA resistance check as follows:

(1) EPA must pass resistance check before installation.

(2) Select multimeter resistance scale (Figure 14).

(3) Contact probes to EPA fixed sensor and non-anodized surface of EPA (Figure 16).

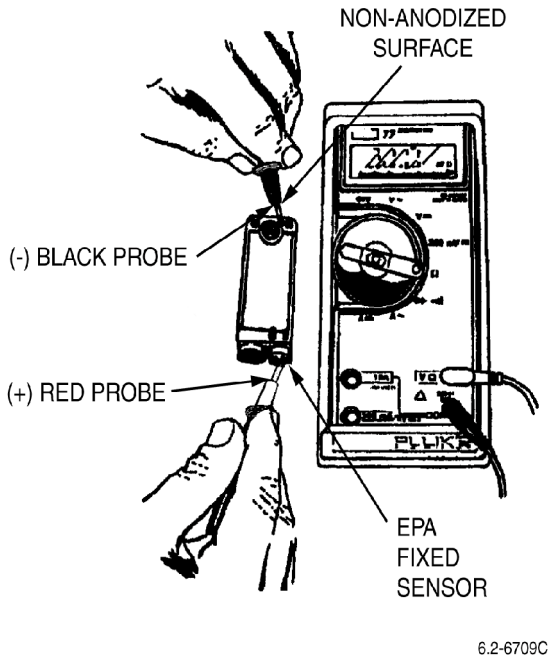


Figure 16. Perform Resistance Check

(4) Read resistance on multimeter. If reading is greater than 20 megohms, or over limit (OL), EPA is deemed serviceable. If less than 20 megohms, EPA has failed to pass resistance check and will be tagged unserviceable. Obtain another EPA and repeat above sub-steps (1) thru (4). (QA)

8. BATTERY POLARITY CHECK.

a. Verify that positive symbol (+) on battery case matches positive symbol (+) on pole (Figure 17). (QA)

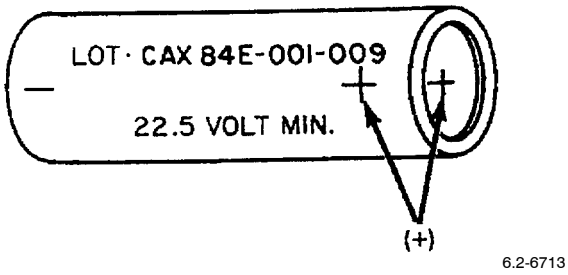


Figure 17. Battery Polarity Check

9. BATTERY VOLTAGE CHECK.

WARNING

The hand held (CONAX Gun) battery tester cannot be used to test PHSRU units with the Generation III EPA's installed.

a. Install meter test leads in multimeter observing proper polarity (Figure 18).

b. Select volts direct current (VDC).

c. Contact positive end of battery with red probe (+) and negative end with black probe (-).

d. Reading shall be 22.5 volts DC or greater. If reading is below 22.5 volts DC, battery must be replaced. Replacement battery must be checked per Paragraph 8. (QA)

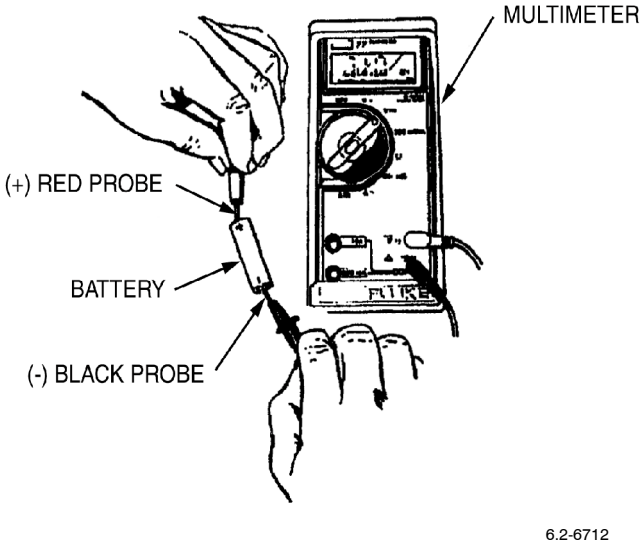


Figure 18. Battery Voltage Check

10. APPLICATION OF MARKINGS.

a. Print Installation Julian date on battery with indelible pencil.

CAUTION

EMI gasket used with EPA protects unit from electromagnetic interference and shall not be replaced with any substitute materials.

b. Print the following on the adapter plate side of EMI Gasket with black or indelible ink (Figure 19).

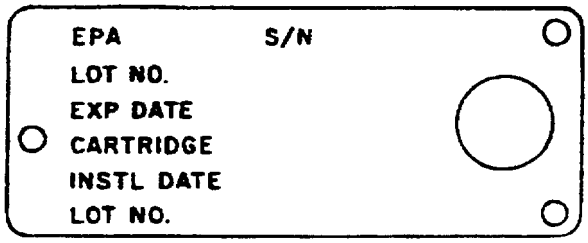


Figure 19. Electromagnetic Interference (EMI) Gasket Markings

(1) EPA serial number.

(2) EPA lot number.

(3) EPA expiration Julian date per applicable WP's

(4) Cartridge installation Julian date.

(5) Cartridge lot number.

c. Verify correctness of all markings. (QA)

d. Allow marking to dry for 10 to 15 min.

e. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

11. INSTALLATION.

WARNING

The following procedures shall not be performed in the aircraft or in a radiation hazardous area.

NOTE

Installation procedures for right and left hand PHSRU are the same with exception of adapter plates which are mirror images. The right hand installation is shown in these procedures.

12. INSTALLATION OF SLEEVE.

a. Place sleeve insertion tool into sleeve. Sleeve insertion tool must fit flush as shown. If not, sleeve insertion tool may be installed in wrong end of sleeve (Figure 20).

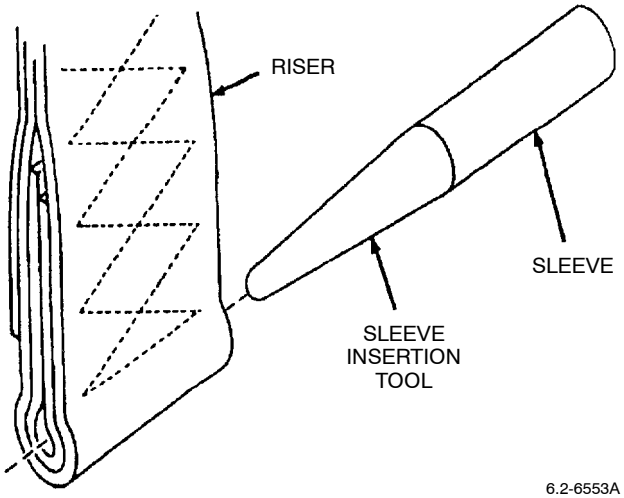


Figure 20. Place Sleeve Insertion Tool into Sleeve

b. Insert sleeve insertion tool and sleeve into riser from inboard side of riser (right riser shown) until sleeve ends are flush with riser sides (Figure 21).

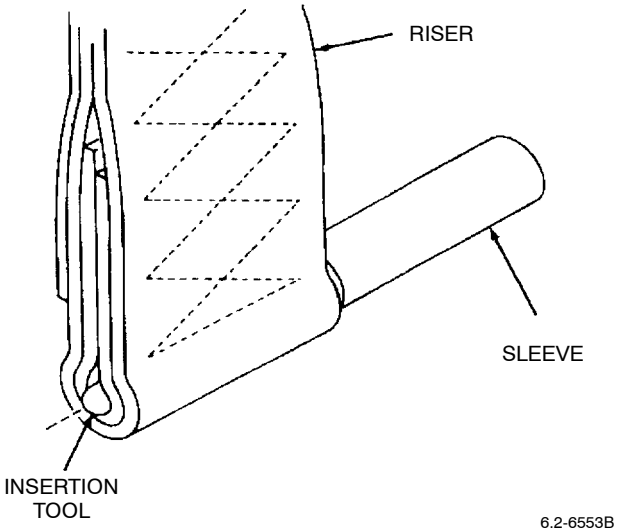


Figure 21. Insert Sleeve Insertion Tool

c. Remove sleeve insertion tool from sleeve leaving sleeve in riser (Figure 22).

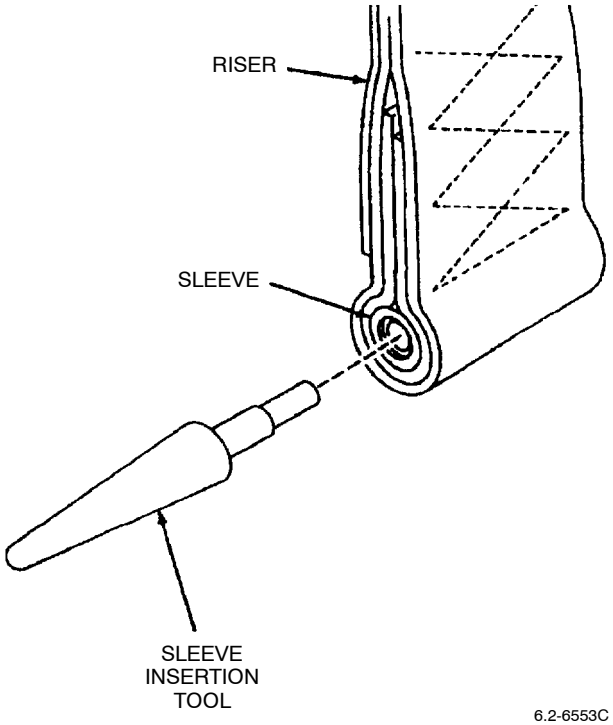


Figure 22. Remove Sleeve Insertion Tool

13. INSTALLATION OF PLUG ASSEMBLY.

a. Align canopy release with adapter plate (right hand shown) (Figure 23).

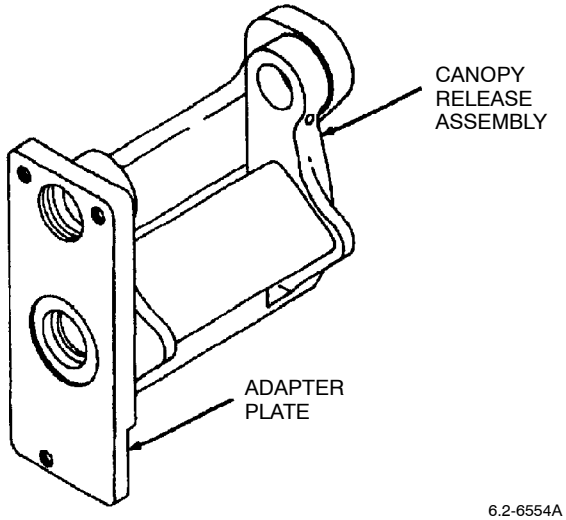


Figure 23. Align Canopy Release

b. Place riser and sleeve between arms of canopy release (Figure 24).

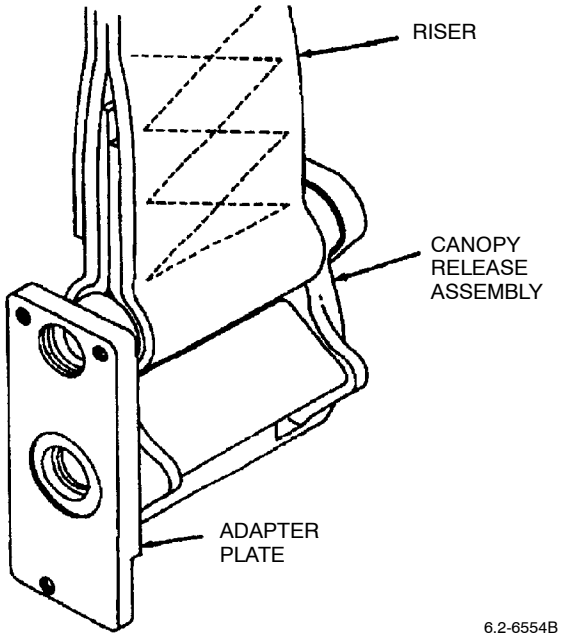


Figure 24. Placement of Riser and Sleeve

c. Install sleeve alignment tool (finger tight only) thru adapter plate, canopy release and into sleeve that is installed in riser. Loosen sleeve alignment tool 1/4 to 1/2 turn (Figure 25).

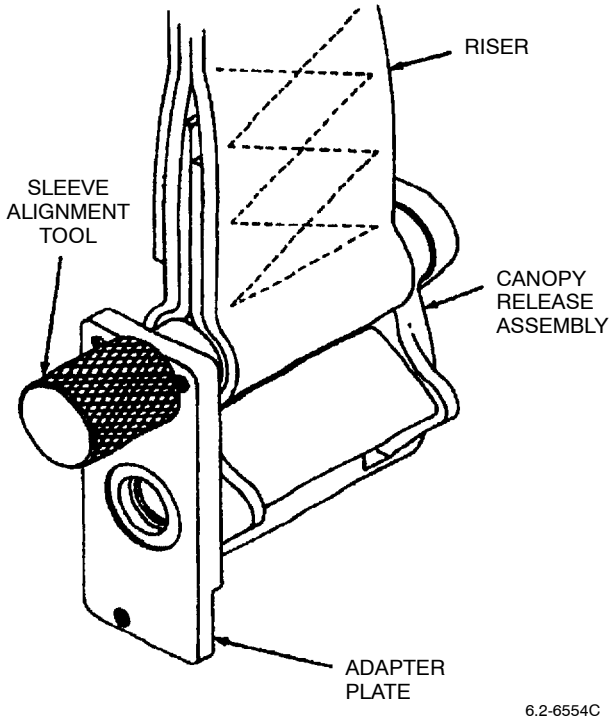


Figure 25. Install Sleeve Alignment Tool

d. Verify alignment of sleeve (Figure 26). (QA)

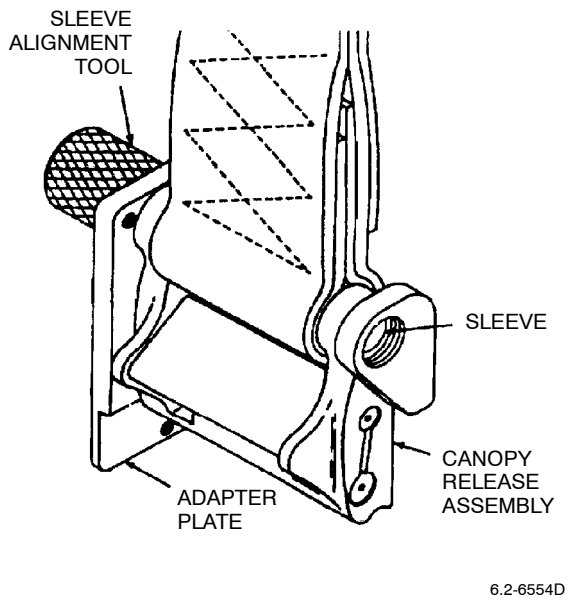


Figure 26. Completed and Aligned Canopy Release Assembly

WARNING

Under no circumstances should a wrench be used to install plug assembly. Use of a wrench may damage plug assembly resulting in a malfunction during parachute opening.

e. Install plug (Figure 27) finger tight into adapter plate until thread locking ring contacts adapter plate. If any resistance is felt, adjust sleeve until plug can be installed finger tight. Repeat step e (Figure 28). (QA)

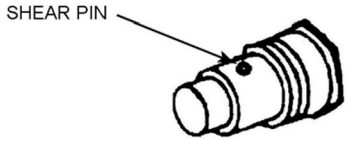


Figure 27. Plug Assembly

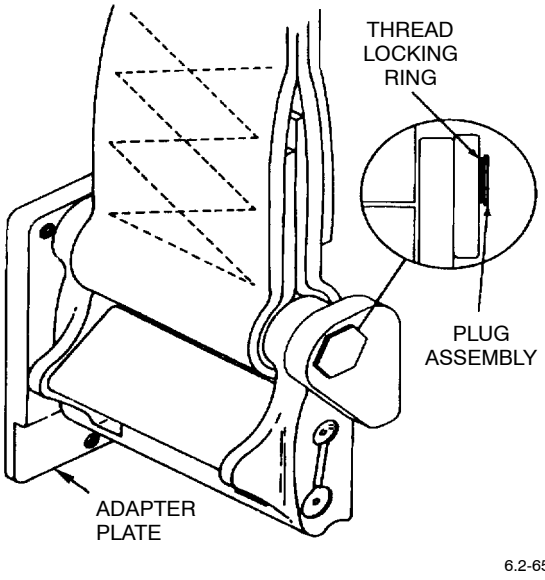


Figure 28. Install Plug

14. INSTALLATION OF LOCKING DISC ASSEMBLY.

a. Install packing on locking disc plug.

b. Place locking disc in adapter plate and ensure blade of locking disc seats in canopy release assembly slot. Install spring in locking disc plug recess (Figure 29). (QA)

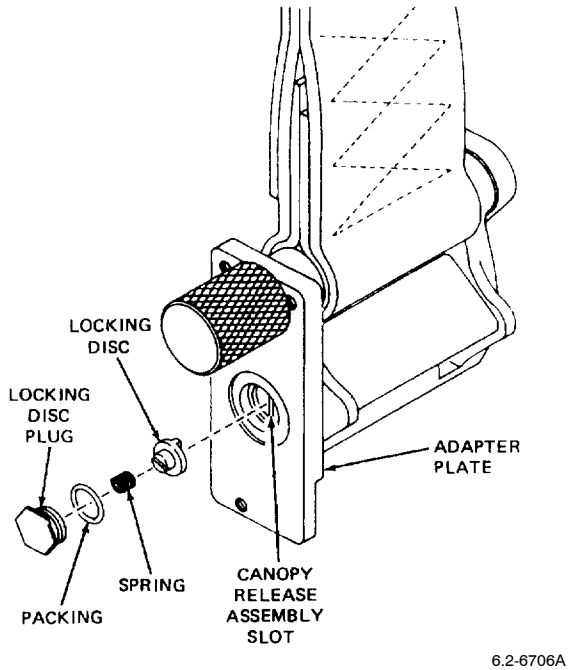


Figure 29. Placement of Locking Disc

c. Screw locking disc plug into adapter plate finger tight (Figure 30).

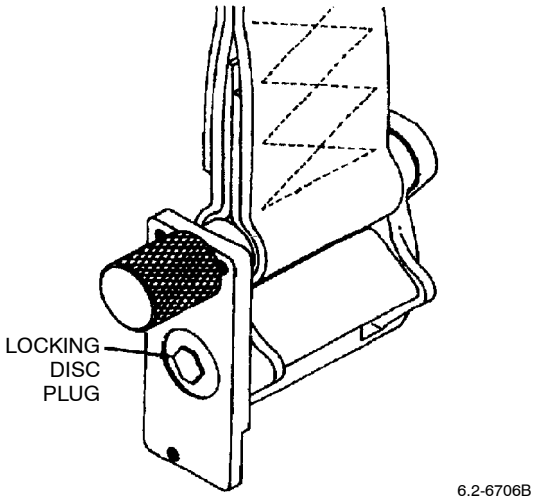


Figure 30. Locking Disc Plug Installed

15. INSTALLATION OF RELEASE PISTON ASSEMBLY.

a. Lubricate packing with silicone compound and install over small end of release piston. Use care when moving packing over shear pin and position at sloping shoulder (Figure 31).

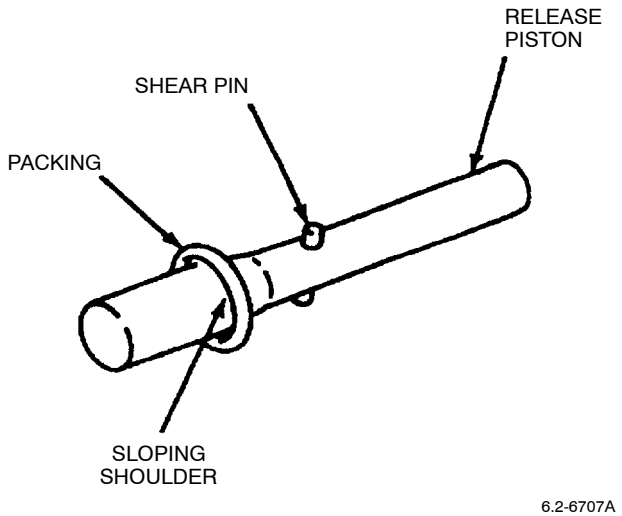


Figure 31. Lubricate Packing

b. Insert release piston into release piston O-ring installation tool (Figure 32).

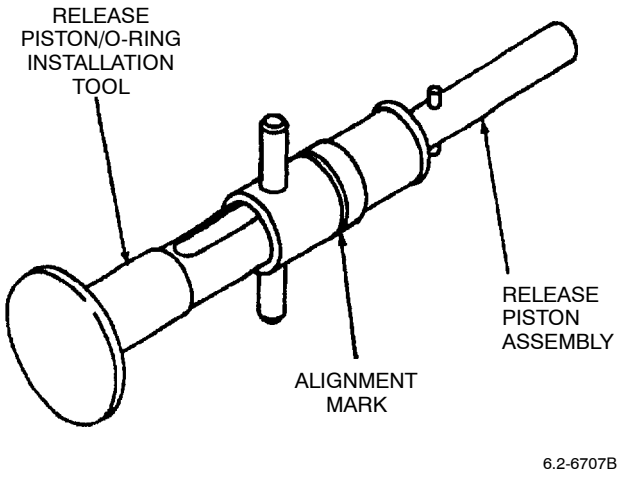


Figure 32. Insert Release Piston

NOTE

Hold riser in place so upon removal of the sleeve alignment tool the sleeve will not misalign.

c. Remove sleeve alignment tool from canopy release assembly (Figure 33).

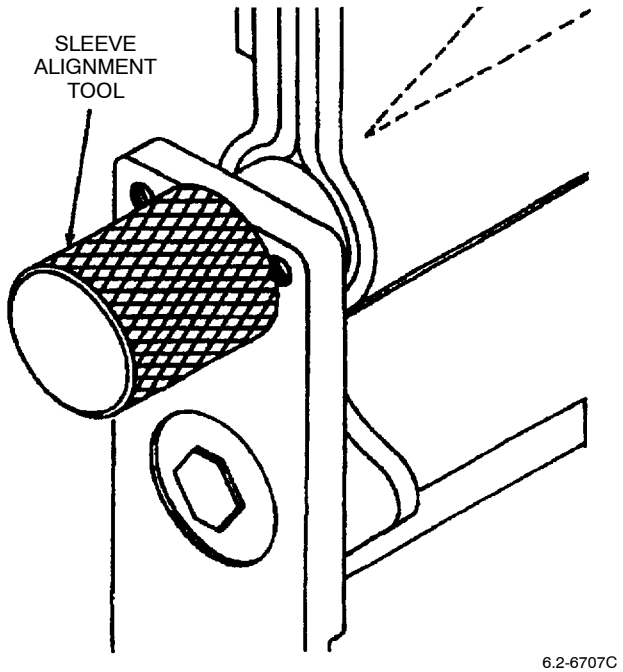


Figure 33. Remove Sleeve Alignment Tool

d. Hold release piston O-ring installation tool at lower outer barrel and insert release piston and packing into cartridge barrel (Figure 34).

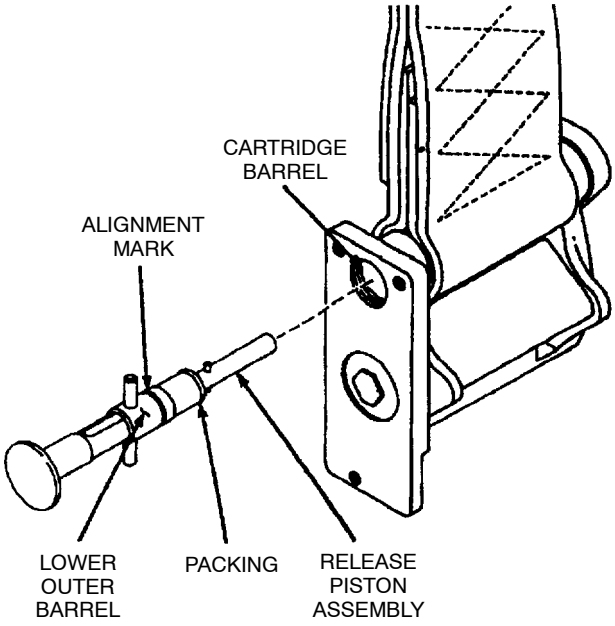


Figure 34. Hold Release Piston O-Ring Installation Tool

e. Use a rotating back and forth motion until release piston O-ring installation tool is inserted to full depth (even with alignment mark on tool) (Figure 35). (QA)

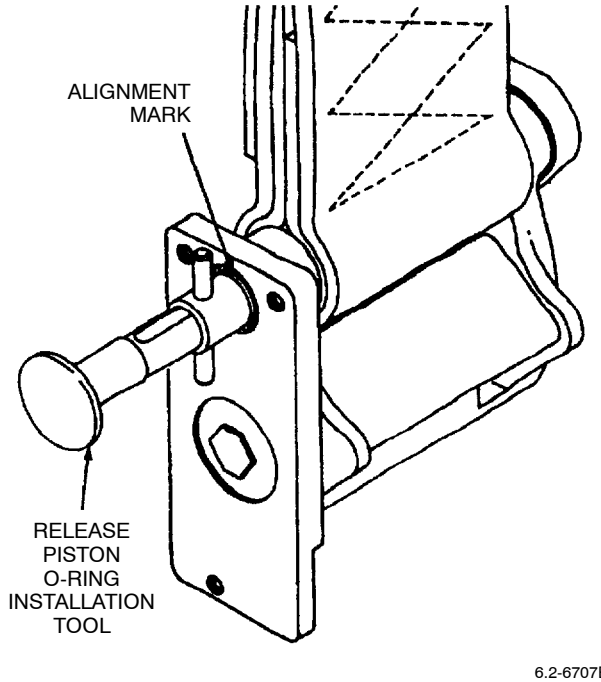


Figure 35. Rotate Back and Forth To Release O-Ring

f. Depress release piston O-ring installation tool plunger to seat release piston and packing (Figure 36).

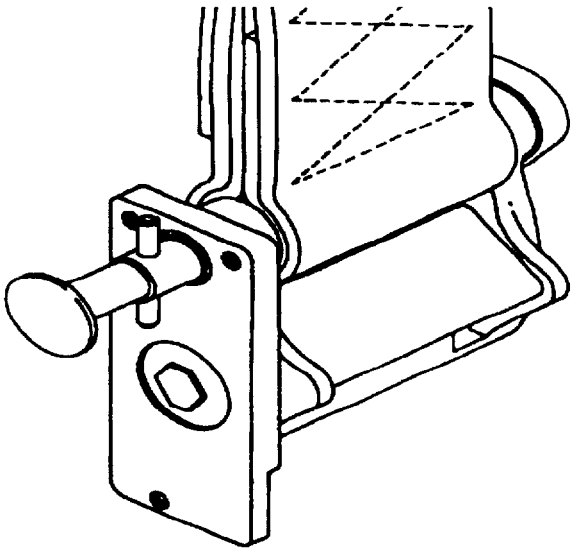


Figure 36. Depress Release Piston O-Ring Installation Tool

g. Remove release piston tool from cartridge barrel.

16. INSTALLATION OF CARTRIDGE ASSEMBLY.

a. Install cartridge finger tight until packing contacts adapter plate (Figure 37).

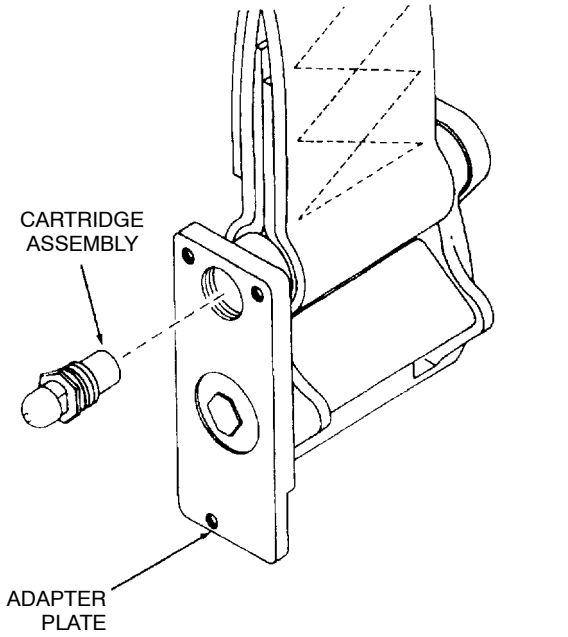


Figure 37. Install Cartridge

17. TORQUING OF DISC.

a. Torque locking disc plug 30 to 40 in-lbs., using special socket 7/16 x 1/4 socket and torque driver (Figure 38). (QA)

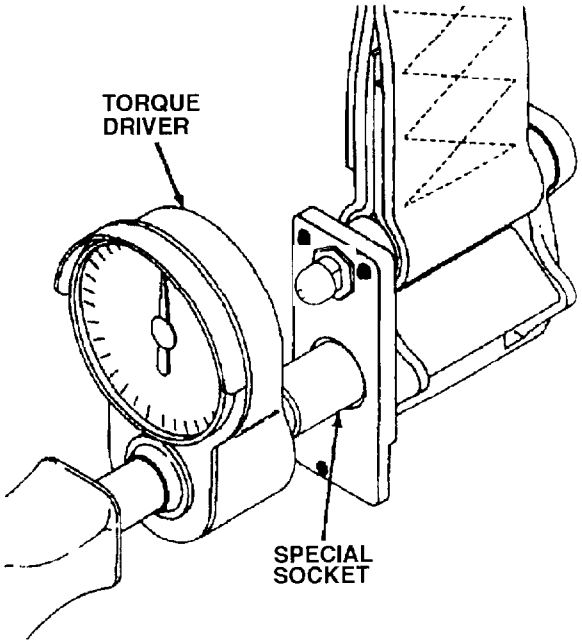


Figure 38. Torque Locking Disc Plug

18. TORQUING OF PLUG ASSEMBLY.

a. Torque plug assembly 45 to 55 in-lbs. using 7/16 x 1/4 socket and torque driver (Figure 39). (QA)

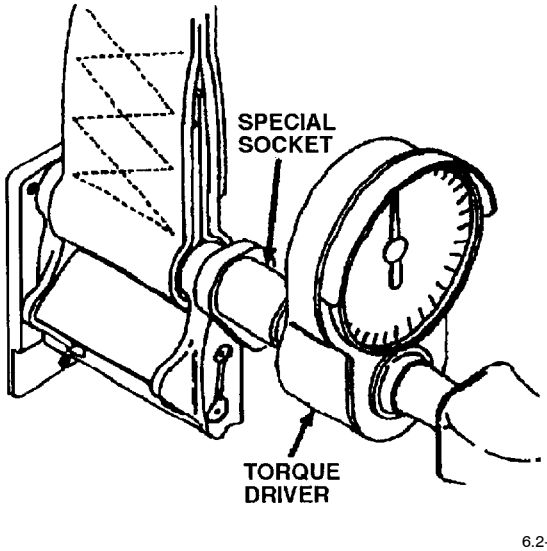


Figure 39. Torquing Plug Assembly

19. TORQUING OF CARTRIDGE.

a. Place cartridge torque alignment tool, over cartridge aligning the three pins on the tool with the three screw holes in the adapter plate (Figure 40).

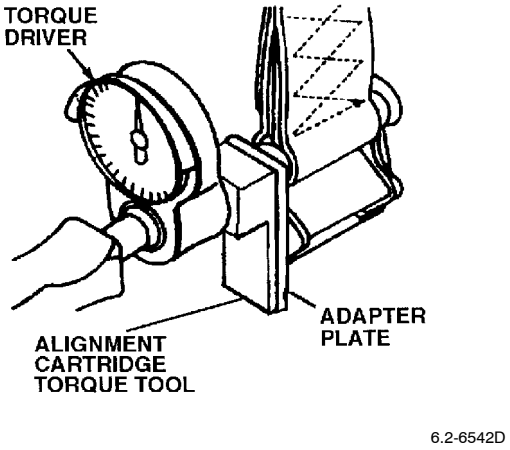


Figure 40. Torque Cartridge

b. Install torque tool in tool socket and torque cartridge 25 to 35 in-lbs. (QA)

20. INSTALLATION OF ELECTRONICS PACKAGE ASSEMBLY (EPA).

a. Ensure battery is not installed in (EPA). (QA)

b. Ensure that data was recorded on EMI gasket. (QA)

c. Align EMI gasket over EPA (Figure 41).

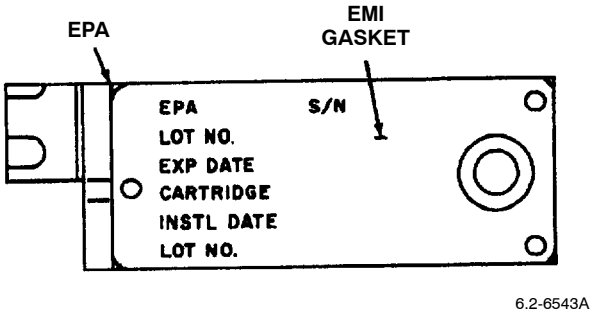


Figure 41. Align EMI Gasket

d. Apply primer to threads of screws and threaded screw holes of adapter plate and allow to dry for 3 to 5 min. (Figure 42).

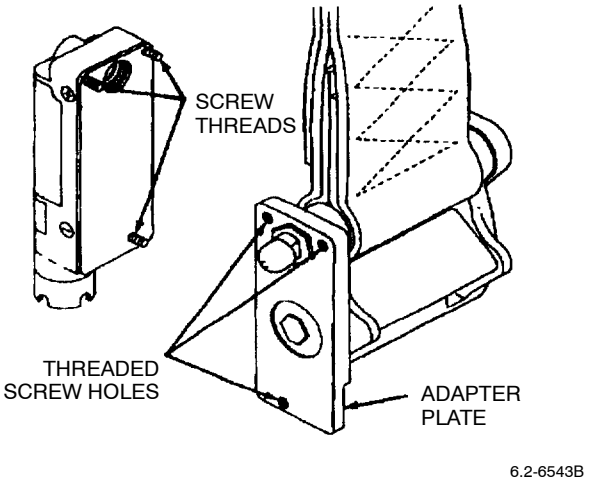


Figure 42. Apply Primer to Threads of Screws

e. Apply sealing compound to threads of screws ensuring all threads are covered.

f. Remove protective cap and foil from cartridge and retain for possible future use. Visually inspect cartridge electrical plug for damage (Figure 43). (QA)

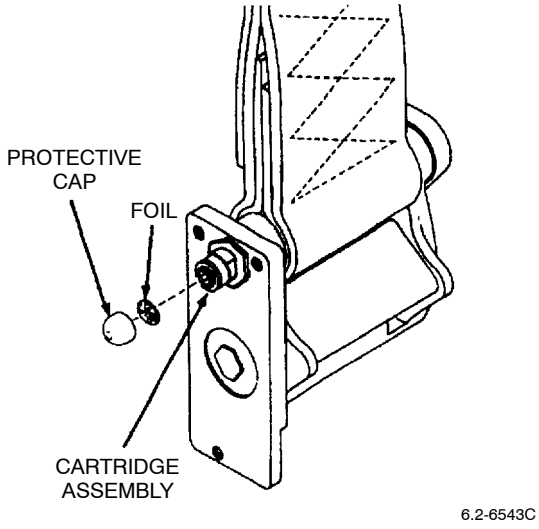


Figure 43. Remove Protective Cap and Foil

g. Install EPA on adapter plate and start screws with Phillips screwdriver. Do not tighten (Figure 44).

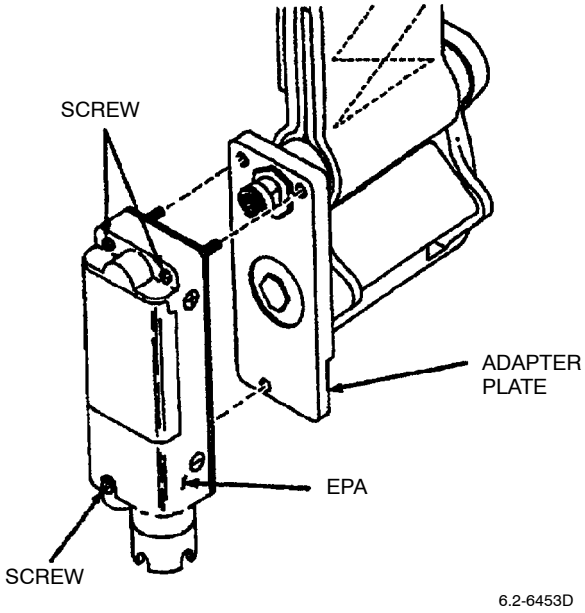


Figure 44. Install EPA on Adapter Plate

h. Torque screws 11 to 13 in-lbs. using bit, holder and torque driver (Figure 45). (QA)

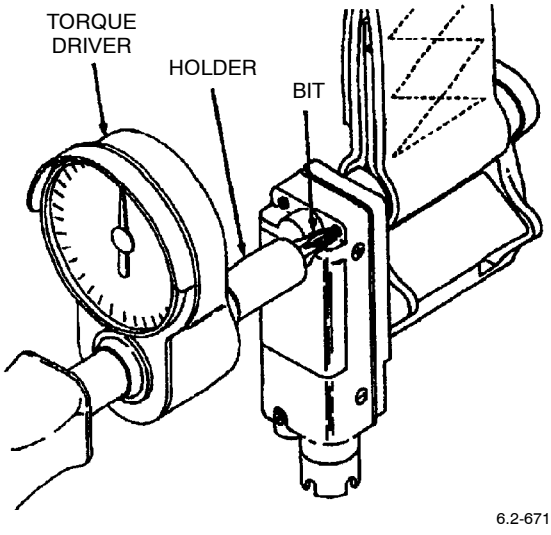


Figure 45. Torque Screws

i. Clean primer and sealing compound residue from adapter plate surface with alcohol.

21. BATTERY INSTALLATION.

a. Remove sensor plug from EPA (Figure 46).

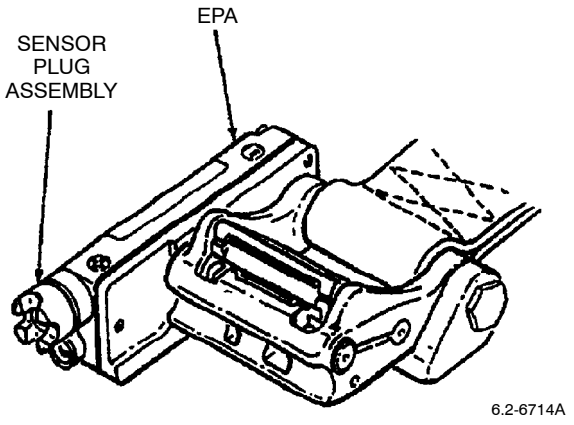


Figure 46. Remove Sensor Plug

b. Verify presence of sensor plug spring (Figure 47). (QA)

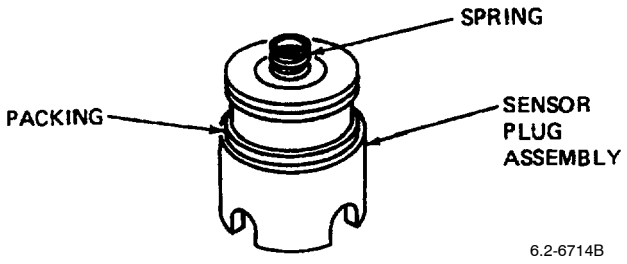


Figure 47. Presence of Sensor Plug Spring

c. Verify presence of packing on sensor plug. (QA)

d. Verify installation julian date on battery. (QA)

e. Verify proper information on Parachute Record (OPNAV 4790/101). (QA)

WARNING

EPA and battery case are marked with positive (+) and negative (-) symbols. Battery shall be installed positive (+) pole first. Incorrect installation will result in PHSRU malfunction.

f. Install battery positive (+) pole first into EPA and install sensor plug fingertight (Figure 48). (QA)

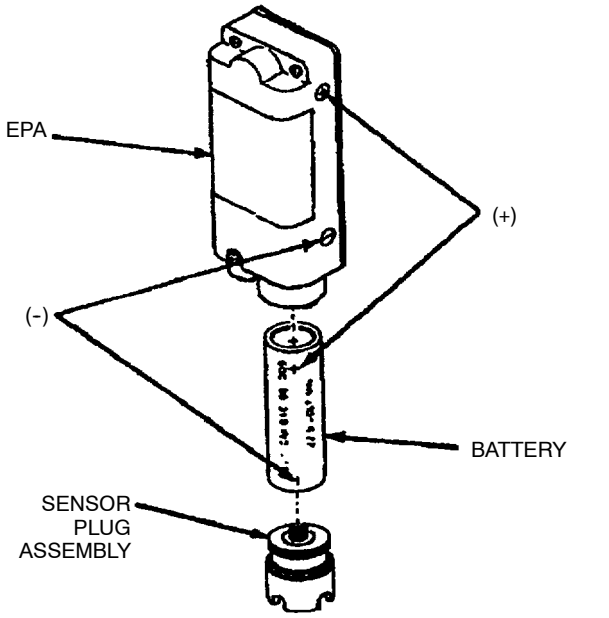


Figure 48. Install Battery

CAUTION

Extreme care must be taken to keep torque driver with special socket in line directly over sensor plug when applying required torque (do not overtorque). Failure to comply can cause damage to sensor plug, resulting in failure.

g. Torque sensor plug 20 to 22 in-lbs. using sensor plug torque tool and torque driver (Figure 49). (QA)

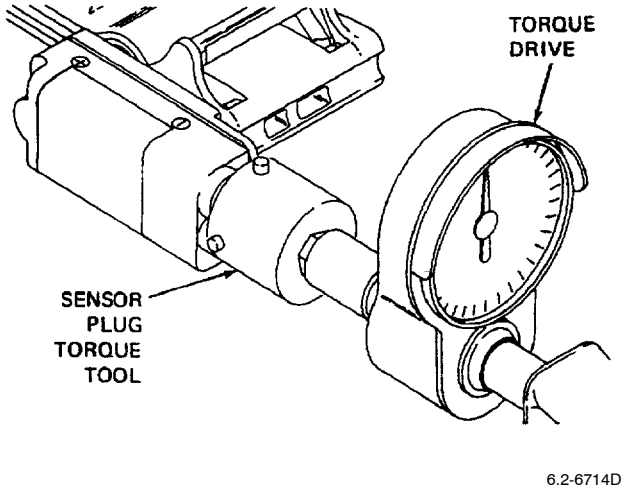


Figure 49. Torque Sensor Plug

22. FINAL CHECK.

a. Install test leads in multimeter observing proper polarity.

b. Select VDC and scale exceeding 26 VDC.

CAUTION

Avoid touching multimeter probes together when making this test. Firing of parachute harness sensing release unit will result.

CAUTION

Do not use tester probes unless they have been modified. Inadvertent actuation may result.

c. Contact negative (black) probe to sensor plug assembly center conductor. Contact positive (red) probe to fixed sensor center conductor (Figure 50).

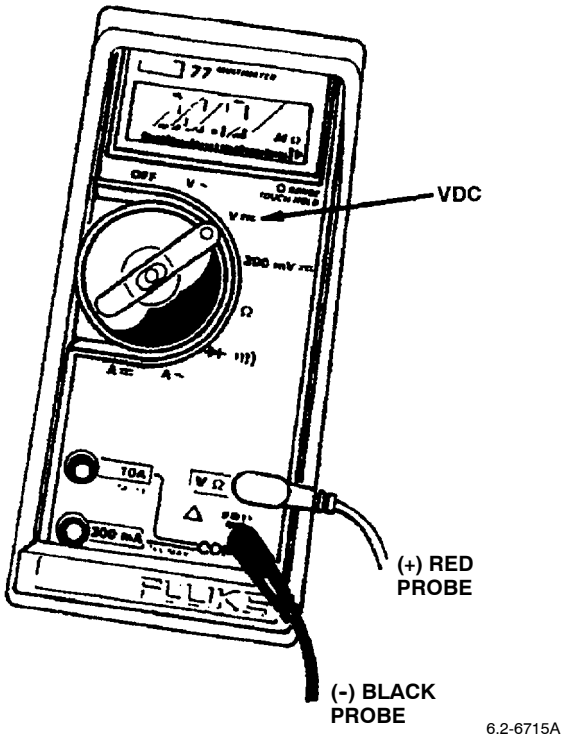
d. Reading of +22.5 volts DC or greater indicates PHSRU is serviceable, continue to Paragraph 23. Record voltage on Parachute Record (OPNAV 4790/101).

e. If reading is negative (-22.5 volts DC), remove sensor plug assembly and battery. Verify polarity and install per Paragraphs 8 and 21, and perform final inspection per Paragraph 22.

f. Or if reading is less than +22.5 volts DC, remove sensor plug and battery.

g. Verify battery voltage per Paragraph 9, perform installation and final check per Paragraphs 21 and 22, if new reading is not +22.5 volts or greater, identify battery as unserviceable and obtain replacement battery.

h. Battery polarity, voltage, installation and final check per Paragraphs 8 thru 9 and 21 thru 23, must be performed on all replacement batteries.



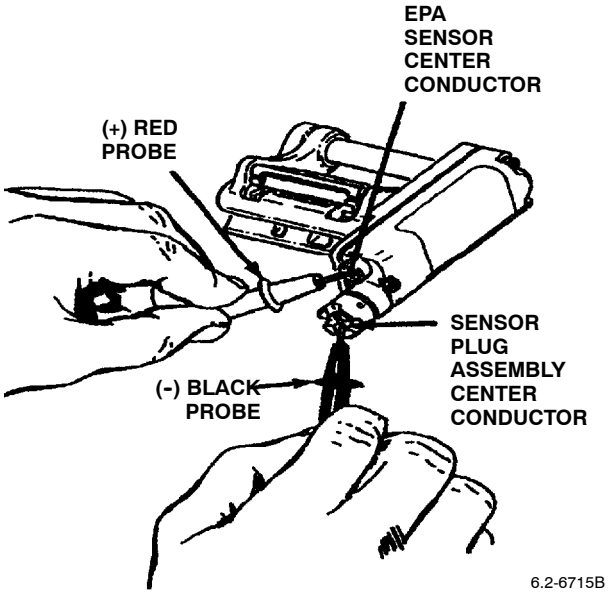


Figure 50. Final Check

23. APPLICATION OF TORQUE SEAL.

a. Apply torque seal to the plug, sensor plug and EPA attaching screws (Figure 51).

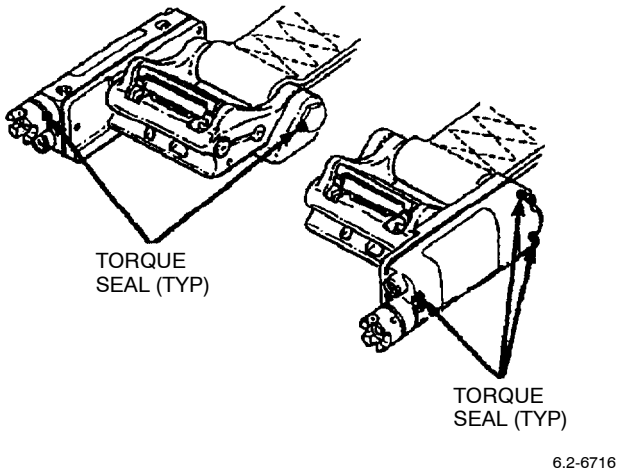


Figure 51. Application of Torque Seal

24. PHSRU X-RAY INSPECTION PROCEDURES.

a. Forward complete packed parachute assembly to either non-destructive inspection lab or medical facility for X-ray. SJU-4/A, SJU-8/A, SJU-11/A, SJU-12/A, SJU-13/A, SJU-14/A and SJU-17 Series riser assemblies may be forwarded vice the entire parachute assembly.

b. For Non-destructive inspection X-ray the set-up is as follows:

(1) Focal Film Distance (FFD) - 24 inches.

(2) Penetration of part - 120 kv.

(3) Time - 0.5 min. (30 seconds).

(4) Milliamps -5.

(5) Record serial number of Electronics Package Assembly (EPA) and serial number assembly on X-ray film.

c. For medical facility inspection X-ray the set-up is as follows:

(1) Focal Film Distance (FFD) - 40 inches.

(2) Penetration of part - 110 kv.

(3) Time - 0.005 sec.

(4) Milliamperes -30.

(5) Milliamperes Per Sec (quality of film) 2.1 MPS.

(6) Record serial number of Electronics Package Assembly (EPA) and serial number assembly on X-ray film.

NOTE

Many non-destructive inspection sites have upgraded their X-ray equipment, and Intermediate Maintenance Departments may receive a computer printout vice X-ray film. These printouts are acceptable if plug integrity is clearly visible.

d. Review X-ray/printout (Figure 52).

e. If plug assembly is suspected or known to be partially or fully recessed, measure overall length of plug. Replace plug if total length is less than 0.706-in. (Figure 7).

f. Record inspection on and attach X-rays or printouts to Parachute Record (OPNAV 4790/101).

25. VERIFY RECORDS.

a. Ensure proper information on Parachute Record (OPNAV 4790/101). (QA)

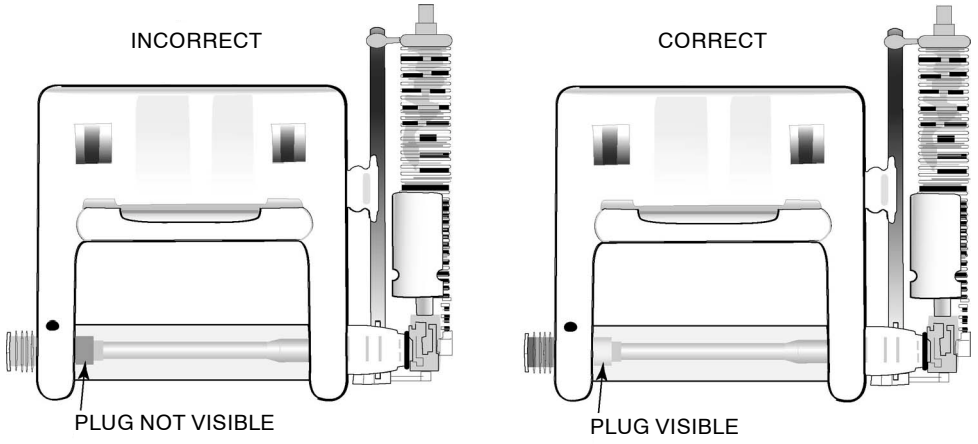


Figure 52. PHSRU X-Ray

INTERMEDIATE AND DEPOT MAINTENANCE

MAINTENANCE PROCEDURES

PARACHUTE HARNESS SENSING RELEASE UNITS (PHSRU) MXU-746/P and MXU-747/P

PART NO. 852AS117-3 and 852AS117-4

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1 thru 3	11	9	11	11	11	20 thru 21	11
4 thru 8	9	10	9	12 thru 19	9		

Reference Material

Cartridge Actuated Devices (CADS) and Propellant Actuated Devices (PADS) (IETM) . . . . . NAVAIR 11-100-1.1
Intermediate and Depot Maintenance, Illustrated Parts Breakdown, Parachute Harness Sensing Release Units (PHSRU), MXU-746/P and MXU-747/P . . . . . WP 024 03
Intermediate and Depot Maintenance, Illustrated Parts Breakdown, Parachute Harness Sensing Release Units (PHSRU), MXU-746/P and MXU-747/P, Special Tool Set . . . . . WP 024 04
Parachute Loft Requirements/Administration . . . . . WP 003 00

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Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains instructions for the maintenance and replacement of the various Parachute Harness Sensing Release Units (PHSRU) parts or subassemblies to ensure that the equipment remains in a Ready-For-Issue (RFI) status. All maintenance actions shall be documented on the Parachute Record.

b. The primary concern in repairing any assembly is ensuring that the basic structural integrity designed into the assembly is maintained. When performing the repairs detailed in this WP, follow these guidelines:

(1) Review and follow applicable instructions in this WP prior to starting repair.

(2) Ensure all necessary support equipment and materials required are available.

(3) All work shall be carefully inspected and compared to applicable instructions at completion of work to ensure conformity.

(4) Parts not meeting acceptable inspection criteria, accidentally fired/actuated, or identified as unserviceable will be shipped to the In-Service Support Team (ISST) by traceable means. Explosive Mishaps reports are required only for fired/actuated PHSRU's. Ship to the following address:

Commander
Code 461000D
NAVAIRWARCENWPNDIV
1900 N Knox Road Stop 6206
China Lake, CA 93555-6106

(5) A Quality Assurance (QA) inspector shall witness all application of torque values and electrical checks, and shall examine all designated QA tasks and finished work.

(6) For date of manufacture, refer to the manufacture's identification plate. See Figure 1 for lot numbering system.

2. DISASSEMBLY OF PHSRU.

WARNING

The following removal and installation procedures shall not be performed in the aircraft or in a radiation-hazardous area.

If PHSRU has been inadvertently fired, it will be necessary to replace all parts except the parachute release fitting and the PHSRU bracket.

Lot Number Example: CAX 01 B 001 - 001

CAX – Manufacturer Identification

01 – Two digit numeric code identifying year of production

B – A single alpha code signifying the month of production

001 – Lot interfix number

001 – Lot sequence number

Code for Month of Manufacture

A – Jan	D – Apr	G – Jul	K – Oct
B – Feb	E – May	H – Aug	L – Nov
C – Mar	F – Jun	J – Sep	M – Dec

Based on the information in the example above, the Date of Manufacture is: Feb 2001

Figure 1. Determining Date of Manufacture

Support Equipment Required

Part Number	Nomenclature
SA852AS105-1	Tool Set, Special

a. Disassemble per Paragraphs 3 thru 11.

3. REMOVAL OF SENSOR PLUG ASSEMBLY.

a. Unscrew sensor plug, using socket handle, sensor plug torque tool and special socket, remove and discard packing.

4. REMOVAL OF BATTERY.

a. Remove sensor plug per Paragraph 3.

b. Tip PHSRU, dumping battery out of Electronics Package Assembly (EPA).

c. Store battery in a cool, dry environment.

5. REMOVAL OF ELECTRONICS PACKAGE ASSEMBLY (EPA).

Support Equipment Required

Part Number	Nomenclature
SA852AS105-1	Tool Set, Special
—	Foil
—	Protective Cap
851AS281	Guard, Safety

CAUTION

To prevent inadvertent firing of cartridge, battery shall be removed prior to removal of EPA. If battery compartment has been damaged, request assistance of explosive ordance disposal (EOD) personnel.

a. Remove battery per Paragraph 4.

NOTE

In some cases the adapter plate and EPA may adhere together. In order to prevent damage to the cartridge it is recommended that the 5-in. bladed screwdriver, P/N PHRB3A be inserted approximately 1/8-in., near the bottom of the unit, between the adapter plate and EPA and twist 1/4 turn. This action will minimize any damage as a result of twisting or rocking off the EPA.

b. Using Phillips screwdriver, loosen three screws until EPA is free of adapter plate.

WARNING

When cartridge is exposed, foil and protective cap shall be placed on cartridge to prevent inadvertent firing.

NOTE

Screws called "captive mounting screws" and split lock washers are designed to stay in EPA when unscrewed from adapter plate. They need not be removed from EPA during the accomplishment of procedures presented in this WP.

6. REMOVAL OF CARTRIDGE ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
SA852AS105-1	Tool Set, Special
—	Foil
—	Protective Cap
851AS281	Guard, Safety

a. Remove EPA per Paragraph 5.

WARNING

When cartridge is exposed, foil and protective cap shall be placed on cartridge to prevent inadvertent firing.

When handling a cartridge, always point away from body to prevent injury in the event of inadvertent firing.

b. Place foil and protective cap on cartridge. (QA)

CAUTION

EMI gasket protects unit from electromagnetic interference and shall not be replaced with any substitute materials.

c. Remove electromagnetic interference (EMI) gasket.

CAUTION

Extreme care shall be taken when removing cartridge to prevent prying up on the electrical plug. This could damage the cartridge and may not be visible. If the cartridge is damaged, it will not operate when required. Do not force or cross thread cartridge.

d. Using cartridge alignment tool and socket handle, remove cartridge.

e. Remove and discard packing from cartridge.

WARNING

When cartridge is not installed in PHSRU it shall be installed in safety guard, to prevent inadvertent firing. Foil and protective cap shall be placed on cartridge.

f. Install cartridge in safety guard. Verify installation of foil and protective cap. Store per NAVAIR 11-100-1.1. (QA)

7. REMOVAL OF LOCKING DISC ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
SA852AS105-1	Tool Set, Special
—	Foil
—	Protective Cap

a. Remove EPA per Paragraph 5.

b. Remove and discard EMI gasket.

c. Place foil and protective cap on cartridge.

d. Using special socket and socket handle, remove locking disc plug.

e. Tip PHSRU allowing spring and locking disc to fall out.

f. Remove and discard packing from locking disc plug.

8. REMOVAL OF PLUG ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
SA852AS105-1	Tool Set, Special

a. Using special socket and socket handle, remove plug.

b. Remove and discard thread locking ring from plug.

9. REMOVAL OF RELEASE PISTON ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
SA852AS105-1	Tool Set, Special

a. Remove cartridge per Paragraph 6.

b. Remove plug per Paragraph 8.

c. Insert sleeve alignment tool into plug hole and push release piston out thru cartridge installation hole.

d. Remove and discard packing from release piston.

10. REMOVAL OF SLEEVE.

a. Remove release piston per Paragraph 9.

b. Extract riser from PHSRU.

c. Insert sleeve alignment tool into inboard side of sleeve and push sleeve out of riser.

11. INSPECTION AND DISASSEMBLY OF CANOPY RELEASE ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
TQS-050	Torque Meter
—	Socket, Hexagonal, Head Key Wrench, 1/4-in. Drive
990055-1 or 015-710001-1	Adapter, Male

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

CAUTION

After pin has been removed, do not lift canopy release assembly fitting locking cover plate.

a. Inspect release body for broken springs, corrosion, dents, dirt or sharp edges. Inspect the release lever left and right arms for cracks.

b. Measure torque of knurled actuating lever as follows:

(1) Hold locking lever in the open position and insert torque meter into either hexagonal cavity.

(2) Rotate actuating lever to point just prior to contact with body. The allowable torque is 28 to 50-in. oz.

c. Inspect replacement canopy release assembly for proper locking as follows.

(1) Engage male adapter (with trapezoidal notch) with the canopy release assembly (Figure 2).

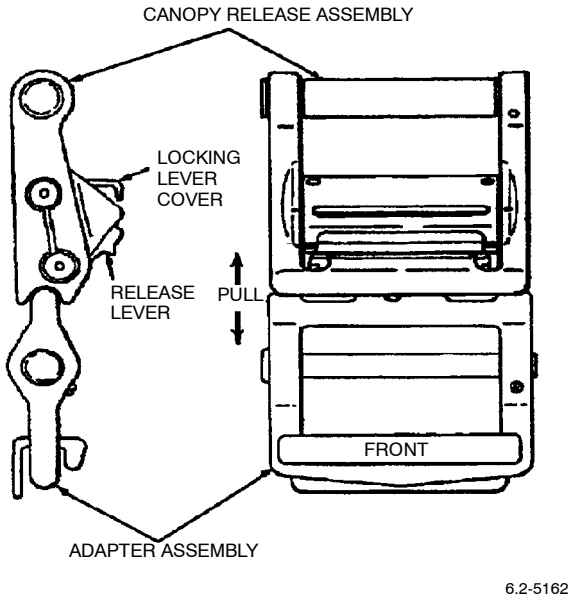


Figure 2. Canopy Release Assembly

(2) Verify full locking of canopy release assembly by lifting locking lever and attempting to disengage adapter from canopy release assembly.

NOTE

Any free movement of actuating lever without spring tension is cause for rejection of canopy release assembly.

d. Remove and discard setscrew.

e. Extract and discard pin.

12. ASSEMBLY OF PHSRU.

Support Equipment Required

Part Number	Nomenclature
SA852AS105-1	Tool Set, Special
MIL-H-45193 or Equivalent	Heater, Gun Type, Electric
FLUKE-77	Multimeter

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
MIL-S-8660	Compound, Silicone
H-B-491	Brush, Non-metallic

a. Install PHSRU per Paragraphs 13 thru 27.

13. PREASSEMBLY INSPECTION OF VITAL PARTS.

a. Trial fit the piston into the sleeve. Piston should slide easily into sleeve allowing 1/8-in. of piston to protrude (Figure 3).

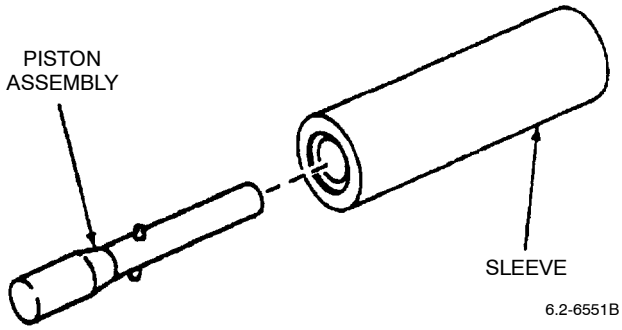


Figure 3. Trial Fit Piston

b. Trial fit plug into opposite end of sleeve. Plug must insert without force or restriction up to shoulder (Figure 4).

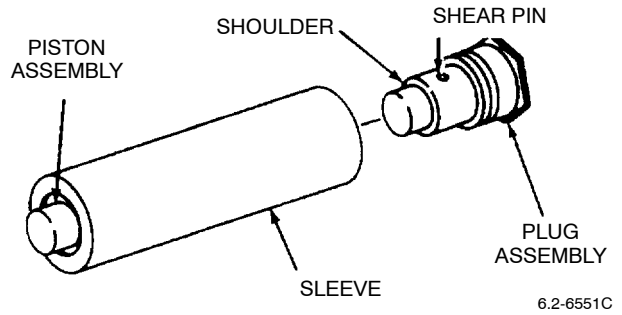


Figure 4. Trial Fit Plug

c. Remove plug and piston from sleeve.

WARNING

Do not use a wrench to do trial fit.

d. Trial fit plug by screwing finger-tight into small arm of adapter plate until thread locking ring contacts adapter plate (Figure 5).

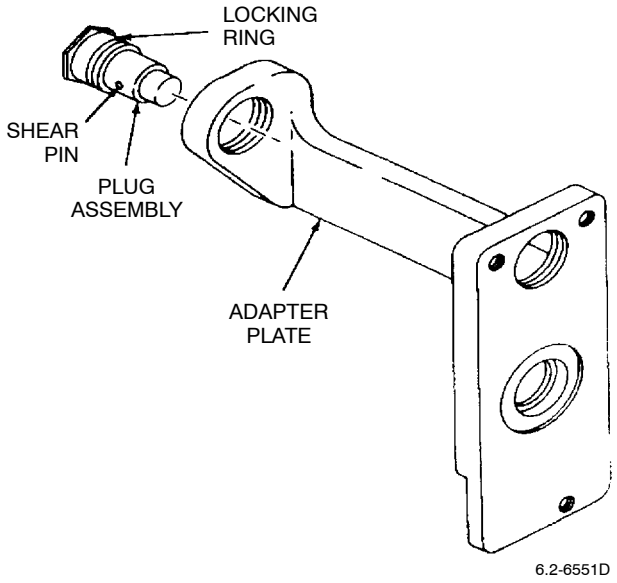


Figure 5. Trial Fit Plug

e. Remove the plug from adapter plate. Check shear pin and plug.

f. Trial fit sleeve between arms of canopy release. Sleeve must not show evidence of binding or restriction of movement (Figure 6).

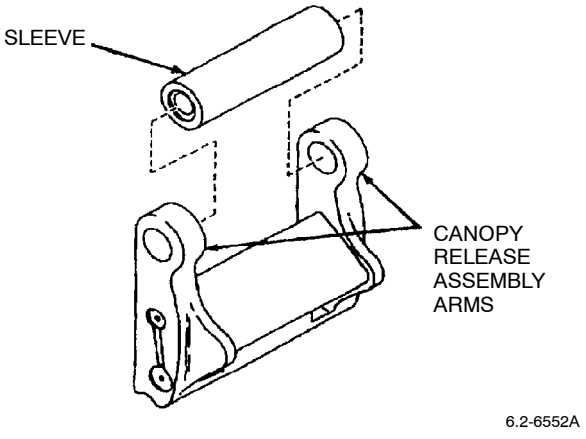


Figure 6. Trial Fit Sleeve

g. Remove sleeve from canopy release.

h. Trial fit sleeve alignment tool into holes in both sides of release. If any of above trial fit procedures should fail use another canopy release and repeat steps until proper fit is achieved (Figure 7).

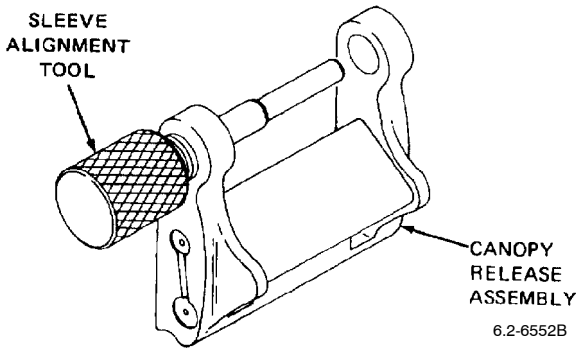


Figure 7. Trial Fit Sleeve Alignment Tool

WARNING

When handling cartridge always point away from body to prevent injury in the event of inadvertent firing.

Foil and protective cap shall remain installed on cartridge to prevent inadvertent firing.

i. Remove safety guard from cartridge (Figure 8).

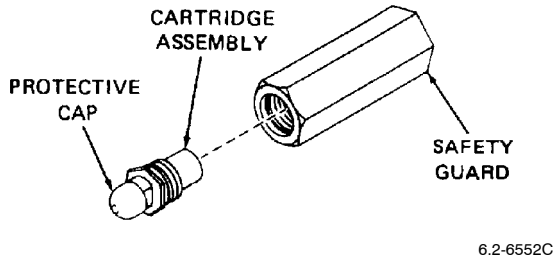


Figure 8. Remove Safety Guard

j. Trial fit large end of release piston into cartridge. Release piston shall fit freely into cartridge (Figure 9).

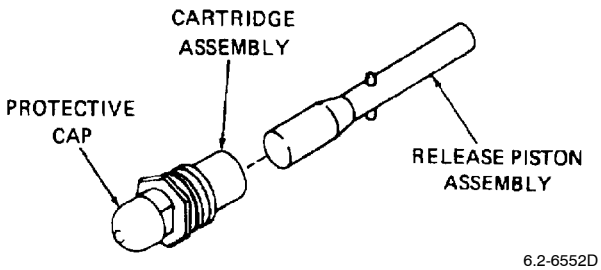


Figure 9. Trial Fit Large End of Release Piston

k. Remove piston from cartridge and install cartridge in safety guard.

l. Prior to continuing all above conditions shall be satisfied.

14. INSTALLATION OF SLEEVE.

Support Equipment Required

Part Number	Nomenclature
SA852AS105-1	Tool Set, Special

a. Perform vital parts preassembly check per Paragraph 13.

b. Install sleeve as described below.

c. Place sleeve insertion tool into sleeve. Insertion tool must fit flush as shown. If not, insertion tool may be installed in wrong end of sleeve (Figure 10).

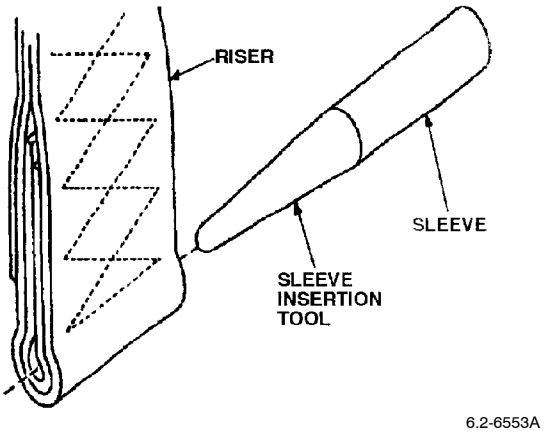


Figure 10. Place Insertion Tool Into Sleeve

d. Insert insertion tool and sleeve into riser from inboard side of riser (right riser shown) until sleeve ends are flush with riser sides (Figure 11).

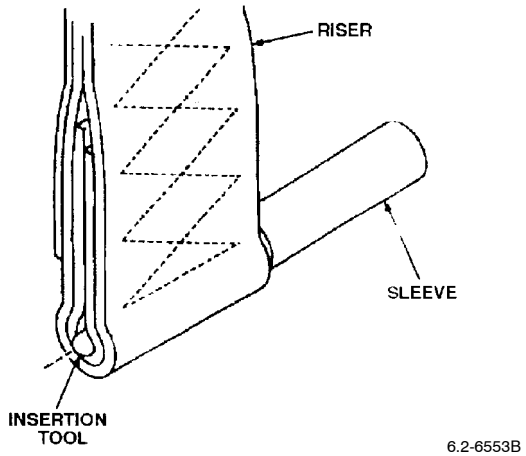


Figure 11. Insert Insertion Tool

e. Remove insertion tool from sleeve leaving sleeve in riser (Figure 12).

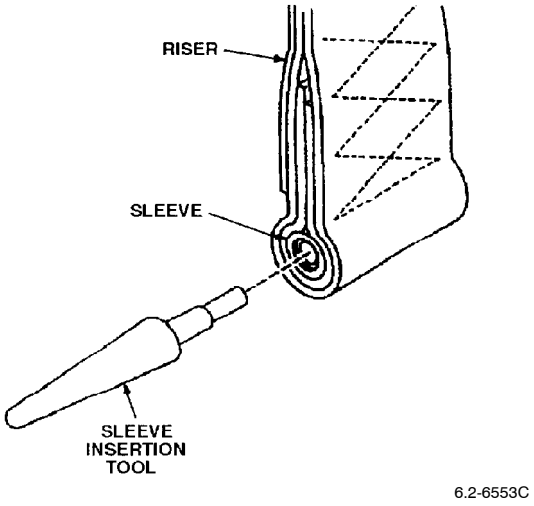


Figure 12. Remove Insertion Tool

15. SHEAR PIN INTEGRITY CHECK.

Support Equipment Required

Part Number	Nomenclature
—	Micrometer, 0-1-in. Outside
GGG-C-105	Micrometer, 0-8-in. Depth

a. Remove plug.

b. Measure overall length of plug. Replace plug if total length is less than 0.706-in. (Figure 13). (QA)

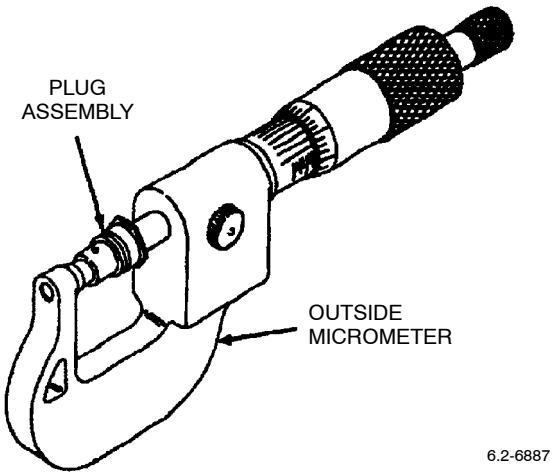


Figure 13. Measure Overall Length of Plug

CAUTION

Use care not to disturb position of release piston assembly within the sleeve. Do not apply excessive pressure.

c. Ensure sleeve canopy release and adapter plate holes are aligned.

d. Install plug finger tight into adapter plate until thread locking ring contacts adapter plate. If any resistance is felt. Remove and inspect plug assembly for cross-threads or broken shear pin, repeat the step. (QA)

16. INSTALLATION OF PLUG ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
MIL-H-45193 or Equivalent	Heater, Gun Type, Electric
SA852AS105-1	Tool Set, Special

a. Install sleeve per Paragraph 14.

b. Align canopy release with adapter plate (right hand shown) (Figure 14).

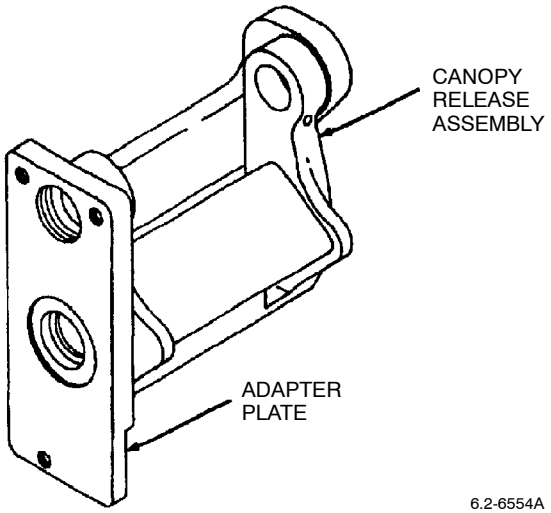


Figure 14. Align Canopy Release

c. Place riser and sleeve between arms of canopy release (Figure 15).

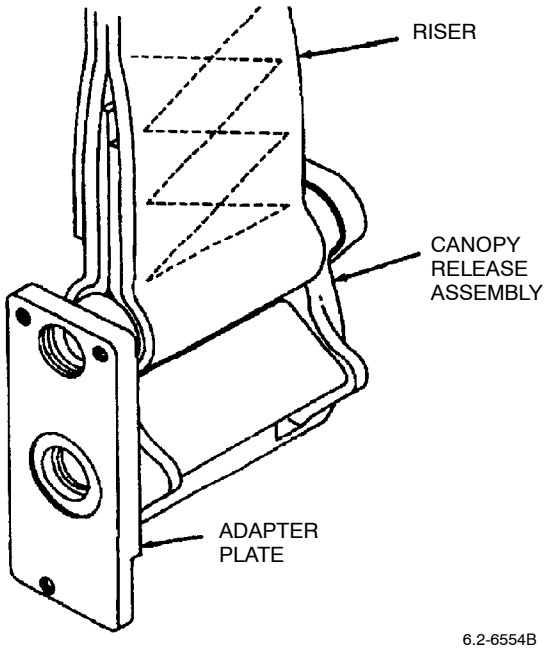


Figure 15. Placement of Riser and Sleeve

d. Install sleeve alignment tool (finger-tight only) thru adapter plate, canopy release and into sleeve that is installed in riser. Loosen sleeve alignment tool 1/4 to 1/2 turn (Figure 16).

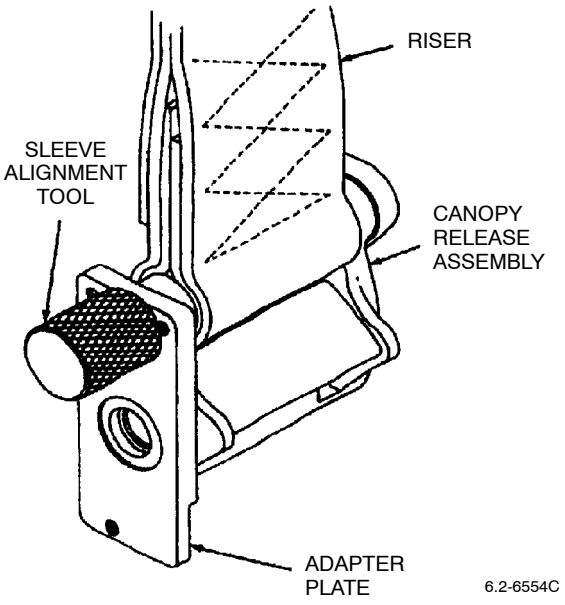


Figure 16. Install Sleeve Alignment Tool

e. Install thread locking ring on plug between hex head and threads (Figure 17).

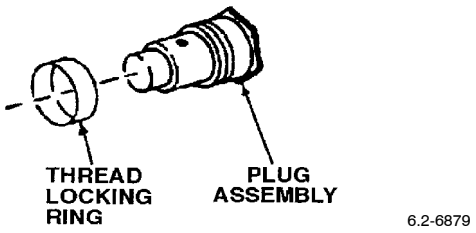


Figure 17. Install Thread Locking Ring

f. Using heating gun, heat thread locking ring until a snug fit is obtained. (QA)

WARNING

Under no circumstances should a wrench be used to install plug. Use of wrench may damage plug resulting in a malfunction during parachute opening.

NOTE

If any resistance is felt during installation of plug, adjust sleeve until plug can be installed finger tight.

g. Opposite inserted sleeve alignment tool ensure sleeve canopy release and adapter plate holes are aligned (Figure 18).

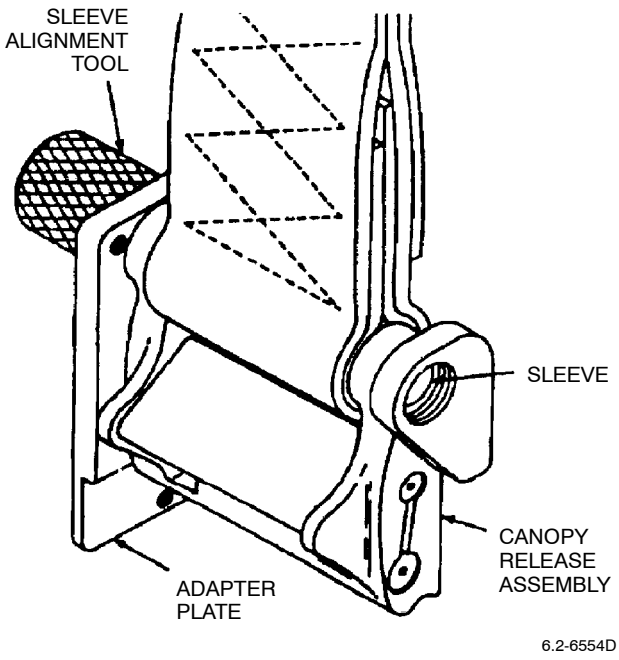


Figure 18. Opposite Inserted Sleeve Alignment Tool

h. Install plug finger-tight into adapter plate until thread locking ring contacts adapter plate. If any resistance is felt, remove and inspect plug for cross threads or broken shear pin, repeat step (Figure 19). (QA)

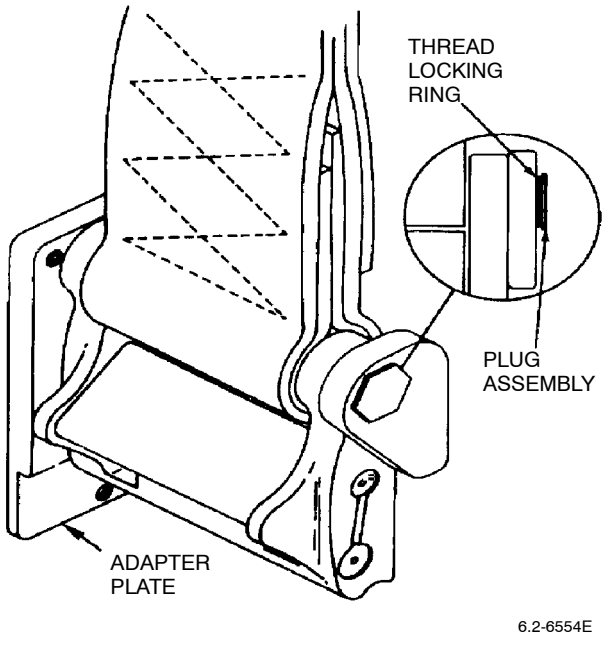


Figure 19. Install Plug

i. If plug cannot be installed finger-tight, obtain another canopy release and repeat Paragraph 13, step h, Paragraph 15, step d, and Paragraph 16.

17. INSTALLATION OF LOCKING DISC ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
SA852AS105-1	Tool Set, Special

a. Install locking disc as described below:

(1) Install packing on locking disc plug.

(2) Place locking disc in adapter plate and ensure blade of locking disc seats in canopy release slot. Install spring in locking disc plug recess (Figure 20). (QA)

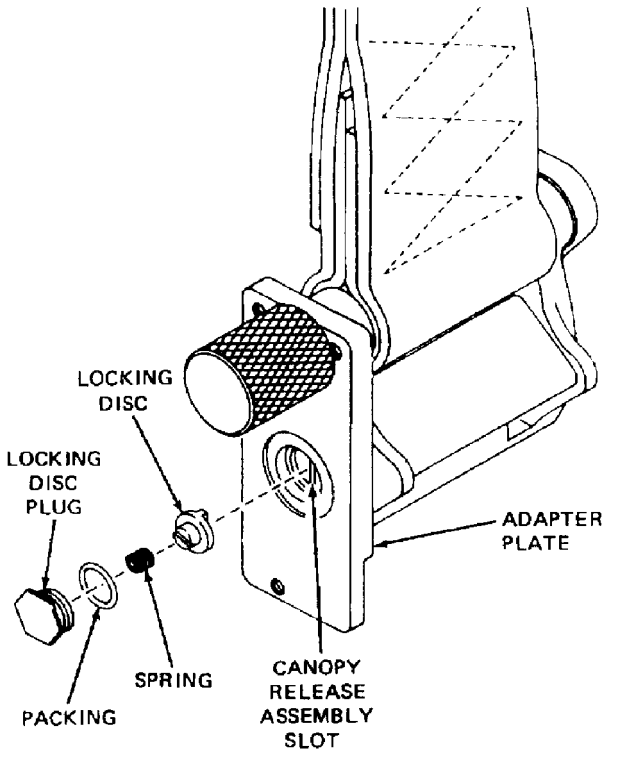


Figure 20. Placement of Locking Disc

(3) Screw locking disc plug into adapter plate finger-tight (Figure 21).

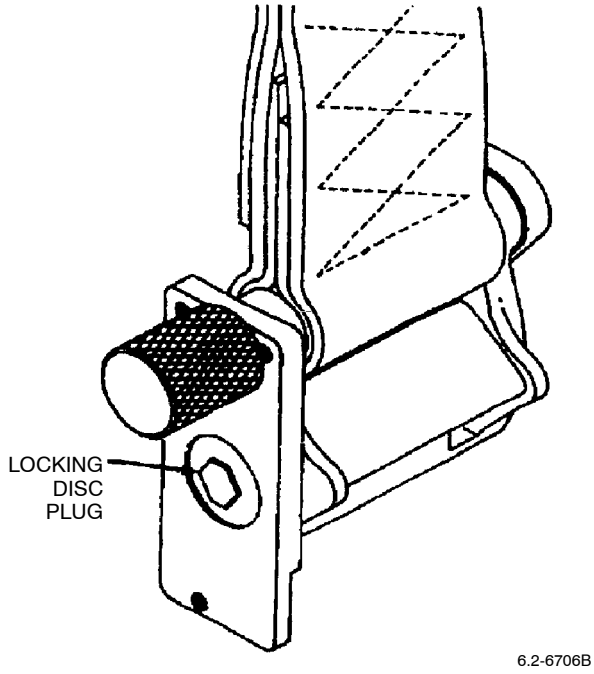


Figure 21. Screw Locking Disc Plug

(4) Torque locking disc plug 30 to 40 in-lbs. using special socket and torque driver (Figure 22). (QA)

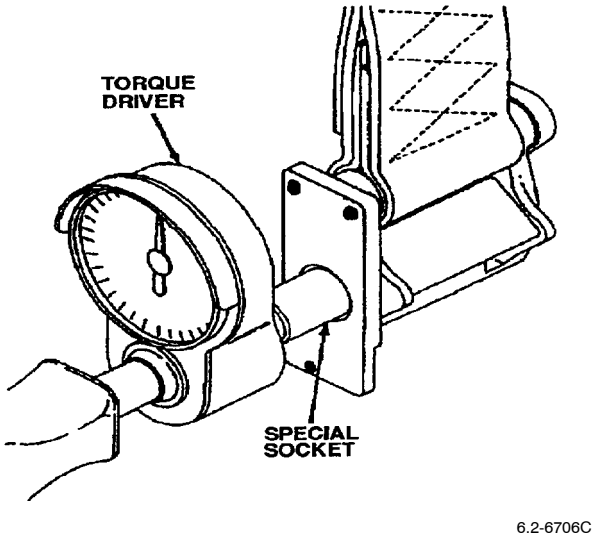


Figure 22. Torque Locking Disc Plug

18. INSTALLATION OF RELEASE PISTON ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
SA852AS105-1	Tool Set, Special

Materials Required

Specification or Part Number	Nomenclature
MIL-S-8660	Compound, Silicone

a. Install locking disc per Paragraph 17.

b. Install release piston as described below:

(1) Lubricate packing with silicone compound and install over small end of release piston. Use care when moving packing over shear pin and position at sloping shoulder (Figure 23).

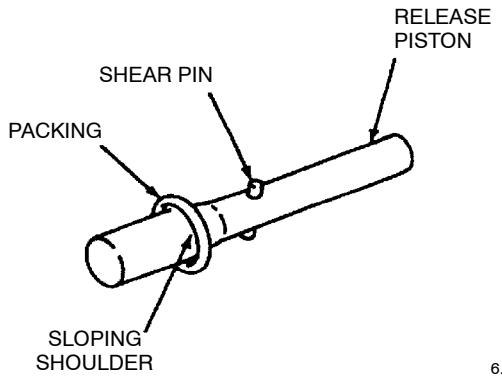


Figure 23. Lubricate Packing

(2) Insert release piston into release piston O-ring installation tool (Figure 24).

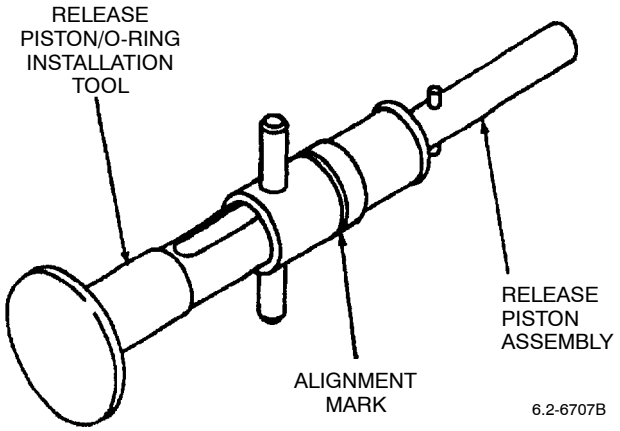


Figure 24. Insert Release Piston

(3) Remove sleeve alignment tool from canopy release (Figure 25).

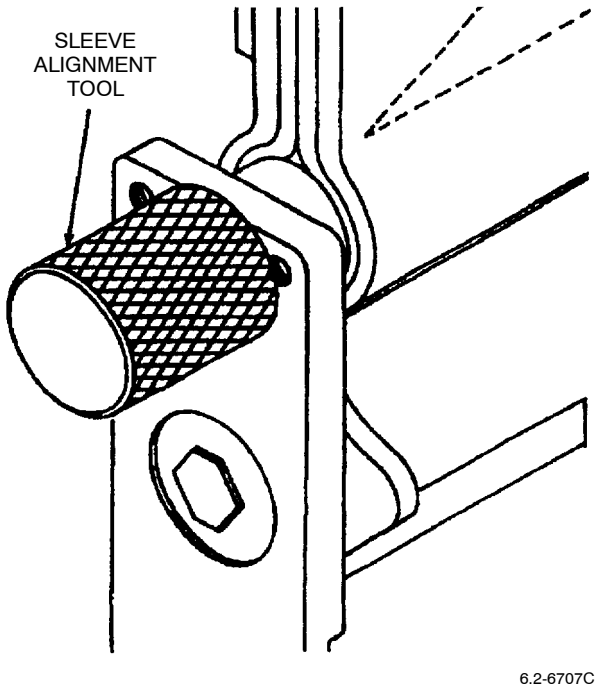


Figure 25. Remove Sleeve Alignment Tool

(4) Hold release piston O-ring installation tool at lower outer barrel and insert release piston and packing into cartridge barrel (Figure 26).

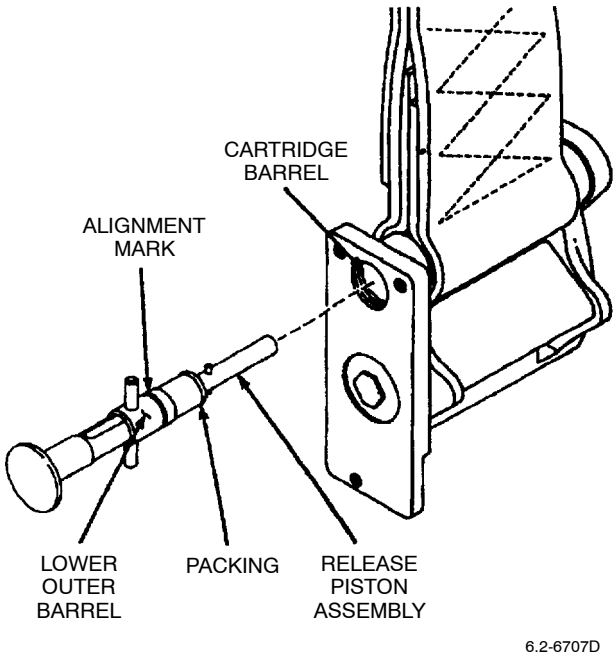


Figure 26. Hold Release Piston O-Ring Installation Tool

(5) Use a rotating back and forth motion until release piston O-ring installation tool is inserted to full depth (even with alignment mark on tool) (Figure 27). (QA)

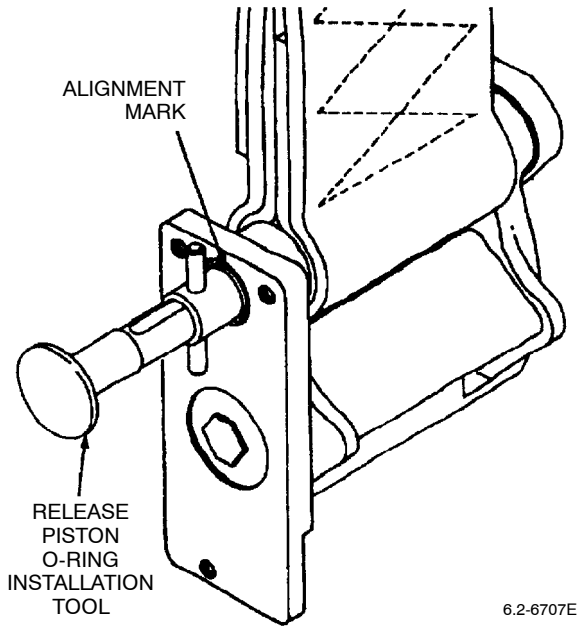


Figure 27. Rotate Back and Forth to Release O-Ring

(6) Depress release piston O-ring installation tool plunger to seat release piston and packing (Figure 28).

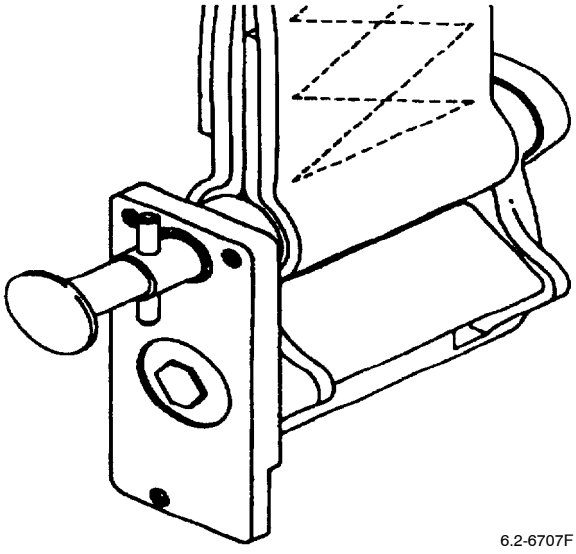


Figure 28. Depress Release Piston O-Ring Installation Tool

(7) Remove release piston tool from cartridge barrel.

19. INSTALLATION OF CARTRIDGE ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
SA852AS105-1	Tool Set, Special

Materials Required

Specification or Part Number	Nomenclature
MIL-S-8660	Compound, Silicone

a. Install locking disc per Paragraph 17.

b. Install cartridge as described below:

WARNING

Safety guard protective cap and foil shall not be removed until instructed. When handling a cartridge, always point it away from body. Removing protective cap and foil from cartridge increases possibility of inadvertent firing.

(1) Remove safety guard from cartridge. Leave protective cap and foil in place (Figure 29).

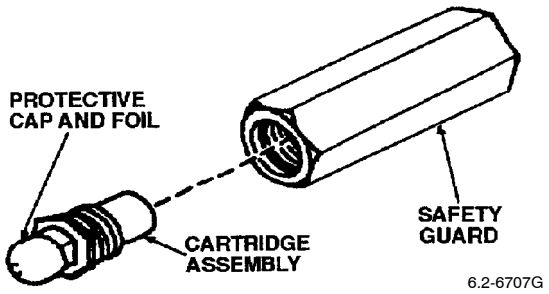


Figure 29. Remove Safety Guard

(2) Install packing on cartridge (Figure 30).

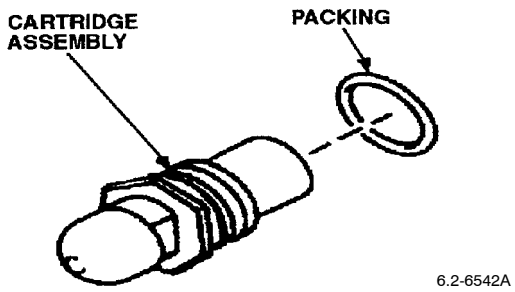


Figure 30. Verify Presence of Packing

(3) Verify presence of white pressure disc in cartridge using inspection mirror (Figure 31). (QA)

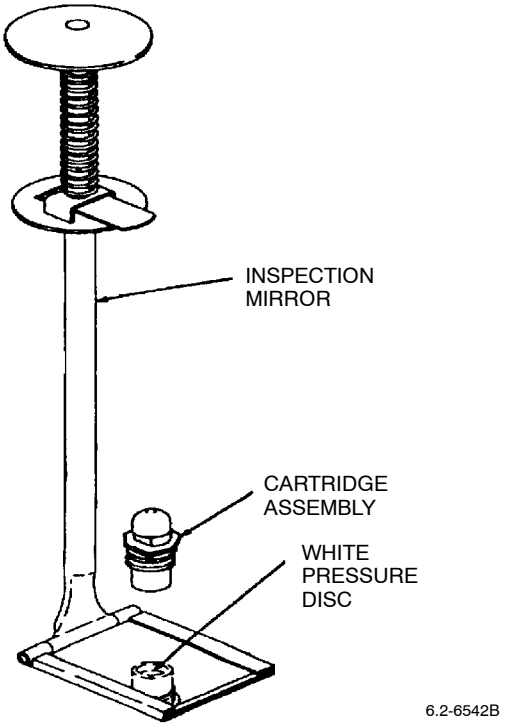


Figure 31. Verify Presence of White Pressure Disc

(4) Verify cartridge has not exceeded shelf or service life. (QA)

(5) Verify proper information on Parachute Record (OPNAV 4790/101). (QA)

(6) Install cartridge finger-tight until packing contacts adapter plate (Figure 32).

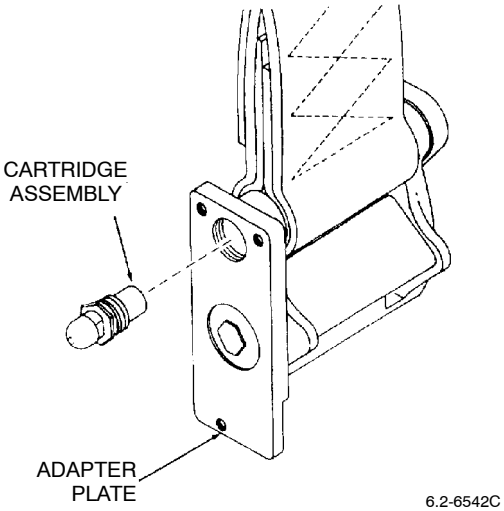


Figure 32. Install Cartridge

(7) Fit cartridge torque alignment tool to adapter plate.

(8) Torque cartridge 25 to 35 in-lbs. with torque driver (Figure 33). (QA)

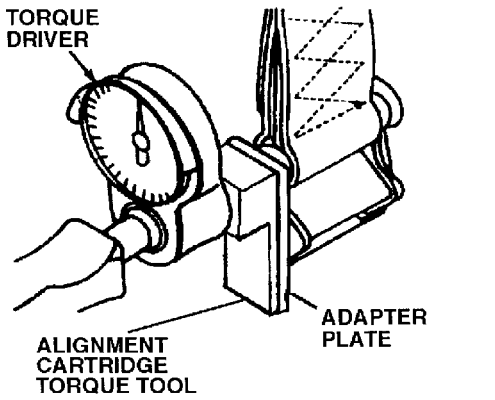


Figure 33. Torque Cartridge

20. RESISTANCE CHECK OF SENSOR PLUG ASSEMBLY AND ELECTRONICS PACKAGE ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
FLUKE-77	Multimeter

a. Perform sensor plug resistance check as follows:

(1) Replacement sensor plug must pass resistance check before installation.

CAUTION

Do not use tester probes until they have been modified. Inadvertent actuation may result.

(2) Remove sensor plug from EPA.

(3) Select multimeter resistance scale (Figure 34).

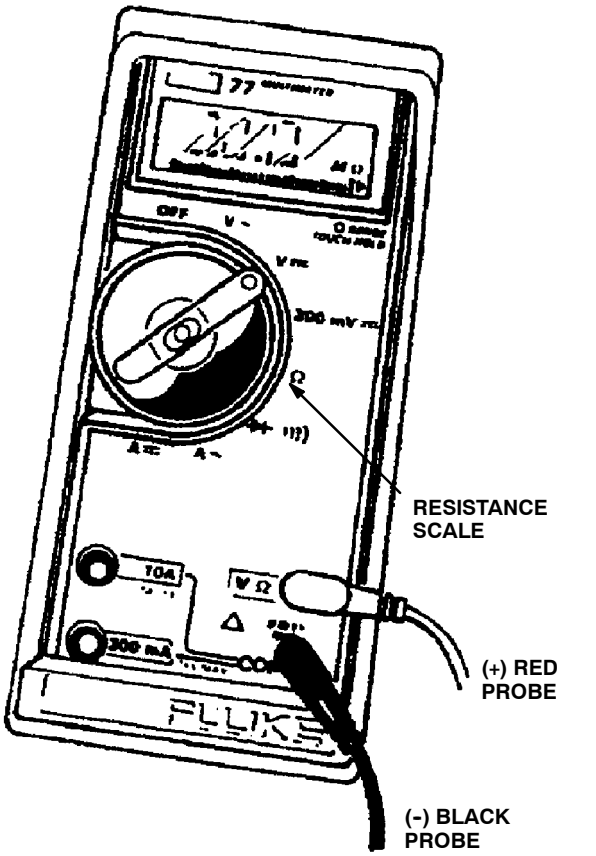


Figure 34. Select Multimeter

WARNING

When performing the resistance check for Generation III EPA's, the FLUKE-77 meter leads must be positioned with the positive lead (red) on the fixed sensor and the negative lead (black) on the EPA housing. Failure to place leads correctly will result in a failure.

The hand held (CONAX Gun) battery tester cannot be used to test PHSRU units with the Generation III EPA's installed.

(4) Contact probes to sensor plug center conductor and sensor plug metal threads (Figure 35).

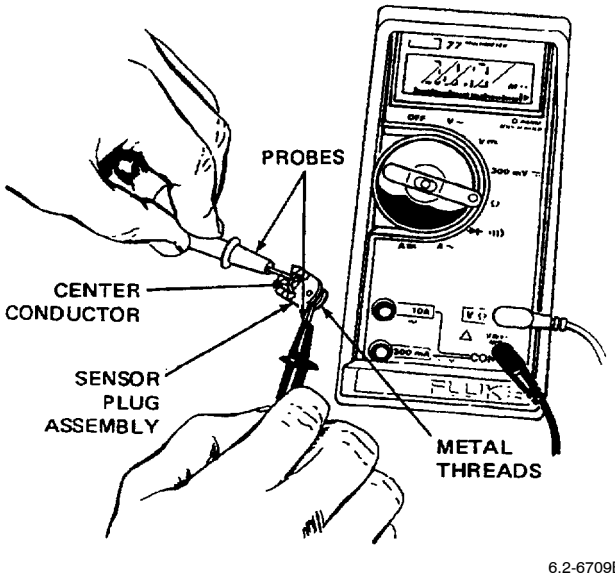


Figure 35. Contact Probes to Sensor Plug

(5) Read resistance on multimeter. If reading is greater than 20 megohms, or over limit (OL), the sensor plug is deemed serviceable. If less than 20 megohms, sensor plug has failed to pass resistance check and will be tagged unserviceable. Obtain another sensor plug and repeat sub-steps (4) and (5). (QA)

(6) Perform EPA resistance check as described below.

(7) Replacement EPA must pass resistance check before installation.

(8) Select multimeter resistance scale (Figure 34).

(9) Contact probes to EPA fixed sensor (+) and non-anodized surface of EPA (-) (Figure 36).

(10) Read resistance on multimeter. If reading is greater than 20 megohms, or over limit (OL), EPA is deemed serviceable. If less than 20 megohms, EPA has failed to pass resistance check and will be tagged unserviceable. Obtain another EPA and repeat sub-steps (9) and (10). (QA)

(11) Install sensor plug in EPA finger tight.

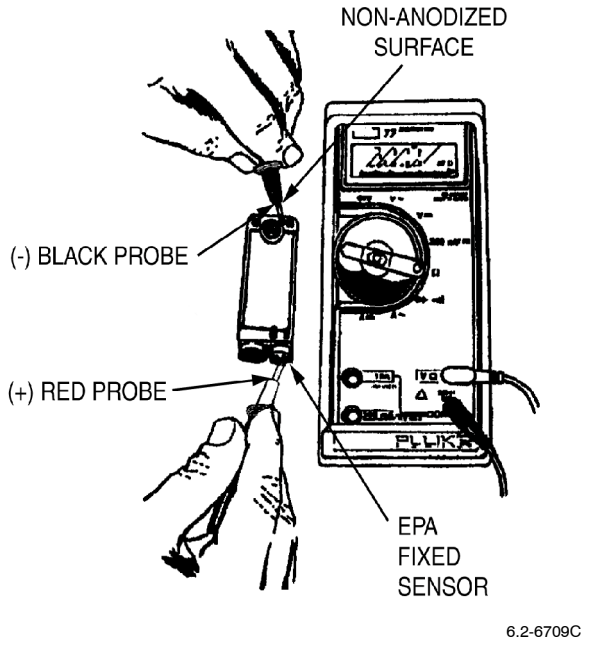


Figure 36. Perform Resistance Check

21. INSTALLATION OF ELECTRONICS PACKAGE ASSEMBLY (EPA).

Materials Required

Specification or Part Number	Nomenclature
MIL-S-22473	Primer, Sealing Compound, Form R, Grade T
MIL-S-22473	Sealing Compound, Grade H
—	Swab, Cotton
O-E-760	Alcohol, Denatured
PX-O	Pen, Marking
—	Pencil, Indelible

a. Ensure battery is not installed in EPA. QA)

CAUTION

EMI gasket used with EPA protects unit from electromagnetic interference and shall not be replaced with any substitute materials.

b. Ensure new EMI gasket is used.

c. Record data on adapter plate side of EMI gasket with black or indelible pencil as follows:

EPA serial number.
EPA lot number.
EPA expiration julian date.
Cartridge installation julian date.
Cartridge lot number.

d. Verify correctness of all markings. (QA)

e. Verify proper information on Parachute Record (OPNAV 4790/101). (QA)

f. Clean EPA screws and threaded screw holes of adapter plate thoroughly using alcohol and cotton swab. Allow to dry 3 to 5 min (Figure 37).

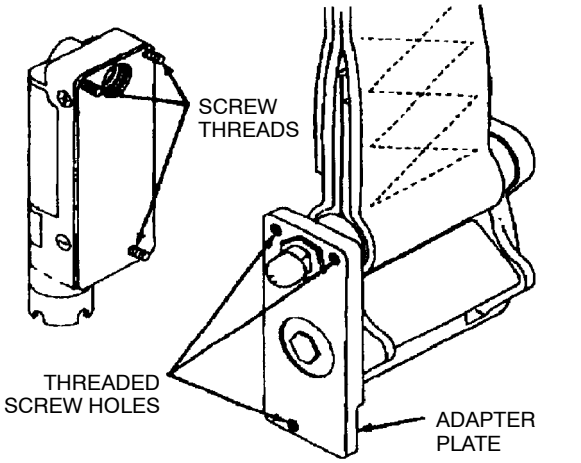


Figure 37. Apply Primer to Threads of Screws

g. Align EMI gasket over EPA (Figure 38).

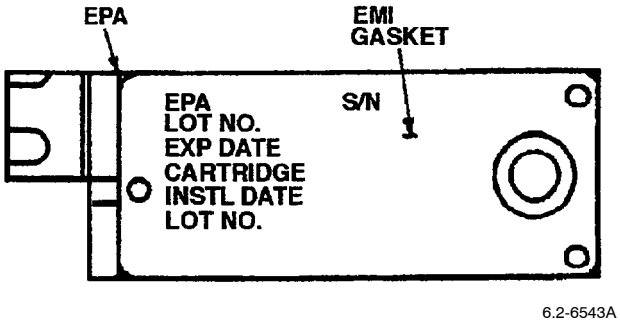


Figure 38. Align EMI Gasket

h. Apply primer to threads of screws and threaded screw holes of adapter plate and allow to dry for 3 to 5 min.

i. Apply sealing compound to threads of screws ensuring all threads are covered.

j. Remove protective cap and foil from cartridge and retain for possible future use. Visually inspect cartridge electrical plug for damage (Figure 39). (QA)

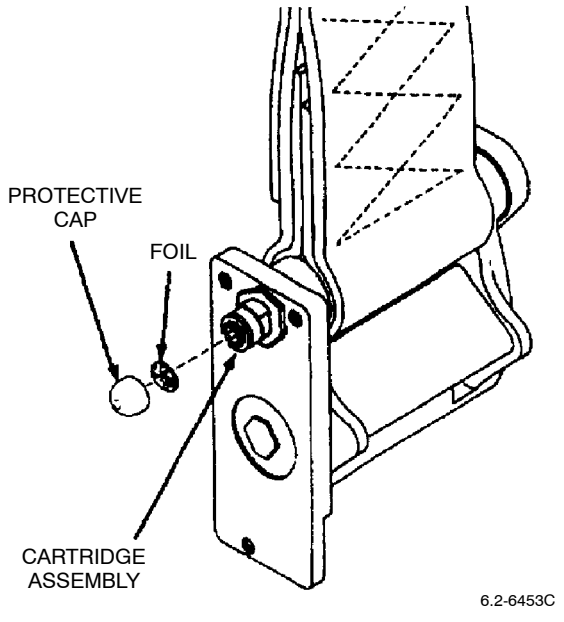


Figure 39. Remove Protective Cap and Foil

k. Install EPA on adapter plate and start screws with Phillips screwdriver. Do not tighten (Figure 40).

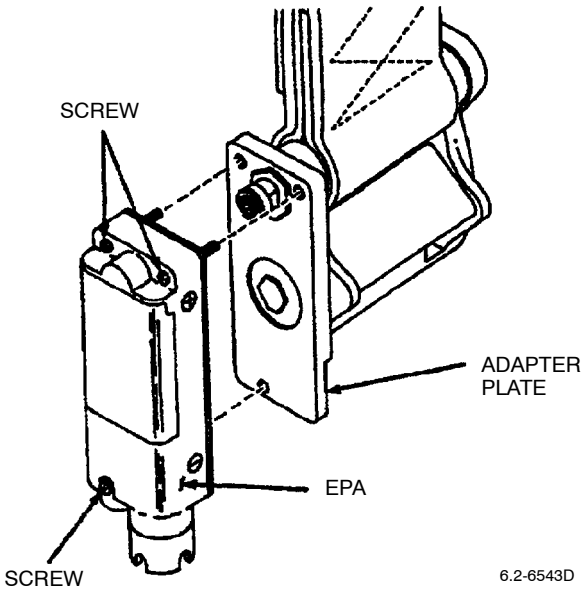


Figure 40. Install EPA on Adapter Plate

l. Torque screws 11 to 13 in-lbs. Using bit holder and torque driver (Figure 41). (QA)

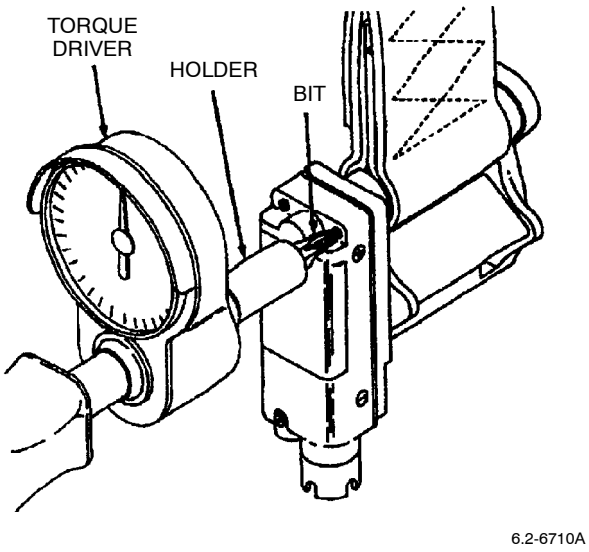


Figure 41. Torque Screws

m. Clean primer and sealing compound residue from adapter plate surface with alcohol.

22. TORQUING OF PLUG ASSEMBLY.

Support Equipment Required

Part Number	Nomenclature
SA852AS105-1	Tool Set, Special

a. Torque plug 45 to 55 in-lbs. using 7/16 x 1/4 socket and torque driver per (Figure 42). (QA)

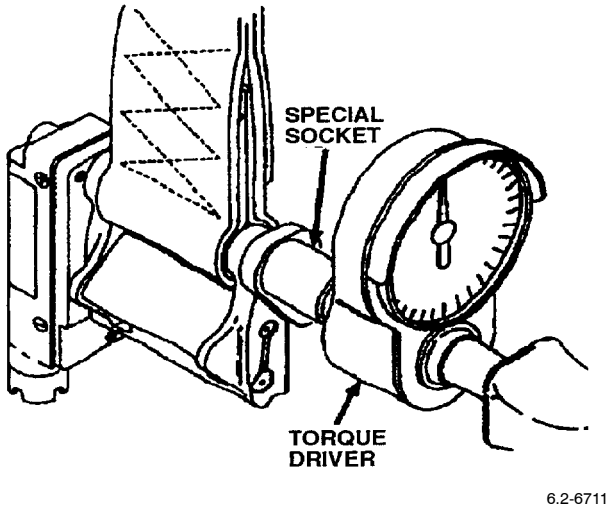


Figure 42. Torquing Plug Assembly

23. BATTERY POLARITY CHECK.

a. Verify that positive symbol (+) on battery case matches positive symbol (+) on pole (Figure 43). (QA).

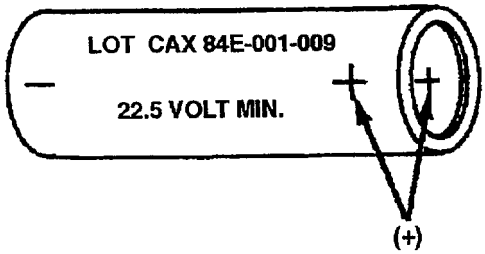


Figure 43. Battery Polarity Check

24. BATTERY VOLTAGE CHECK.

Support Equipment Required

Part Number	Nomenclature
FLUKE-77	Multimeter

a. Install meter test leads in multimeter observing proper polarity.

b. Select volts direct current (VDC).

c. Contact positive end of battery with red probe (+) and negative end with black probe (-).

d. Reading shall be 22.5 volts DC or greater. If reading is below 22.5 volts DC, battery must be replaced. Replacement battery must be checked per Paragraph 23 (Figure 44). (QA)

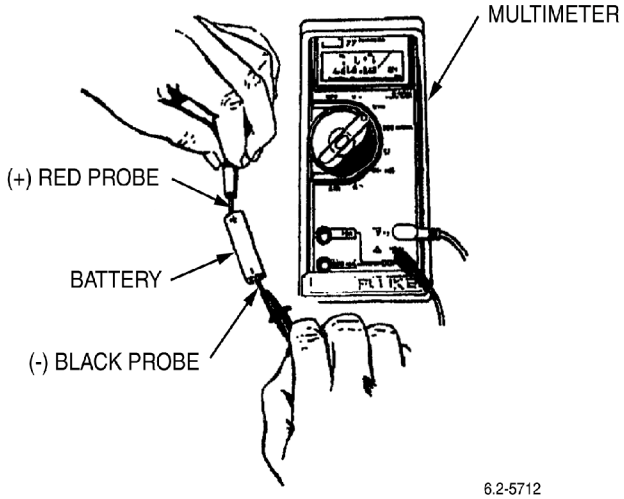


Figure 44. Battery Voltage Check

25. INSTALLATION OF BATTERY.

Support Equipment Required

Part Number	Nomenclature
SA852AS105-1	Tool Set, Special
—	Pencil Indelible

a. Remove sensor plug from EPA (Figure 45).

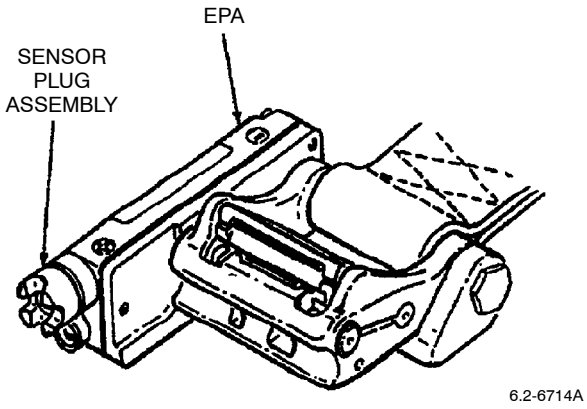


Figure 45. Remove Sensor Plug

b. Verify presence of sensor plug spring (Figure 46). (QA)

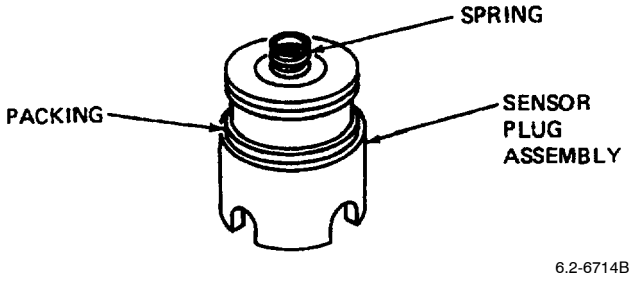


Figure 46. Presence of Sensor Plug Spring

c. Verify presence of packing on sensor plug. (QA)

d. Verify installation Julian date on battery. (QA)

e. Verify proper information on Parachute Record (OPNAV 4790/101). (QA)

WARNING

EPA and battery case are marked with positive (+) and negative (-) symbols. Battery shall be installed positive (+) pole first. Incorrect installation will result in PHSRU malfunction.

f. Install battery positive (+) pole first into EPA and install sensor plug finger-tight (Figure 47). (QA)

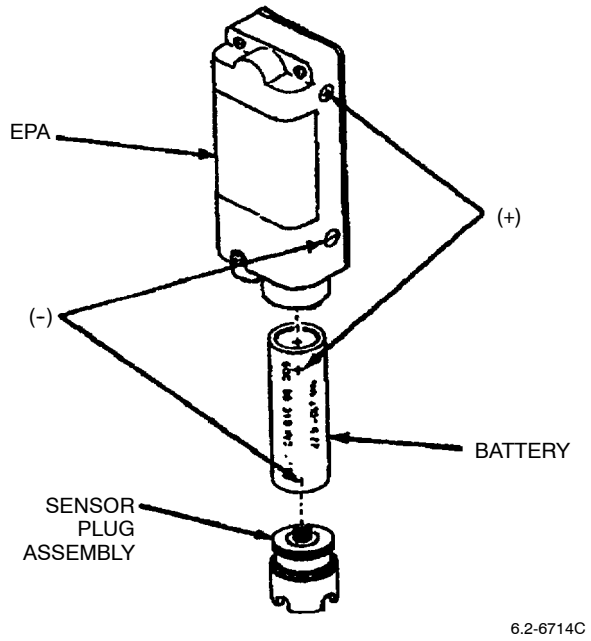


Figure 47. Install Battery

CAUTION

Extreme care must be taken to keep torque driver with special socket in line directly over sensor plug when applying required torque (do not overtorque). Failure to comply can cause damage to sensor plug, resulting in failure.

g. Torque sensor plug 20 to 22 in-lbs. using sensor plug torque tool and torque driver (Figure 48). (QA)

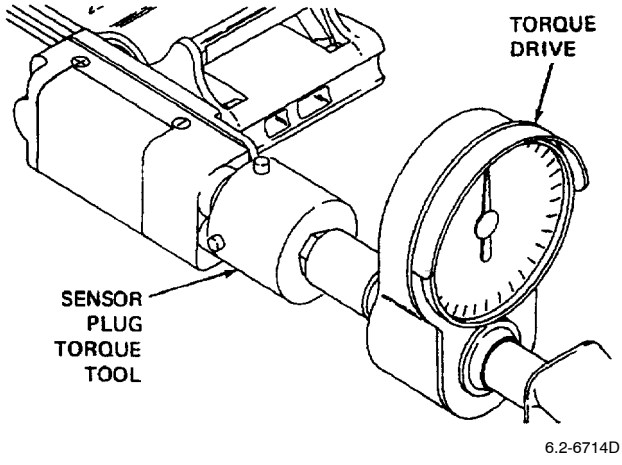


Figure 48. Torque Sensor Plug

26. FINAL CHECK.

Support Equipment Required

Part Number	Nomenclature
FLUKE-77	Multimeter

a. Install test leads in multimeter observing proper polarity.

b. Select VDC and scale exceeding 26 VDC.

CAUTION

Avoid touching meter probes together when making this test. Firing of PHSRU unit will result.

c. Contact negative (black) probe to sensor plug center conductor. Contact positive (red) probe to fixed sensor center conductor (Figure 49).

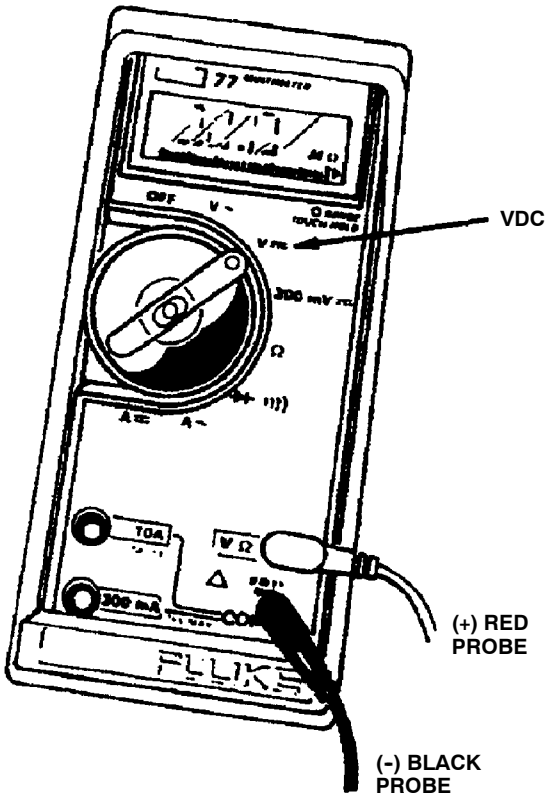
d. Reading of +22.5 volts DC or greater indicates PHSRU is serviceable. Record voltage on Parachute Record (OPNAV 4790/101).

e. If reading is negative, remove sensor plug and battery. Verify polarity and install per Paragraphs 24 and 25, and perform final inspection per Paragraph 26.

f. If reading is less than +22.5 volts DC, remove sensor plug and battery.

g. Verify battery voltage per Paragraph 23, perform battery installation and final check per Paragraphs 25 and 26, if new reading is not +22.5 volts or greater, find battery as unserviceable and obtain replacement battery.

h. Battery voltage check, polarity, installation and final check per Paragraphs 23 thru 26, must be performed on all replacement batteries.



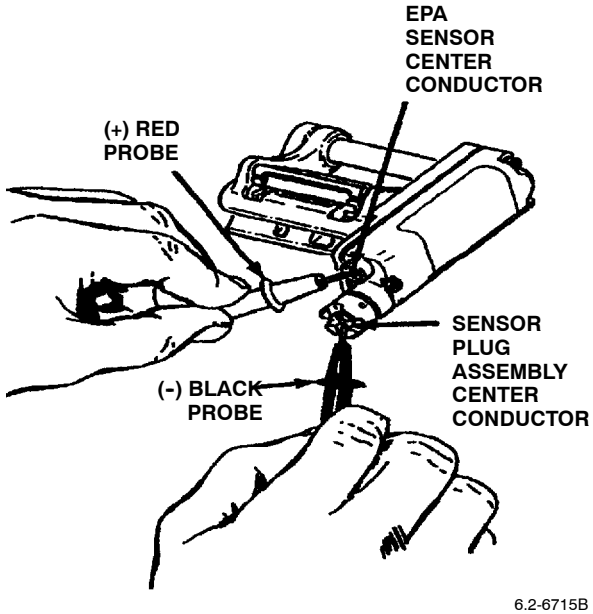


Figure 49. Final Check

27. APPLICATION OF TORQUE SEAL.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Apply torque seal to the plug, sensor plug, and EPA attaching screws so they may be easily seen during inspections per (Figure 50). (QA)

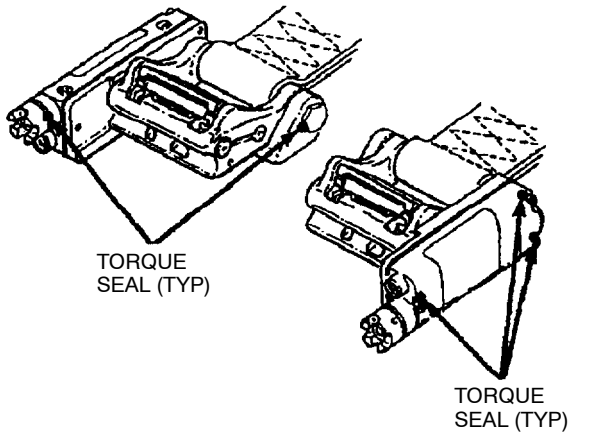


Figure 50. Application of Torque Seal

28. PHSRU X-RAY INSPECTION PROCEDURES.

NOTE

This procedure will be conducted only if the plug assembly was removed.

a. Forward complete packed parachute assembly to either non-destructive inspection lab or medical facility for X-ray. SJU-4/A, SJU-8/A, SJU-11/A, SJU-12/A, SJU-13/A, SJU-14/A and SJU-17 Series riser assemblies may be forwarded vice the entire parachute assembly.

b. For Non-destructive inspection X-ray the set-up is as follows:

(1) Focal Film Distance (FFD) - 24 inches.

(2) Penetration of part - 120 kv.

(3) Time - 0.5 min. (30 seconds).

(4) Milliamps -5.

(5) Record serial number of Electronics Package Assembly (EPA) and serial number assembly on X-ray film.

c. For medical facility inspection X-ray the set-up is as follows:

(1) Focal Film Distance (FFD) - 40 inches.

(2) Penetration of part - 110 kv.

(3) Time - 0.005 sec.

(4) Milliamperes - 30.

(5) Milliamperes Per Sec (quality of film) 2.1 MPS.

(6) Record serial number of Electronics Package Assembly (EPA) and serial number assembly on X-ray film.

NOTE

Many non-destructive inspection sites have upgraded their X-ray equipment, and Intermediate Maintenance Departments may receive a computer printout vice X-ray film. These printouts are acceptable if plug integrity is clearly visible.

d. Review X-ray (Figure 51).

e. If plug assembly is suspected or known to have partially or fully recessed, the unit shall be returned for shear pin integrity check per Paragraph 15, torquing plug assembly per Paragraph 22, and X-ray per Paragraph 28.

f. Record inspection on and attach X-rays to the Parachute Record (OPNAV 4790/101).

29. REPORTING REPLACEMENT.

a. A cartridge, battery, or EPA replacement shall be reported thru VIDS/MAF.

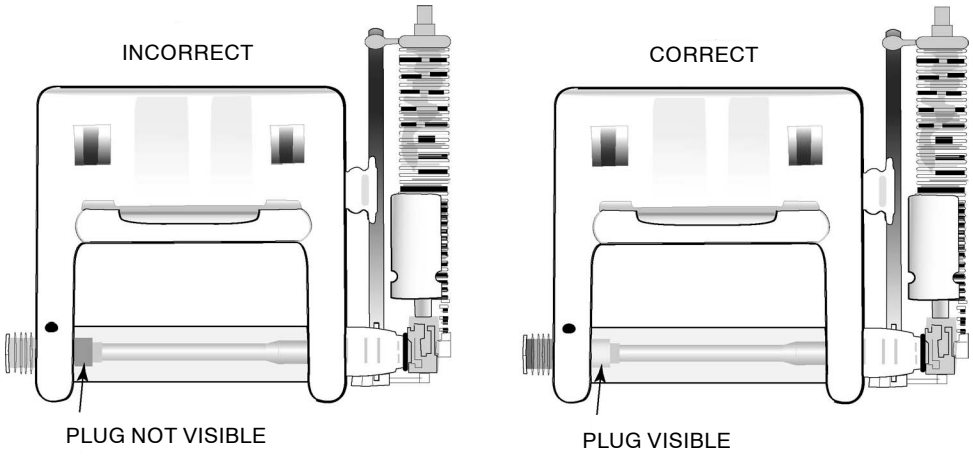


Figure 51. PHSRU X-Ray

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INTERMEDIATE AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

MXU-746/P and MXU-747/P PARACHUTE HARNESS SENSING RELEASE UNITS (PHSRU)

PART NO. 852AS117-3 and 852AS117-4

List of Effective Work Package Pages

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None

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Service/Total Life	1
Usable on Codes	1

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MXU-746/P and MXU-747/P Parachute Harness Sensing Release Units	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the Parachute Harness Sensing Release Units (PHSRU) MXU-746/P and MXU-747/P (Figure 1).

2. USABLE ON CODES.

a. The usable on codes in this WP refer to the aircraft applications for the PHSRU.

b. The following usable on codes apply to this WP:

A, B - A/P28S-24, A/P28S-28, A/P28S-30, A/P28S-31, A/P28S-32, NES-8B, NES-12, NES-14, and NES-25A.

3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in individual WP's.

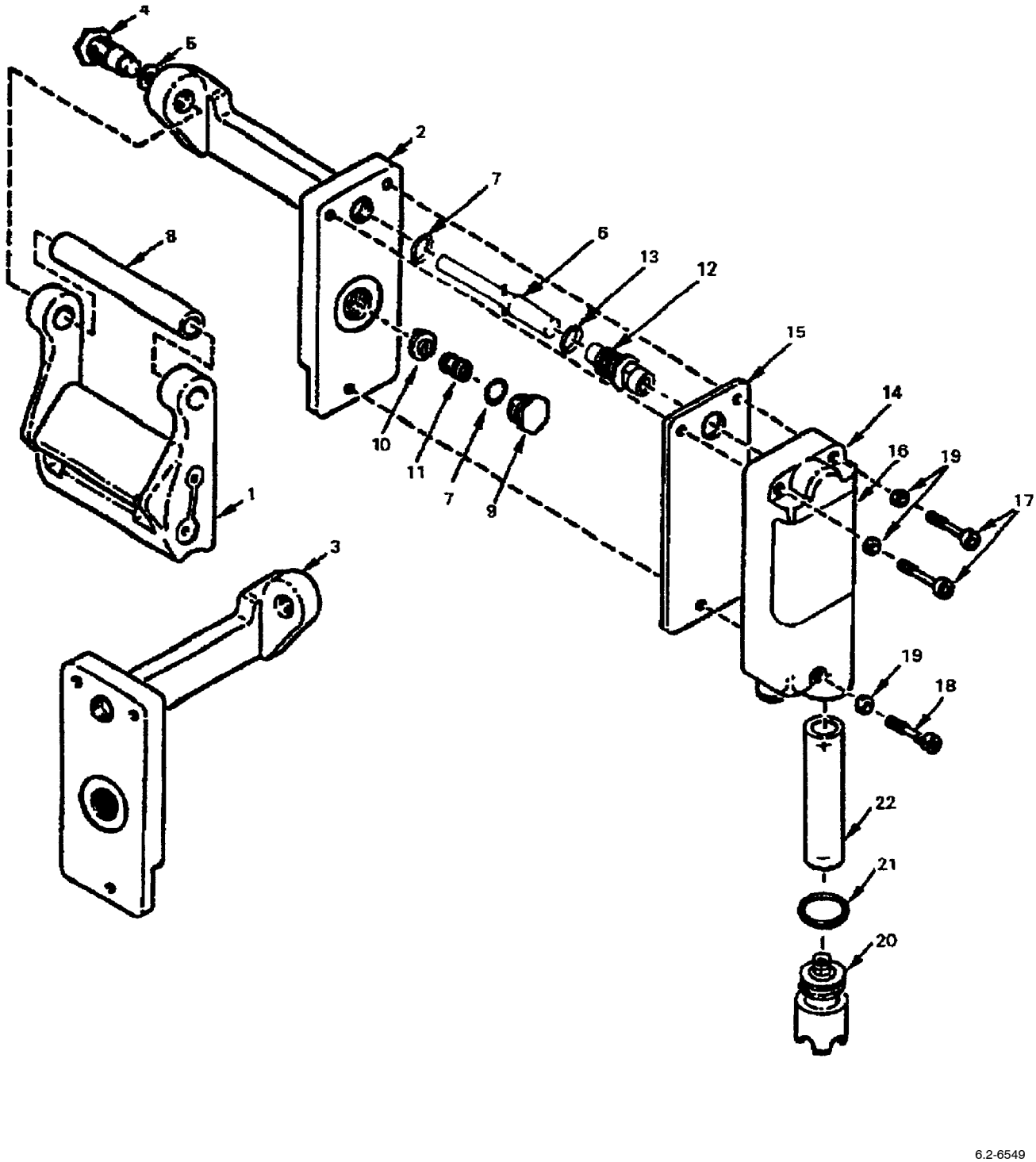

Figure 1. MXU-746/P and MXU-747/P Parachute Harness Sensing Release Units (Sheet 1 of 2)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	852AS117-3	SENSING RELEASE UNIT, PARACHUTE ..... HARNESS MXU-746/P LEFT SIDE /30003/	1	A	AGGGG
	852AS117-4	SENSING RELEASE UNIT, PARACHUTE ..... HARNESS MXU-747/P RIGHT SIDE /30003/	1	B	AGGGG
1	990055-1	. RELEASE ASSEMBLY, CANOPY /99449/	1	*	PAGGG
	015-10307-5	. RELEASE ASSEMBLY, CANOPY /99449/ ..... (USE UNTIL EXHAUSTED)	1	*	PAGGG
2	1137-015-01	. PLATE, ADAPTER /LEFT HAND /62323/	1	A	PAGZZ
3	1137-015-02	. PLATE, ADAPTER /RIGHT HAND /62323/	1	B	PAGZZ
4	1618-016-01	. PLUG ASSEMBLY /62323/	1	*	PAGZZ
	852AS103	. PLUG ASSEMBLY /62323/	1	*	PAGZZ
5	1122-048-01	. . RING, THREAD LOCKING /62323/	1		PAGZZ
6	1112-225-01	. PISTON ASSEMBLY, RELEASE /62323/	1		PAGZZ
7	NAS1612-2	. PACKING /80205/	2		PAGZZ
8	1122-046-01	. SLEEVE	1		PAGZZ
9	1102-203-01	. PLUG, LOCKING DISC /62323/	1		PAGZZ
10	1137-016-01	. DISC, LOCKING /62323/	1		PAGZZ
11	MS24585-C29	. SPRING /96909/	1		PAGZZ
12	851AS275	. CARTRIDGE ASSEMBLY MW19 /30003/	1		PCGZA
13	851AS282	. . PACKING /30003/	1		PAGZZ
14	852AS101-3	. PACKAGE ASSEMBLY, ELECTRONICS	1		PCGZA
15	1129-043-01	. . GASKET /62323/	1		PAGZZ
16	1216-075-01	. . NAMEPLATE, EPA IDENT. /62323/	1		PAGZZ
17	1127-036-02	. . SCREW, CAPTIVE MOUNTING ..... (Short) /62323/	2		PAGZZ
18	1127-036-05	. . SCREW, CAPTIVE MOUNTING ..... (Long) /62323/	1		PAGZZ
19	CC-357-02	. . WASHER, SPLIT LOCK /62323/	3		PAGZZ
20	1618-017-01	. PLUG ASSEMBLY, SENSOR /62323/	1		PAGZZ
21	1129-045-01	. . PACKING /62323/	1		PAGZZ
22	852AS102	. BATTERY /30003/	1		PCGZA

Figure 1. MXU-746/P and MXU-747/P Parachute Harness Sensing Release Units (Sheet 2 of 2)

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INTERMEDIATE, AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

MXU-746/P and MXU-747/P PARACHUTE HARNESS SENSING RELEASE UNITS (PHSRU)

SPECIAL TOOL SET PART NO. SA852AS105-1

List of Effective Work Package Pages

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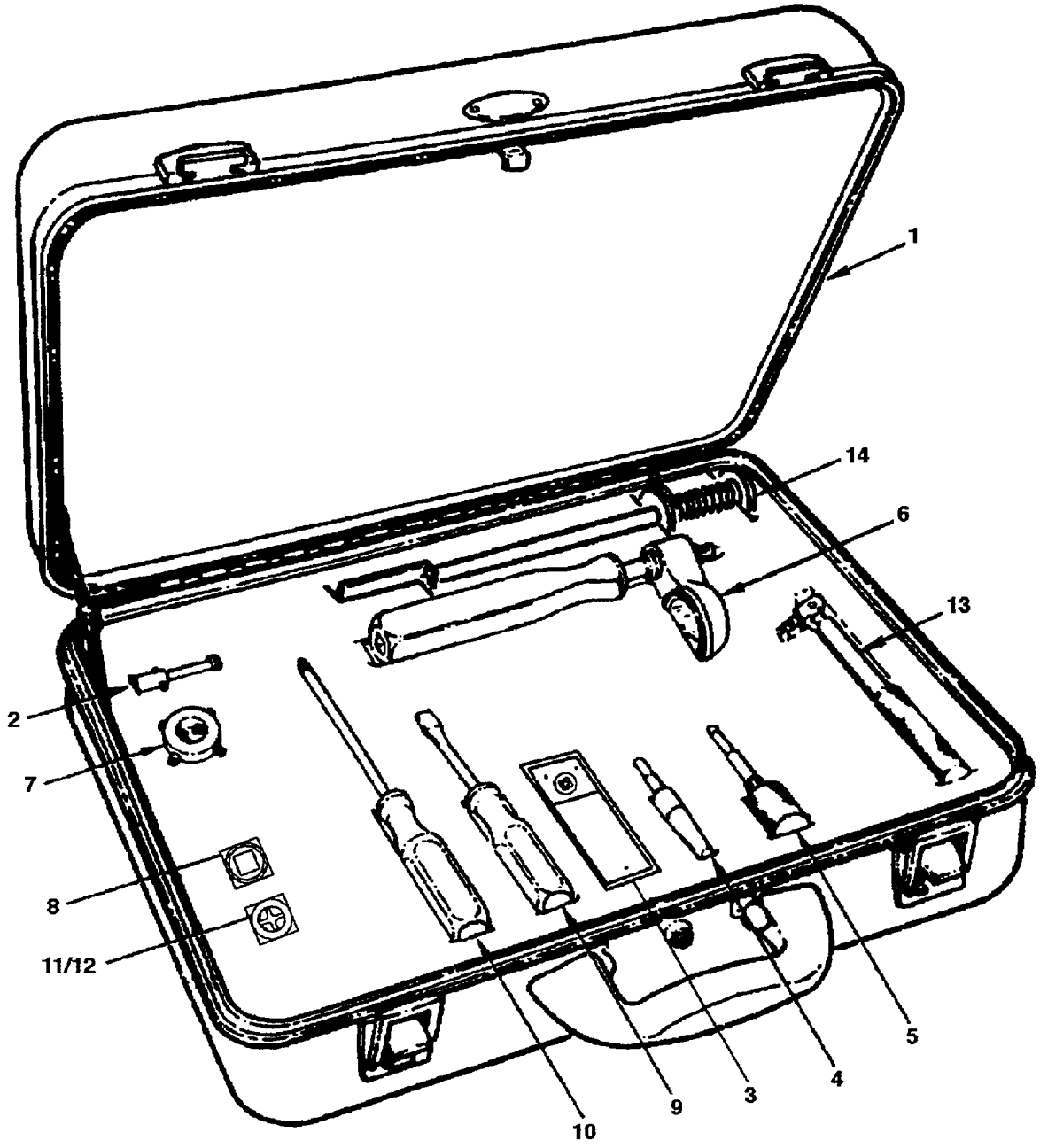
Special Tool Set for MXU-746/P and MXU-747/P Parachute Harness Sensing Release Units (PHSRU)	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for special tool set for Parachute Harness Sensing Release Units (PHSRU) MXU-746/P and MXU-747/P (Figure 1).



6.2-6548

Figure 1. Special Tool Set for MXU-746/P and MXU-747/P Parachute Harness Sensing Release Units (PHSRU) (Sheet 1 of 2)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	SA852AS105-1	TOOL SET, SPECIAL	REF		PEGZZ
1	SA852AS106	. CASE, TOOL	1		PEGZZ
2	SA852AS107	. INSTALLATION TOOL, RELEASE . . . . . PISTON O-RING	1		PEGZZ
3	3405AS100-1	. TOOL, ALIGNMENT CARTRIDGE TORQUE . . .	1		PEGZZ
4	SA852AS110	. TOOL, SLEEVE INSERTION	1		PEGZZ
5	SA852AS111	. TOOL, SLEEVE ALIGNMENT	1		PEGZZ
6	SA852AS112	. TORQUE DRIVER /55719/	1		PEGZZ
7	SA852AS113	. TORQUE TOOL, SENSOR PLUG	1		PEGZZ
8	3405AS101-2	. SOCKET, 6 POINT 1/4 DRIVE MODIFIED	1		PEGZZ
9	GGG-S-121	. SCREWDRIVER, BLADED, 5 LONG x . . . . . 9/64 BLADE x 0.020 BLADE THICKNESS	1		PEGZZ
10	PHRB3A	. SCREWDRIVER, NO. 2 PHILLIPS, ... 7 1/2-IN. LONG /76377/	1		PEGZZ
11	GGG-B-001222	. ADAPTER, SCREWDRIVER BIT	1		PEGZZ
12	GGG-B-001222	. SCREWDRIVER, NO. 2 PHILLIPS . . . . . CLASS 1 1/4 IN. HEXAGONAL SHANK	1		PEGZZ
13	GGG-W-641	. SOCKET HANDLE, 1/4 IN. DRIVE x . . . . . 6 INCH LONG /76377/	1		PEGZZ
14	GG-M-350	. MIRROR, INSPECTION, TYPE 2 . . . . . CLASS 3, SIZE 1 /55719/	1		PEGZZ

Figure 1. Special Tool Set for MXU-746/P and MXU-747/P Parachute Harness Sensing Release Units (PHSRU) (Sheet 2 of 2)

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ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

A/P22P-11 EMERGENCY EGRESS CREW BACKPACK ASSEMBLY

PART NO. 123AB50510-3

List of Effective Work Package Pages

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Reference Material

Aviation - Crew Systems Manual, Inflatable Survival Equipment . . . . . NAVAIR 13-1-6.1
Aviation - Crew Systems Manual, Oxygen Equipment . . . . . NAVAIR 13-1-6.4
Aviation - Crew Systems Manual, Rescue and Survival Equipment . . . . . NAVAIR 13-1-6.5
Illustrated Parts Breakdown . . . . . WP 025 04

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Manual Operation	6
Repack Schedule	6

Record of Applicable Technical Directives

None

1. DESCRIPTION.

2. GENERAL. Emergency Egress Backpack Assembly (crew backpack) is designated A/P22P-11, and was developed for use in the E-2C aircraft. It is installed on the aircrew seats. The crew backpack contains three major parts: a parachute assembly, seat survival kit assembly, and an emergency oxygen system assembly (Figure 1).

3. The crew backpack is installed into the aircrew seat parachute support and the lapbelt fittings are installed and secured/snapped in place in the seat retaining pin cavities. During an emergency egress or removal of the crew back-pack for maintenance, the crew backpack lapbelt fittings are released from the retaining pin cavities and inertia reel cable and fitting by means of actuating the emergency equipment release handle located on the right side of the seat bucket.

4. The crew backpack measures about 15 in. wide, 6 in. thick and 24 in. high, and the weight is about 37 lb.

5. CONFIGURATION.

6. The two piece, upper and lower, crew backpack containers are constructed of rigid fiberglass material, and are mated by two hinges and straight pins. The upper container, which houses the 26 ft. diameter conical shaped canopy assembly, has four flap assemblies (left, right, top, and bottom) attached to the fiberglass container by means of hook and pile tape fasteners and directional snap fasteners. The upper container of the crew backpack is designated Parachute PCK-47/P22P-11. The canopy assembly is multi-colored (white, olive green, international orange, and sand shade), 26 ft. diameter, conical shaped, nylon consisting of 22 gores. Water deflation pockets are sewn to the skirt hem on alternate gores. The canopy and risers are packed in the upper container, extending from the left and right top of the container. The crew backpack is secured to the aircrew by the right and left lapbelt assemblies, and the canopy releases to the parachute restraint harness fittings located in the shoulder area.

7. The lower container contains a SKK-9/P22P-11 seat survival kit assembly and an emergency oxygen system assembly. The seat survival kit assembly is a two sided assembly containing a LRU-18U life raft packed in the right side and survival items packed in the left side. The seat survival kit assembly is releasable by rotating the survival kit release handle located under the cushion assembly on the lower left side of the lower container. The emergency oxygen system assembly contains a removable 45 cu. in. emergency oxygen assembly with a CRU79/P miniature regulator and an attached oxygen hose assembly.

8. During flight operations, the crew backpack functions as the seat back with a back cushion assembly, and has an adjustable back pad assembly (lumbar pad) for aircrew comfort. The parts are identified in (Figure 2).

9. SUBASSEMBLY CONFIGURATION. The subassemblies listed below and shown in (Figure 2), make up the crew backpack assembly. Refer to Illustrated Parts Breakdown WP 025 04 for detailed information on the following subassemblies:

Pilot Parachute

Pilot Parachute Connector Strap

Canopy Assembly

Riser Assembly, Ripcord Assembly, Ripcord, Cross-Connector Straps

Canopy Releases

Anti-Rotation Strap Assembly

Container Assembly

Cushion Assembly

Lapbelt Assembly

Seat Survival Kit Assembly

Emergency Oxygen System Assembly.

10. For subassembly configuration of the emergency oxygen system, mini-regulator system, and oxygen hose, refer to NAVAIR 13-1-6.4. For subassembly configurations of the survival items in the seat survival kit assembly, refer to NAVAIR 13-1-6.5. For subassembly configuration of the liferaft and packing of survival items, refer to NAVAIR 13-1-6.1.

11. Should an emergency oxygen supply be required, the aircrew actuates the emergency oxygen supply by pulling downward on the green manual oxygen release ball, located near the left side, bottom, of the crew back-pack.

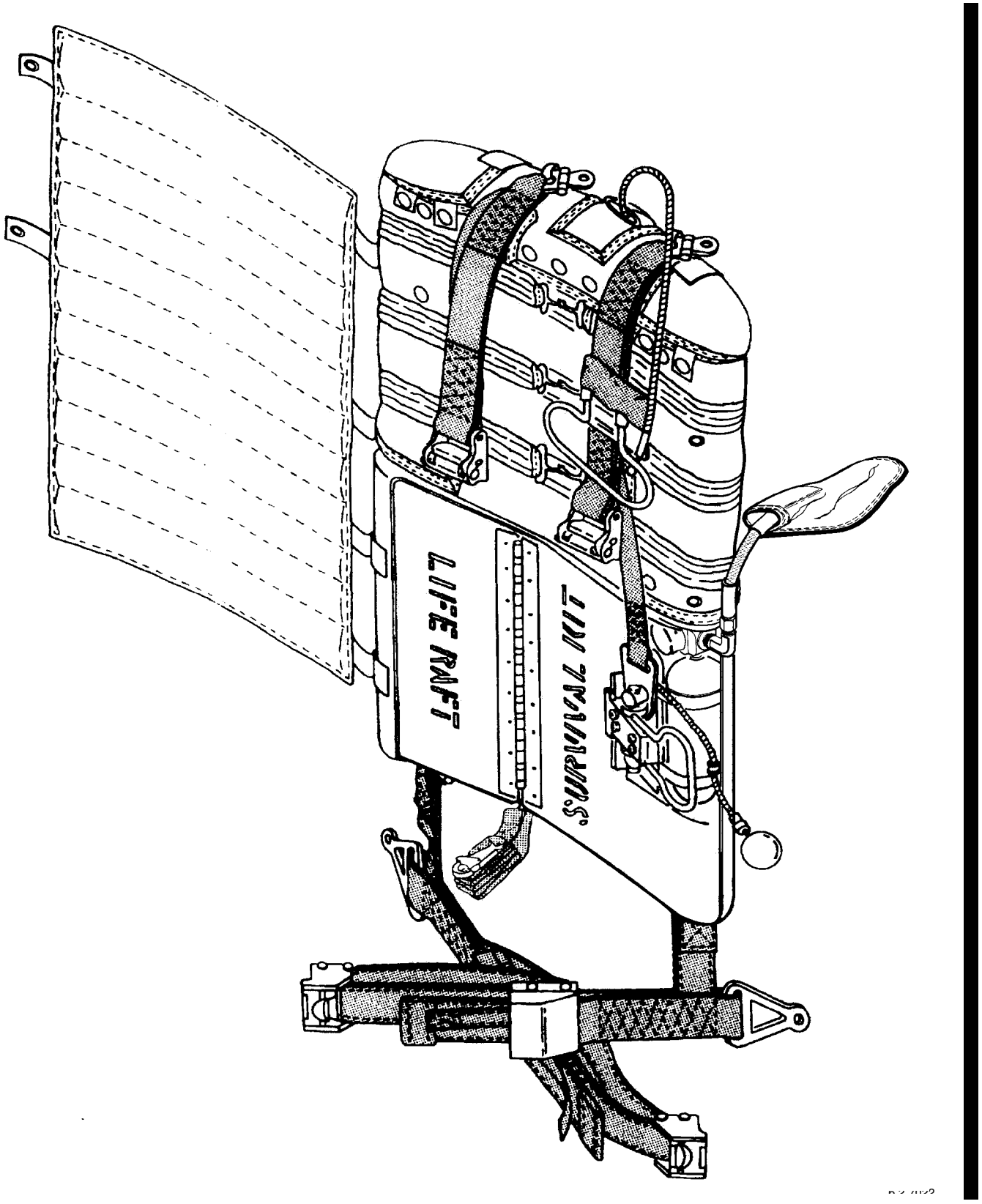


Figure 1. Emergency Egress Crew Backpack Assembly, A/P22P-11

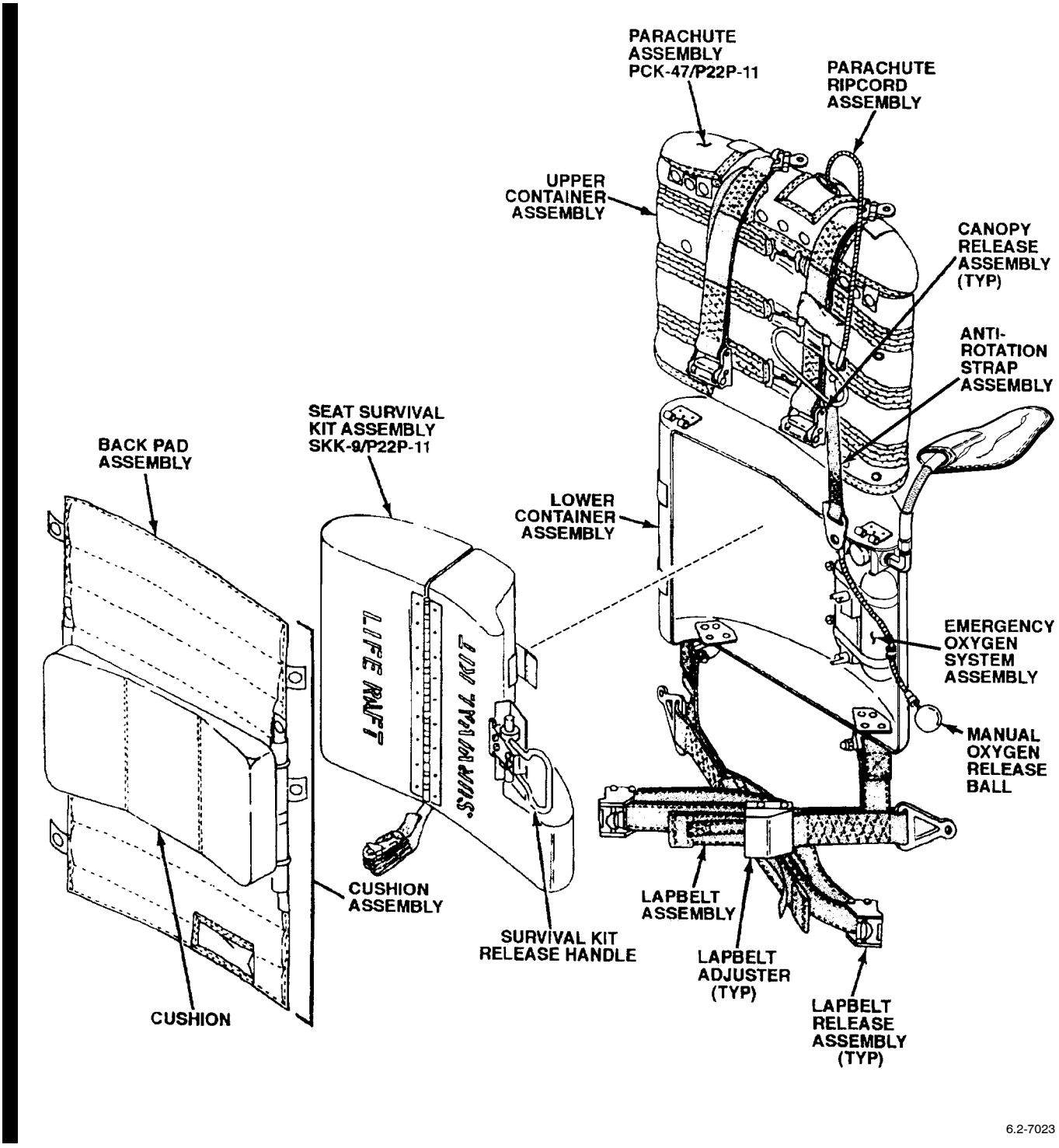
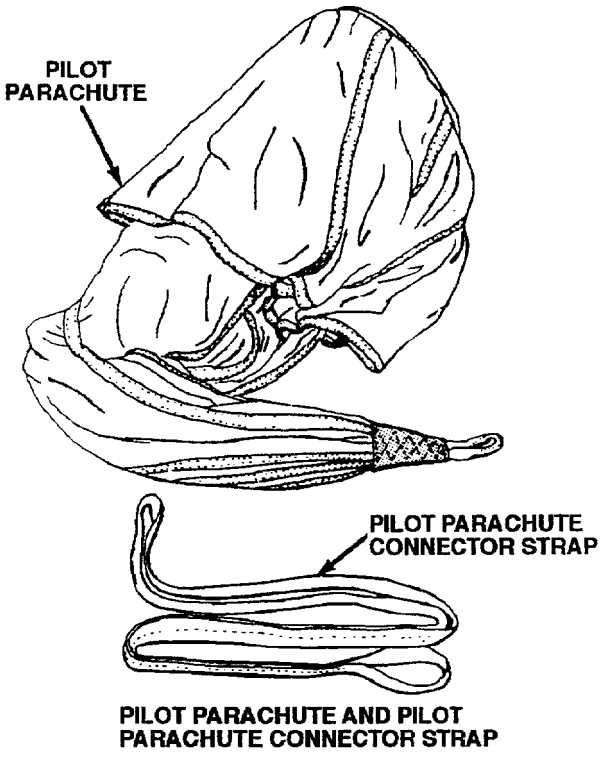
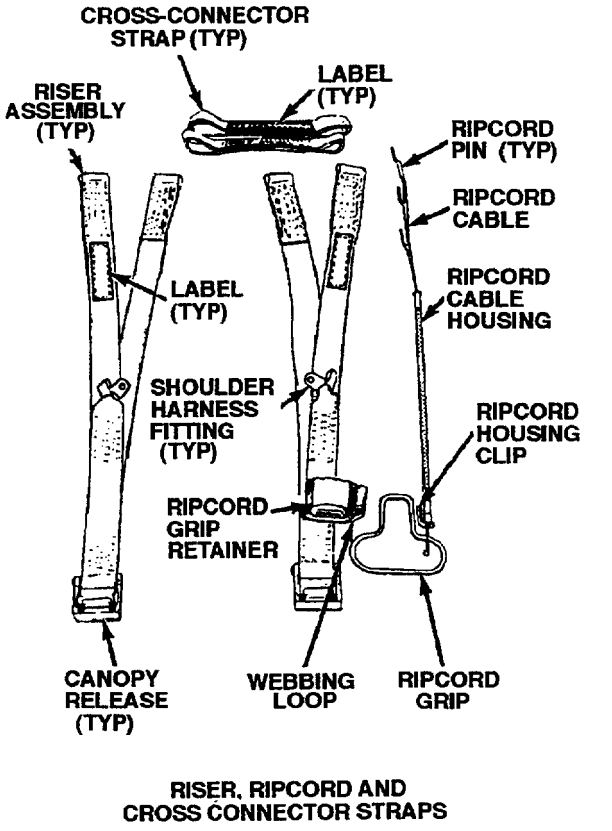
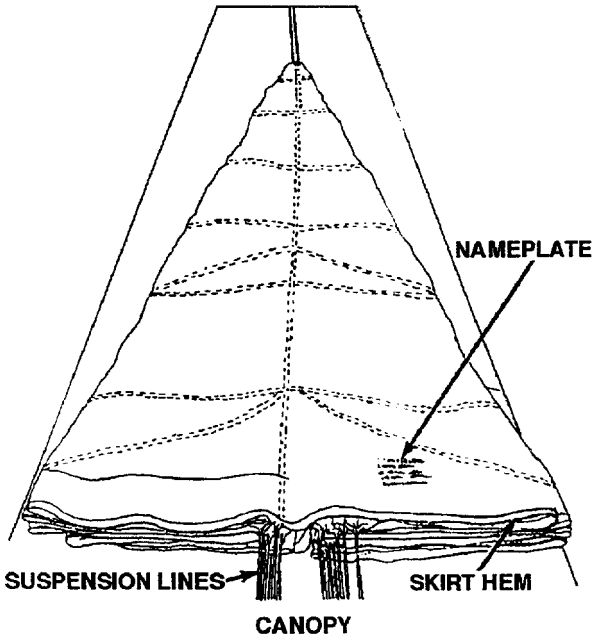


Figure 2. Subassemblies, A/P22P-11 (Sheet 1 of 2)







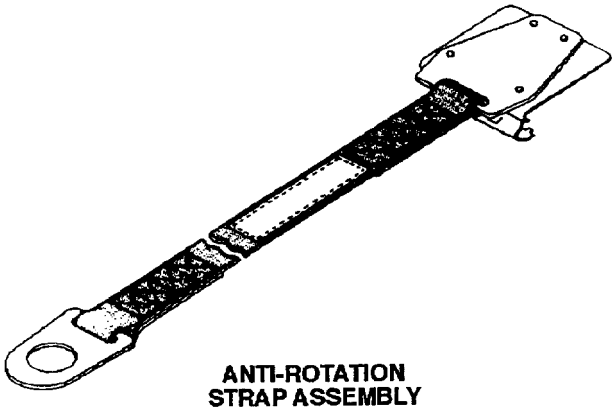


Figure 2. Subassemblies, A/P22P-11 (Sheet 2 of 2)

12. PRINCIPLES OF OPERATION.

13. MANUAL OPERATION. After an exit from a disabled aircraft, the following sequence of events takes place:

a. Manually grasping and pulling the ripcord grip removes the ripcord pins from the container locking cones, permitting the spring opening assemblies to pull the side flaps apart, allowing the pilot parachute to spring from the opened container and inflate.

b. As the aircrew falls away from the inflated pilot parachute, which acts as an anchor, the canopy, followed by the suspension lines, is extracted from the container. The canopy begins to inflate during this operation.

c. As the load is applied to the canopy and it fully inflates, the connector link ties break away from the container, followed by the riser snap fasteners disengaging from the container. This permits the aircrew to descent suspended from the canopy in the parachute restraint harness.

j. Upon landing, the aircrew disengages the parachute assembly from the PCU-33/P or PCU-56/P parachute restraint harness by actuating the canopy release assembly.

14. REPACK SCHEDULE.

a. Scheduled repack cycle is 224 days.

ORGANIZATIONAL MAINTENANCE

REPAIR PROCEDURES

A/P22P-11 EMERGENCY EGRESS CREW BACKPACK ASSEMBLY

PART NO. 123AB50510-3

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1	9	4 thru 6	9	8 thru 9	9	10 thru 11	7
2 thru 3	8	7	7				

Reference Material

Aviation - Crew Systems Manual, Seat Survival Kits ..... NAVAIR 13-1-6.3
Aviation - Crew Systems Manual, Oxygen Equipment ..... NAVAIR 13-1-6.4
Intermediate and Depot Maintenance, Packing Procedures,
A/P22P-11 Emergency Egress Crew Backpack Assembly ..... WP 025 02
Introduction ..... WP 002 00

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Ripcord Housing Clip Tacking Replacement	2
Shoulder Harness Fitting Replacement	2
Survival Kit	7
Survival Kit Installation	7
Survival Kit Removal	7

Record of Applicable Technical Directives

None

1. INTRODUCTION.

2. This work package (WP) contains instructions for organizational level repair to ensure that the parachute assembly remains in ready-for-issue (RFI) status.

3. When performing repairs detailed in this WP follow these guidelines:

a. Review all applicable instructions prior to starting repair.

b. Ensure all necessary support equipment and materials required are available prior to starting repair.

c. When required, remove enough material from its source for immediate use only. Ensure that the material identification ticket remains with the source material at all times. Material that cannot be identified will not be used.

d. To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

e. A quality assurance (QA) inspector shall examine the finished work.

4. RISER ASSEMBLY.

5. RIPCORD HOUSING CLIP TACKING REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. If necessary, insert ripcord housing clip into webbing loop attached to riser (Figure 1).

b. Tack thru loop and thru hole in ripcord housing clip with one turn of size E thread, single and waxed; tie off (Figure 1). (QA)

c. Insert ripcord grip into ripcord grip retainer.

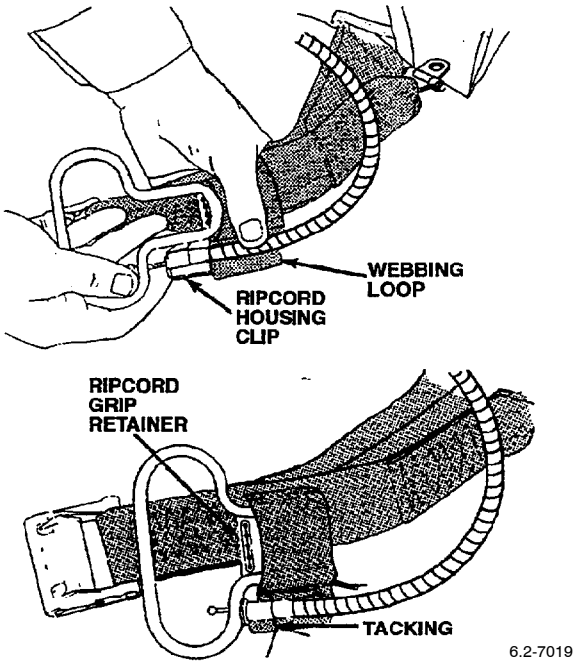

Figure 1. Ripcord Housing Clip Tacking Replacement

6. SHOULDER HARNESS FITTING REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
123ABM50500-11	Fitting
22NKTM-02	Nut, Hex

a. Remove and discard hex nut. Remove washers, bolt, and shoulder harness fitting (Figure 2).

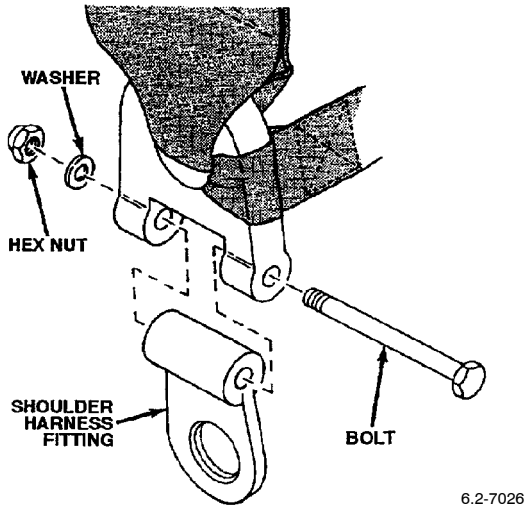

Figure 2. Shoulder Harness Fitting Replacement

b. Inspect replacement shoulder harness fitting for corrosion, burrs, and sharp edges.

c. Insert replacement shoulder harness fitting and install bolt, washers, and new hex nut (Figure 2).

7. RIPCORD CLAMP RELEASE LANYARD TACKING REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Position large slotted end of base plate clamp under screwhead on base plate. Position ripcord housing and spacer under clamp with flat sides of each housing positioned against base plate stud. Insert locking pin into stud hole and tighten screw to secure clamp in place (Figure 3). (QA)

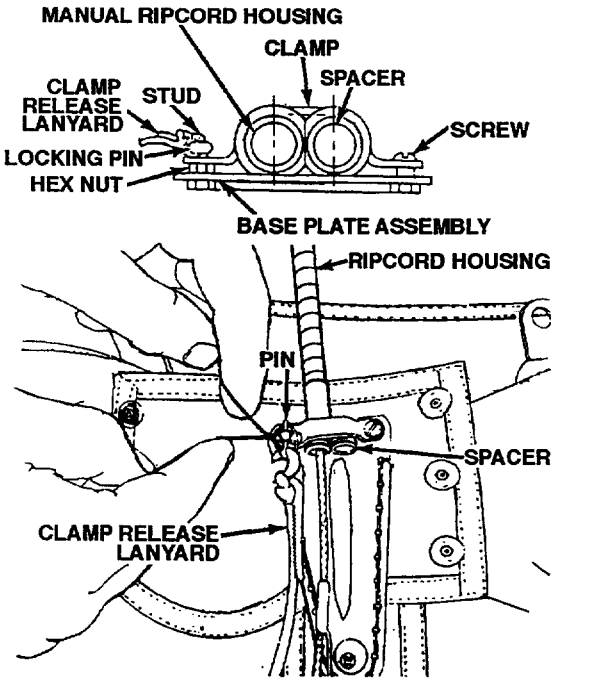

Figure 3. Ripcord Clamp Release Lanyard Tacking Replacement

b. Safety-tie locking pin to stud with one turn of size FF thread, single and waxed. Pass thread thru lanyard knot; tie off (Figure 3). (QA)

8. CANOPY RELEASE ASSEMBLY.

a. Repair of canopy release assembly is limited to the following:

(1) Replacement of broken torque seal on screw head.

(2) Cleaning of dirt, grease, and other contaminating agents.

b. Replace canopy release assembly for any of the following:

(1) Inoperable release.

(2) Corrosion, contamination, pitting, cracks, dents, and other damage. Inspect the release lever left and right arms for cracks.

9. TORQUE SEAL ON CANOPY RELEASE ASSEMBLY REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Ensure setscrew is tight and seated properly in retention pin.

b. Apply torque seal to setscrew (Figure 4).

10. CANOPY RELEASE ASSEMBLY REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
990065-1 -or- 015-710001-1	Adjuster Assembly, Strap
990055-1 -or- 015-10307-5	Release Assembly, Canopy
F-900 Torque Seal (Color Optional)	Sealing Compound

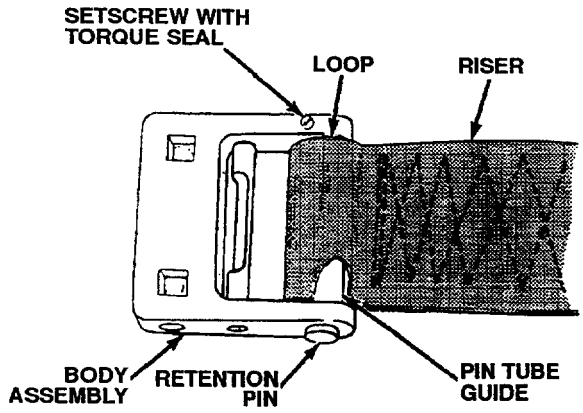

Figure 4. Canopy Release Assembly Replacement

CAUTION

To prevent damage to locking lever cover spring, do not lift locking lever cover after retention pin has been removed.

a. Remove unserviceable canopy release assembly by removing setscrew on underside of canopy release assembly and sliding retention pin out. Remove pin guide tube from riser loop.

NOTE

Some canopy release assemblies may still have pinhead (Allen head) screws installed. This screw will remain in service until removal becomes necessary. Replacement will be made with a slotted head setscrew P/N 122-10935-3 (CAGE 99449). This screw is a one-time use item.

b. Inspect replacement canopy release assembly per WP 025 02.

c. Check replacement canopy release assembly for proper locking as follows:

(1) Engage adapter assembly with canopy release assembly.

DELETED

(2) Verify full locking of canopy release assembly by lifting locking lever cover and attempting to disengage adapter assembly from canopy release assembly (Figure 5).

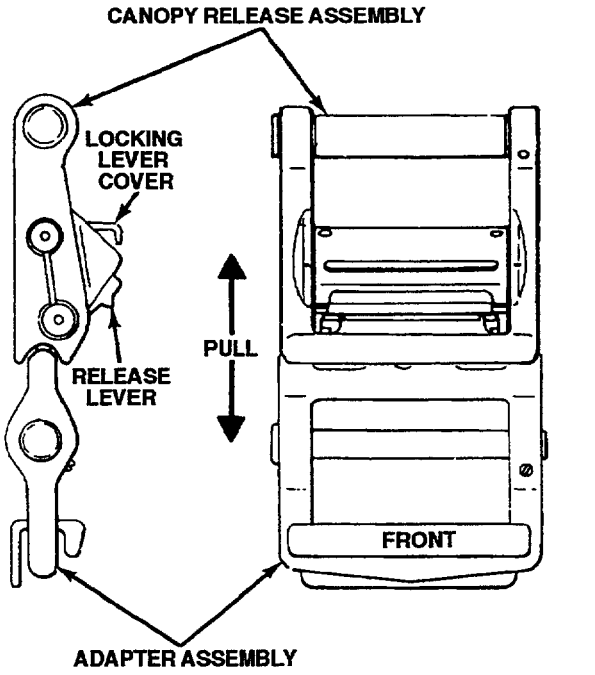

Figure 5. Canopy Release Assembly Locking Inspection

CAUTION

To prevent damage to locking lever cover spring, do not lift locking lever cover after retention pin has been removed.

d. Remove setscrew on underside of replacement canopy release assembly and slide retention pin out (Figure 4). Remove pin guide tube.

e. Insert replacement pin guide tube into riser loop (Figure 4).

f. Insert riser loop and pin guide tube into body of canopy release assembly (Figure 4). Ensure that release body is properly positioned for mating with release adapter. Insert retention pin thru pin guide tube.

g. Insert setscrew in hole located on underside of canopy release assembly (Figure 4) and tighten.

h. Apply torque seal to setscrew (Figure 4).

11. CONTAINER ASSEMBLY.

12. SPRING OPENING ASSEMBLY REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
60A113D11-3	Spring Assembly, Container Opening

a. Measure length of replacement spring opening assembly. Required length is 10 3/8 ± 1/4 in. when measured from end of one hook to end of opposite hook with no tension applied.

b. Inspect spring opening assembly for broken spring, contamination, corrosion, cuts, fraying, bent or broken hooks, elasticity, and cover for loose or broken stitching.

c. Remove cushion assembly from crew backpack per Paragraph 17.

d. Remove defective spring opening assembly from slot on centerline of container and flap assembly eye.

e. Attach hook of replacement spring opening assembly with hook facing down to slot on container centerline.

f. Attach remaining hook to corresponding eye on container flap assembly.

g. Attach cushion assembly on crew backpack per Paragraph 17.

13. LAPBELT ASSEMBLY.

14. LAPBELT ADJUSTER REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
184C100-1	Adjuster, Lapbelt
MIL-S-22473	Sealing Compound, Grade H

a. Replace lapbelt adjuster per NAVAIR 13-1-6.3.

15. LAPBELT RELEASE ASSEMBLY REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
1979AS826-1 -or- 015-11365-1 -or- 990060-1	Release Assembly, Lapbelt
MIL-S-22473	Sealing Compound, Grade H

a. Remove two shoulder screws. Pull release assembly away from webbing and slide pin out of lapbelt webbing loop.

b. Inspect replacement release assembly for proper operation, corrosion, burrs, and sharp edges.

c. Insert replacement pin into lapbelt webbing loop.

d. Apply sealing compound to threads of two shoulder screws. Insert webbing loop into release assembly, install shoulder screws thru holes in release assembly and into pin (Figure 6). (QA)

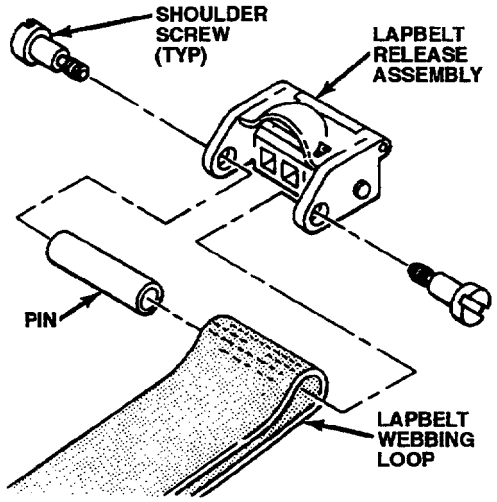

Figure 6. Lapbelt Release Assembly Replacement

16. LAPBELT ASSEMBLY REPLACEMENT.

Support Equipment Required

Part Number	Nomenclature
—	Wrench, 7/16-in.

Materials Required

Specification or Part Number	Nomenclature
123AB50516-1 or 123AB50516-2	Lapbelt, Left Side Lapbelt, Right Side
GN510C-T428	Nut, Hex

a. Remove and discard hex nut. Remove washers, bolt, and lapbelt assembly (Figure 7).

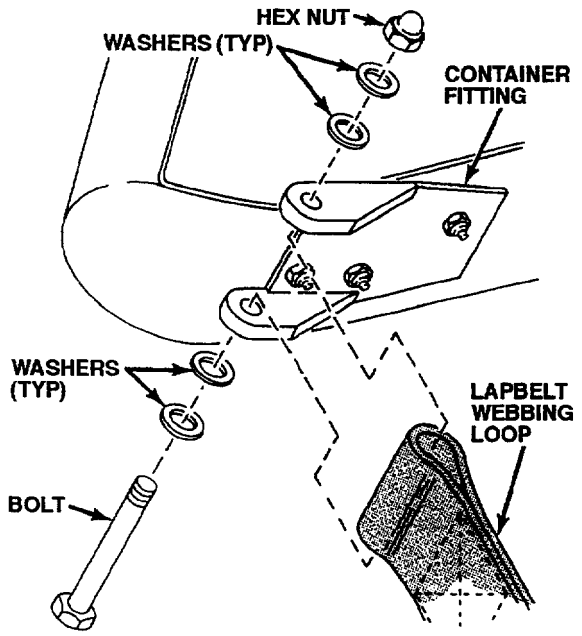

Figure 7. Lapbelt Assembly Replacement

b. Inspect replacement lapbelt assembly for loose or broken stitches, snags, or contamination.

c. Insert replacement lapbelt assembly and install bolt, washers, and new hex nut (Figure 7), left side shown for clarity). Ensure hex nut faces inboard.

d. Tighten bolt and nut. (QA)

e. Remove lapbelt adjuster and lapbelt release assembly from unserviceable lapbelt, and attach to replacement lapbelt per Paragraphs 14 and 15.

f. Mark date placed in service on replacement lapbelt label. (QA)

17. CUSHION ASSEMBLY.

18. CUSHION REMOVAL.

a. Remove unserviceable cushion as follows:

(1) Unsnap two snap fasteners securing cushion to backpad assembly. Remove cushion by sliding upward and free of backpad assembly.

(2) Dispose of unserviceable cushion per current supply directives.

19. BACKPAD ASSEMBLY REMOVAL.

a. Remove unserviceable backpad assembly as follows:

(1) Remove survival kit lanyard from lanyard stowage pocket at lower left portion of backpad assembly.

(2) Remove backpad assembly from snap fasteners and pile fasteners. Dispose unserviceable backpad assembly per current supply directives.

20. BACKPAD ASSEMBLY REPLACEMENT.

a. Inspect survival kit lanyard per NAVAIR 13-1-6.3.

b. Attach replacement backpad assembly to snap fasteners and pile fasteners.

c. Accordion fold and insert survival kit lanyard in lanyard stowage pocket. Ensure snap hook is completely inside lanyard stowage pocket, and end loop of lanyard is exposed outside lanyard stowage pocket (Figure 8).

21. CUSHION REPLACEMENT.

a. Install replacement cushion onto cushion adjustors located on backpad.

b. Secure snap fasteners located on top of adjustors.

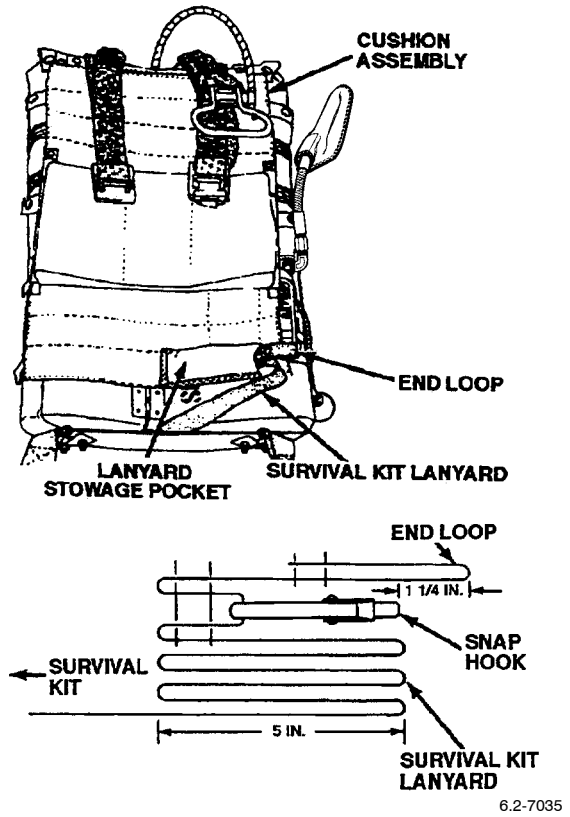

Figure 8. Cushion Assembly Replacement

22. SURVIVAL KIT.

23. SURVIVAL KIT REMOVAL.

a. Unsnap lower right two snap fasteners on backpad assembly. Remove tamper seal from release handle and from oxygen release cable.

b. Rotate survival kit release handle counterclockwise, remove anti-rotation strap fitting from locking mechanism upper stud (Figure 9).

c. Remove survival kit from lower container.

24. SURVIVAL KIT INSTALLATION.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

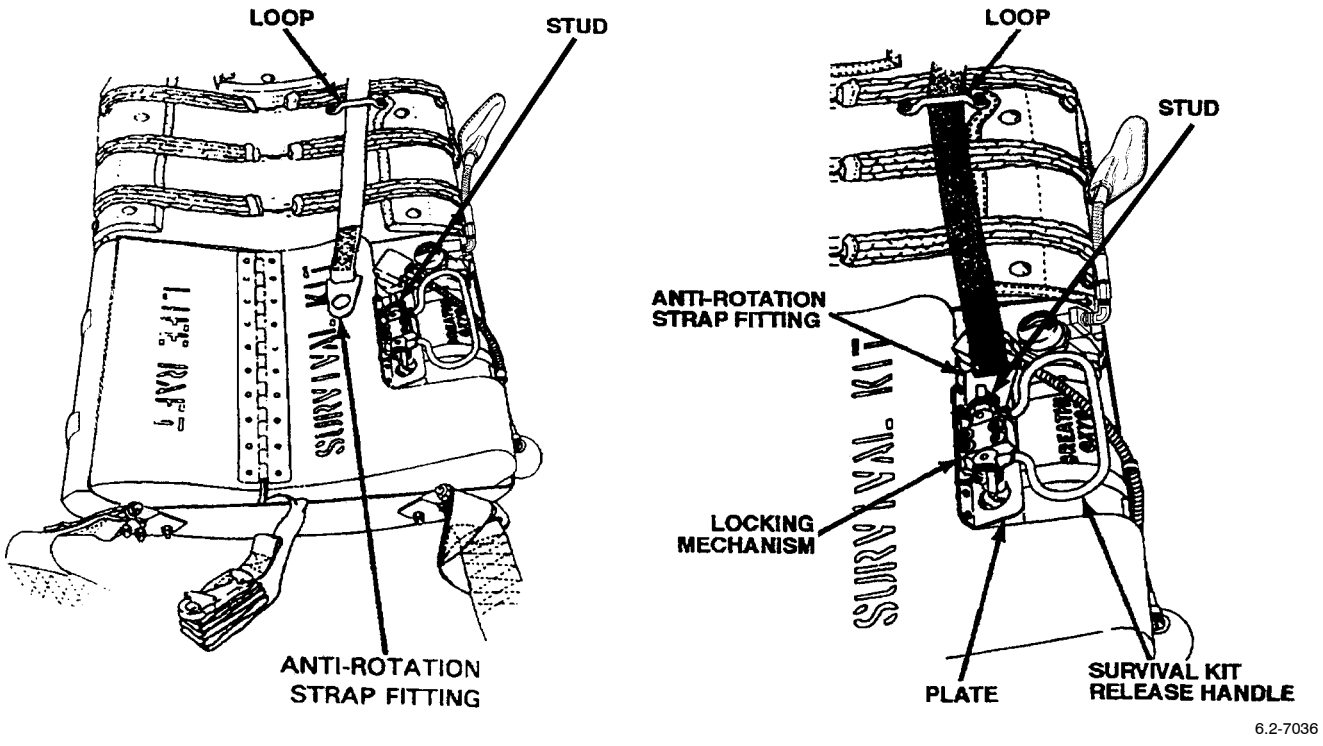

Figure 9. Survival Kit Replacement

NOTE

Loosening the three (3) captive screws aids in the installation of the survival kit and the prevention of inadvertent actuation.

a. Loosen the three captive screws 2 1/2 turns or 3 turns maximum (Figure 11). Place survival kit in lower container.

b. Place anti-rotation strap fitting between plate and locking mechanism, ensuring there are no twists in anti-rotation strap. Lock survival kit release handle by rotating clockwise. Ensure that anti-rotation strap fitting is located between plate and locking mechanism (Figure 10). Tighten three captive screws (Figure 11) and apply torque seal to each screw (Figure 13). (QA)

c. Install tamper seal on release handle and oxygen release cable.

d. Secure lower right two snap fasteners on backpad assembly.

25. ANTI-ROTATION STRAP ASSEMBLY REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II Class A
—	Tamper Seal (2)
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove backpad assembly from crew backpack per Paragraph 19, above.

b. Remove and discard tamper seal on release handle and oxygen release cable.

c. Rotate survival kit release handle counterclockwise and remove anti-rotation strap fitting from locking mechanism upper stud (Figure 10).

d. Remove anti-rotation strap clip from canopy release assembly (Figure 10). Remove torque seal from the three captive screws.

e. Remove anti-rotation strap from loop.

f. Inspect replacement anti-rotation strap per WP 025 02.

g. Route anti-rotation strap fitting thru loop toward the locking mechanism upper stud. Attach anti-rotation strap clip to left canopy release assembly.

NOTE

Loosening the three (3) captive screws aids in the installation of the survival kit and the prevention of inadvertent actuation.

h. Place anti-rotation strap fitting over upper stud between plate and locking mechanism, ensuring there are no twists in anti-rotation strap. Loosen the three captive screws 2 1/2 turns or 3 turns maximum (Figure 11). Lock survival kit release handle by lifting up. Ensure that anti-rotation strap fitting is located between plate and locking mechanism. Rotate release handle downward ensuring that locking mechanism engages locking studs (Figure 10). Tighten three captive screws (Figure 11) and apply torque seal to each screw (Figure 13). (QA)

i. Center anti-rotation strap on left riser assembly and tack where riser exits upper container and 4-in. from loop end of riser assembly. Tack with one turn of size FF thread, single and waxed. Tacking shall pass thru inside layer of webbing only.

j. Install new tamper seals on release handle and oxygen release cable.

k. Install backpad assembly on crew backpack per Paragraph 20.

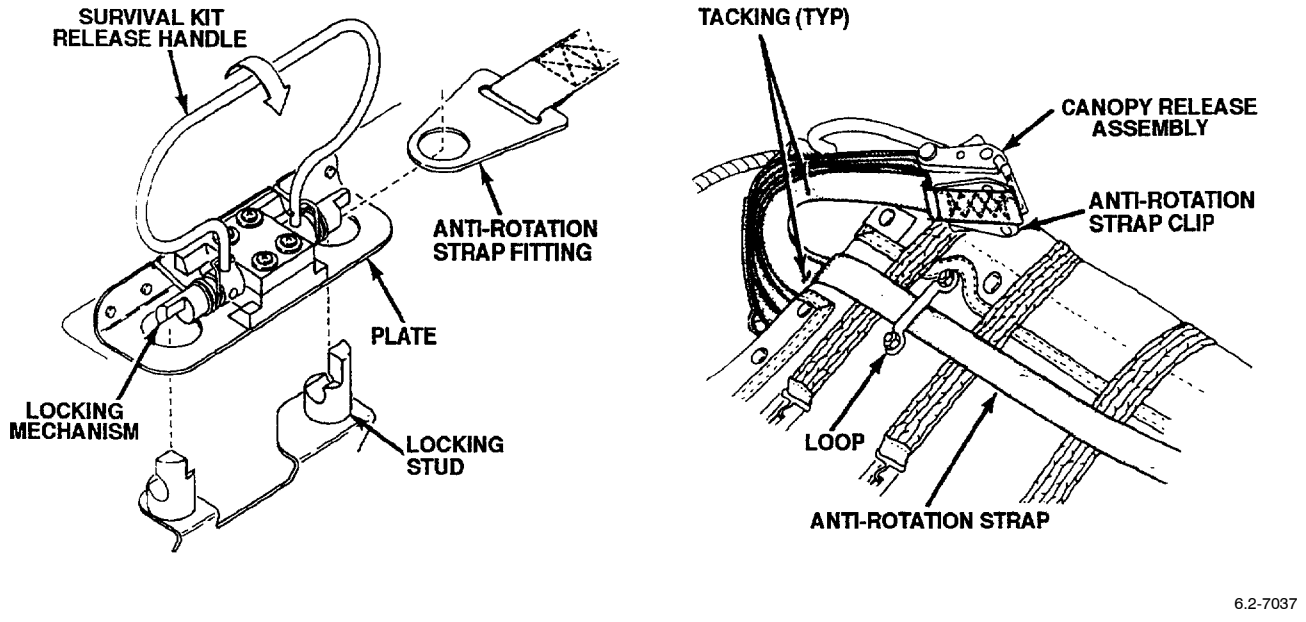

Figure 10. Anti-Rotation Strap Replacement

26. EMERGENCY OXYGEN SYSTEM ASSEMBLY REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
—	Tamper Seal (2)

a. Remove backpad assembly from crew backpack per Paragraph 19.

b. Remove torque seal from three captive screws and tamper seals from kit release handle and oxygen release cable.

c. Remove survival kit per Paragraph 23.

d. Remove emergency oxygen system assembly hose stowage lanyard assembly from the upper container.

e. Loosen three captive screws and remove emergency oxygen system assembly from lower container (Figure 11).

f. Ensure replacement emergency oxygen system assembly has been inspected per NAVAIR 13-1-6.4.

g. Place emergency oxygen system assembly in lower container. Align and install three captive screws in emergency oxygen system assembly thru lower container (Figure 11).

NOTE

Loosening the three (3) captive screws aids in the installation of the survival kit and the prevention of inadvertent actuation.

h. Loosen the three captive screws 2 1/2 turns or 3 turns maximum (Figure 11).

i. Attach emergency oxygen system assembly hose stowage lanyard assembly to the upper container. Install survival kit per Paragraph 24.

j. Tighten the three captive screws (Figure 11) and apply torque seal to each screw (Figure 13). (QA)

k. Attach yellow tamper seal, routed thru oxygen bottle bottom retaining band and survival kit release handle. (QA)

l. Ensure tamper seal is pulled tightly to allow proper breakage when kit release handle and oxygen are pulled.

m. Install cushion assembly on crew backpack per Paragraph 20.

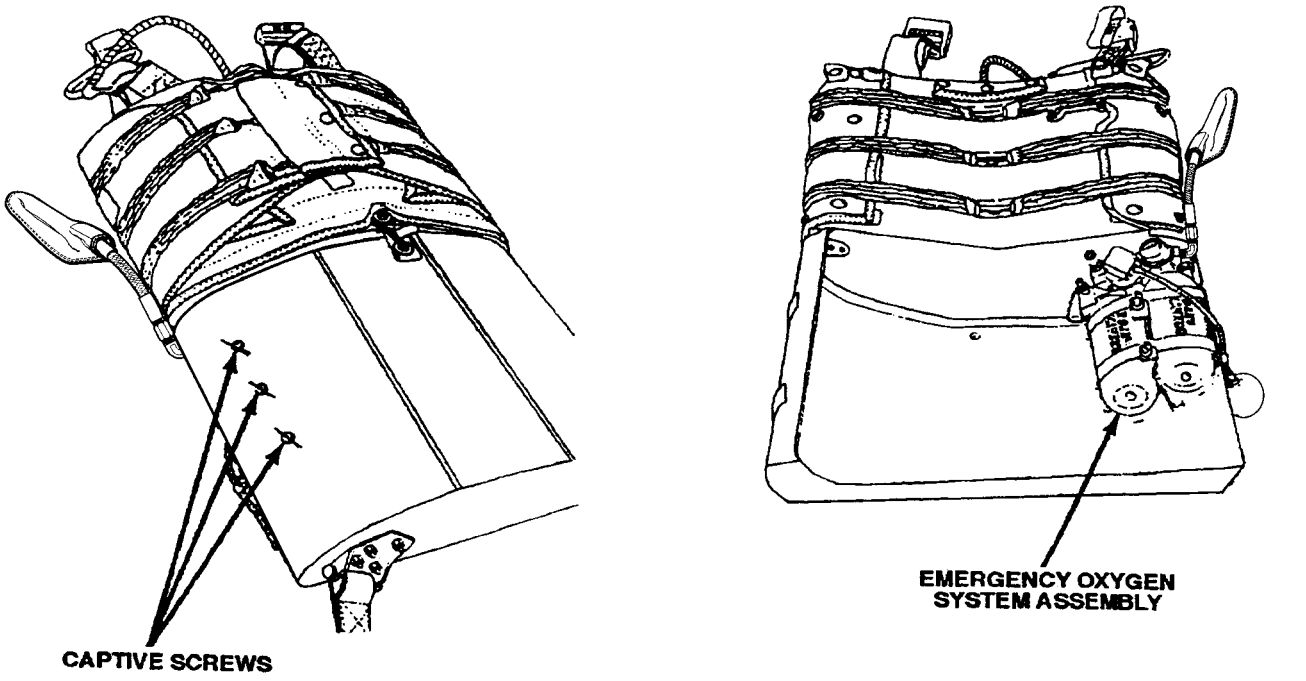

Figure 11. Emergency Oxygen System Assembly Replacement

27. KIT RELEASE HANDLE AND OXYGEN CABLE TAMPER SEAL REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
—	Tamper Seal (1)

a. **Deleted**

b. Attach yellow tamper seal, routed thru bottom oxygen bottle retaining band and around survival kit release handle (Figure 12).

c. Ensure tamper seal is pulled tightly to allow proper breakage when kit release handle and oxygen cable are pulled.

28. TORQUE SEAL ON CAPTIVE SCREWS REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Apply one strip of torque seal from center of captive screw across washer and about 1/8-in. onto container assembly on each of the three captive screws on back of container assembly (Figure 13).

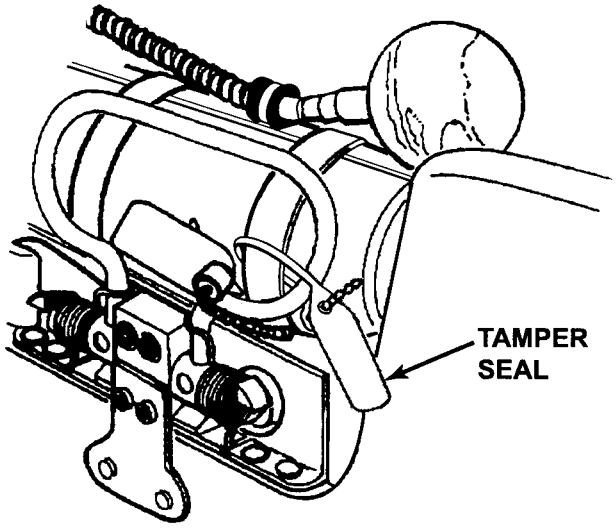

Figure 12. Tamper Seal Replacement

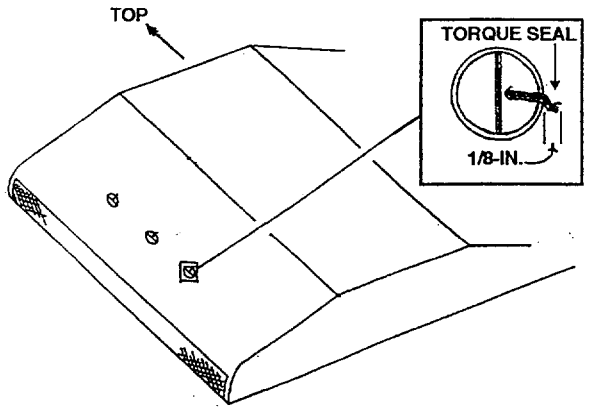

Figure 13. Torque Seal Replacement

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INTERMEDIATE AND DEPOT MAINTENANCE

PACKING PROCEDURES

A/P22P-11 EMERGENCY EGRESS CREW BACKPACK ASSEMBLY

PART NO. 123AB50510-3

List of Effective Work Package Pages

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Reference Material

Aviation - Crew Systems Manual, Inflatable Survival Equipment (Liferafts) . . . . . NAVAIR 13-1-6.1-1
Aviation - Crew Systems Manual, Seat Survival Kits (Oxygen Hoses and Non SKU Series Seat Kits) . NAVAIR 13-1-6.3-1
Aviation - Crew Systems Manual, Oxygen Equipment . . . . . NAVAIR 13-1-6.4
Aviation - Crew Systems Manual, Rescue and Survival Equipment . . . . . NAVAIR 13-1-6.5
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Record of Applicable Technical Directives

None

1. GENERAL.

a. This Work Package (WP) provides packing procedures with the assumption that they will be carried out under ideal conditions in a parachute loft (WP 003 00). When a parachute assembly must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

b. In no case shall the packing of a parachute assembly be interrupted after the packing operation has been started. If the packing operation is interrupted, due to unforeseen circumstances, the parachute assembly shall be completely repacked per the instructions contained in this WP.

c. Quality Assurance (QA) points have been included in the rigging procedures. When a procedural step is followed by "(QA)" there is a quality assurance step requirement. Witnessing of QA steps may be delayed by QA if their satisfactory completion is verified in later steps.

d. During packing procedures, packer shall be positioned on left side of table, and helper on right side, when viewed from riser end of table.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Shot Bag (4)
Refer to WP 005 00	Long Bar
Refer to WP 005 00	Fid
Refer to WP 005 00	Packing Hook
—	Pullup Cord (4)
11-1-3512	Small Line Separator
Refer to WP 005 00	Temporary Locking Pin (3)
DDP-50	Scale, Spring
Refer to WP 005 00	Ripcord Pin Lock
A-A-1358	Wrench, 3/8-in.
—	Wrench 7/16-in.

Materials Required

Specification or Part Number	Nomenclature
22NKTM-02	Nut, Hex
MS20392-2C51	Pin, Cotter
V-T-295	Thread, Nylon Size E, Type I or II, Class A
V-T-295	Thread, Nylon Size FF, Type I or II, Class A
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Ensure that all support equipment and materials required are available prior to starting.

b. Inspect packing tools for nicks, burrs, or sharp edges which may cause damage to the parachute assembly.

c. Count and record the number of packing tools.

d. Clean packing table.

3. REMOVAL OF LOWER CONTAINER.

a. Remove lower container from upper container.

b. Remove lower stop assembly hex nut, bolt and washer. Retain for re-assembly. Replace, if damaged (Figure 1).

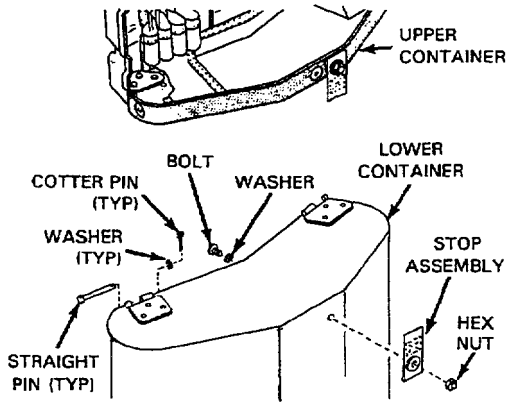


Figure 1. Removal of Lower Stop Assembly Hex Nut

c. Remove survival kit lanyard from lanyard stowage pocket and remove cushion assembly.

d. Remove and discard tamper seal from release handle. Rotate survival kit release handle counter-clockwise and remove anti-rotation strap fitting from locking mechanism upper stud. Cut tackings and remove anti-rotation strap clip from left canopy release assembly (Figure 2).

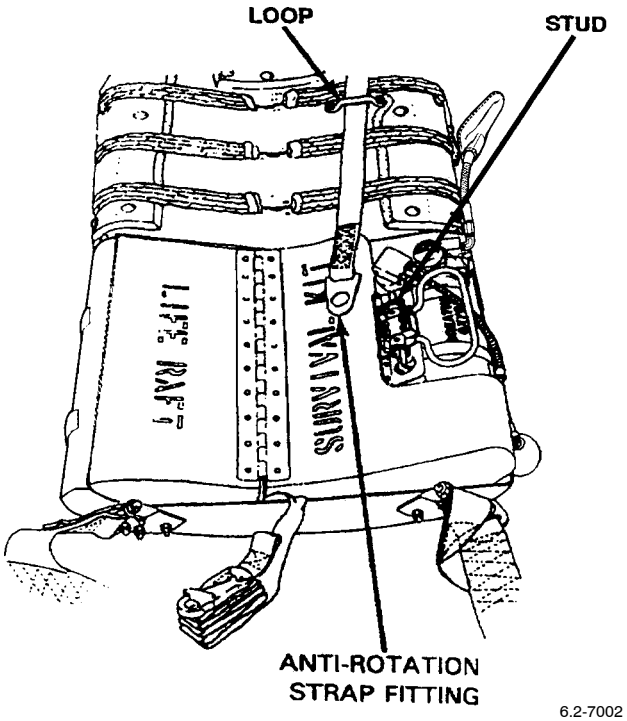


Figure 2. Rotate Survival Kit Release Handle

e. Remove survival kit from lower container. Inspect survival kit and contents per NAVAIR 13-1-6.5.

f. Remove emergency oxygen system assembly hose stowage lanyard assembly, and turn backpack assembly over on table ensuring oxygen regulator is protected.

CAUTION

When loosening three captive screws, hold oxygen bottle secure to prevent screws from stripping.

g. Remove torque seal from captive screws. Loosen three captive screws and remove emergency oxygen system assembly from lower container. Emergency oxygen system assembly shall be inspected per NAVAIR 13-1-6.4 (Figure 3).

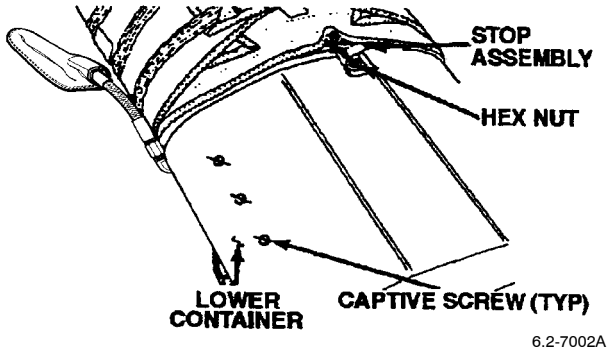


Figure 3. Loosen Three Captive Screws

h. Turn backpack assembly over. Remove lower stop assembly hex nut, bolt and washer. Retain for re-assembly. Replace, if damaged. (Figure 4).

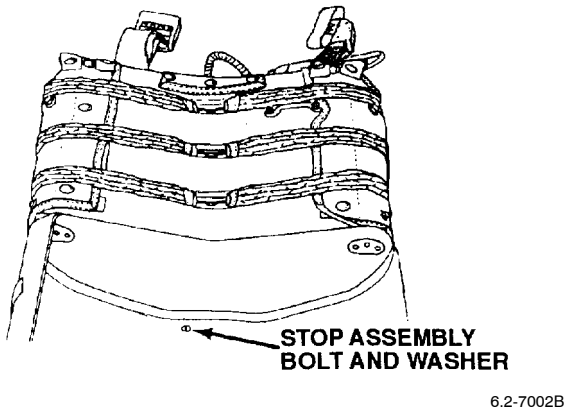


Figure 4. Turn Backpack Assembly Over

i. Turn backpack assembly over. Remove and discard two hinge assembly cotter pins. Remove hinge assembly straight pins and washers. Retain straight pins and washers for reassembly. Set lower container aside until packing is complete (Figure 5).

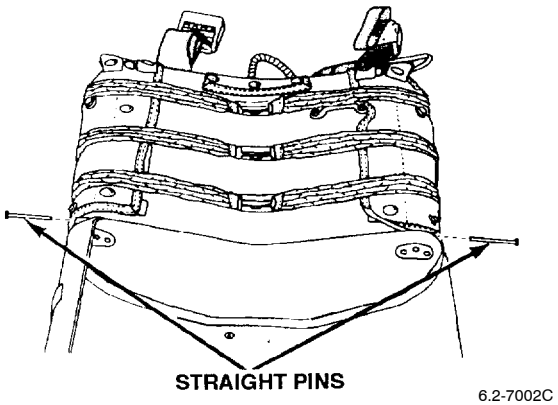


Figure 5. Remove and Discard Cotter Pins

4. LAYOUT OF RIGGED PARACHUTE ASSEMBLY.

a. Completely open upper container and detach spring opening assemblies from flaps. Unsnap corner keeper fasteners.

b. Remove canopy and suspension lines from upper container and stretch on table, untie clamp release lanyard.

c. Remove connector link tackings and disengage riser fasteners from upper container.

d. Locate gore 22 (nameplate gore) and place uppermost in center of packing table.

e. Attach tension strap hook to canopy apex lines.

f. Separate suspension lines into two equal groups with lines 1 thru 11 on packer's side and lines 12 thru 22 on helper's side. Grasp each group of lines, walk from skirt hem to connector links removing dips and twists between the two groups.

g. Position upper container on packing table with inside facing up and ripcord grip retainer on packer's side of table.

h. Place connector link holding lines 1 thru 5 on top of connector link holding lines 6 thru 11. Place connector link holding lines 22 thru 18 on top of connector link holding lines 12 thru 17 (Figure 6).

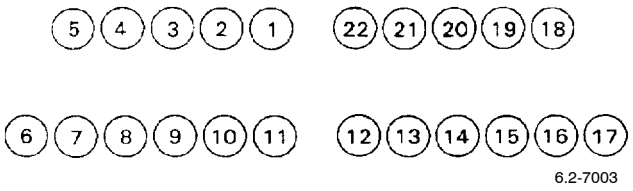


Figure 6. Suspension Line Arrangement and Orientation on Connector Links

i. Insert tension hooks into connector links and insert hooks into packing table.

j. Tension canopy using tension strap.

5. INSPECTION (SPECIAL).

a. Maximum scheduled repack cycle is 224 days.

6. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Parachute Harness Sensing Release Unit Cartridge) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be re-based if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Components without a service/total life shall be removed from service if the components do not pass inspection, as determined by Quality Assurance Representative (QAR) or Collateral Duty Inspector (CDI).

g. Check date placed in-service and date of manufacture on each parachute part for service/total life as follows:

Nomenclature	Service Life (Yr)	Total Life (Yr)
Canopy Assembly	None	13
Cross-Connector Strap	(See Note 1)	(See Note 1)
Cushion	None	12
Lapbelt Assembly	None	15
Pilot Parachute		15
Pilot Parachhute Connector Strap		12
Riser Assembly	None	15
Strap Assembly, Anti-Rotation	None	15

Note 1: Replace at Canopy Assembly replacement.

(1) Markings for completeness, legibility, and agreement with information on Parachute Record.

(2) Compare configuration of parachute assembly to that shown in NAVAIR 13-1-6.2 Record of Applicable Technical Directives, and Illustrated Parts Breakdown.

7. SUSPENSION LINE CONTINUITY.

a. Inspect lines for dips, twists, and proper sequencing (Figure 6). (QA)

8. CANOPY ASSEMBLY.

a. Canopy skirt hem, fabric surface, diagonal seams, radial seams, vent hem, water deflation pockets, for cuts, holes, ruptures, contamination, deterioration, and loose or broken stitching.

b. Suspension lines and canopy apex lines for fraying, ruptures, protruding inner core lines, burns, contamination, and presence of twists.

c. Attachment of suspension lines at skirt hem for security and condition of V-tabs.

d. Connector links for corrosion, distortion, nicks, burrs, sharp edges, and cracks.

NOTE

For Double "L" Connector Link, refer to WP 025 03 for disassembly, assembly, and inspection instructions.

e. Connector links for defective yoke and plate assemblies. Maximum of 1/32-in. play allowable in plate.

f. Torque seal unbroken with yoke and plate assemblies installed with knurled portion facing up and screwheads facing outboard (Figure 7). (QA)

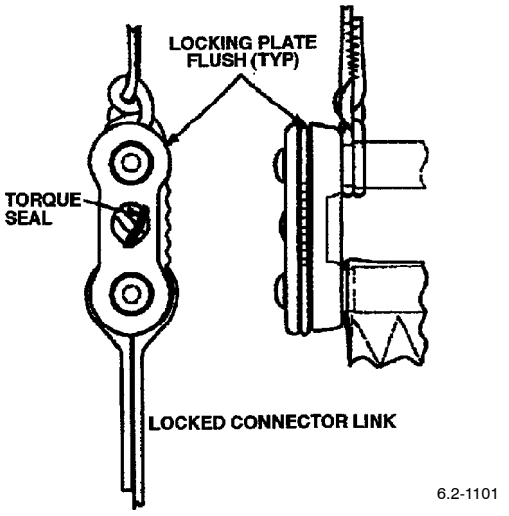


Figure 7. Torque Seal Unbroken

9. PILOT PARACHUTE AND CROSS-CONNECTOR STRAP.

a. Fabric surfaces, and seams for cuts, tears, burns, fraying, and loose or broken stitching.

b. Vane material for cuts, tears, burns, fraying, and deterioration.

c. Seams area at crown for seam separation.

d. Spring assembly for distortion.

e. Loose or broken tackings (4 places) at bottom of the plate assembly.

f. Connector strap for cuts, tears, burns, fraying, and loose or broken stitching.

g. Connector strap for proper attachment at apex lines and pilot parachute loop.

h. Connector strap for loose or broken tacking of Lark's head knot at pilot parachute loop.

10. RISER AND CROSS-CONNECTOR STRAPS.

a. Webbing for contamination, rust at points of contact with metal parts, cuts, twists, fading, wear, fraying, burns, abrasions, and loose or broken stitching.

b. Cross-connector straps for proper attachment to connector links.

c. Snap fastener sockets for proper mating to container, easy release if pulled from connector link end of riser, damage, and security of attachment.

d. Ripcord grip retainer for corrosion, damage, and security of attachment.

e. Cross-connector straps for contamination, cuts, fraying, burns, and loose or broken stitching.

f. Shoulder harness fittings for corrosion, damage, and security of attachment.

11. CANOPY RELEASE ASSEMBLY.

a. Release body for broken locking and actuating lever springs, corrosion, dents, dirt, or sharp edges. Inspect the release lever left and right arms for cracks.

b. Presence and condition of torque seal on setscrew.

c. Measure torque of knurled actuating lever as follows:

(1) Hold locking lever in open position and insert torque meter into either hexagonal cavity. (QA)

(2) Rotate actuating lever to point just prior to contact with body. The allowable torque is 28 to 50 in-oz. (Figure 8). (QA)

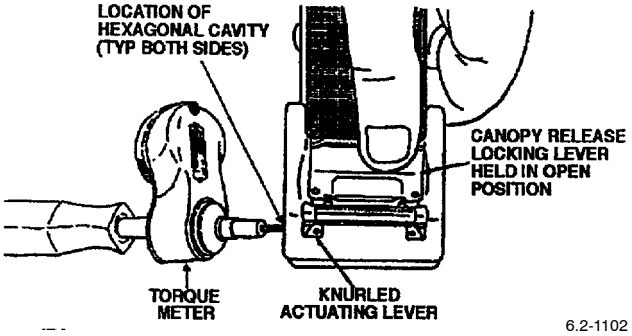


Figure 8. Measuring Torque of Actuating Lever

12. RIPCORD ASSEMBLY.

a. Cable for corrosion, bends, fraying, broken strands and security of swaged terminal ball.

b. Locking pins for bends, dents, cracks, corrosion and security of attachment to cable.

c. Ripcord grip for bends, dents, cracks, and corrosion.

d. Housing and clip for bends, dents, loose ferrules, breaks, cracks, corrosion, and security of attachment

13. CUSHION ASSEMBLY.

a. Snap fasteners for cracks, nicks, gouges, corrosion, and security of attachment.

b. Fabric for seam separations, cuts, tears, loose or broken stitching, contamination, and deterioration.

c. Backpad for security of attachment, Plastic tube for wear, security of attachment to retainer strap.

14. CONTAINER ASSEMBLY.

a. Flap assemblies for security of attachment to the container.

b. Grommets, cones, snap fasteners for security of attachment, cracks, corrosion, nicks, and gouges.

c. Fabric areas, release lanyard, and suspension line hesitator loops for seam separations, loose or broken stitching, cuts, tears, contamination, and deterioration. Suspension line panel for separation from container.

d. Spring opening assemblies for broken springs, contamination, corrosion, cuts, fraying, bent or broken hooks, elasticity, and loose or broken stitching.

e. Spring opening eyes (6) for security of attachment.

f. Hinges for corrosion, nicks, gouges, distortion, and security of attachment.

g. Pile tape fasteners for wear, and security of attachment.

h. Fiberglass for gouges, breaks, and cracks.

i. Anti-rotation strap for loose or broken stitching, fraying, contamination, cuts, and deterioration. Clip spring for corrosion and security of attachment.

15. LAPBELT ASSEMBLY.

a. Webbing for contamination, cuts, fraying, twists, loose or broken stitching and presence and condition of keeper straps.

b. Lapbelt container fittings for corrosion, bends, burrs, wear, and cracks.

c. Release assemblies and adjusters for condition, corrosion, proper operation, and security of attachment.

16. PACKING.

17. WHIPPING AND FOLDING OF CANOPY.

a. The packer and helper shall lift the suspension line on each side of nameplate gore up and out. The skirt hem between lines shall be taut so that canopy apex can be seen on inside. While holding suspension lines up, each man shall whip the gore hanging from line outwards to prepare canopy for folding (Figure 9).

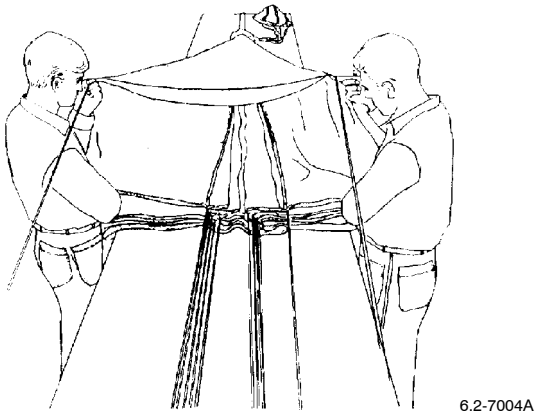
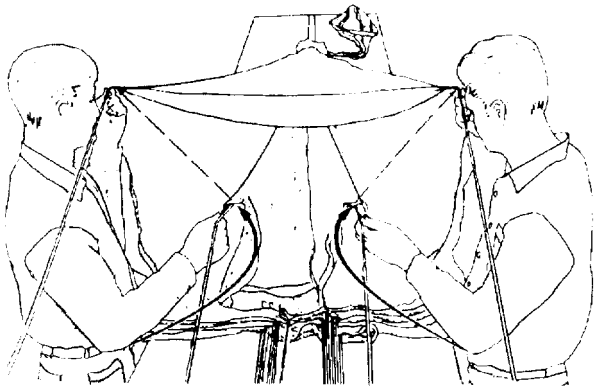


Figure 9. Lift Suspension Lines on Each Side

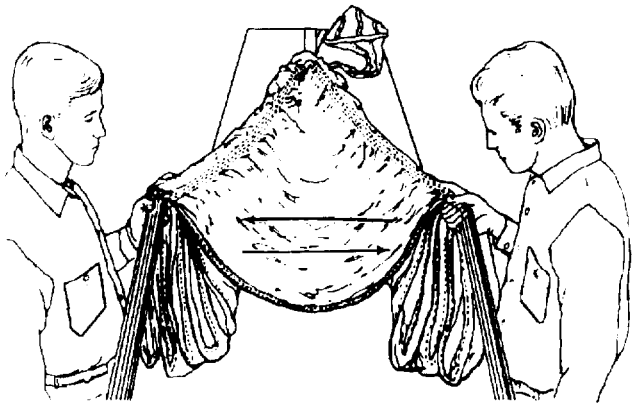
b. Draw next suspension line upwards to suspension line in hand, using a rapid, circular motion (Figure 10).



6.2-7004A

Figure 10. Draw Up Next Suspension Line

c. Continue whipping operation for all gores. Ensure radial seams are not overlapped by gore material. Move whipped gores rapidly back and forth across packing table (Figure 11).



6.2-7004B

Figure 11. Continue Whipping Operation

d. The two groups of suspension lines shall be stretched to the edges of packing table with folded gores hanging over sides. Packer and helper shall grasp all folds at the outer edges on skirt hem and hold suspension line groups at edges of packing table. Packer and helper shall simultaneously move folds up and down rapidly, in a whipping motion.

e. Packer shall flap top gore up and down at skirt hem center as helper holds bottom gore at skirt hem center (Figure 12).

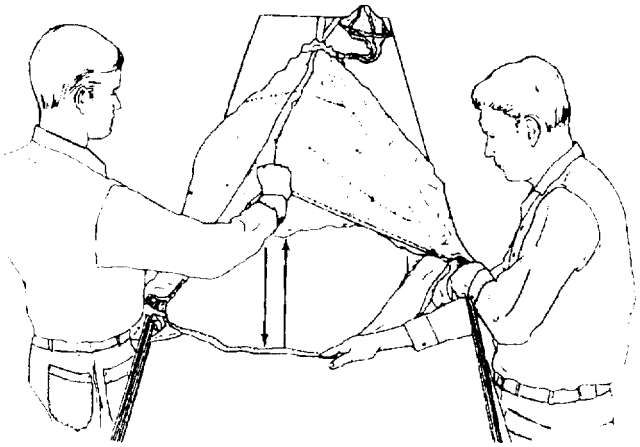


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Figure 12. Packer Shall Flap Top Gore

f. On signal, packer and helper shall draw their respective gores, at skirt hem centers, towards table edge while at same time bringing suspension line groups to center of packing table (Figure 13).

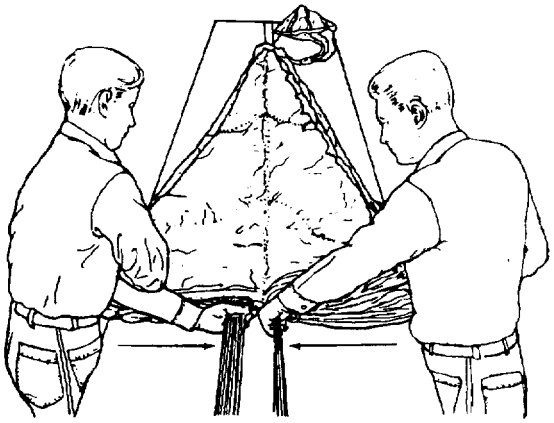

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Figure 13. On Signal Packer and Helper Draw Their Respective Gores to Center

g. Insert suspension line groups into their respective slots in small line separator and place shot bag on lines. Packer shall place second shot bag across skirt hem on left side of suspension lines (Figure 14).

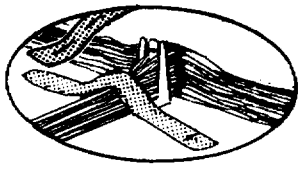

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Figure 14. Insert Suspension Line Groups

h. Helper shall rotate all gores as a group, except bottom gore, from helper's side to packer's side of packing table (Figure 15).

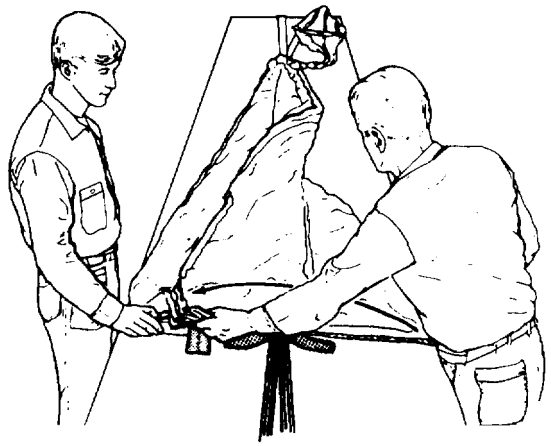

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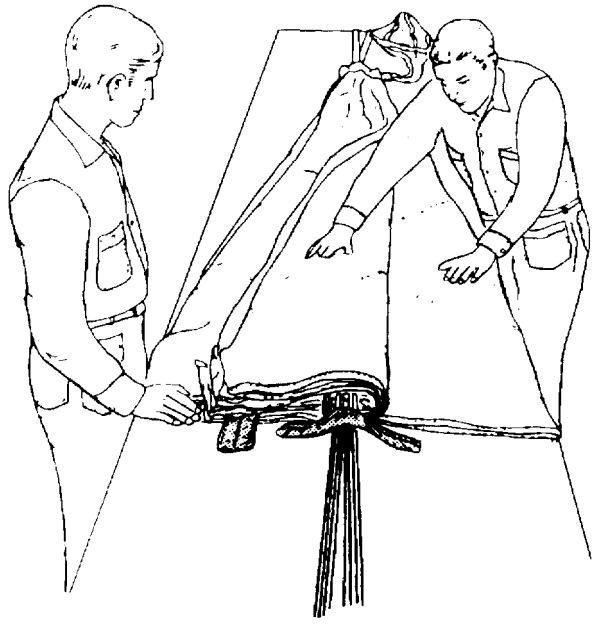
Figure 15. Helper Shall Rotate All Gores as a Group to Packer's Side

i. Helper shall straighten and smooth bottom gore on helper's side of packing table throughout its length to apex (Figure 16).



6.2-7005B

Figure 16. Helper Shall Straighten and Smooth Bottom Gore

j. Packer shall return folded gores above shot bag to helper's side of packing table. Helper shall straighten and smooth each gore and place the shot bag on skirt hem (Figure 17).

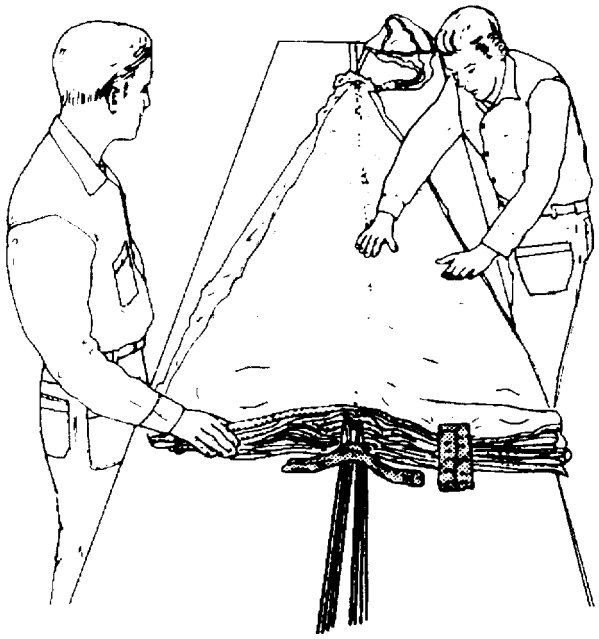


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Figure 17. Packer Shall Return Folder Gores Above Shot Bag

k. Packer shall rotate all gores as a group, except bottom gore, from packer's side to helper's side of packing table (Figure 18).

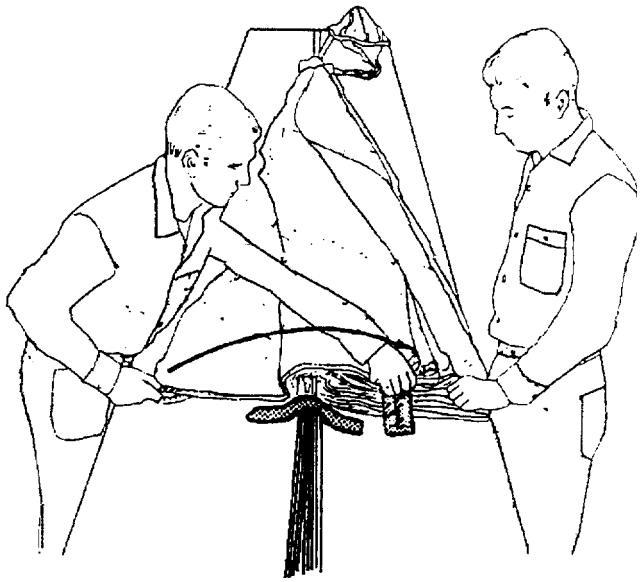

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Figure 18. Packer Shall Rotate all Gores as a Group to Helper's Side

l. Packer shall straighten and smooth bottom gore on packer's side of packing table throughout its length to apex (Figure 19).

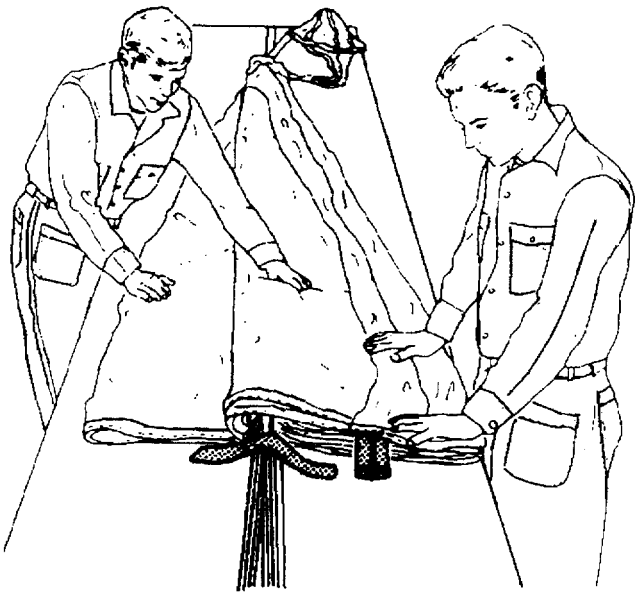

Figure 19. Packer Shall Straighten and Smooth Gore on Packers Side

m. Helper shall return folded gores above shot bag to packer's side of packing table. Packer shall straighten and smooth each gore. Remove shot bag from canopy (Figure 20).

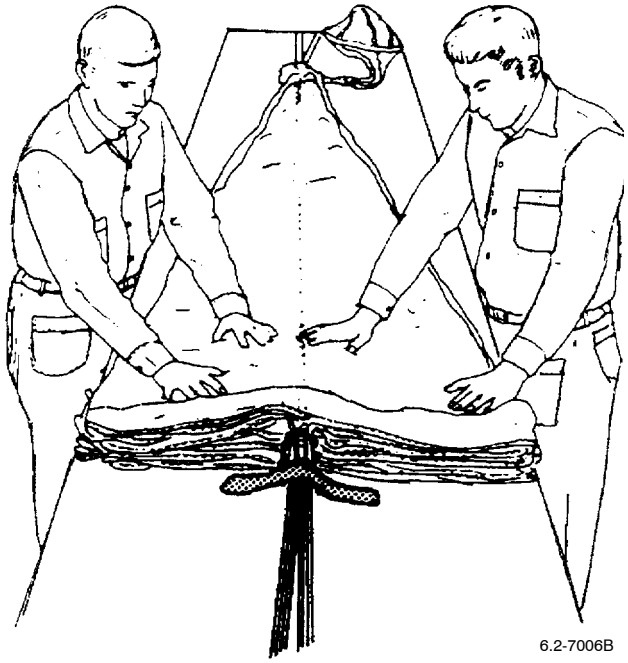

Figure 20. Helper Shall Return Folded Gores Above Shot Bag to Packer's Side

n. Packer and helper shall grasp skirt hem at mid-sections of gores and rotate towards suspension lines (Figure 21).

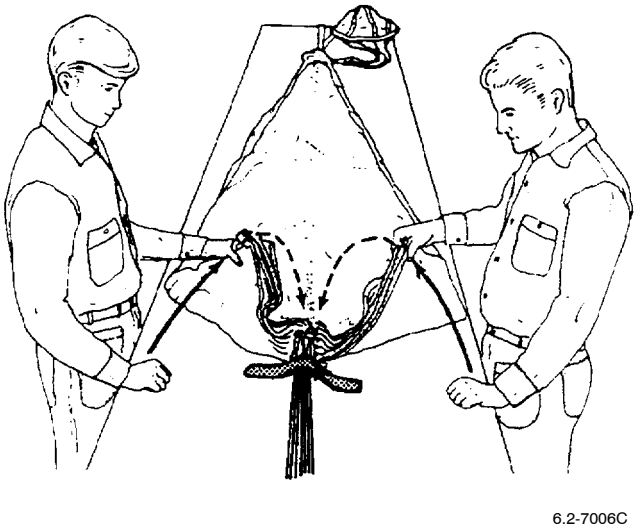

Figure 21. Packer and Helper Shall Grasp Skirt Hem

o. Packer and helper shall grasp the bottom most gore fold and extend outwards, aligning the edge of the skirt hem and suspension line "V" tab reinforcements. The remaining 10 gores shall be aligned in a similar manner. Ensure that all "V" tab reinforcements face same direction and that 11 gores have been counted on each side (Figure 22).

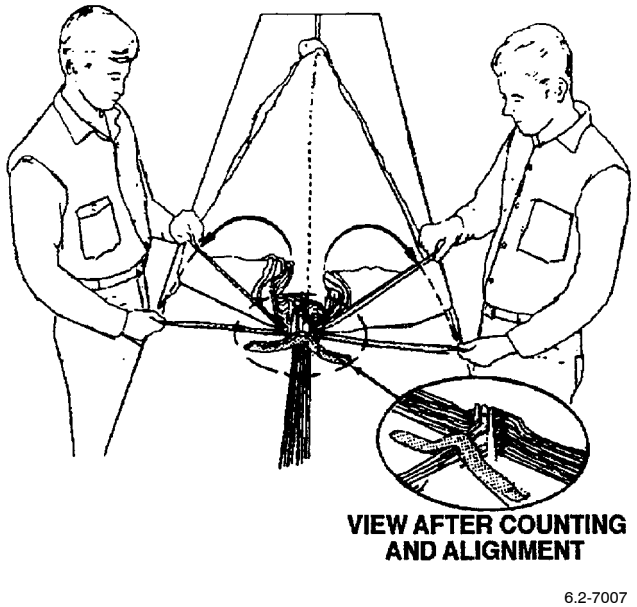

Figure 22. Packer and Helper Shall Grasp Bottom Most Gore

p. The canopy shall be folded by packer placing his hand on helper's side of skirt hem at a location that will allow the finished folds to be the width of the container, about 15-in. helper shall rotate gores toward the center of the canopy (Figure 23).

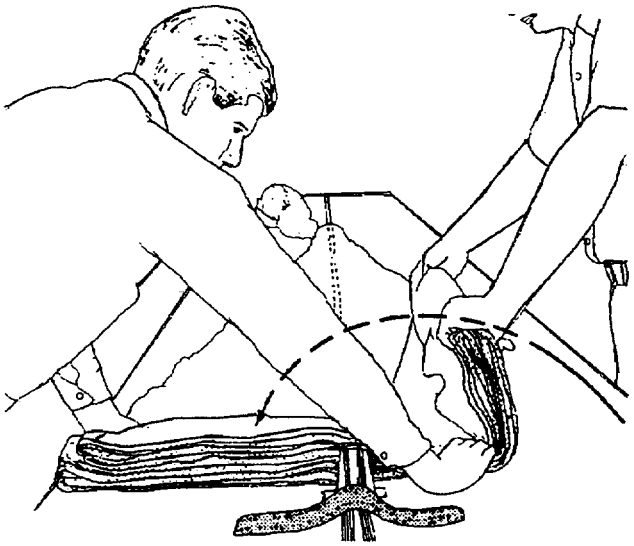

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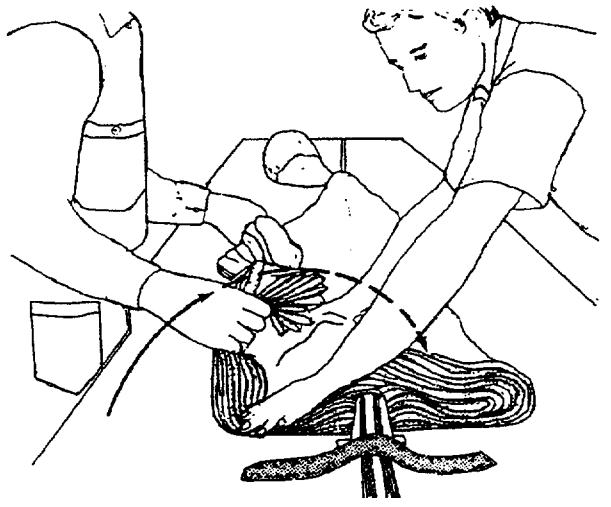
Figure 23. Canopy Shall Be Folded

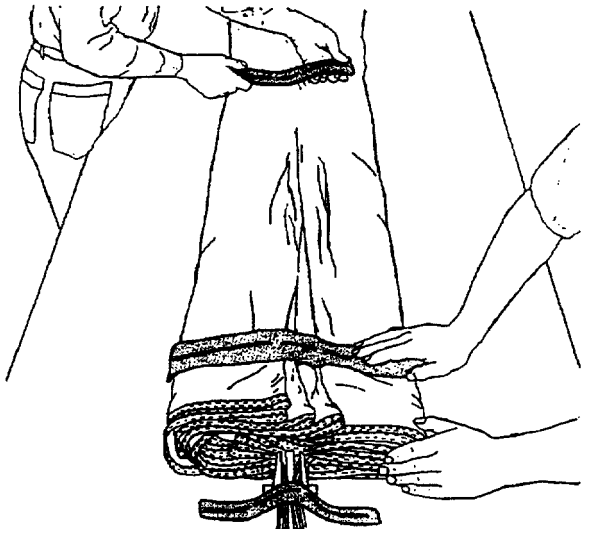
q. Helper shall place his hand on the packer's side of the skirt hem at a location that will allow the finished folds to be the width of the pack, about 15-in. the two groups of folded gores shall fold together. Note that canopy cannot be folded throughout entire length but breaks about two-thirds the distance to the apex (Figure 24).



6.2-7007B

Figure 24. Helper Shall Place Hand on Packer's Side of Skirt Hem

r. Place one shot bag slightly behind skirt hem and another on middle of canopy. The folded gores shall be lapped to the width of the pack (Figure 25).



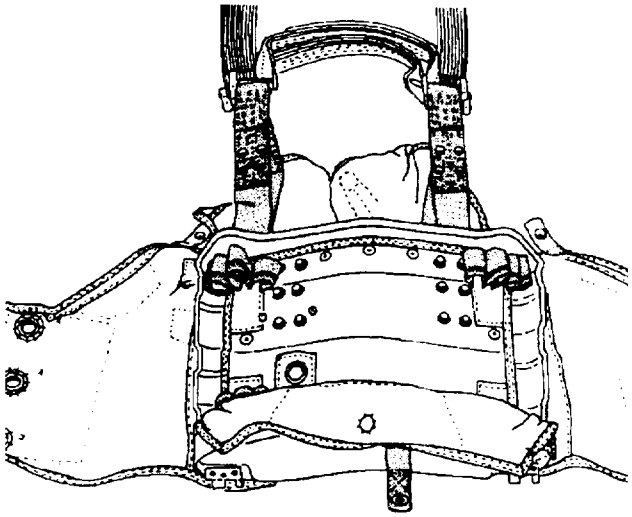
6.2-7007C

Figure 25. Place One Shot Bag Slightly Behind Skirt Hem

18. RISER ASSEMBLY ATTACHMENT TO UPPER CONTAINER ASSEMBLY.

a. Remove tension strap, and place pilot parachute on top of canopy. Remove tension hooks from connector links, then remove hooks from table.

b. Position upper container on top of canopy release assemblies with inside facing up (Figure 26).



6.2-7008

Figure 26. Position Upper Container

c. Slide upper container towards connector links. Fold each riser back and secure riser fasteners to top four fasteners on upper container (Figure 27).

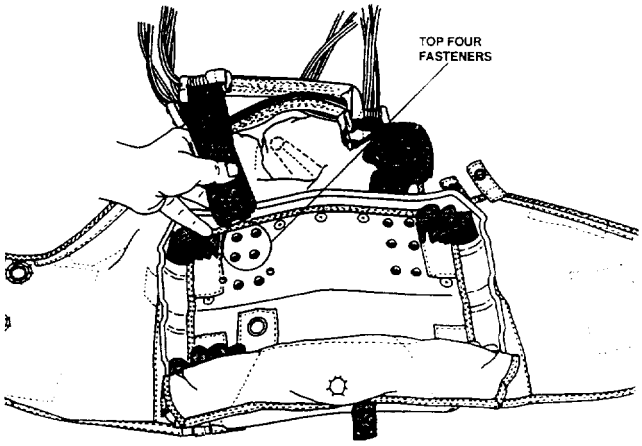


Figure 27. Secure Top Four Fasteners

19. STOWAGE OF SUSPENSION LINE.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Position connector links inside open upper container.

b. Ensure presence and security of clamp release lanyard tackings on top flap. Reeve clamp release lanyard thru lanyard guide grommet. Position 26-in. mark on lanyard over bar on bottom left connector link. Secure clamp release lanyard to bottom left connector link with a bowline knot followed by an overhand knot (Figure 28). (QA)

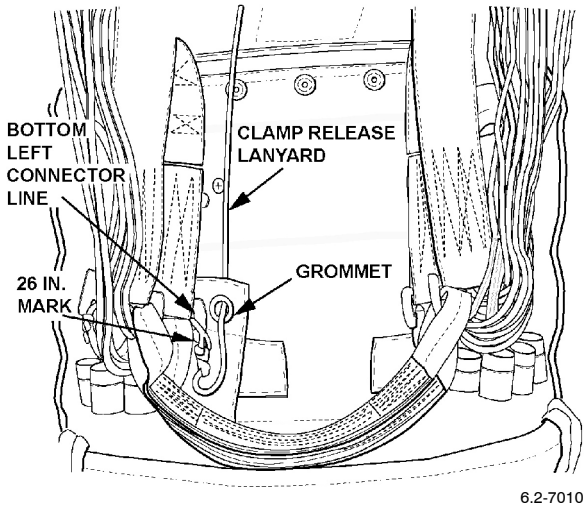


Figure 28. Ensure Presence and Security of Clamp

c. Position cross-connector straps flat, position connector links, tie each pair of connector links on inboard side with one turn of size FF thread, single and waxed, passing thru fabric above first rib; tie off (Figure 29).

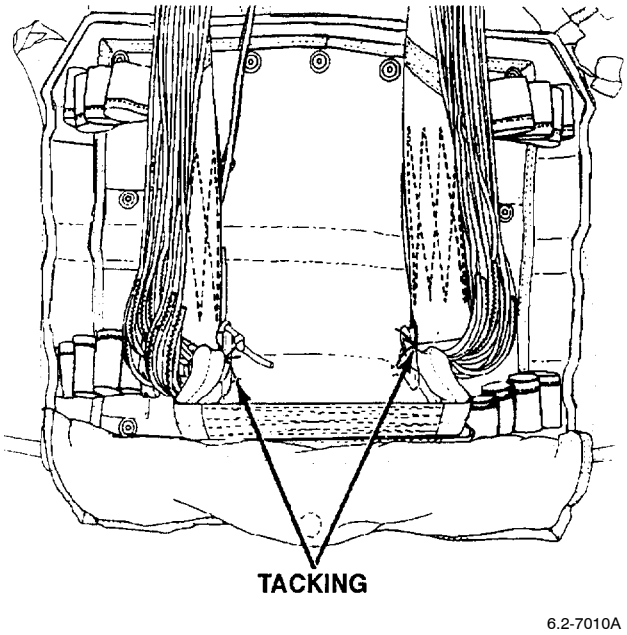


Figure 29. Position Cross-Connector Straps Flat

d. Packer shall grasp both groups of suspension lines in left hand about 16-in. from connector links to make first bight. Ensure there are equal amounts of suspension line in both groups, from connector links to hand. Canopy shall be drawn along packing table only in sufficient length to permit each bight to be formed.

WARNING

Rapid removal of pullup cord can cause damage to suspension lines.

e. Packer shall form first bight in suspension lines over hesitator loop farthest from canopy and closest to helper. Insert a waxed pullup cord thru first bight then thru access hole in upper container base and draw bight against pack lip at upper container base. Helper shall assist by holding pack steady and by holding completed bight while next bight is formed (Figure 30).

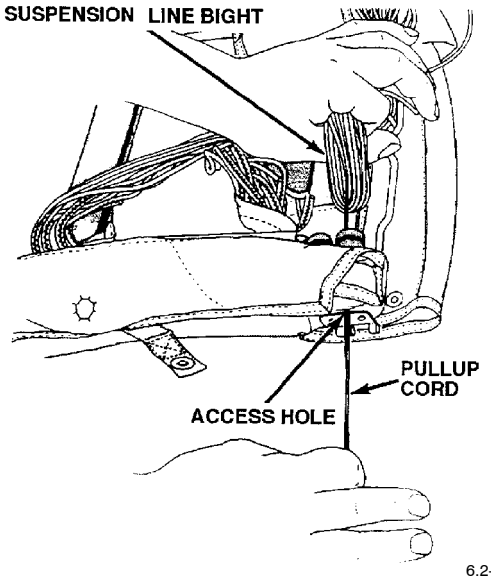


Figure 30. Packer Shall Form First Bight

f. Packer shall draw suspension lines and folded canopy toward upper container to form second bight. The second bight shall be drawn thru hesitator loop opposite first one. Packer shall engage hook in suspension lines and draw second bight thru hesitator loop.

g. After stowing second bight, there shall be 3/8-in. clearance between packing hook and hesitator loop (Figure 31).

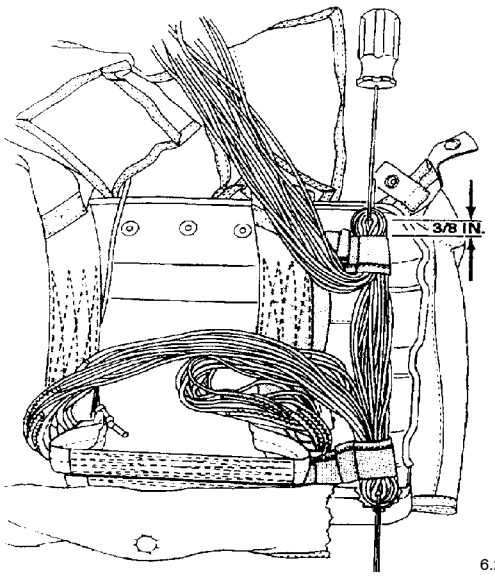


Figure 31. Bight Shall Extend 3/8-in.

h. Third bight is formed in same manner as first stow. Bight is pulled thru hesitator loop next to first stow. Stow bights 4 thru 8 in the same manner as in preceding steps.

i. Cross suspension lines over to opposite side of upper container and stow bight 9 (Figure 32).

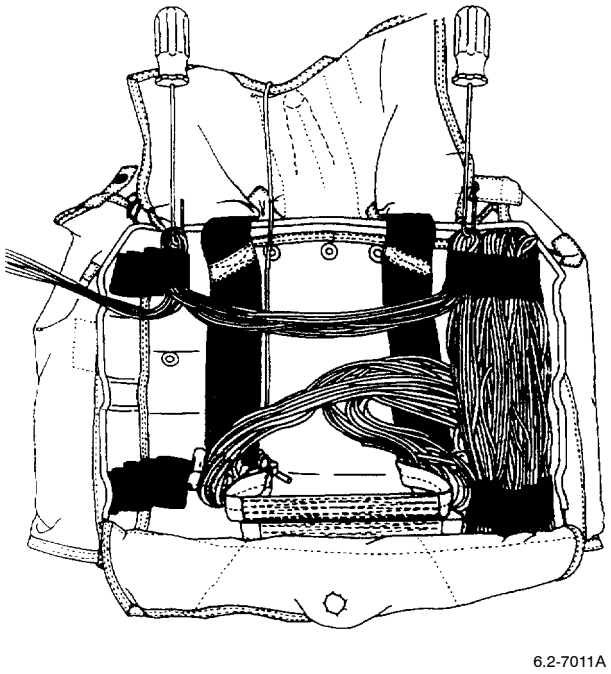
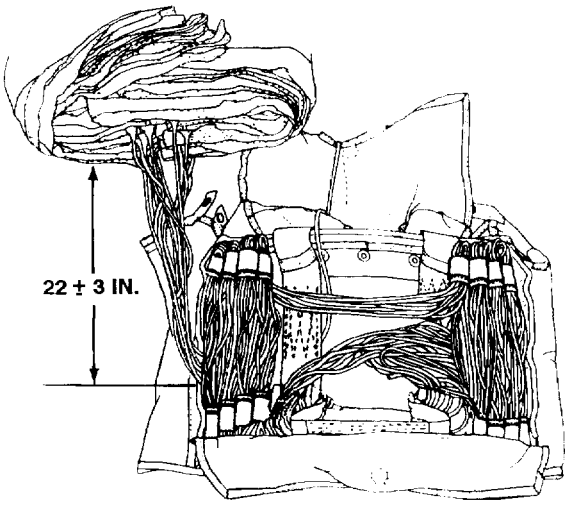


Figure 32. Cross Suspension Lines Over to Opposite Side

j. Continue stowing suspension line bights in hesitator loops 10 thru 16. As each stow is completed ensure lines are not rotated or loose and that there are no suspension lines left out of hesitator loops. Stowed bights at top of upper container shall extend 3/8-in. beyond hesitator loops and packing hook. Stowed bights at bottom of upper container shall extend to upper container base. Straighten all hesitator loops using a temporary locking pin.

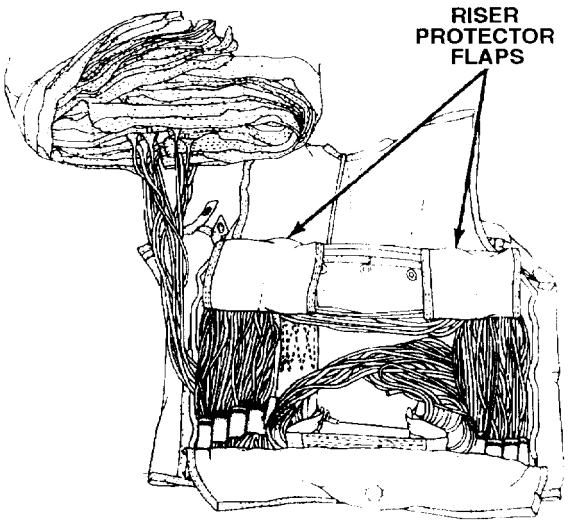
k. When suspension lines are stowed in last hesitator loop, there shall be an excess of 22 ± 3-in. of suspension lines between last bight and skirt hem (Figure 33). (QA)



6.2-7012

Figure 33. Last Bight 22 ± 3-in. of Line

l. Place riser protector flaps on top of risers and suspension lines. Place access hole cover flaps over access holes at base of upper container (Figure 34).



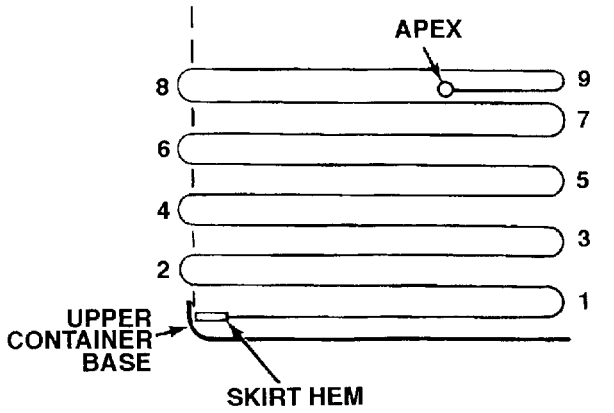
6.2-7012A

Figure 34. Placement of Protector Flaps

m. Remove small line separator. (QA)

20. STOWAGE OF CANOPY IN CONTAINER.

a. Nine folds shall be made when stowing canopy. Use the following illustration as a guide while stowing canopy (Figure 35).



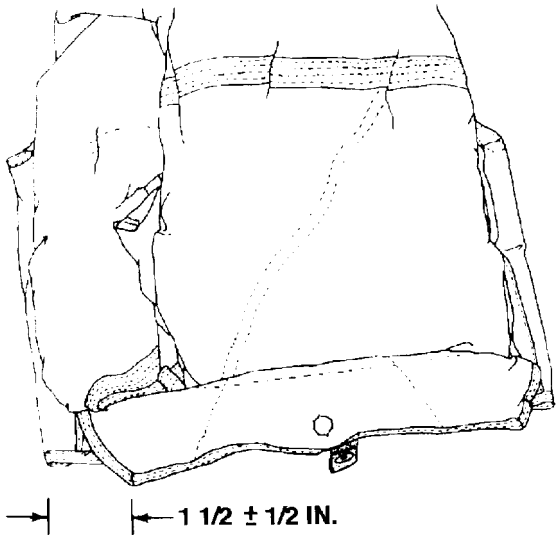
6.2-7013

Figure 35. Nine Folds Shall Be Made

b. Remove shot bag at canopy skirt hem. (QA)

c. Packer shall grasp canopy skirt hem on each side of suspension lines and draw canopy across upper container. Place excess suspension lines on center of upper container.

d. Skirt hem shall be placed at upper container base. Allow folded canopy to spread 1 1/2 ± 1/2-in. over sides of upper container (Figure 36).



6.2-7013A

Figure 36. Placement of Skirt Hem

e. To make first and second folds, helper shall place long bar on top of canopy, parallel with top edge of upper container. Packer shall grasp canopy short of upper container length and draw it across folded canopy. Remove remaining shot bags as necessary (Figure 37).

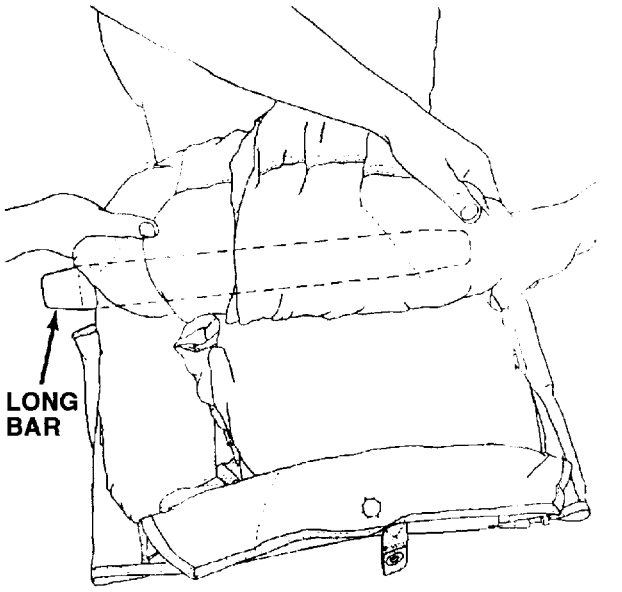


Figure 37. Make First and Second Folds

f. Second fold shall be positioned 1-in. beyond skirt hem. Sides of canopy shall spread 1 1/2 ± 1/2-in. over sides of upper container (Figure 38).

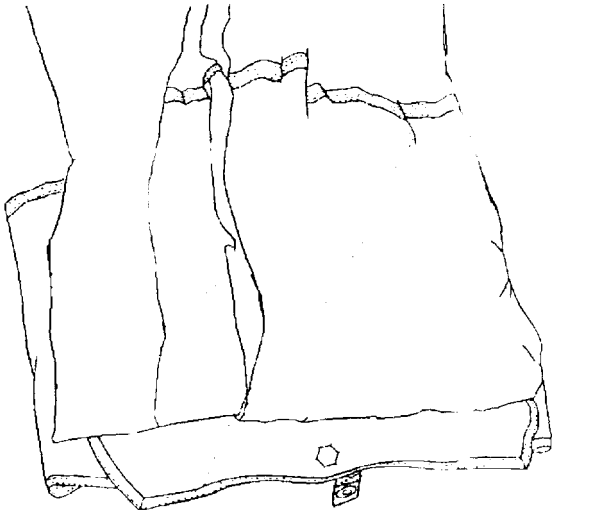


Figure 38. Position Second Fold 1-in. Beyond Skirt Hem

g. To make third and fourth folds, helper shall use long bar in same manner as with first and second folds. Fourth fold is extended to align with skirt hem (Figure 39).

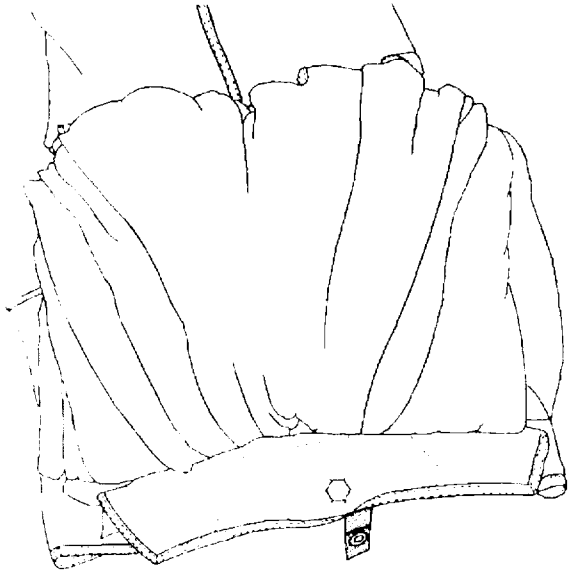


Figure 39. Make Third and Fourth Folds

h. Continue accordion folding remainder of canopy onto upper container, maintaining 1 1/2 ± 1/2-in. overlap on sides of upper container. As apex of canopy is drawn close to upper container, pilot parachute shall be placed back onto packing table (Figure 40).

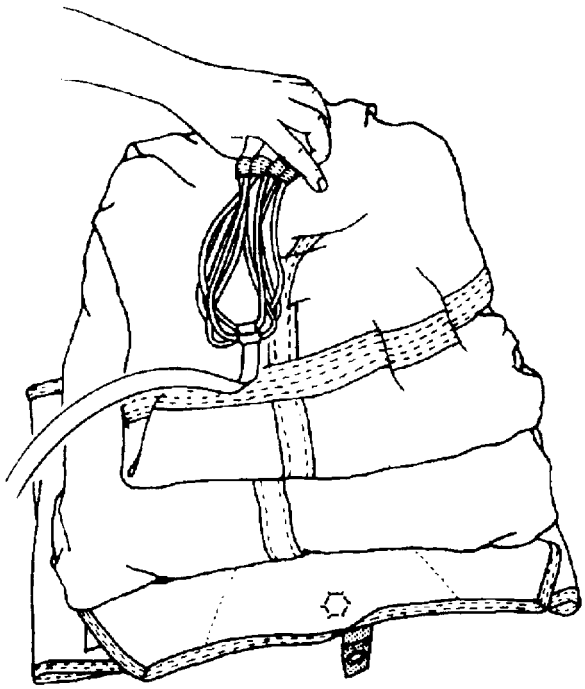


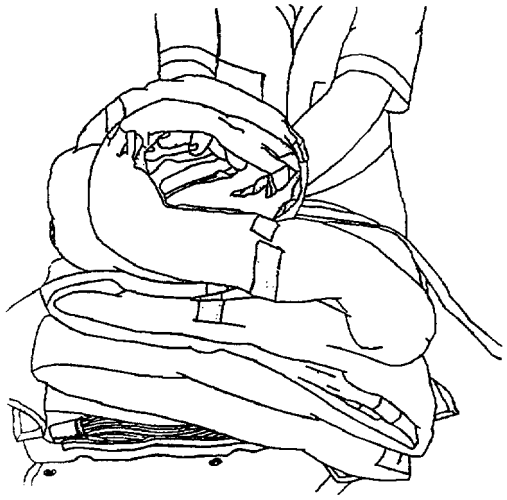
Figure 40. Continue Accordion Folding

i. When insufficient canopy remains to continue folding, canopy shall be folded under 9 ± 2-in. from apex (Figure 41).

6.2-7014B

Figure 41. Fold Under 9 ± 2-in. From Apex

j. Folded under portion of canopy shall be positioned on top of canopy to form uppermost fold (Figure 42).



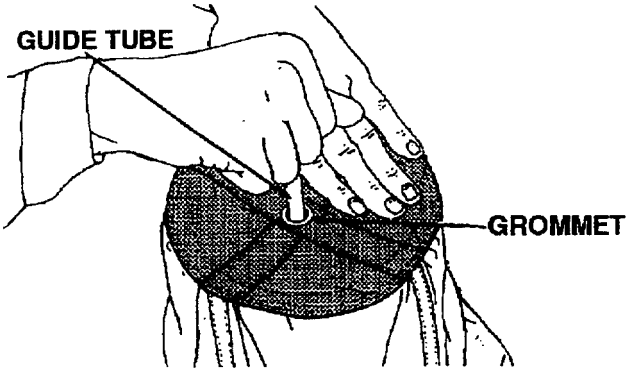
6.2-7014C

Figure 42. Positioning of Canopy to Form Uppermost Fold

k. Adjust canopy as required, to obtain neat and square folds. (QA)

l. Inspect pilot parachute connector strap for entanglements. Rotate upper container 90-degrees counterclockwise.

m. Position pilot parachute vertically on packing table and insert guide tube into grommet in crown of pilot parachute. Extend guide tube to bottom of pilot parachute and position over locking cone on spring base plate (Figure 43).



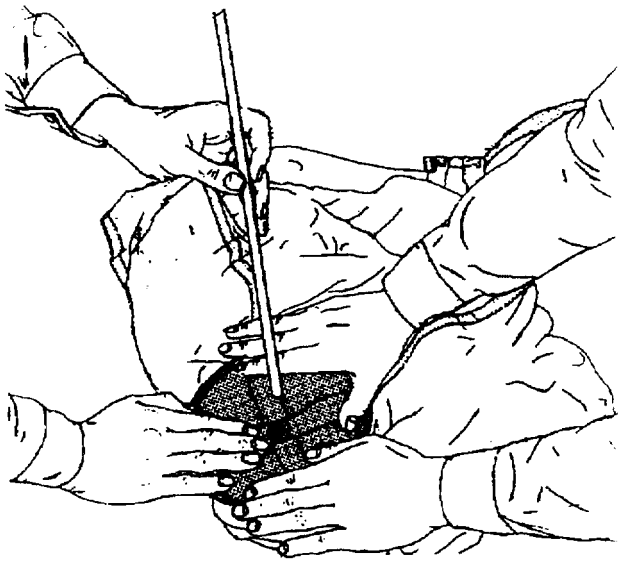
6.2-7015

Figure 43. Position Pilot Parachute

WARNING

Ensure pilot parachute cloth is not twisted around or entangled in compressed pilot parachute spring.

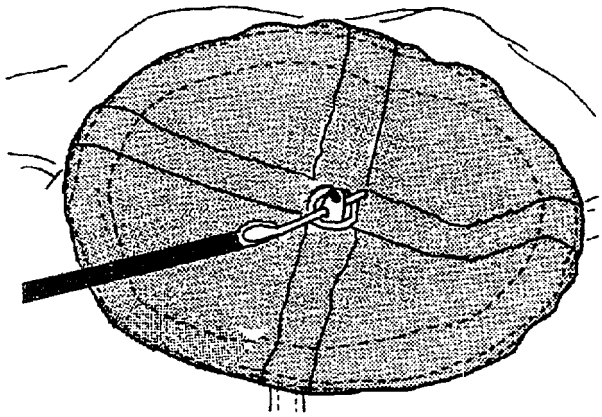
n. Compress pilot parachute spring and remove guide tube from locking cone. Locking cone shall protrude thru grommet (Figure 44).



6.2-7015A

Figure 44. Compress Pilot Parachute

o. Insert temporary locking pin into bottom hole in cone to keep pilot parachute compressed. Pull all nylon cloth away from locking cone to ensure that no cloth shows thru grommet (Figure 45).



6.2-7015B

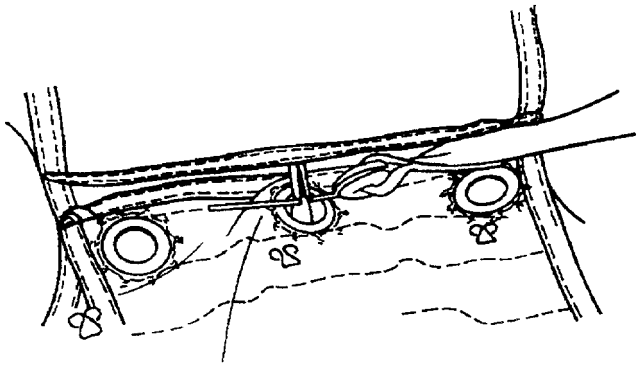
Figure 45. Insert Temporary Locking Pin

p. Position pilot parachute so locking cone is aligned with second grommet from top end of upper container. Pilot parachute temporary locking pin shall extend over top end flap. Tuck pilot parachute cloth under outer edge of crown. (QA)

21. CLOSING OF UPPER CONTAINER.

a. Attach pull up cord to top hole in pilot parachute locking cone.

b. Pass pull up cord attached to pilot parachute locking cone, thru center grommet on left side flap. Pull flap over pilot parachute and canopy. Secure cone with temporary pin (Figure 46).



6.2-7016

Figure 46. Pass Pull Up Cord Thru Cone

NOTE

Do not remove temporary pin until step c.

c. Pass pull up cord thru center grommet on right side flap and insert temporary locking pin thru knot loop in pull up cord, NOT THRU CONE (Figure 47).

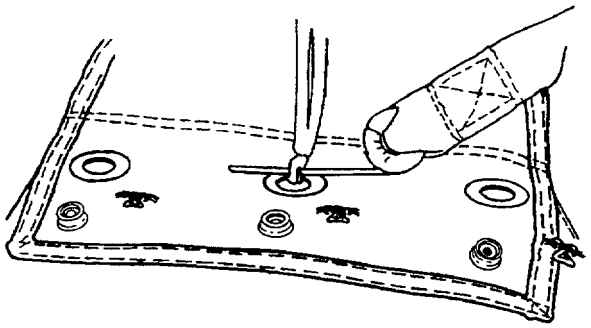


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Figure 47. Pass Pull Up Cord Thru Center Grommet

d. Insert long bar under left side flap and on top of pilot parachute (Figure 48).

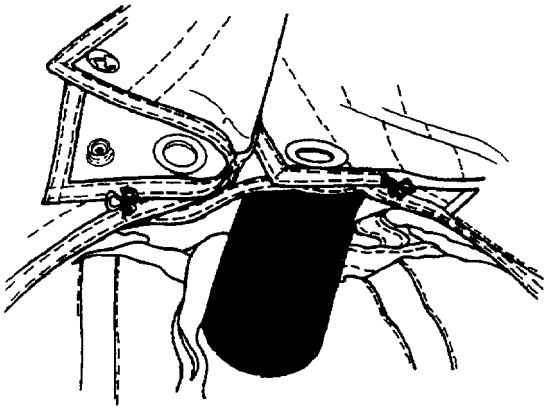
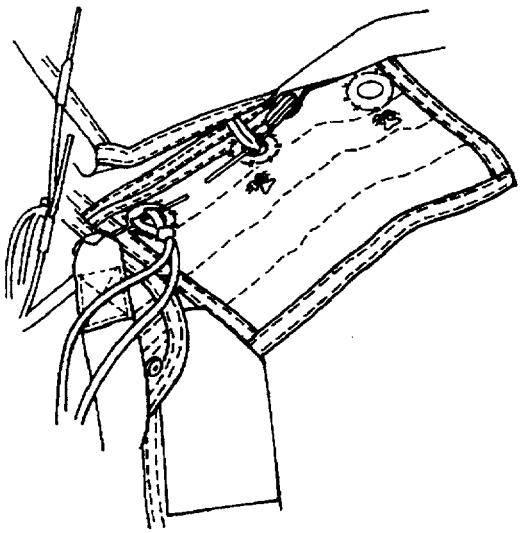


Figure 48. Insert Long Bar 6.2-7016B

e. Pass pull up cord attached to top flap cone, thru top grommet on left side flap and pull cone on top flap thru grommet and insert temporary locking pin (Figure 49).



6.2-7016C

Figure 49. Insert Temporary Locking Pin

NOTE

Always maintain long bar under cone of top flap.

f. Pass pull up cord attached to top flap cone up thru grommet on top right side flap and pull cone thru grommet and insert top ripcord pin or ripcord assembly into cone. Remove pull up cord and remove long bar (Figure 50).

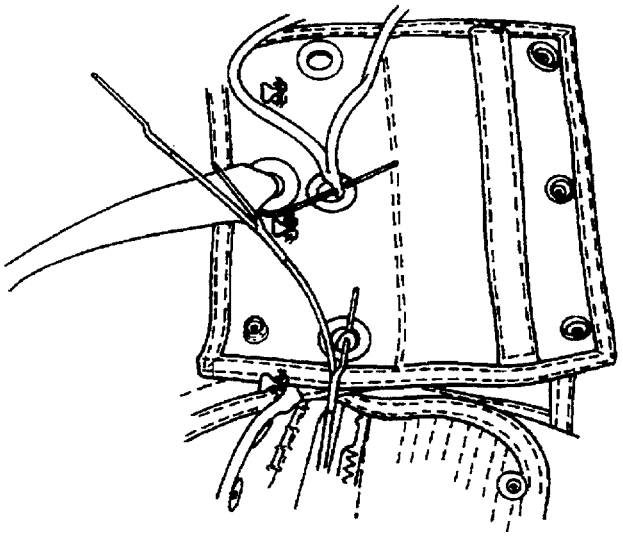


Figure 50. Pass Pull Up Cord Thru Top Cone

g. Insert long bar from top flap end under both side flaps and on top of pilot parachute (Figure 51).

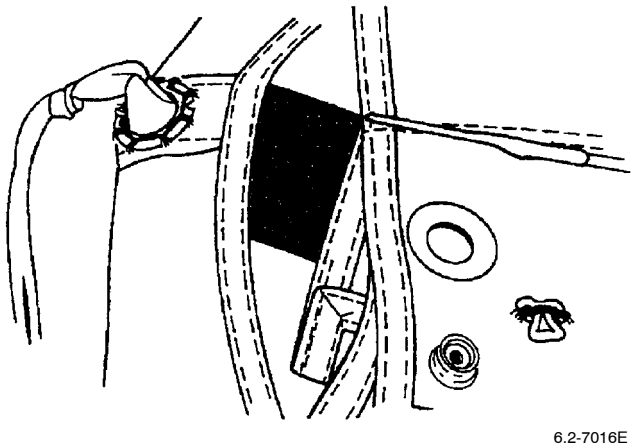


Figure 51. Insert Long Bar Under Both Flaps

h. Pass pull up cord attached to bottom flap cone, thru left side flap and pull cone thru grommet and insert temporary pin (Figure 52).

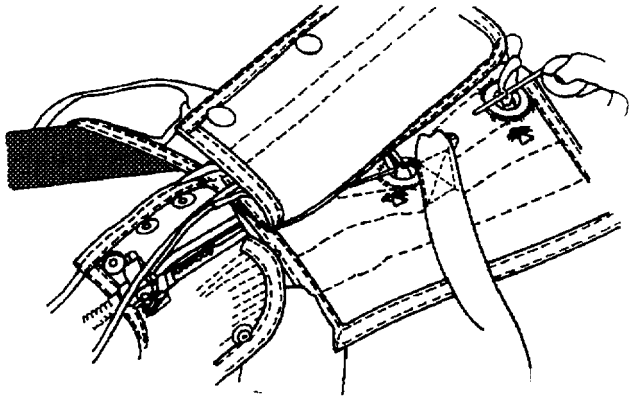


Figure 52. Pass Pull Up Cord Attached to Bottom Flap Cone

NOTE

Always maintain long bar under cone of bottom flap.

i. Pass pull up cord attached to bottom flap cone up thru grommet in bottom right side flap and pull cone thru grommet and insert temporary pin into cone. Remove long bar (Figure 53).

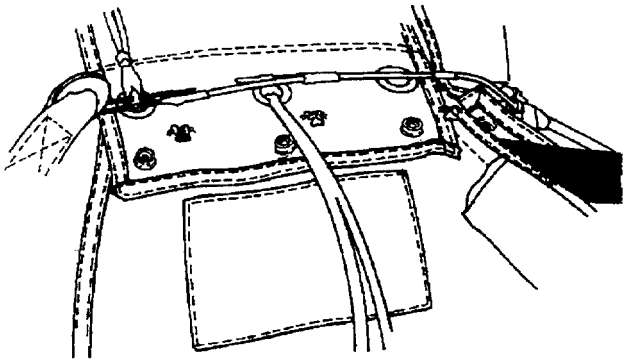


Figure 53. Pass Pull Up Cord Attached to Bottom Flap Cone

j. Push riser protector flaps firmly into upper container using fid.

k. Push corner flaps into upper container using packing fid inserted into pockets. Remove wrinkles and smooth corners of upper container using fid.

l. Using roll bar tool, wind around pull up cord attached to cone in pilot parachute and bring cone up to center grommet of right side flap. Remove temporary pin on top of left side flap and bring cone in pilot parachute thru grommet of right side flap (Figure 54).

m. Remove pilot parachute temporary locking pin. (QA) ■

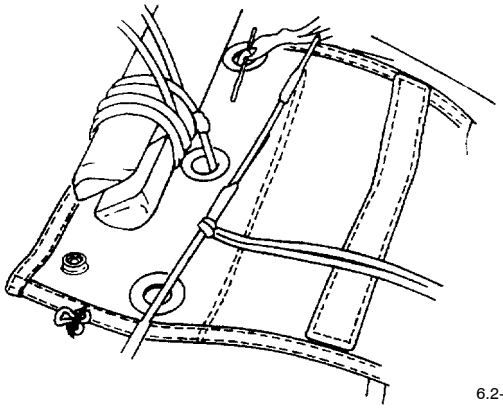


Figure 54. Using Roll Bar Wing Pull Up Cord

WARNING

Use of the ripcord pins as alignment aids during installation may cause bending of pins and result in excessive pull forces.

n. Insert ripcord pin thru cone. Remove pull up cord (Figure 55).

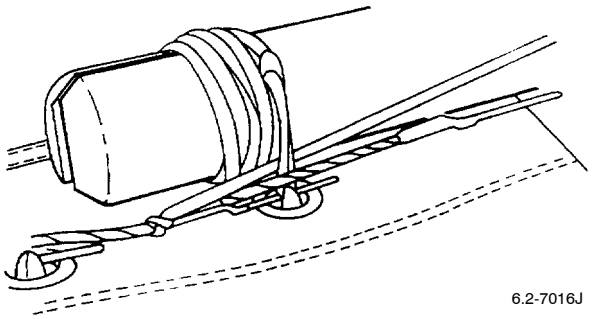


Figure 55. Insert Ripcord Pin

o. Remove temporary pin from bottom flap cone and insert ripcord pin (Figure 56).

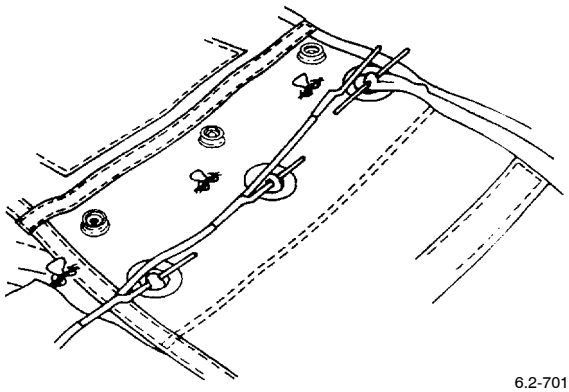


Figure 56. Remove Temporary Pin

p. Remove pull up cord (Figure 57).

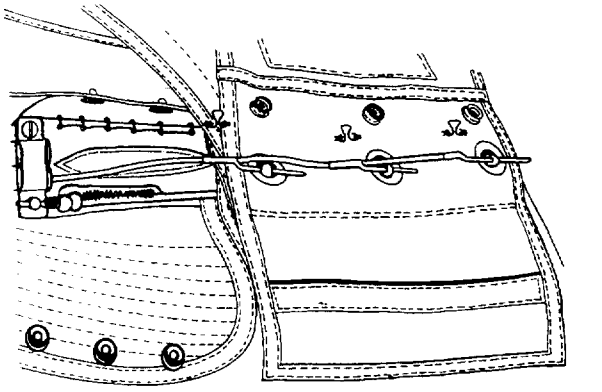


Figure 57. Remove Pull Up Cord

q. Turn upper container over and secure four corner keeper fasteners to container (Figure 58).

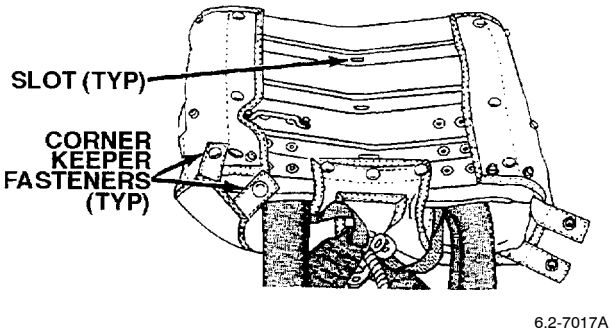


Figure 58. Turn Upper Container Over

r. Ensure ripcord pins are centered in locking cones so that shoulder of ripcord pin is not jammed against locking cone, but extends more than 1/2 in. beyond inside edge of grommet (Figure 59).

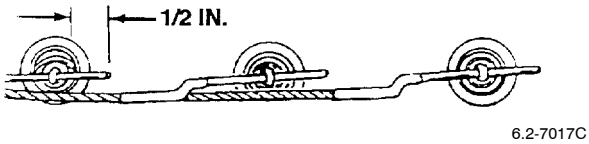


Figure 59. Ensure Locking Pins are Centered

s. Attach tabless ends of spring opening assemblies to slots in upper container at centerline.

t. Turn upper container over so ripcord pins face up.

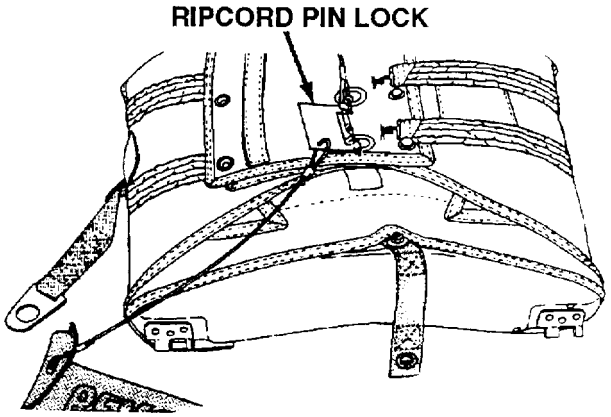
u. Attach spring opening assemblies to eyes on flap assemblies.

22. RIPCORD PIN PULL CHECK.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed by a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Insert ripcord pin lock on bottom ripcord pin (Figure 60).



6.2-7018

Figure 60. Insert Ripcord Pin Lock

b. Install ripcord grip into ripcord grip retainer.

c. Attach a nylon pull cord loop to ripcord grip.

d. Attach spring scale to nylon pull cord loop.

e. Using the spring scale, apply a straight steady pull and remove ripcord grip from ripcord grip retainer. Allowable force is 15 ± 5 lbs. (QA)

f. Reset spring scale. Apply a straight steady pull to ripcord grip until initial movement of bottom ripcord pin is observed. Maximum allowable force is 27 lbs. (QA)

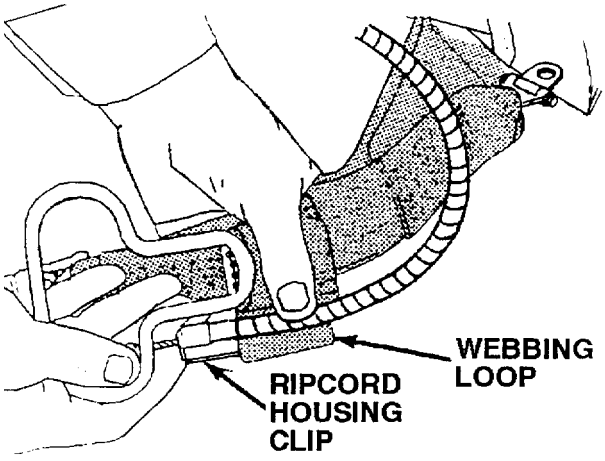
WARNING

Ripcord pin lock must be removed.

g. Remove ripcord pin lock. (QA)

h. If necessary reposition ripcord pins so they are centered in locking cones so that shoulder of ripcord pin is not jammed against locking cone, but extends more than 1/2-in. beyond inside edge of grommet.

i. Install ripcord housing clip into webbing loop attached to left riser assembly (Figure 61).

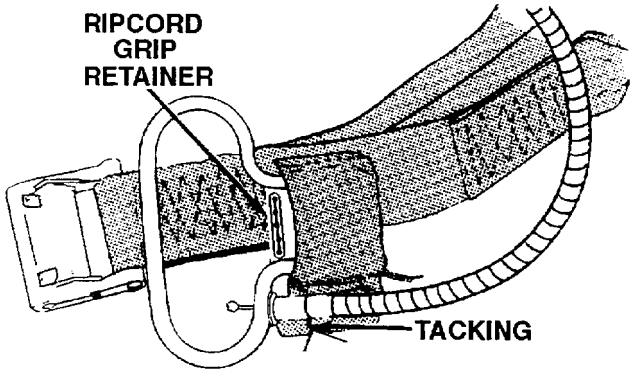


6.2-7018A

Figure 61. Install Ripcord Housing Clip

j. Tack thru loop and thru hole in ripcord housing clip with one turn of size E thread, single and waxed; tie off. (QA)

k. Insert ripcord grip into ripcord grip retainer (Figure 62).



6.2-7018B

Figure 62. Insert Ripcord Grip

l. Snap ripcord pin protector flap and baseplate protector flap closed.

23. ATTACHMENT OF LOWER CONTAINER.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed by a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Align upper container and lower container hinges. Install straight pins and washers in hinge assemblies, ensuring heads of straight pins face outboard (Figure 63).

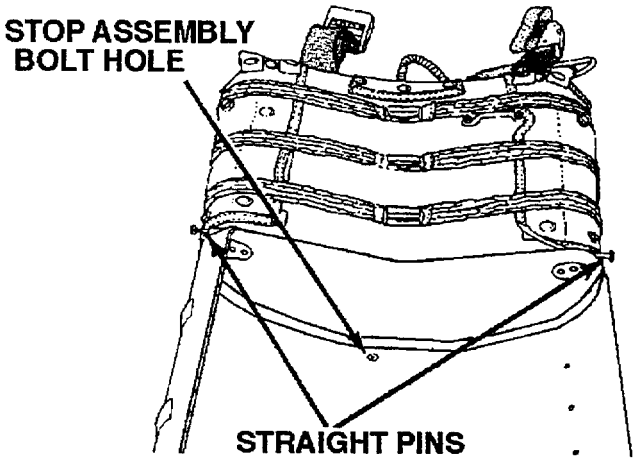


Figure 63. Align Upper Container and Lower Container Hinges

b. Install washers and new cotter pins. (QA)

c. Install lower stop assembly bolt and washer. Turn backpack assembly over. Install hex nut (Figure 64). (QA)

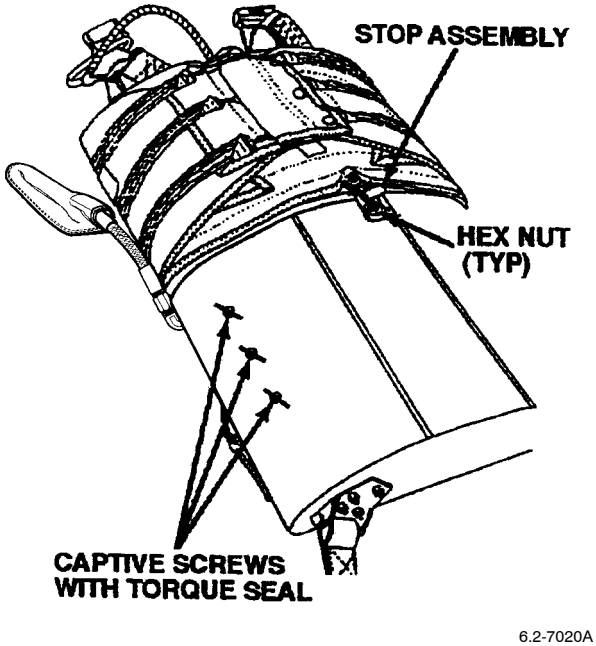


Figure 64. Install Lower Stop Assembly Bolt and Washer

d. Ensure emergency oxygen system assembly has been inspected per NAVAIR 13-1-6.4. Place emergency oxygen system assembly in lower container. Align and install three captive screws in emergency oxygen system assembly thru lower container (Figure 65).

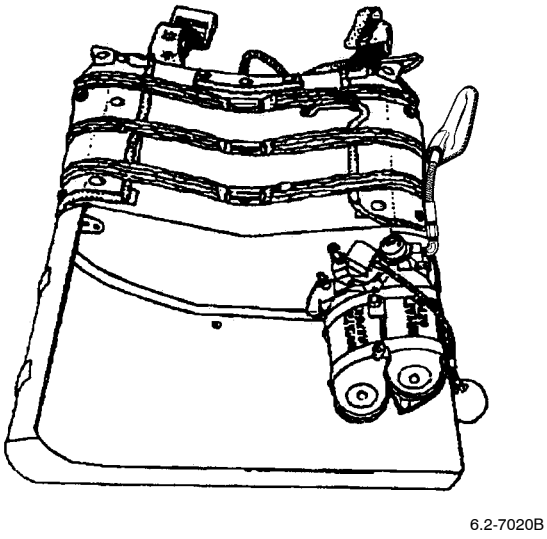


Figure 65. Ensure Emergency Oxygen Has Been Inspected

e. Attach emergency oxygen system hose stowage lanyard assembly to pile fastener tape on upper container (Figure 66).

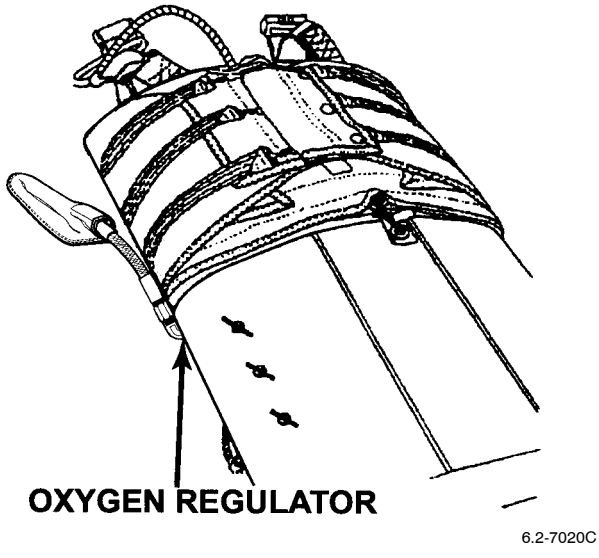


Figure 66. Attach Emergency Oxygen Hose

f. Ensure survival kit and contents have been inspected per NAVAIR 13-1-6.1-1, NAVAIR 13-1-6.3-1, and NAVAIR 13-1-6.5). Place survival kit in lower container.

NOTE

Loosening the three (3) captive screws aids in the installation of the survival kit and the prevention of inadvertent actuation.

g. After installing oxygen bottles, adjust two lateral bands so they are touching lower container. Loosen the three captive screws 2 1/2 turns or 3 turns maximum (Figure 64). Ensure that survival kit lanyard is not trapped between lower container and survival kit and that lanyard exits at bottom of lower container.

h. Route anti-rotation strap thru loop. place anti-rotation strap fitting over upper stud between plate and locking mechanism ensuring there are no twists in anti-rotation strap. Lock survival kit release handle by lifting up. Ensure that anti-rotation strap fitting is located between plate and locking mechanism. Rotate release handle downward ensuring that locking mechanism engages locking studs (Figure 67). Tighten three captive screws and apply torque seal to each screw (Figure 64). (QA)

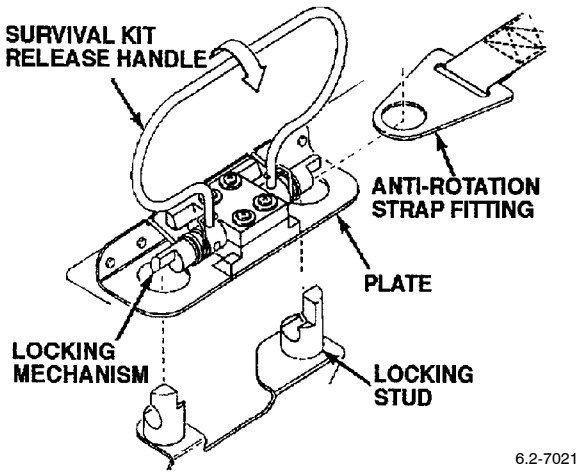


Figure 67. Route Anti-Rotation Strap Thru Loop

i. Attach yellow tamper seal, routed thru oxygen bottle bottom retaining band and survival kit release handle (Figure 68).

j. Ensure tamper seal is pulled tightly to allow proper breakage when kit release handle and oxygen cable are pulled.

k. Install anti-rotation strap clip to left canopy release assembly ensuring strap is free of twists. Center anti-rotation strap on left riser assembly and tack where riser exits upper container and 4-in. from loop end of riser assembly. Tack with one turn of size FF thread, single and waxed. Tacking shall pass thru inside layer of webbing only (Figure 69). (QA)

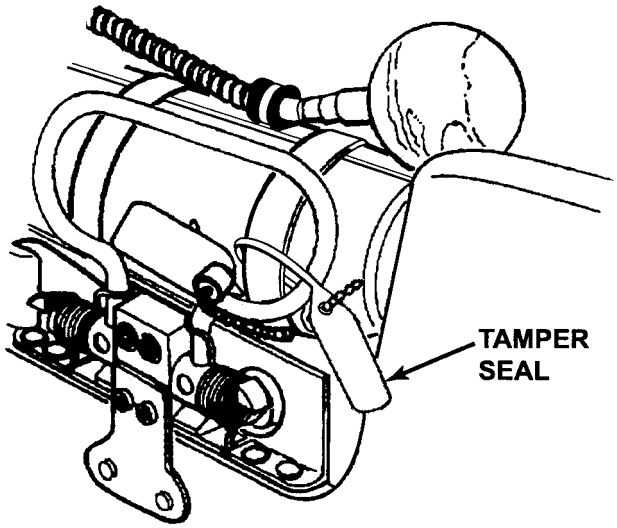


Figure 68. Tamper Seal Replacement

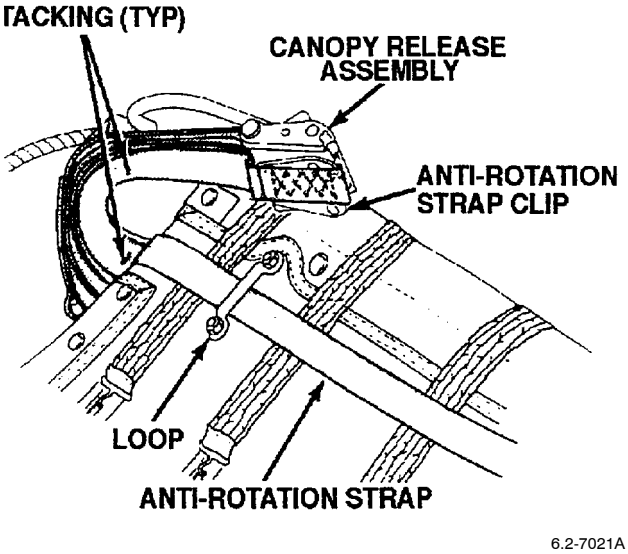


Figure 69. Install Anti-Rotation Strap Clip

l. Install cushion assembly on crew backpack. Accordion fold and insert survival kit lanyard in lanyard stowage pocket. Ensure snap hook is completely inside lanyard stowage pocket, and end loop of lanyard is exposed outside lanyard stowage pocket (Figure 70).

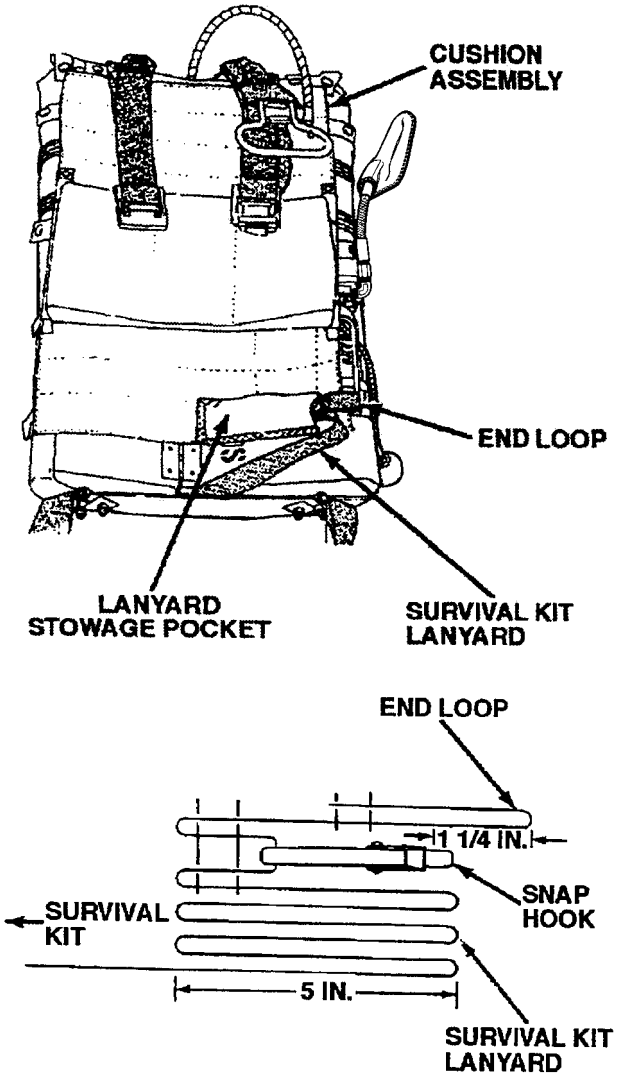


Figure 70. Install Cushion Assembly

24. FINAL CHECKOUT.

a. Account for all packing tools.

b. Examine packed parachute for general condition.

c. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA)

d. QA inspector shall examine completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

e. QA inspector shall sign Parachute Record (OPNAV 4790/101).

f. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

INTERMEDIATE AND DEPOT MAINTENANCE

REPAIR PROCEDURES

A/P22P-11 EMERGENCY EGRESS CREW BACKPACK ASSEMBLY

PART NO. 123AB50510-3

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1 thru 26	9						

Reference Material

Aviation - Crew Systems Manual, Inflatable Survival Equipment (Liferafts) . . . . . NAVAIR 13-1-6.1-1
Aviation - Crew Systems Manual, Seat Survival Kits (Oxygen Hoses and Non SKU Series Seat Kits) . NAVAIR 13-1-6.3-1
Aviation - Crew Systems Manual, Oxygen Equipment . . . . . NAVAIR 13-1-6.4
Aviation - Crew Systems Manual, Rescue and Survival Equipment . . . . . NAVAIR 13-1-6.5
Common Repairs . . . . . WP 004 00
Intermediate and Depot Maintenance Packing Procedures A/P22P-11 Emergency Egress Crew Backpack Assembly . . . . . WP 025 02
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdowns Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00
Organizational Maintenance Repair Procedures, A/P22P-11 Emergency Egress Crew Backpack Assembly . . . . WP 025 01
Parachute Loft Requirements/Administration . . . . . WP 003 00

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Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This work package (WP) contains instructions for the maintenance, repair, replacement, and fabrication of various parachute parts or subassemblies to ensure that proper items of equipment remain in a ready-for-issue (RFI) status. Selected repairs shall be documented on the Parachute Record (OPNAV 4790/101). For common repairs refer to WP 004 00.

2. PILOT PARACHUTE AND CONNECTOR STRAP REPAIRS.

3. REPLACEMENT OF PILOT PARACHUTE.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Inspect replacement pilot parachute per WP 025 02.

b. Remove tacking at Lark's head knot and then remove pilot parachute.

c. Pass large loop end of connector strap thru loop in pilot parachute. Pass entire pilot parachute thru large loop of connector strap; pull tight forming a Lark's head knot (Figure 1).

d. Tack Lark's head knot at pilot parachute with two turns of size 6 thread, single and waxed; tie off (Figure 1). (QA)

e. Mark date placed in service on pilot parachute per WP 004 00. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

4. REPLACEMENT OF CONNECTOR STRAP.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

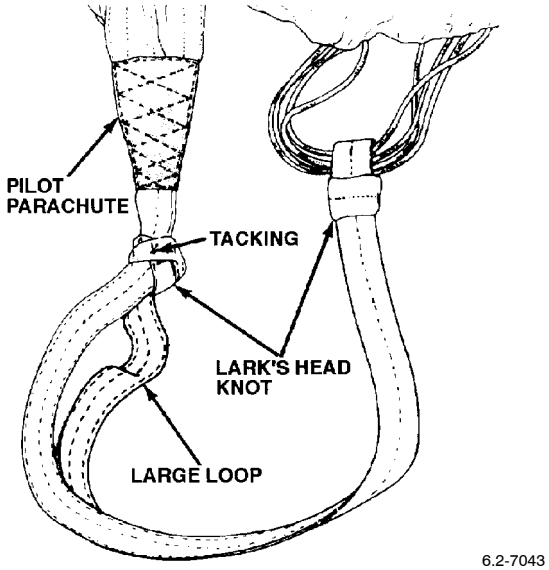


Figure 1. Pilot Parachute and Connector Strap Replacement

NOTE

For Double "L" Connector Link, refer to Paragraph 38 for disassembly, assembly, and inspection instructions.

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove tacking at Lark's head knot and then remove pilot parachute and pilot parachute connector strap.

b. Inspect replacement connector strap per WP 025 02.

c. Measure length of pilot parachute connector strap. Proper length is 23 1/2 ± 1/2-in. unattached.

d. Pass small loop end of connector strap thru and around canopy apex lines. Pass large loop end of connector strap thru small loop end; pull tight forming a Lark's head knot (Figure 1).

e. Pass large loop end of connecter strap thru loop in pilot parachute. Pass entire pilot parachute thru large loop of connector strap; pull tight forming a Lark's head knot (Figure 1).

f. Tack Lark's head knot at pilot parachute with two turns of size 6 thread, single and waxed; tie off (Figure 1). (QA)

g. Mark date placed in service on connector strap per WP 004 00. Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

5. REPLACEMENT OF PILOT PARACHUTE CONNECTOR STRAP LOOSE OR BROKEN TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove broken tacking or completely remove loose tacking.

b. Pull Lark's head knot tight.

c. Tack Lark's head knot at pilot parachute with two turns of size 6 thread, single and waxed; tie off (Figure 1). (QA)

6. REPLACEMENT OF PILOT PARACHUTE LOOSE OR BROKEN TACKING (PLATE ASSEMBLY) .

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove broken tacking or completely remove loose tacking.

NOTE

The plate assembly is attached at the base of the coil spring.

b. Locate the four holes in plate assembly within the pilot parachute fabric.

c. Tack thru holes with two turns of size 6 thread, doubled and waxed, tie off. (QA)

7. CANOPY ASSEMBLY REPAIRS.

8. REPLACEMENT OF CANOPY ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

For Double "L" Connector Link, refer to Paragraph 38 for disassembly, assembly, and inspection instructions.

a. Remove pilot parachute and connector strap from apex lines Paragraphs 3 and 4. Retain for reinstallation.

b. Remove connector link yoke and plate assemblies.

c. Remove connector links from riser and connector straps then reinstall yoke and plate assemblies.

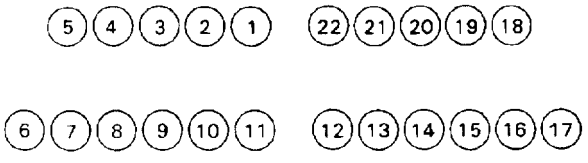
d. Dispose of canopy assembly per current supply directives.

e. Lay out replacement canopy and stretch it to its full length on clean packing table.

f. Attach tension strap hook to canopy apex lines.

g. Locate gore 22 (nameplate gore) and place it uppermost in center of packing table.

h. At skirt hem separate suspension lines into two equal groups with skirt hem lines 1 thru 11 on packer's side and 12 thru 22 on helper's side. Grasping each group of lines, walk from skirt hem to connector links removing any dips and twists between two groups (Figure 2).



6.2-7003

Figure 2. Suspension Line Arrangement and Orientation on Connector Links

i. Place connector link holding lines 1 thru 5 on top of connector link holding lines 6 thru 11. Place connector link holding lines 22 thru 18 on top of connector link holding lines 12 thru 17 (Figure 2).

j. Insert tension hooks into connector links and insert hooks into packing table.

k. Pull suspension lines taut and adjust apex hem.

l. Check suspension line continuity on left side of gore 22. Packer shall grasp line 1 at skirt hem and raise to enough height to ensure line is free of dips and twists. Continue procedure with lines 2 thru 11. Helper shall be positioned at connector links to check lines selected by packer (Figure 2).

m. Check suspension line continuity on right side of gore 22. Packer shall grasp line 22 at skirt hem and raise to enough height to ensure line is free of dips and twists. Continue procedure with lines 21 thru 12. Helper shall be positioned at connector links to check lines selected by the packer (Figure 2).

n. Continue to inspect canopy assembly per WP 025 02.

o. Reinstall pilot parachute and connector strap Paragraphs 3 and 4.

p. Lay out riser assemblies and cross-connector straps on packing table at connector links. Riser snap fasteners shall face up. Ensure that riser assembly with ripcord grip retainer is on packer's side.

q. Remove connector links from tension hooks. Remove tension hooks from packing table.

r. Remove connector link yoke and plate assemblies from bottom connector links.

s. Insert bottom connector links thru loop in each end of bottom cross connector strap, then thru loops in bottom risers. Ensure cross-connector strap label faces up.

t. Reinstall yoke and plate assemblies on bottom connector links. Ensure knurled portion of plates face up and screwheads face outboard.

u. Remove connector link yoke and plate assemblies from top connector links.

v. Insert top connector links thru loops in each end of top cross-connector strap, then thru loops in top risers. Ensure cross-connector strap label faces up.

w. Reinstall yoke and plate assemblies on top connector links. Ensure knurled portion of plates face up and screwheads face outboard.

x. Insert tension hooks into connector links and insert hooks into packing table. Apply tension to canopy.

y. Repeat steps l and m. (QA)

z. Tighten screws on top and bottom connector links to a torque value of 20 to 25 in-lbs. (QA)

aa. Apply torque seal to each torqued connector link screwhead.

ab. Mark date placed in service on canopy assembly per WP 004 00. (QA)

9. RISER ASSEMBLY REPAIRS.

10. REPLACEMENT OF SHOULDER HARNESS FITTING.

Materials Required

Specification or Part Number	Nomenclature
123ABM50500-11	Fitting
79NKTM-62	Nut, Hex

a. Remove and discard hex nut. Remove washers, bolt, and shoulder harness fitting (Figure 3).

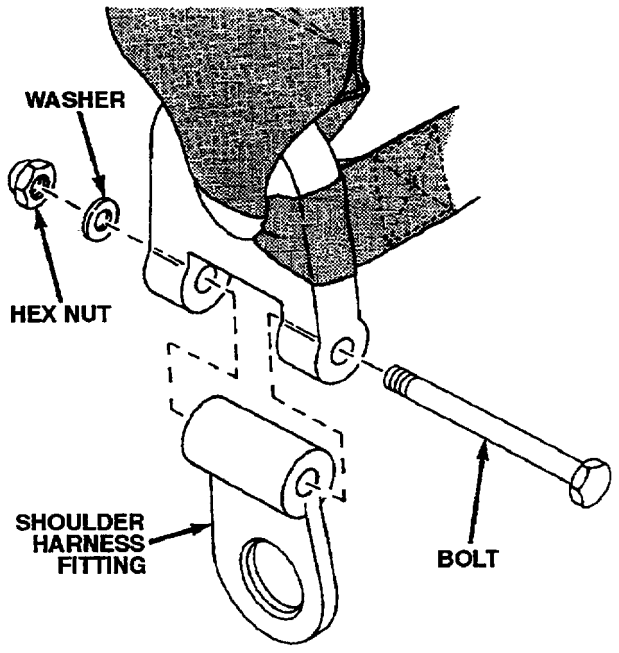


Figure 3. Shoulder Harness Fitting Replacement

b. Inspect replacement shoulder harness fitting for corrosion, burrs, and sharp edges.

c. Insert replacement shoulder harness fitting and install bolt, washers, and new hex nut (Figure 3).

11. REPLACEMENT OF RIPCORD GRIP RETAINER.

Support Equipment Required

Part Number	Nomenclature
DPP-50	Scale, Spring

Materials Required

Specification or Part Number	Nomenclature
60A116C10-1	Ripcord Grip
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove cover stitching and expose ripcord grip retainer.

b. Remove ripcord grip retainer and stitching from riser.

c. Position replacement ripcord grip retainer in same location as removed retainer and handstitch to riser with size 6 thread, doubled and waxed; tie off.

d. Machine stitch cover to riser with size E thread.

e. Perform ripcord grip pull test as follows:

(1) Fully seat ripcord grip into ripcord grip retainer.

(2) Set scale to zero. Attach spring scale to ripcord grip using nylon cord.

(3) Using a straight steady pull, remove ripcord grip from ripcord grip retainer. The pull force required to remove ripcord grip from ripcord grip retainer shall be 15 ± 5 lbs.

f. (If required) If pull force is not within limits, use pliers to adjust retainer. Ensure plier jaws are covered with protective material. After adjustment, repeat ripcord grip pull test. (QA)

g. Replace ripcord housing clip tacking WP 025 01.

12. REPLACEMENT OF RISER ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
123AB50542-9	Riser Assembly
-or-	
1979AS400-1	Riser Assembly

NOTE

For Double "L" Connector Link, refer to Paragraph 38 for disassembly, assembly, and inspection instructions.

a. Remove ripcord assembly from left riser assembly.

b. Remove canopy release assemblies from risers WP 025 01.

c. Remove connector link yoke and plate assemblies.

d. Slide riser loops off connector link bar.

e. Reinstall yoke and plate assemblies.

f. Ensuring suspension line continuity is maintained, insert connector links onto tension hooks (Figure 2).

g. Inspect replacement risers per WP 025 02.

h. Lay out replacement risers on packing table with riser fasteners facing up, and riser with ripcord grip clip on packer's side.

i. Remove connector link yoke and plate assemblies from bottom connector links.

j. Insert bottom connector links into bottom risers loops.

k. Reinstall yoke and plate assemblies on bottom connector links ensure knurled portion of plate face up and screwheads face outboard.

l. Remove connector link yoke and plate assemblies from top connector links.

m. Insert top connector links into top risers loops.

n. Reinstall yoke and plate assemblies on top connector links ensure knurled portion of plate face up and screwheads face outboard.

o. Perform suspension line continuity check (Figure 2).

p. Tighten screws on top and bottom connector links to a torque value of 20 to 25 in-lbs. (QA)

q. Apply torque seal to each connector link screwhead.

r. Reinstall canopy release fittings WP 025 01.

s. Install ripcord grip on left riser assembly, perform ripcord pull test Paragraph 11, and replace ripcord housing clip tacking WP 025 01.

t. Mark date placed in service on identification and service life label per WP 004 00. (QA)

13. REPLACEMENT OF CANOPY RELEASE ASSEMBLY.

Support Equipment

Part Number	Nomenclature
990065-1 -or- 015-710001-1	Adjuster Assembly, Strap

Materials Required

Specification or Part Number	Nomenclature
990055-1 -or- 015-10307-5	Release Assembly, Canopy
F-900 Torque Seal (Color Optional)	Sealing Compound

CAUTION

To prevent damage to locking lever cover spring, do not lift locking lever cover after retention pin has been removed.

a. Remove unserviceable canopy release assembly by removing setscrew on underside of canopy release assembly and sliding retention pin out. Remove pin guide tube from riser loop.

NOTE

Some canopy release assemblies may still have pinhead (Allen head) screws installed. This screw will remain in service until removal becomes necessary. Replacement will be made with a slotted head setscrew P/N 122-10935-3 (CAGE 99449). This screw is a one-time use item.

b. Inspect replacement canopy release assembly per WP 025 02.

c. Check replacement canopy release assembly for proper locking as follows:

(1) Engage adapter assembly with canopy release assembly.

NOTE

Any free movement of release lever without spring tension is cause for rejection of canopy release assembly.

(2) Verify full locking of canopy release assembly by lifting locking lever cover and attempting to disengage adapter assembly from canopy release assembly (Figure 4).

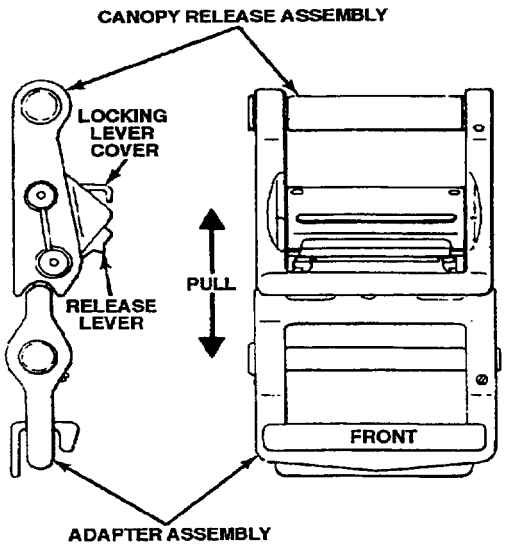


Figure 4. Canopy Release Assembly Locking Inspection

CAUTION

To prevent damage to locking lever cover spring, do not lift locking lever cover after retention pin has been removed.

d. Remove setscrew on underside of replacement canopy release assembly and slide retention pin out (Figure 5). Remove pin guide tube.

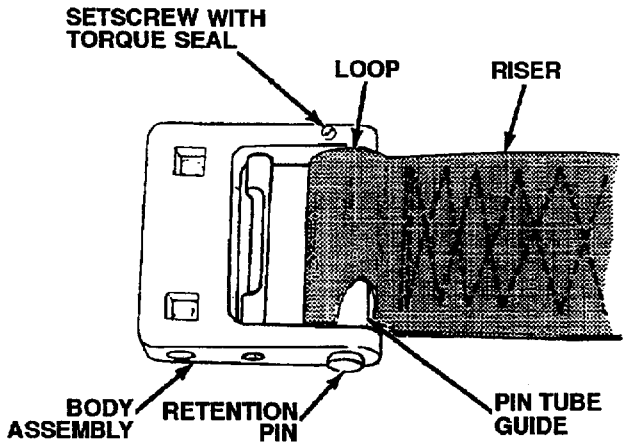


Figure 5. Canopy Release Assembly Replacement

e. Insert replacement pin guide tube into riser loop (Figure 5).

f. Insert riser loop and pin guide tube into body of canopy release assembly (Figure 5). Ensure that release body is properly positioned for mating with release adapter. Insert retention pin thru pin guide tube.

g. Insert setscrew in hole located on underside of canopy release assembly (Figure 5) and tighten.

h. Apply torque seal to setscrew (Figure 5).

14. CONTAINER ASSEMBLY REPAIR.

a. Repair of the container assembly is limited to the following:

(1) Cleaning of contaminated areas.

(2) Replacement of grommets, locking cones, snap fasteners, and eyes.

(3) Repair of loose or broken stitching, holes, tears, and seam separations.

(4) Replacement of flap assemblies.

(5) Replacement of chaffing patch.

(6) Replacement of clamp release lanyard assembly.

(7) Replacement of shape channel.

b. Replace parachute container for any of the following:

(1) Service/total life has expired per WP 025 02.

(2) Damaged suspension line loops, snap fasteners, lanyard guide assembly and stitches on suspension line stowage loop assembly.

(3) Deterioration, fading, abrasion, holes, tears, degradation, or excessive contamination.

15. REPLACEMENT OF CLAMP BASE ASSEMBLY AND/OR LOCKING CONE ON CONTAINER TOP FLAP ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A
60A113D16-1	Base Assembly, Clamp
	-or-
60A113C24-1	Cone, 0.410 Grip

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Cut and remove stitching retaining clamp base assembly and locking cone from top flap assembly. Remove clamp base assembly and locking cone.

b. If clamp base assembly is to be replaced, remove clamp and screw and retain for reinstallation. If locking cone is to be replaced, leave clamp with ripcord housing attached to clamp base assembly.

c. Using a sufficient length of size 6 thread, doubled and waxed, to complete repair, tie an overhand knot 3 to 4-in. from end of thread for tie-off when stitching is complete.

d. Position replacement clamp base assembly/locking cone in exact location of damaged or missing clamp base assembly/locking cone. Ensure that ripcord locking pin hole is aligned in same direction as that removed.

e. Start handstitching from inside of container at widest end of clamp base assembly, using a running stitch thru each hole in the clamp base assembly and applicable holes in locking cone. Stitch to last hole in sequence; then stitch back around base assembly to starting hole. Tie off; trim ends 1/2-in.

f. If base assembly was replaced, reinstall clamp and screw.

16. REPLACEMENT OF HOUSING RELEASE CLAMP SPACER.

Support Equipment

Part Number	Nomenclature
A-A-2311	File, Hand

a. To manufacture the shim, cut the end off of a scrap automatic release power cable housing or ripcord housing (Figure 6).

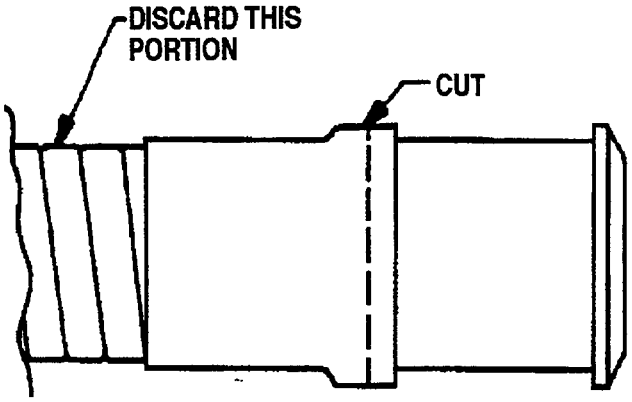


Figure 6. Spacer for Housing Release Clamp

b. Remove all sharp edges with a file.

c. A shim may be fabricated to dimensions of power cable and fitting.

17. REPLACEMENT OF FLAP ASSEMBLY.

a. Remove right and left side flaps and tops and bottom flaps from upper container pile fastener tape, and unfasten snap fasteners.

b. Remove clamp release lanyard Paragraph 19.

c. Dispose of flaps per current supply directives. Retain serviceable hardware for future use.

d. Inspect new flaps for loose or broken stitches, snags or contamination.

e. Ensure right and left side flaps and top and bottom flaps are properly attached to upper container using hook fastener tape to pile fastener tape, and snap fasteners. (QA)

18. REPLACEMENT OF CHAFING PATCH.

Materials Required

Specification or Part Number	Nomenclature
MIL-F-21840	Fastener Tape, Hook, Type II

a. Remove damaged chafing patch.

b. Cut three 3/4-in. lengths of 2-in. hook fastener tape.

c. Align with, and attach three 3/4 by 2-in. hook fastener tape to pile fastener tape on top flap assembly.

19. REPLACEMENT OF CLAMP RELEASE LANYARD ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size A, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Completely remove clamp release lanyard and tackings from container.

b. Inspect replacement clamp release lanyard for loose or broken stitching, cuts, and contamination.

c. Mark clamp release lanyard 26-in. from locking pin end.

d. Temporarily insert lanyard pin into base plate stud hole.

e. Rotate top container flap onto packing table. Route clamp release lanyard around left side of top container flap. Tack clamp release lanyard 6-in. from top container flap edge at point A, allowing 1/8-in. slack in lanyard between locking pin and tacking. Tacking passes around lanyard, not thru it. Use one turn of size A thread, single and waxed; tie off (Figure 7).

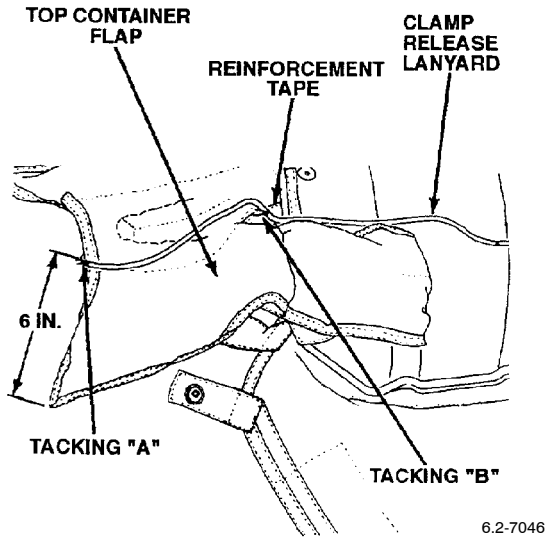


Figure 7. Clamp Release Lanyard Assembly Replacement

f. Route clamp release lanyard along inside of top container flap. Tack clamp release lanyard to reinforcement tape at point B, allowing 1/8-in. slack between points A and B. Use one turn of size A thread, single and waxed; tie off (Figure 7). (QA)

20. LENGTH EXTENSION OF THE SHOULDER RESTRAINT STRAPS.

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon, Type XXVII, Class 1 or 1A
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

a. Remove left hand riser from parachute canopy by:

(1) Remove connector link yoke and plate assemblies.

(2) Slide riser loops off connector link bars.

(3) Reinstall yoke and plate assemblies.

b. Remove release assembly from riser.

c. Remove ripcord assembly from left riser assembly.

d. Cut and remove stitching that secures shoulder harness fitting to shoulder restraint strap.

e. Remove shoulder harness fitting from shoulder restraint strap. Ensure location of restrictor strap is maintained on fitting.

f. From the riser release fitting assembly loop end, measure and mark shoulder restraint strap at 12-in. At 12-in. mark, cut and sear shoulder restraint strap webbing. Avoid forming sharp edges while hot knifing and searing.

g. Cut a new 14-in. length of webbing. Sears ends. Avoid forming sharp edges while hot knifing and searing.

h. Install shoulder harness fitting at center point of the 14-in. length of webbing.

i. Fold 14-in. length of webbing in half (7-in.).

j. Place folded 14-in. webbing 3 1/2 -in. down each side of cut shoulder restaint strap. (The riser restraint strap (12-in. length) is sandwiched between the folded 14-in. webbing.) Ensure restrictor strap is located correctly and shoulder harness fitting offset is facing down. (If swivel shoulder release is used, offset is not applicable.)

k. Ensure total length of shoulder restraint webbing is 14 1/2-in. from loop end of riser release fitting assembly to end of shoulder restraint strap webbing.

l. Sew lengthwise with size 6 thread, using a 4-point cross-stitch pattern (WP 004 00), 5-in. long, 1/8-in. from edge.

m. Inspect for correct length of shoulder restraint strap, 14 1/2-in. ± 1/4-in (Figure 8). (QA)

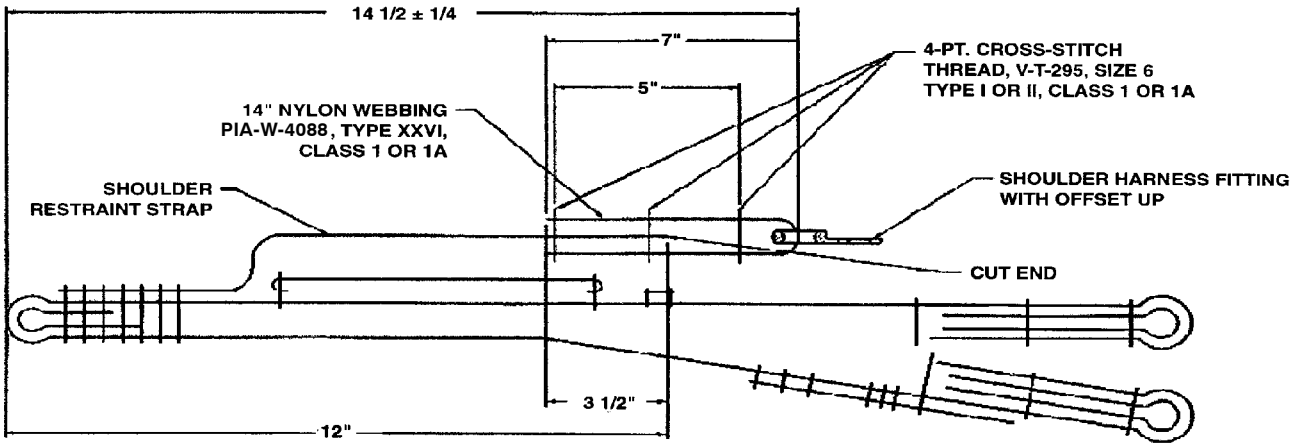


Figure 8. Modified Riser Length

n. Remove right hand riser from parachute canopy by:

(1) Remove connector link yoke and plate assemblies.

(2) Slide riser loops off connector link bars.

(3) Reinstall yoke and plate assemblies.

o. Remove release assembly from riser.

p. Repeat steps d through m. Step j, ensure that the shoulder harness fitting offset is facing up on the right hand riser. (If the swivel shoulder release fitting is used, offset is not applicable.) (Figure 9).

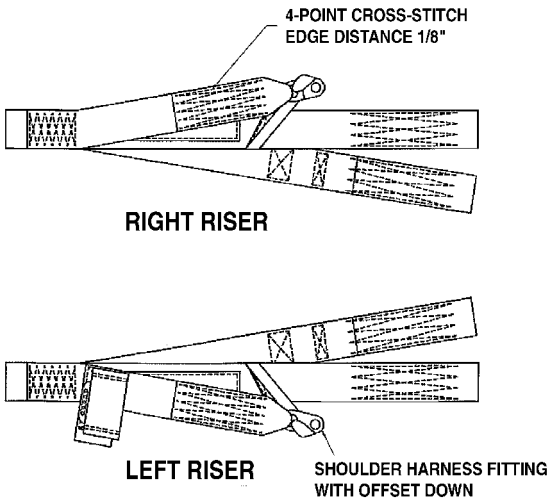


Figure 9. Harness Fitting Offset

21. REPAIR OF RIGHT SIDE FLAP CHAFING.

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon. Type VIII 1 3/4-in. Wide
MIL-F-21840	Fastener Tape, Pile, 2-in. Wide, Type II Class 1
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Cut one piece of webbing 7 3/4-in. long and one piece 3 1/2-in. long.

b. Cut one piece of pile fastener tape 7 3/4-in. long and one piece 3 1/2-in. long.

c. Cut one piece of hook fastener tape 7 3/4-in. long and one piece 3 1/2-in. long.

d. Place respective lengths of webbing onto hook fastener tape and sew with two rows of size E thread, and backstitch 1/2-in.

e. Place 7 3/4-in. pile fastener tape on outside of right side flap assembly lengthwise, 1 1/2-in. from edge with snaps. Sew with two rows of size E thread, 1/8-in. from edge and backstitch 1/2-in.

f. Hand tack 7 3/4-in. hook fastener tape on outside right flap assembly lengthwise, 1 1/2-in. from edge with snaps. Tack with size FF thread, doubled and waxed, tie off. Tack in 6 places 1/4-in. from corners and in middle.

g. Place 3 1/2-in. pile fastener tape on outside of top flap assembly lengthwise 3/4-in. from edge with snaps. Sew with two rows of size E thread, 1/8-in. from edge and backstitch 1/2-in.

h. Hand tack 3 1/2-in. pile fastener tape on outside of top flap assembly lengthwise 3/4-in. from snaps. Tack with size FF thread, doubled and waxed, tie off. Tack in 4 places 1/4-in. from corners.

22. REPLACEMENT OF SHAPE CHANNEL.

Materials Required

Specification or Part Number	Nomenclature
GS179AP-4, Rev B, CAGE 75345 or 76376	Rubber Silicone Nonmetallic (Shape Channel)
MIL-A-46106	Adhesive, Sealants Silicone, RTV, General Purpose, 12-oz. Cartridge
—	Cloth, Emery, 180 Grit or Equal

CAUTION

Apply the adhesive in a well ventilated area. Keep away from heat, sparks and open flame.

a. Remove unserviceable shape channel.

b. Thoroughly remove/clean adhesive silicone residue from the upper container. Use emery cloth to further clean the surface, then wipe clean.

c. Cut a 35-in. length of shape channel material from the source.

d. Apply adhesive generously into the shape channel groove.

e. Attach the shape channel in place around the perimeter of the upper container. Use finger pressure to seat the shape channel. Remove residue with a paper towel (Figure 9A).

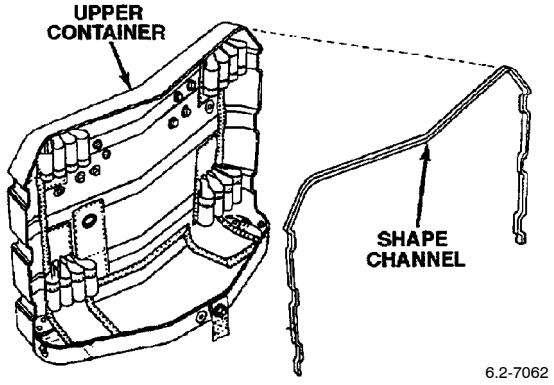


Figure 9A. Shape Channel Replacement

f. Allow a minimum of 1-hr. to dry.

23. REPLACEMENT OF CONTAINER.

a. Below addresses the upper and lower container.

24. REPLACEMENT OF UPPER CONTAINER.

Support Equipment Required

Part Number	Nomenclature
A-A-1358	Wrench, 3/8 in.

Materials Required

Specification or Part Number	Nomenclature
22NKTM-02	Nut, Hex
MS20392-2C51	Pin, Cotter
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove survival kit lanyard from lanyard stowage pocket and remove cushion assembly.

b. Remove tamper seal. Rotate survival kit release handle counter-clockwise and remove anti-rotation strap fitting from locking mechanism upper stud. Cut tackings and remove anti-rotation strap clip from left canopy release assembly (Figure 10).

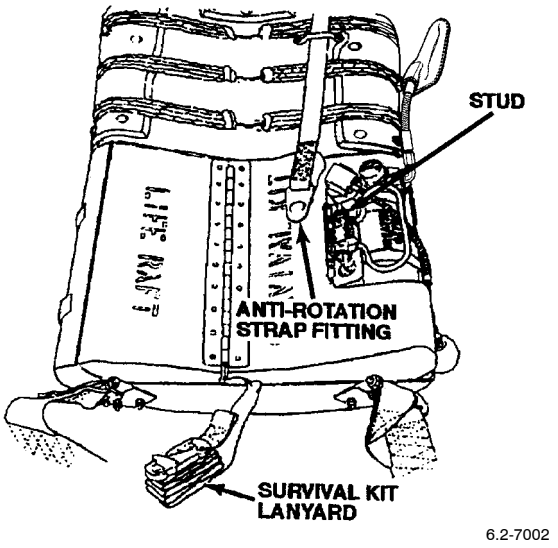


Figure 10. Rotate Survival Kit Release Handle

c. Remove survival kit from lower container. Inspect survival kit and contents per (NAVAIR 13-1-6.1-1, NAVAIR 13-1-6.3-1, and NAVAIR 13-1-6.5).

d. Remove emergency oxygen system assembly hose stowage lanyard assembly, and turn backpack assembly over on table ensuring oxygen regulator is protected.

CAUTION

When loosening three captive screws, hold oxygen bottle secure to prevent screws from stripping.

e. Remove torque seal from three captive screws. Loosen three captive screws and remove emergency oxygen system assembly from lower container. Emergency oxygen system assembly shall be inspected per NAVAIR 13-1-6.4 (Figure 11).

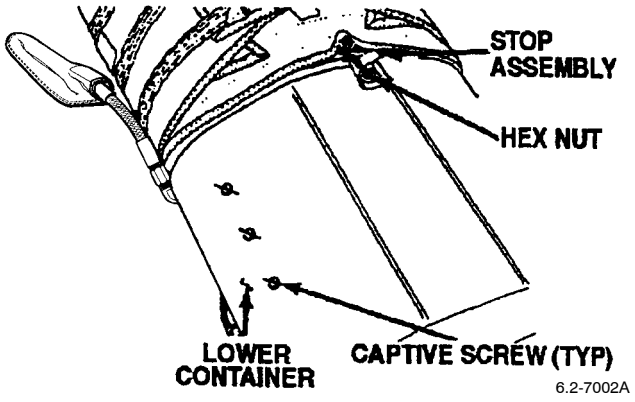


Figure 11. Remove Torque Seal

f. Turn backpack assembly over. Remove lower stop assembly hex nut, bolt and washer. Retain for re-assembly. Replace, if damaged (Figure 12).

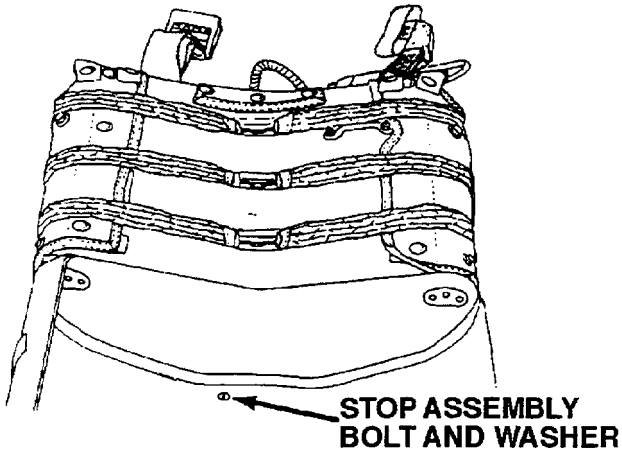


Figure 12. Remove and Discard Lower Stop Hex Nut

g. Turn backpack assembly over. Remove and discard two hinge assembly cotter pins. Remove hinge assembly straight pins and washers. Retain straight pins and washers for re-assembly (Figure 13).

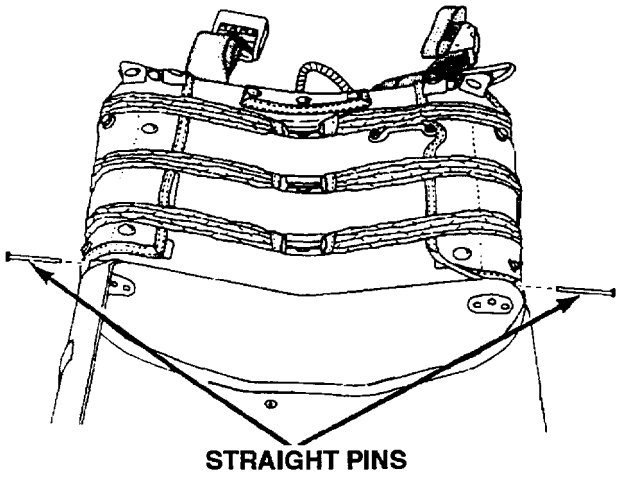


Figure 13. Remove and Discard Two Hinge Pins

h. Completely open upper container and detach spring opening assemblies from flaps. Unsnap corner keeper snaps.

i. Untie clamp release lanyard and remove canopy and suspension lines from upper container and stretch on table.

j. Remove connector link tackings and disengage riser fasteners from upper container.

k. Remove flap assemblies from upper container Paragraph 17.

l. Dispose of upper container per current supply directives. Retain serviceable hardware for future use.

m. Inspect replacement upper container per NAVAIR 13-1-6.1-1.

n. Repack parachute assembly WP 025 02.

o. Align upper container and lower container hinges. Install straight pins and washers in hinge assemblies, ensuring heads of straight pins face outboard (Figure 14).

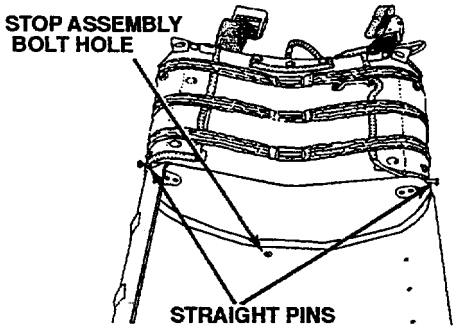


Figure 14. Align Upper Container and Lower Container Hinges

p. Install washers and new cotter pins. (QA)

q. Install lower stop assembly bolt and washer. Turn backpack assembly over. Install hex nut (Figure 15). (QA)

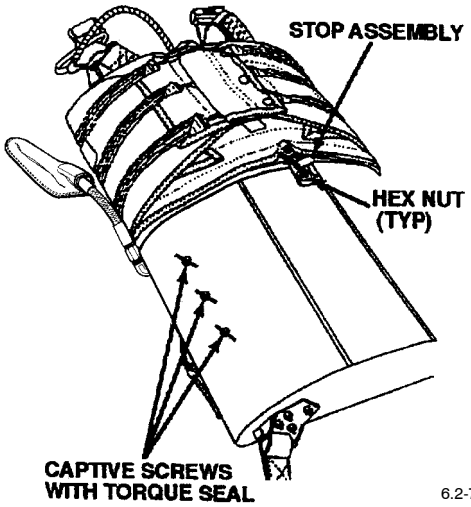


Figure 15. Install Lower Stop Assembly Bolt and Washer

r. Ensure emergency oxygen system assembly has been inspected per NAVAIR 13-1-6.4. Place emergency oxygen system assembly in lower container. Align and install three captive screws in emergency oxygen system assembly thru lower container (Figure 16).

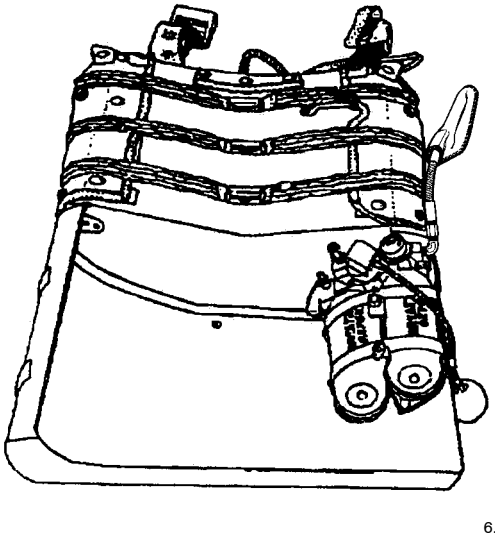


Figure 16. Inspecting Emergency Oxygen System

s. Attach emergency oxygen system hose stowage lanyard assembly to pile fastener tape on upper container (Figure 17).

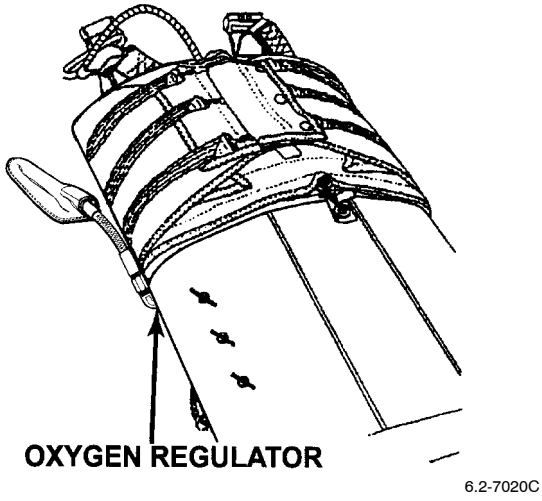


Figure 17. Attaching Emergency Oxygen Hose

t. After installing oxygen bottles, adjust two lateral bands so they are touching lower container. Ensure that survival kit lanyard is not trapped between lower container and survival kit and that lanyard exits at bottom of lower container.

NOTE

Loosening the three (3) captive screws aids in the installation of the survival kit and the prevention of inadvertent actuation.

u. Route anti-rotation strap thru loop. Place anti-rotation strap fitting over upper stud between plate and locking mechanism ensuring there are no twists in anti-rotation strap. Loosen the three captive screws 2 1/2 turns or 3 turns maximum (Figure 15). Lock survival kit release handle by lifting up. Ensure that anti-rotation strap fitting is located between plate and locking mechanism. Rotate release handle downward ensuring that locking mechanism engages locking studs (Figure 18). Tighten three captive screws and apply torque seal to each screw (Figure 15). (QA)

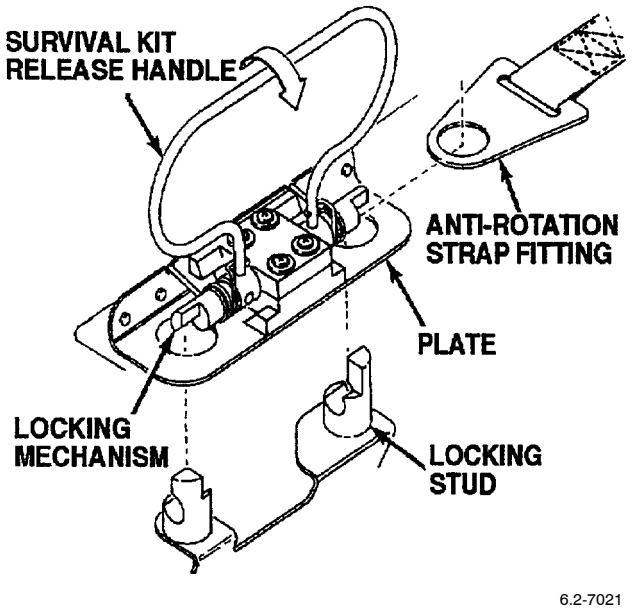


Figure 18. Routing of Anti-Rotation Strap

v. Install anti-rotation strap clip to left canopy release assembly ensuring strap is free of twists. Center anti-rotation strap on left riser assembly and tack where riser exits upper container and 4-in. from loop end of riser assembly. Tack with one turn of size FF thread, single and waxed. Tacking shall pass thru inside layer of webbing only (Figure 19). (QA)

w. Install cushion assembly on crew backpack. Accordion fold and insert survival lanyard in lanyard stowage pocket. Ensure snap hook is completely inside lanyard stowage pocket, and end loop of lanyard is exposed outside lanyard stowage pocket (Figure 20).

x. Perform final checkout WP 025 02.

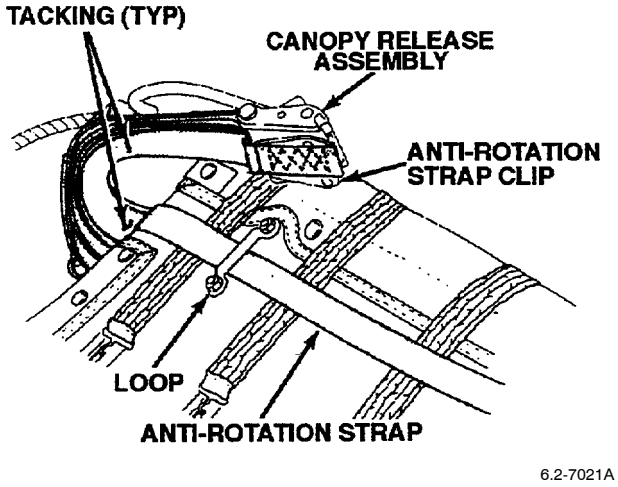


Figure 19. Install Anti-Rotation Strap Clip

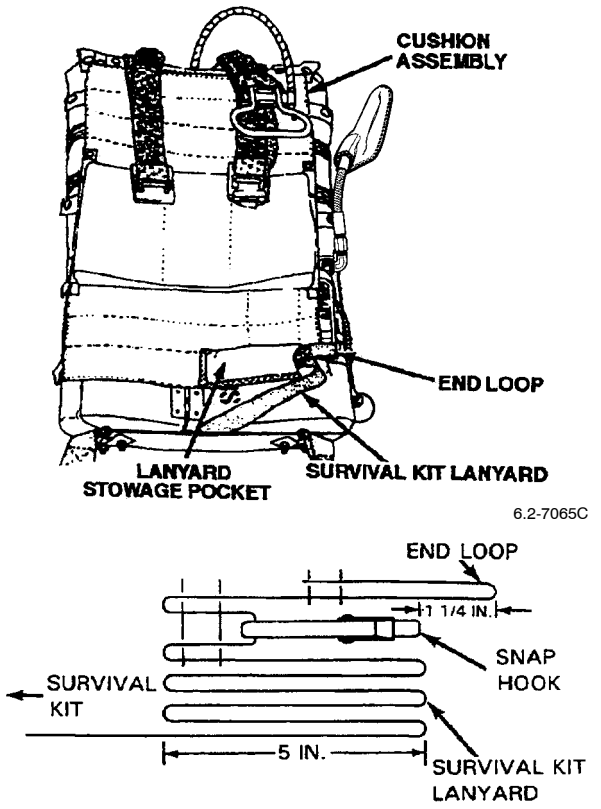


Figure 20. Install Cushion Assembly

25. REPLACEMENT OF LOWER CONTAINER.

Support Equipment Required

Part Number	Nomenclature
A-A-1358	Wrench, 3/8-in.

Materials Required

Specification or Part Number	Nomenclature
22NKTM-02	Nut, Hex
MS20392-2C51	Pin, Cotter
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove survival kit lanyard from lanyard stowage pocket and remove cushion assembly.

b. Remove tamper seal. Rotate survival kit release handle counter-clockwise and remove anti-rotation strap fitting from locking mechanism upper stud (Figure 21).

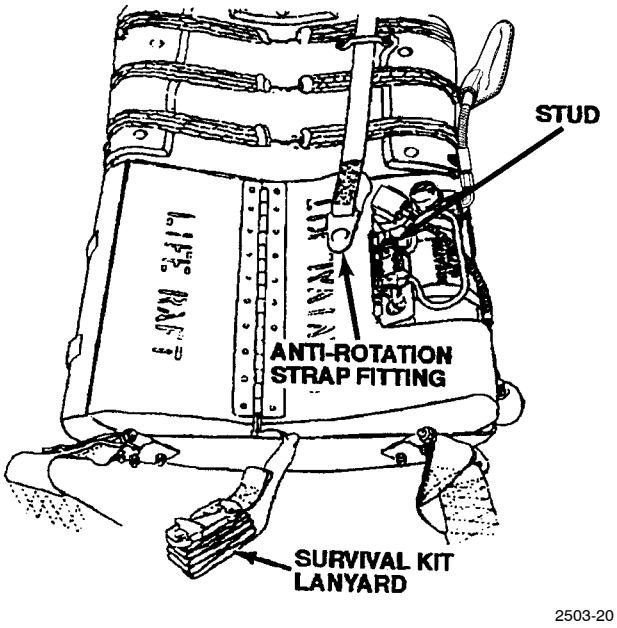


Figure 21. Rotate Survival Kit Release Handle

c. Remove survival kit from lower container. inspect survival kit and contents per NAVAIR 13-1-6.1-1, NAVAIR 13-1-6.3-1, and NAVAIR 13-1-6.5.

d. Remove emergency oxygen system assembly hose stowage lanyard assembly, and turn backpack assembly over on table ensuring oxygen regulator is protected.

CAUTION

When loosening three captive screws, hold oxygen bottle secure to prevent screws from stripping.

e. Remove old torque seal from three captive screws. Loosen three captive screws and remove emergency oxygen system assembly from lower container. Emergency oxygen system assembly shall be inspected per NAVAIR 13-1-6.4 (Figure 22).

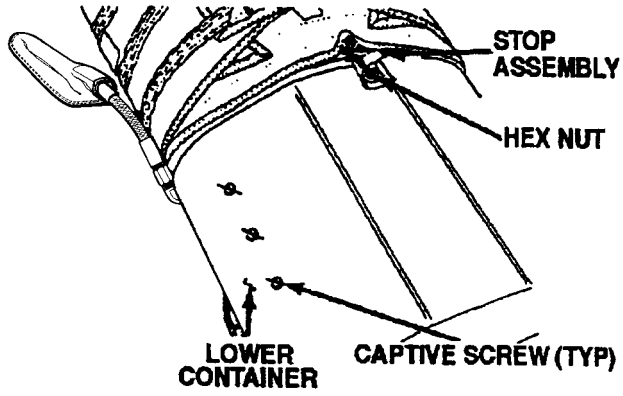


Figure 22. Remove Old Torque Seal

f. Turn backpack assembly over. Remove lower stop assembly hex nut, bolt and washer. Retain for re-assembly. Replace, if damaged. (Figure 23).

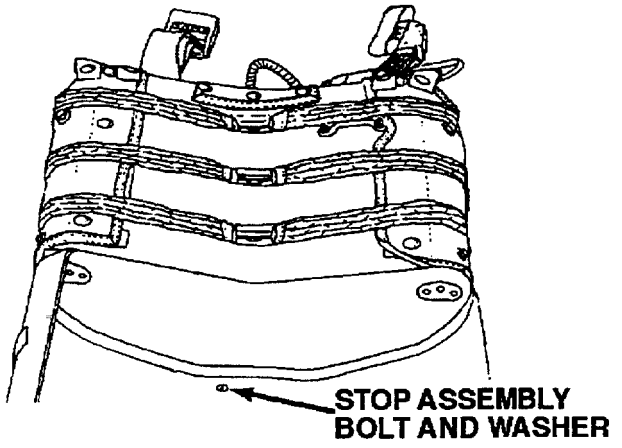


Figure 23. Remove and Discard Lower Stop

g. Turn backpack assembly over. Remove and discard two hinge assembly cotter pins. Remove hinge assembly straight pins and washers. Retain straight pins and washers for reassembly (Figure 24).

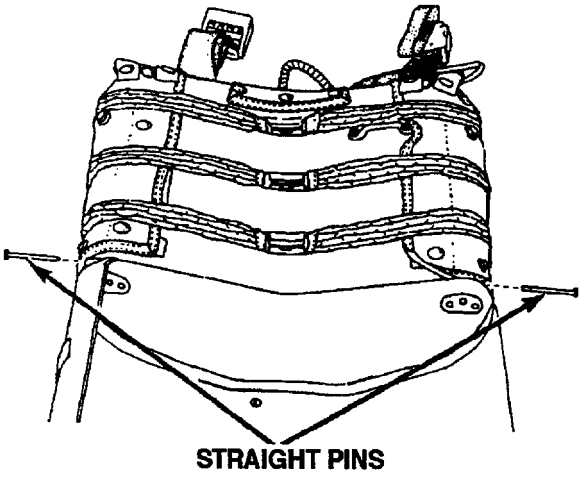


Figure 24. Remove and Discard Cotter Pins

h. Dispose of lower container per current supply directives. Retain serviceable hardware for future use.

i. Remove lapbelt assembly per WP 025 01.

j. Inspect replacement lower container per WP 025 02.

k. Install lapbelt assembly per WP 025 01.

l. Align upper container and lower container hinges. Install straight pins and washers in hinge assemblies, ensuring heads of straight pins face outboard (Figure 25).

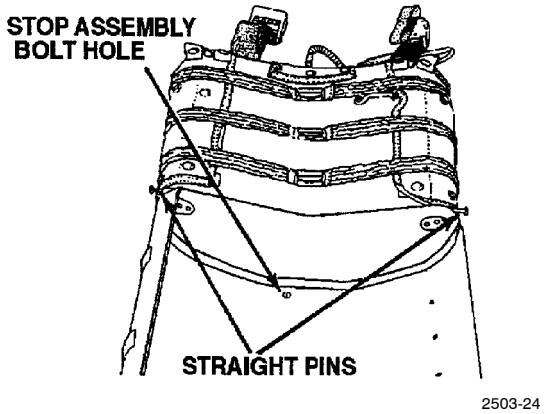


Figure 25. Align Upper Container

m. Install washers and new cotter pins. (QA)

n. Install lower stop assembly bolt and washer. Turn backpack assembly over. Install hex nut (Figure 26). (QA)

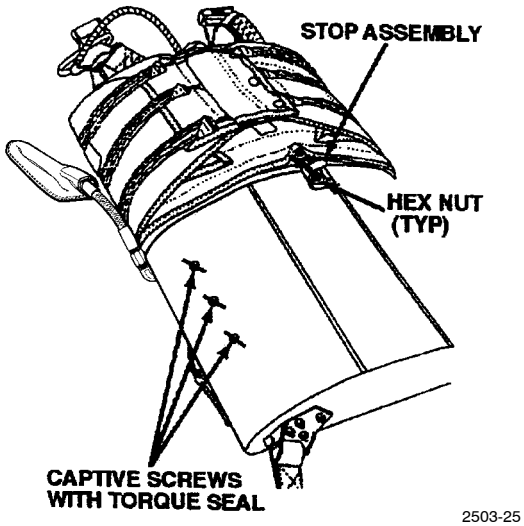


Figure 26. Install Lower Stop Bolt

o. Ensure emergency oxygen system assembly has been inspected per NAVAIR 13-1-6.4. Place emergency oxygen system assembly in lower container. Align and install three captive screws in emergency oxygen system assembly thru lower container (Figure 27).

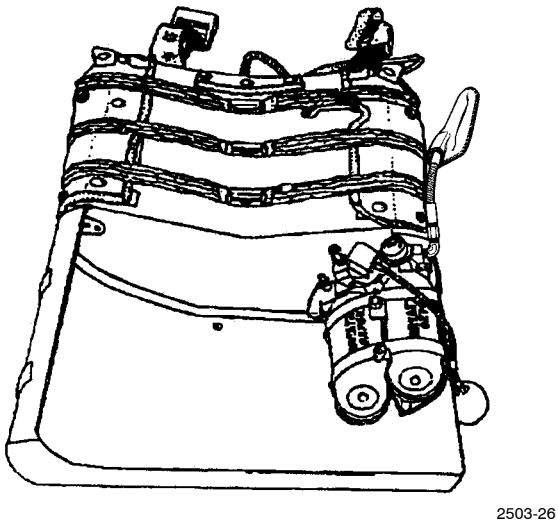


Figure 27. Inspect Emergency Oxygen System

p. Attach emergency oxygen system hose stowage lanyard assembly to pile fastener tape on upper container (Figure 28).

q. Ensure survival kit and contents have been inspected per NAVAIR 13-1-6.1-1, NAVAIR 13-1-6.3-1, and NAVAIR 13-1-6.5. Place survival kit in lower container.

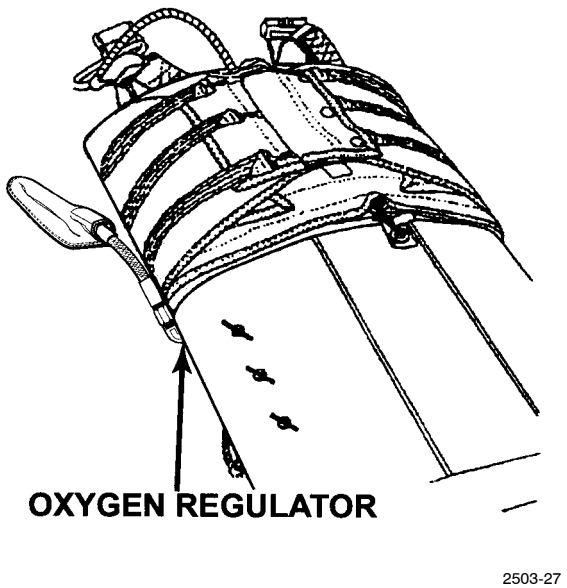


Figure 28. Apply Torque Seal

r. After installing oxygen bottles, adjust two lateral bands so they are touching lower container. Ensure that survival kit lanyard is not trapped between lower container and survival kit and that lanyard exits at bottom of lower container.

NOTE

Loosening the three (3) captive screws aids in the installation of the survival kit and the prevention of inadvertent actuation.

s. Route anti-rotations strap thru loop. Place anti-rotation strap fitting over upper stud between plate and locking mechanism ensuring there are no twists in anti-rotation strap. Loosen the three captive screws 2 1/2 turns or 3 turns maximum (Figure 15). Lock survival kit release handle by lifting up. Ensure that anti-rotation strap fitting is located between plate and locking mechanism. Rotate release handle downward ensuring that locking mechanism engages locking studs (Figure 29). Tighten three captive screws and apply torque seal to each screw (Figure 14). (QA)

t. Install cushion assembly on crew backpack. Accordion fold and insert survival kit lanyard in lanyard stowage pocket. Ensure snap hook is completely inside lanyard stowage pocket, and end loop of lanyard is exposed outside lanyard stowage pocket (Figure 30).

u. Perform final checkout WP 025 01.

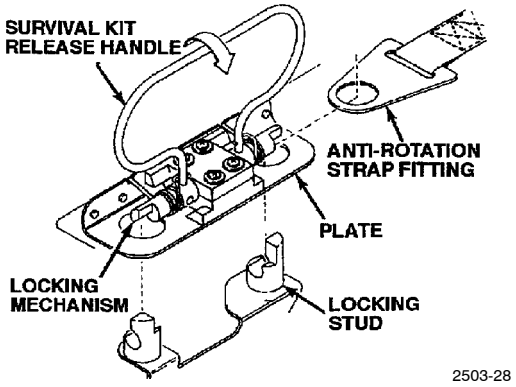


Figure 29. Route Anti-Rotation Strap Thru Loop

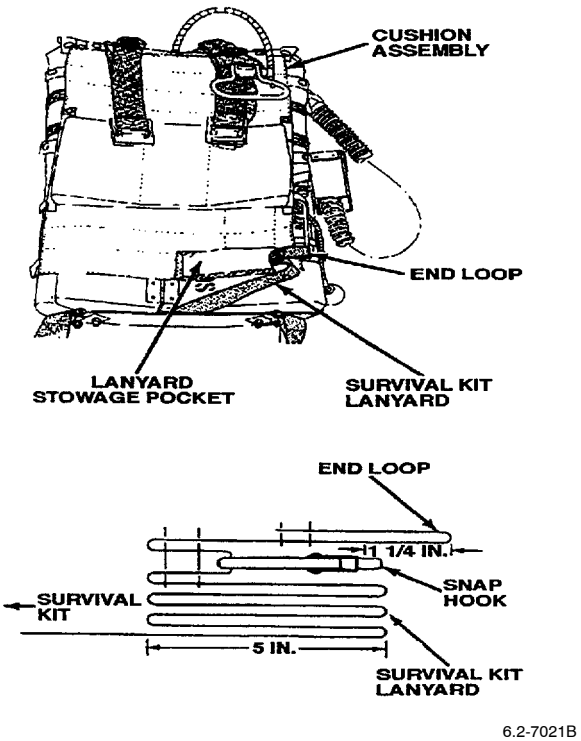


Figure 30. Install Cushion Assembly

26. ANTI-ROTATION STRAP ASSEMBLY REPAIR.

a. Remove unserviceable webbing from anti-rotation clip spring and fitting. Retain for reuse.

b. Cut a 39-in. length of webbing using a hot knife. If shears are used for cutting, sear ends to prevent fraying. Aviod forming sharp edges while hot knifing or searing.

c. Measure and mark 3 1/2-in. from each end.

d. Insert webbing into anti-rotation clip spring, fold on mark and tack in place (Figure 31).

27. FABRICATION OF ANTI-ROTATION STRAP ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
PIA-W-4088	Webbing, Nylon, Type XVII Gray, Class 2

a. Machine stitch tacked folds (Figure 31). (QA)

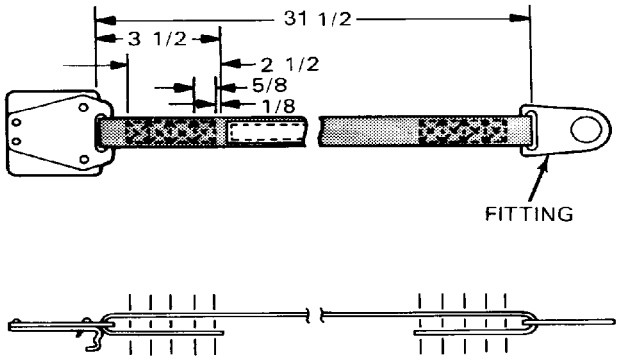


Figure 31. Anti-Rotation Strap Assembly Fabrication

b. Attach label per Paragraph 27.

28. REPLACEMENT OF LABEL ON ANTI-ROTATION STRAP ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
676AS100-1	Label

a. Carefully cut stitching and remove unserviceable label.

b. Mark required information on replacement label.

c. Locate label on anti-rotation strap assembly (Figure 32).

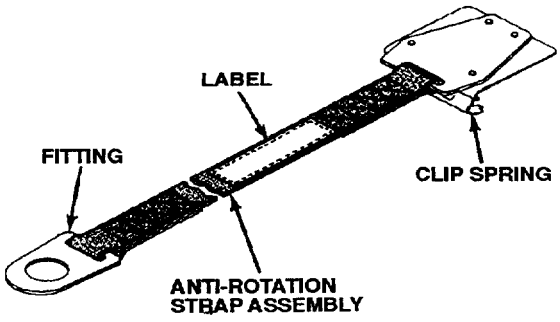


Figure 32. Label Removal and Replacement

d. Fold label sides and ends under 1/4-in. Machine or hand baste folds in place.

e. Machine stitch label to anti-rotation strap assembly (Figure 32).

f. Remove basting stitches. (QA)

29. RIPCORD ASSEMBLY REPAIR.

a. Repair of the ripcord assembly is limited to the following:

(1) Cleaning contaminates areas per WP 004 00.

(2) Replacement of loose or broken tackings per WP 025 01.

b. Replace ripcord assembly for any of the following:

(1) Bent, broken, or cracked locking pins.

(2) Corroded, frayed, or permanently bent cable.

(3) Loose cable swage ball or housing ferrule.

(4) Corroded, cracked, or bent handle or housing.

30. REPLACEMENT OF RIPCORD ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove ripcord assembly and tacking from webbing loop.

b. Inspect replacement ripcord assembly per WP 025 02.

c. Insert ripcord housing clip into webbing loop attached to left riser assembly (Figure 33).

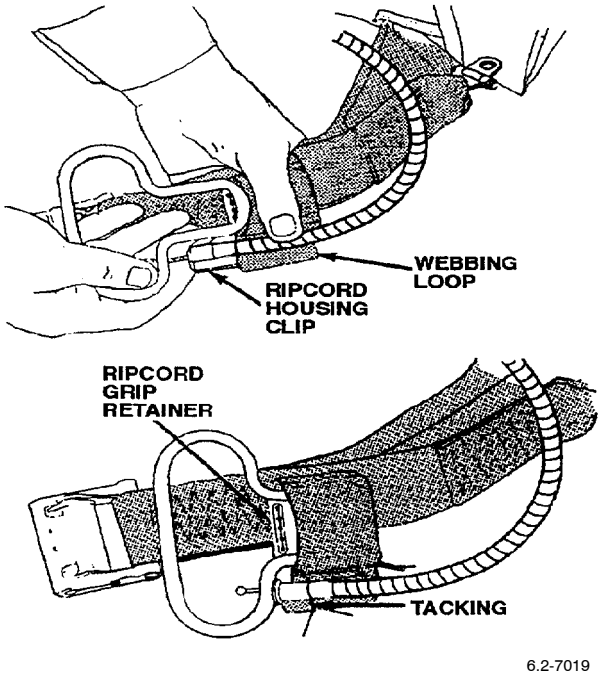


Figure 33. Ripcord Assembly Replacement

d. Tack thru loop and thru hole in ripcord housing clip with one turn of size E thread, single and waxed; tie off (Figure 33). (QA)

e. Insert ripcord grip into ripcord grip retainer.

31. REPLACEMENT OF RIPCORD HOUSING AND SPACER ATTACHMENT TO CLAMP BASE ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A
711-07094	Spacer

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Mark clamp release lanyard 26-in. from locking pin end.

b. Position large slotted end of base plate clamp under screwhead on base plate. Position ripcord housing and spacer under clamp with flat sides of each housing positioned against base plate stud. Insert locking pin into stud hole and tighten screw to secure clamp in place (Figure 34). (QA)

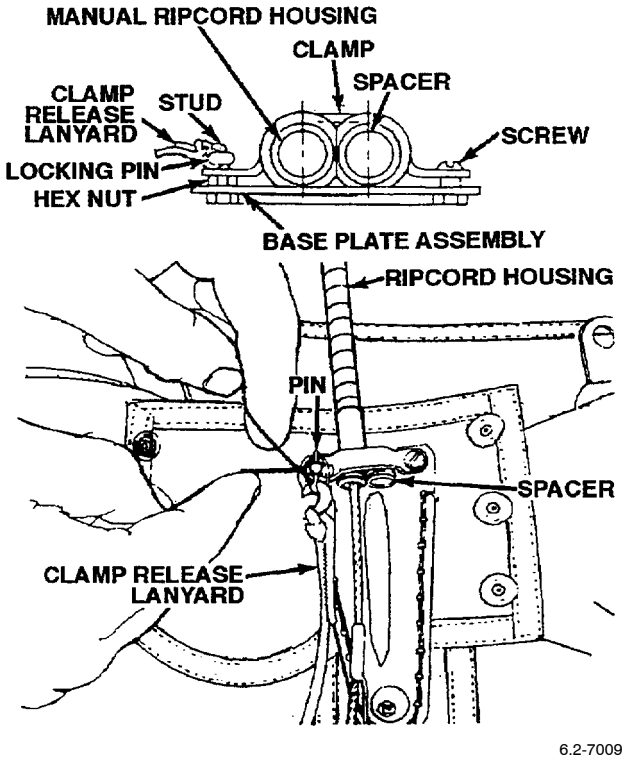


Figure 34. Ripcord Clamp Release Lanyard

c. Safety-tie locking pin to stud with one turn of size FF thread, single and waxed. Pass thread thru lanyard knot; tie off (Figure 34). (QA)

32. CROSS-CONNECTOR STRAPS.

a. Repair of cross-connector straps is limited to cleaning of contaminated areas. Replace cross-connector straps if any other damage exists that may affect the safe operation of the parachute assembly.

33. REPLACEMENT OF CROSS-CONNECTOR STRAP.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

NOTE

For Double "L" Connector Link, refer to Paragraph 38 for disassembly, assembly, and inspection instructions.

a. Remove torque seal and connector link yoke and plate assemblies from appropriate connector links.

b. Remove connector links from riser loops and then remove cross-connector strap.

c. Inspect replacement cross-connector strap for contamination, cuts, fraying, burns, loose or broken stitching, and proper length (16 ± 1/4-in.).

d. Reinstall connector links thru loop in each end of cross-connector strap, then thru loop in riser. Ensure cross-connector strap label faces up.

e. Reinstall yoke and plate assemblies on connector links. Ensure knurled portion of plates face up and screwheads face outboard.

f. Tighten screws on connector links to a torque value of 20 to 25 in-lbs. (QA)

g. Apply torque seal to each torqued connector link screwhead.

h. Mark date placed in service on identification and service life label. (QA)

34. REPAIR OF CUSHION ASSEMBLY.

a. Repair of the cushion (lumbar pad) and backpad assembly is limited to the following:

(1) Cleaning contaminated areas per WP 004 00.

(2) Replacement of snap fasteners per WP 004 00.

(3) Replacement of hook fastener tape.

(4) Repair of holes, tears, and loose or broken stitching per WP 004 00.

b. Replace cushion assembly or backpack assembly for any holes, tears, or other damage deemed beyond repair.

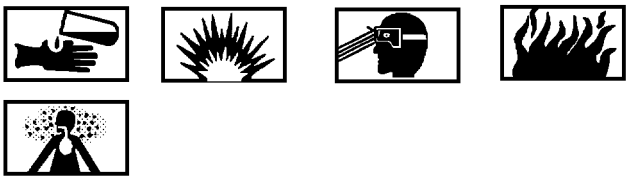
35. REPAIR OF SURFACE SCRATCHES AND CRACKS.

Materials Required

Specification or Part Number	Nomenclature
MIL-R-9300 (CAGE Code 86961)	Epoxy Resin, Type II, Form A, Grade D
O-D-1271	Hardener (Diethylene Triamine)
MIL-C-9084	Glass Cloth, Type VIII B, Class 2
MIL-L-19537	Lacquer, Color-34087, Class 2
MIL-P-23377	Epoxy Primer, Class 2
LP00370	Cellophane
O-A-51	Acetone
PC451	Aluminum Oxide Paper (240 Grit)
(CAGE Code 45255)	Milled Glass Fiber (Glass Floc), 1/32-in.

Acetone, O-A-51 **1**

a. Clean damaged area with acetone, using a clean, cotton cloth. Clean about 2-in. past damaged area in all directions.



Epoxy Resin, MIL-R-9300 **6**

Diethylene Triamine, O-D-271 **4**

NOTE

Mix 100 parts of epoxy resin to 10 parts diethylene triamene (hardener). Do not mix more than can be used in 25 min.

b. Paint cleaned area with one or more coats of resin (number of coats to be applied depends on severity of damage).

c. Fill small fractures with putty-like mixture of resin and milled glass fibers.

d. Over coated surface, apply sheet of cellophane extending 2 or 3-in. beyond treated surface. Smooth out all entrapped air bubbles either by hand or with a rubber roller.

e. Allow resin to cure overnight at room temperature. If necessary, resin may be cured in an oven heated to 212°F (100°C) in order to reduce curing time.

Aluminum Oxide, PC 451 **2**

f. After resin has cured, remove cellophane sheet and lightly sand off excess resin. Clean sanded area with clean, cotton cloth.

Epoxy Primer, MIL-P-23377 **5**

g. Refinish surface with one coat of epoxy primer and two coats of camouflage green acrylic lacquer.

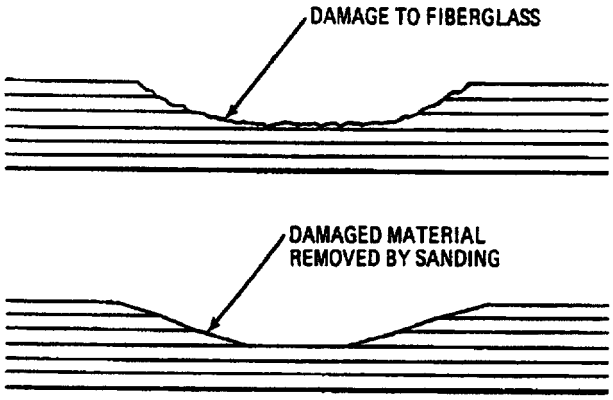
h. Upon completion of repair, return container to service.

36. REPAIR OF NON-PENETRATING CRACKS, HOLES, AND SCRATCHES.

Materials Required

Specification or Part Number	Nomenclature
LP00370	Cellophane
MIL-R-9300 (CAGE Code 86961)	Epoxy Resin, Type II, Form A, Grade D
O-D-1271	Hardener (Diethylene Triamine)
MIL-C-9084	Glass Cloth, Type VIII B, Class 2
MIL-L-19537	Lacquer, Color-34087, Class 2
O-A-51	Acetone
PC451	Aluminium Oxide Paper (240 Grit)
MIL-P-23377	Epoxy Primer, Class 2

a. Sand damaged areas lightly either by hand or machine to a smooth contour (Figure 35).

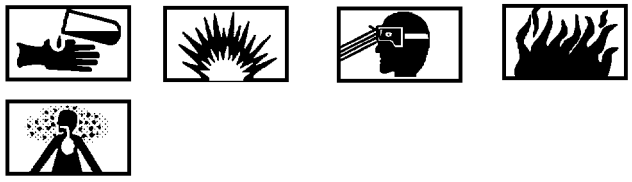


6.2-5877

Figure 35. Sand Damaged Areas

Acetone, O-A-51 **1**

b. Clean sanded area with acetone, using clean, cotton cloth. Clean about 2-in. past sanded area in all directions.



Epoxy Resin, MIL-R-9300 **6**

Diethylene Triamine, O-D-271 **4**

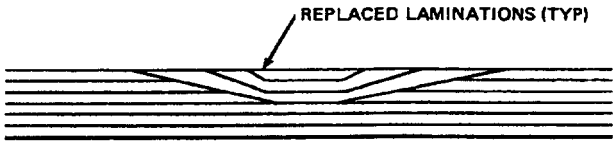
NOTE

Mix 100 parts of epoxy resin to 10 parts diethylene triamine (hardener). Do not mix more than can be used in 25 min.

c. Paint sanded area with one coat of resin.

d. Cut sections of glass fabric to shape of damaged area. Soak cut sections in resin until resin content 50 percent has been achieved.

e. Place soaked sections of glass fabric in sanded depression area as shown (Figure 36).



6.2-5877A

Figure 36. Placement of Soaked Sections

f. Place a sheet of cellophane over repaired area, and work out excess resin.

g. Allow resin to cure overnight at room temperature. If necessary, resin may be cured in oven heated to 100°C (212°F) in order to reduce curing time.

Epoxy Primer, MIL-P-23377 **5**

h. After resin has cured, remove cellophane sheet and hand or machine sand surface of repaired area to remove excess resin. Clean sanded area with a clean cotton cloth.

i. Refinish surface with one coat of epoxy primer and two coats of camouflage black acrylic lacquer.

j. Upon completion of repair, return container to service.

37. REPAIR OF PENETRATING CRACKS OR HOLES.

Materials Required

Specification or Part Number	Nomenclature
MIL-R-9300 (CAGE Code 86961)	Epoxy Resin Type II, Form A, Grade D
O-D-1271	Hardener (Diethylene Triamine)
MIL-C-9084	Glass Cloth, Type VIII B, Class 2
MIL-L-19537	Lacquer, Color-34087, Class 2
LP00370	Cellophane
O-A-51	Acetone
PC451	Aluminum Oxide Paper (240 Grit)
A-11 or B11	Plastic Hydrocal
MIL-P-265	Polyvinyl Alcohol

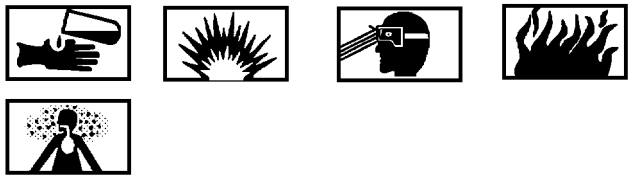
Materials Required

Specification or Part Number	Nomenclature
MIL-P-23377	Epoxy Primer, Class 2

NOTE

To repair extensively damaged containers, a mold must be used in forming/shaping replacement part to proper curvature. Plaster molds formed of materials such as Hydrocal A-11 or B-11 have proven satisfactory. Steps a thru e pertain to fabrication of molds; Steps f thru q pertain to container repairs.

a. Construct suitable wood frame or container that follows roughly the contour of convex side of parachute container for holding soft plaster mold material.



Polyvinyl Alcohol, MIL-P-265 **7**

b. After plaster has been applied to frame, coat a similar undamaged area on parachute container with release agent (paste wax, polyvinyl alcohol, vinyl film, or cellophane); then embed container in soft plaster to form surface of required size and shape.

c. After plaster has hardened (set), remove container and allow mold to dry for 12 to 15 hr. Mold should be oven-dried at about 104°C (220°F) for several hours.

d. Carefully hand sand mold surface with fine sand-paper while mold is still warm, coat with DC-4 silicone grease.

e. After excess grease has been removed, spray or brush on two or three coats of releasing lacquer (garalease 915 or XD-481) onto mold surface. When these coats of releasing lacquer are completely dry, apply additional coat of DC-4 silicone grease and rub off any excess. Mold is now ready for use.

f. Trim (cut out) damaged portion carefully to either circular or oval shape.

g. Carefully sand damaged area either by hand or machine a distance of at least 25 times thickness of container wall (Figure 37).

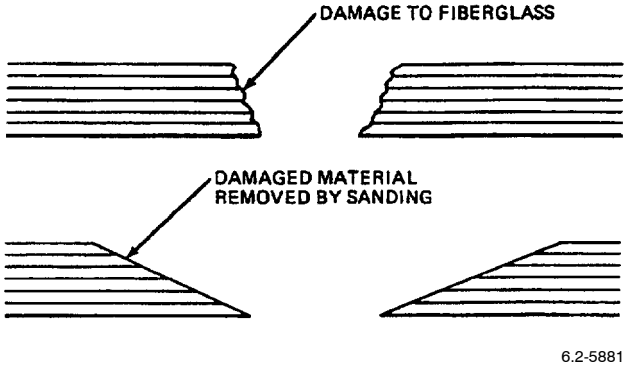
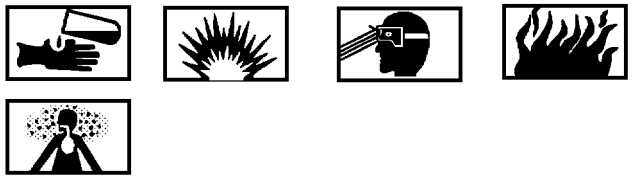


Figure 37. Carefully Sand Damaged Area

h. Prepare glass-fabric laminations for repairing container wall by cutting largest piece of fabric to exact outer shape of the sanded surface.

i. Cut smallest piece so that it overlaps scarfed area a proportionate distance (depending upon number of plies in repair). Cut intermediate size pieces so they overlap equally.



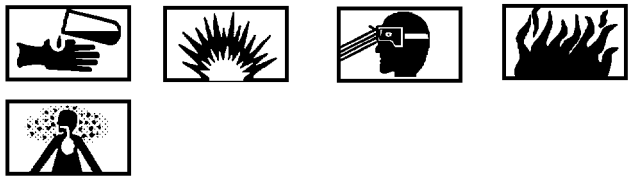
Epoxy Resin, MIL-R-9300 **6**

Diethylene Triamine, O-D-271 **4**

NOTE

Mix 100 parts of epoxy resin to 10 parts diethylene triamine (hardener). Do not mix more than can be used in 25 min.

j. A convenient way to prepare these laminations is to brush-spread resin on them and then sandwich spread fabric between two sheets of colored cellophane. Sections of glass fabric can then be cut to shape without fraying at edges. Resin content of all applied fabric should be about 50 percent.



Polyvinyl Alcohol, MIL-P-265 **7**

NOTE

When necessary to use a mold to rebuild part of a container wall, surface of mold must be treated to prevent sticking (adhesion of resin). One or more coats of following release agents may be applied: Heavy duty paste wax, polyvinyl alcohol, vinyl film, polyester film, or cellophane.

k. (If required) place required mold inside container.

l. Lay/spread prepared sections of glass fabric into place as shown by first removing cellophane sheet from one side of fabric, placing exposed fabric into position of damaged area, and then removing second sheet of cellophane (Figure 38).

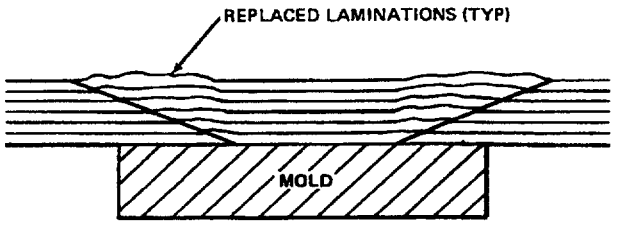


Figure 38. Lay/Spread Prepared Sections

m. Cover entire repaired area with a sheet of cellophane, and carefully work surface to remove as much excess resin as possible.

n. Allow resin to cure overnight at room temperature. If necessary, resin may be cured in an oven heated to 100°C (212°F) in order to reduce curing time.

Epoxy Primer, MIL-P-23377 **5**

o. After resin has cured, remove cellophane sheet and lightly sand off excess resin. Clean sanded area with a clean cotton cloth.

p. Refinish surface with one coat of epoxy primer and two coats of camouflage black acrylic lacquer.

q. Upon completion of repair, return container to service.

38. REPLACEMENT OF MS22021-1 CONNECTOR LINK (SPEED LINK) WITH MS22002-1 (DOUBLE "L") CONNECTOR LINK.

NOTE

New canopies received from supply may have the Double 'L" Connector Links installed.

Instructions for attachment of Firing Lanyards, PDVL's, Four-Line Release Systems, etc., will remain the same and will be contained in the application parachute manual.

Materials Required

Specification or Nomenclature	Part Number
MS22002-1	Connector Link (Double "L")
F-900 Torque Seal (Color Optional)	Sealing Compound
—	Torque Screwdriver
MIL-S-43243 (See WP 002 00)	Separator, Link or Equivalent

a. Remove yoke and plate assembly from parachute connector link, P/N MS22021-1.

b. Slide suspension lines from connector link onto a temporary locking pin or rod.

c. Remove cross-connector strap.

d. Slide riser loop off connector link bar and dispose of connector link, P/N MS22021-1.

e. Remove screws from the double "L" connector link, P/N MS22002-1 and separate the two halves of the link.

f. It may be necessary to use a separator device to separate the two halves of the connector link if a separator device is not available, loosen both screws of the connector link by four turns. Place a long bar between the connector link bars to hold the link in place. Using a rawhide or rubber mallet, tap one screw head and then the other screw head several times until the connector link bars separate.

g. Install suspension lines on the new connector link bar. The short leg of the "L" connector is to be positioned to the inside (Figure 39).

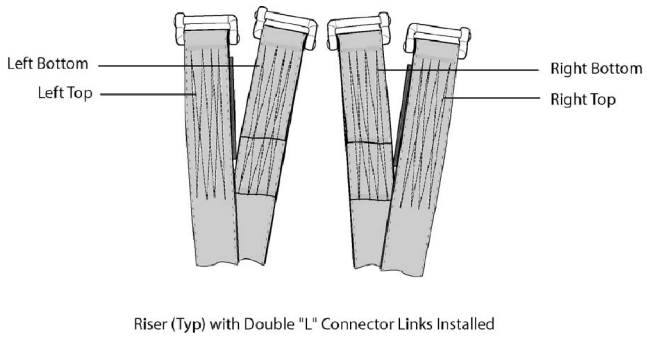


Figure 39. Double "L" Connector Link Layout

h. Install cross-connector strap.

i. Slide riser loop onto opposite connector link bar.

j. Mate both halves of the connector link together.

k. Install screws (2 each).

NOTE

Screws must make a minimum of 6 full turns prior to applying torque.

l. Check suspension line continuity. (QA)

m. Tighten screws to a torque value of 15 in-lbs. (QA)

WARNING

Care must be taken when tightening screws as screwdriver may slip and cause minor injury.

NOTE

It may be necessary to check the torque value on each screw more than once due to the interference fit design feature of the connector link.

n. Apply torque seal to both screw heads and allow to dry before proceeding with remainder of parachute packing.

o. Repeat steps a through l on each riser group.

p. Re-identify the parachute canopy by using an indelible black pen to cross out the existing part number and marking the new superceding part number per Illustrated Parts Breakdown (IPB) WP 025 04.

ORGANIZATIONAL, INTERMEDIATE AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

A/P22P-11 EMERGENCY EGRESS CREW BACKPACK ASSEMBLY

PART NO. 123AB50510-3

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1	11	3 thru 4	11	5 thru 8	9	9	11
2	9						

Reference Material

Intermediate and Depot Maintenance, Packing Procedures, A/P22P-11 Emergency Egress Crew Backpack Assembly ..... WP 025 02

Alphabetical Index

Title	Page
Introduction	1
Service Life	1
Usable on Codes	1

List of Figures

Title	Page
A/P22P-11 Personnel Parachute Assembly	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the A/P22P-11 Emergency Egress Crew Backpack Assembly (Figure 1).

2. USABLE ON CODES.

a. The usable on codes in this WP refer to the aircraft applications for the A/P22P-11 Emergency Egress Crew Backpack Assembly.

b. Following usable on codes apply to this WP:

A - E-2C

3. SERVICE LIFE.

a. The service/total life information is contained in WP 025 02.

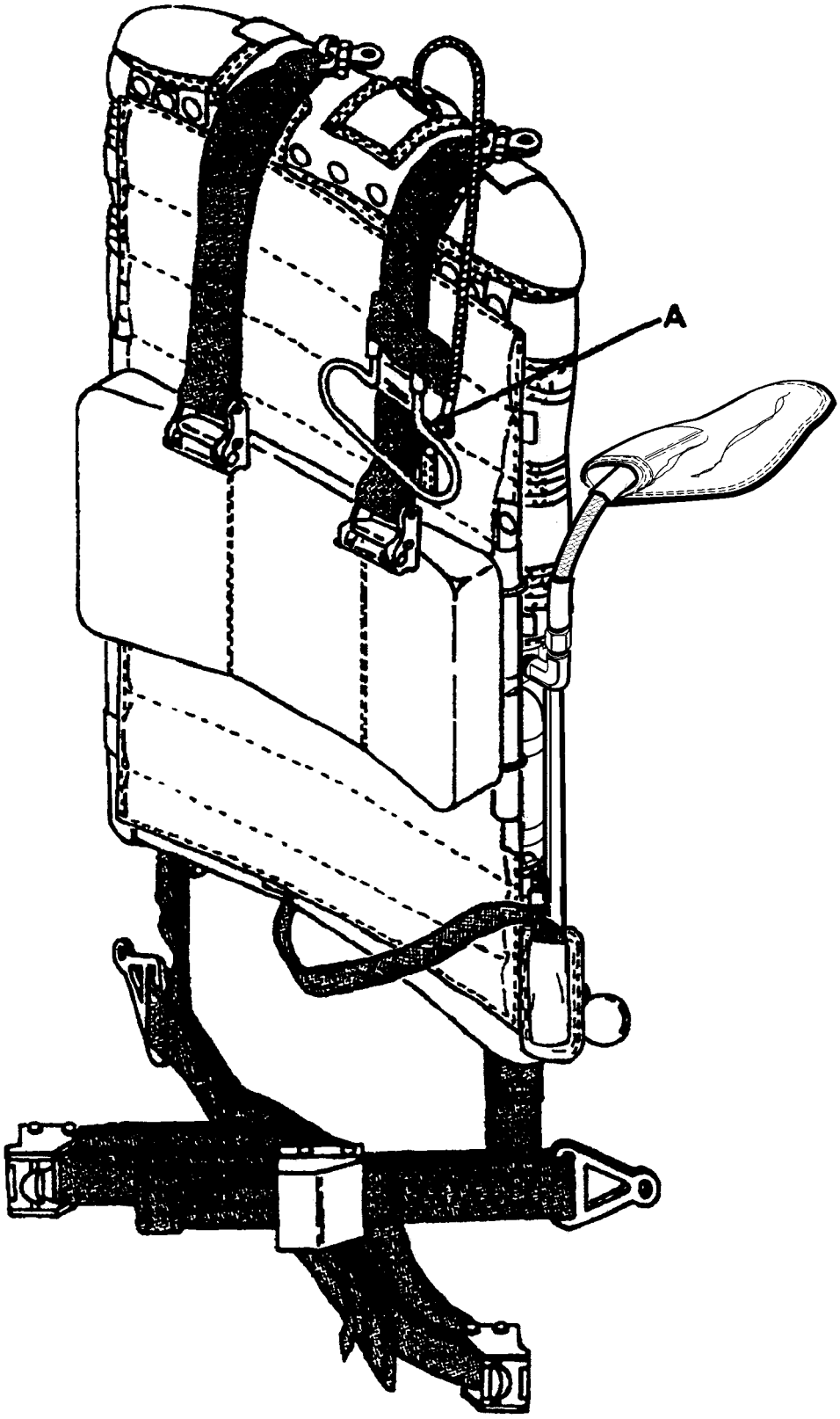


Figure 1. A/P22P-11 Emergency Egress Crew Backpack Assembly (Sheet 1 of 8)

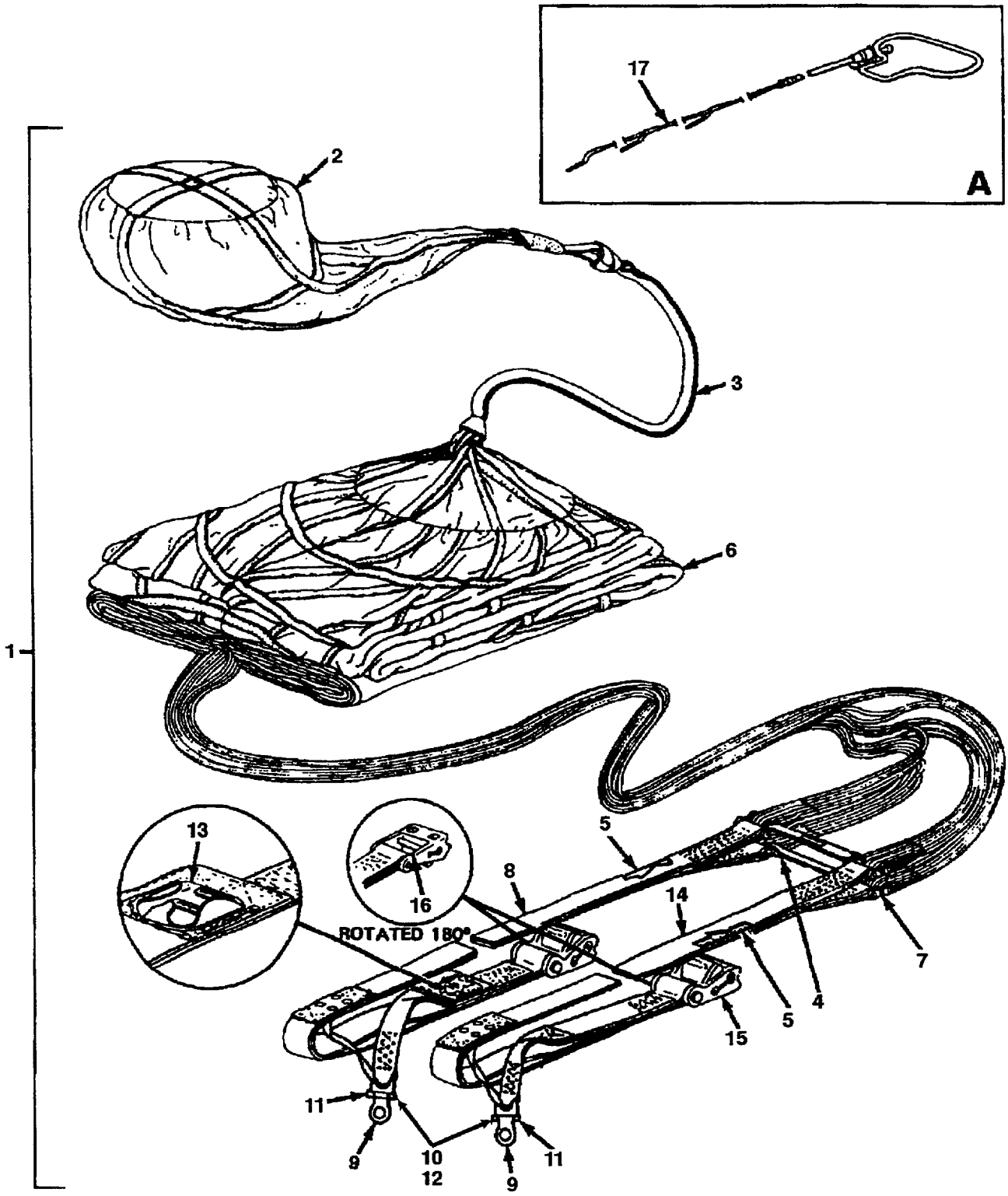


Figure 1. A/P22P-11 Emergency Egress Crew Backpack Assembly (Sheet 2 of 8)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	123AB50510-3	BACK PACK ASSEMBLY, CREW BACK PACK	1	A	AGOGG
1	123AB50517-5	. RISER ASSEMBLY, PARACHUTE CANOPY .... CREW BACK	1		AGOGG
2	60A125E16-1	. . PARACHUTE ASSEMBLY, PILOT	1		PCGZZ
3	666AS100-1	. . STRAP CONNECTOR, PILOT PARACHUTE ..	1		PCGZZ
4	677AS100-2	. . STRAP, CROSS CONNECTOR	2		PCGGG
5	1979AS400-1	. . RISER ASSEMBLY	1	*	PCGGG
	123AB50542-9	. . RISER ASSEMBLY ..... (USE UNTIL EXHAUSTED)	1	*	PCGGG
6	60A114E3-1	. . CANOPY ASSEMBLY	1	*	PCGGG
	60A114E3-27	. . CANOPY ASSEMBLY (WITH DOUBLE "L" ... CONNECTOR LINK INSTALLED)	1	*	PCGGG
7	MS22021-1	. . . LINK, REMOVABLE CONNECTOR	4	*	PAGZZ
	MS22002-1	. . . CONNECTOR LINK (DOUBLE "L")	4	*	PAGZZ
8	1979AS400-2	. . . RISER, LEFT	1	*	XAZZZ
	123AB50542-25	. . . RISER, LEFT ..... (USE UNTIL EXHAUSTED)	1	*	XAZZZ
9	123ABM50500-11	. . . . FITTING, SHOULDER HARNESS	2		XBGZZ
10	AN960C6L	. . . . . WASHER, FLAT	4		PAGZZ
11	GB511DU06C15	. . . . . BOLT, PANHEAD	2		PAGZZ
12	79NKTM-62	. . . . . NUT, HEX /72962/	2		PAGZZ
13	60A116C10-1	. . . . CLIP, RIPCORD GRIP	1		PAGZZ
14	1979AS400-3	. . . RISER, RIGHT	1	*	XAZZZ
	123AB50542-501	. . . RISER, RIGHT ..... (USE UNTIL EXHAUSTED)	1	*	XAZZZ
15	990055-1	. . RELEASE ASSEMBLY, CANOPY /99449/	2	*	PAOGG
	015-10307-5	. . RELEASE ASSEMBLY,CANOPY /99449/ ..... (USE UNTIL EXHAUSTED)	2	*	PAOGG
16	122-10935-3	. . . SETSCREW, PIN END /99449/	2		PAOZZ
17	123AB50523-1	. . RIPCORD ASSEMBLY PARACHUTE	1		PAGZZ
18	711-07094	. . SPACER /52497/	1		PAGZZ
19	123AB50540-3	. . LANYARD, CLAMP RELEASE ..... (MAKE FROM 60A116D26-2)	1		MGGZZ
20	123AB50513-9	. . CUSHION ASSEMBLY	1		AGOGG
21	123AB50513-45	. . . CUSHION	1		PAOZZ
22	123AB50513-43	. . . BACKPAD	1		PAOZZ
23	MS27983-1B	. . . . SNAP, FASTENER BUTTON	24		PAGZZ
24	MS27983-2B	. . . . SNAP, FASTENER SOCKET	24		PAGZZ
25	MS27980-10B	. . . . FASTENER, EYELET	26		PAGZZ
26	123AB50529-1	. STRAP ASSEMBLY, ANTI-ROTATION	1		MGGGG
27	123AB50529-3	. . SPRING ASSEMBLY	1		PAGZZ
28	123AB50530-39	. . FITTING	1		PAGZZ
29	123AB50511-3	. CONTAINER ASSEMBLY, WITH ..... PARACHUTE/RISER	1		AGOGG
30	990060-1	. . LAPBELT RELEASE	2	*	AGOGG
	015-11365-1	. . LAPBELT RELEASE ..... (USE UNTIL EXHAUSTED)	2	*	AGOGG

Figure 1. A/P22P-11 Emergency Egress Crew Backpack Assembly (Sheet 3 of 8)

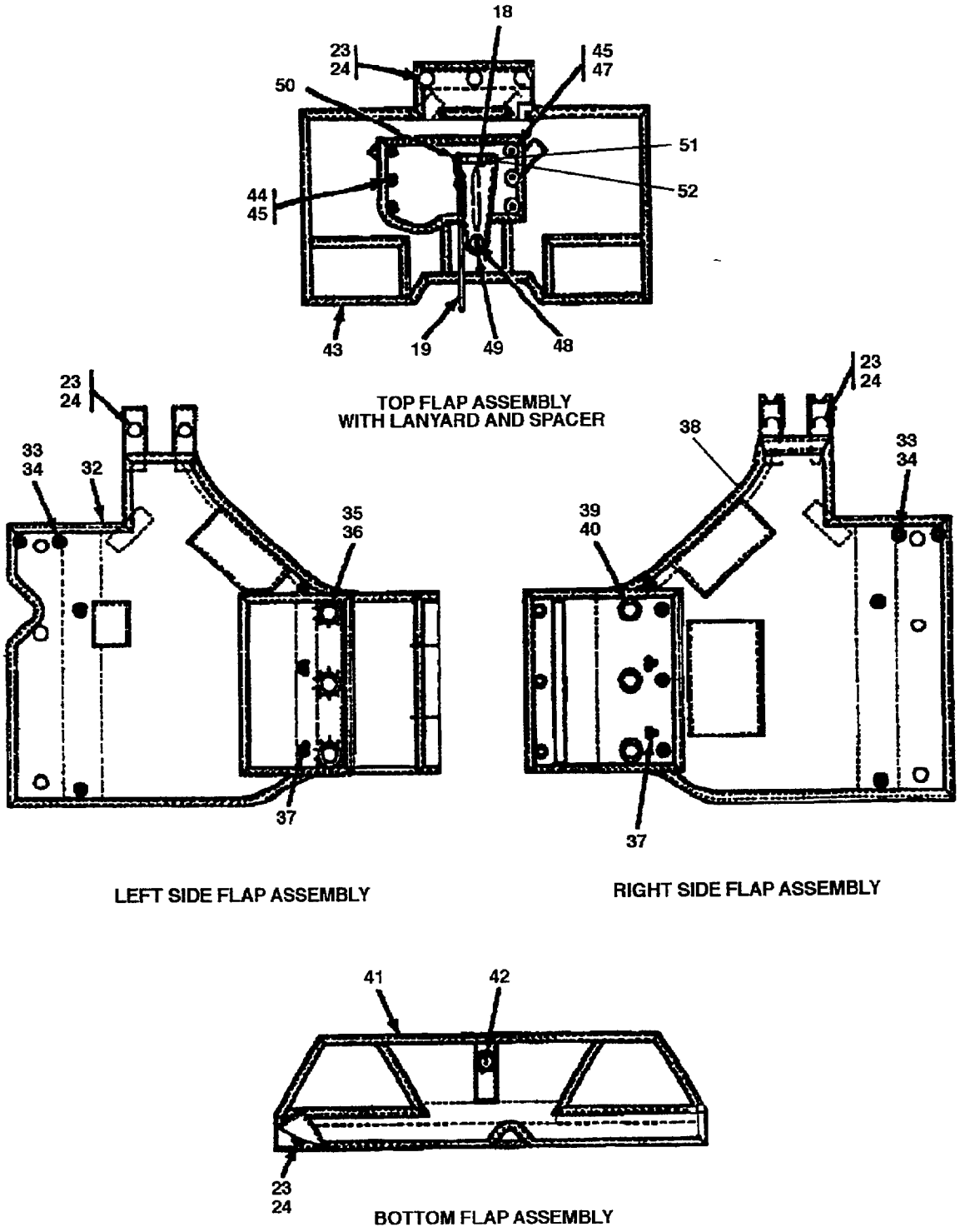


Figure 1. A/P22P-11 Emergency Egress Crew Backpack Assembly (Sheet 4 of 8)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
31	123AB50515-3	. . CONTAINER ASSEMBLY, WITH PARACHUTE CREW BACK	1		PAGZZ
32	123AB50520-7	. . . FLAP ASSEMBLY, LEFT	1		PCGZZ
33	MS27983-4	. . . . FASTENER, EYELET	11		PAGZZ
34	MS27983-3	. . . . FASTENER, STUD	25		PAGZZ
35	GW502CV1	. . . . GROMMET, PARACHUTE PACK	3		PAGZZ
36	MS22048WC1	. . . . WASHER, GROMMET	3		PAGZZ
37	60A113C28-1	. . . . EYE	6		PAGZZ
38	123AB50520-9	. . . FLAP ASSEMBLY, RIGHT	1		PCGZZ
39	MS22048GC2	. . . . GROMMET, PARACHUTE PACK	3		PAGZZ
40	MS22048WC2	. . . . WASHER, GROMMET	3		PAGZZ
41	123AB50521-7	. . . FLAP ASSEMBLY, BOTTOM	1		PCGZZ
42	60A113C31-1	. . . . CONE, 0.338 GRIP	1		PAGZZ
43	123AB50521-3	. . . FLAP ASSEMBLY, TOP	1		PCGZZ
44	MS27981-5	. . . . FASTENER, EYELET	3		PAGZZ
45	MS27981-4	. . . . FASTENER, STUD	3		PAGZZ
46	MS27981-1	. . . . FASTENER, BUTTON	3		PAGZZ
47	MS27981-3	. . . . FASTENER, SOCKET	3		PAGZZ
48	60A113C24-1	. . . . CONE, 0.410 GRIP	1		PAGZZ
49	60A113D16-1	. . . . BASE ASSEMBLY, CLAMP	1		PAGZZ
50	60A116C27-1	. . . . CLAMP, DOUBLE	1		PAGZZ
51	60A116C25-1	. . STUD	1		PAGZZ
52	60A116C28-1	. . SCREW	1		PAGZZ
53	60A113D11-3	. . . SPRING ASSEMBLY, CONTAINER OPENING	6	*	PAGZZ
	MS70105-7	. . . SPRING ASSEMBLY, CONTAINER OPENING	6	*	PAGZZ
54	123AB50516-4	. LAPBELT ASSEMBLY	1		PAGZZ
55	123AB50516-1	. . . LAPBELT ASSEMBLY, LEFT	1		PCOZZ
56	184C100-1	. . . . ADJUSTER, LAPBELT /30941/	2		PCOZZ
	015-12231-2	. . . . ADJUSTER, LAPBELT /99449/	2	*	PCOZZ
	GA506D1	. . . . ADJUSTER, LAPBELT	2	*	PCOZZ
57	123AB50516-2	. . . . LAPBELT ASSEMBLY, RIGHT	1		XAOZZ
58	AN960-416	. . . WASHER, FLAT	8		PAGZZ
59	AN4-27A	. . . BOLT, HEX HEAD	2		PAGZZ
60	52-NKTM-048	. . NUT, HEX /72962/	2		PAGZZ
61	123AB50518-5	. . CONTAINER ASSEMBLY	1		PAGGG
62	GS179AP4	. . . SHAPE CHANNEL	1		PCGGG
63	MS27980-7N	. . . . FASTENER, STUD	12		PAGZZ
64	GL514A1	. . . . LOOP	1		XBGZZ
65	AN960D10L	. . . . WASHER, FLAT	19		PAGZZ
66	22NKTM-02	. . . . NUT, HEX /72692/	12		PAGZZ
67	MS27039-1-07	. . . . SCREW, PANHEAD	2		PAGZZ
68	123AB50530-15	. . . . PLATE	2		XBGZZ

Figure 1. A/P22P-11 Emergency Egress Crew Backpack Assembly (Sheet 5 of 8)

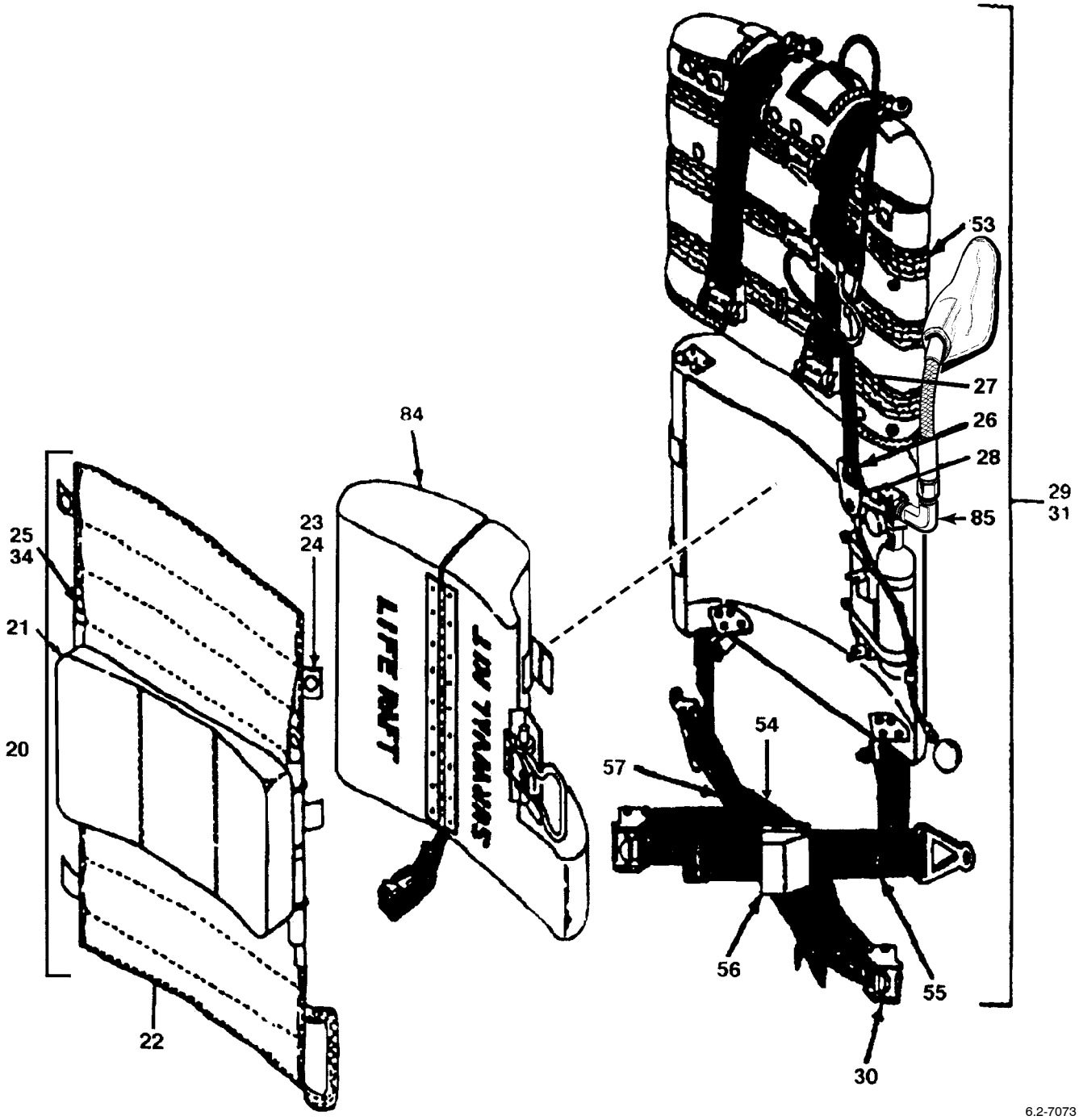


Figure 1. A/P22P-11 Emergency Egress Crew Backpack Assembly (Sheet 6 of 8)

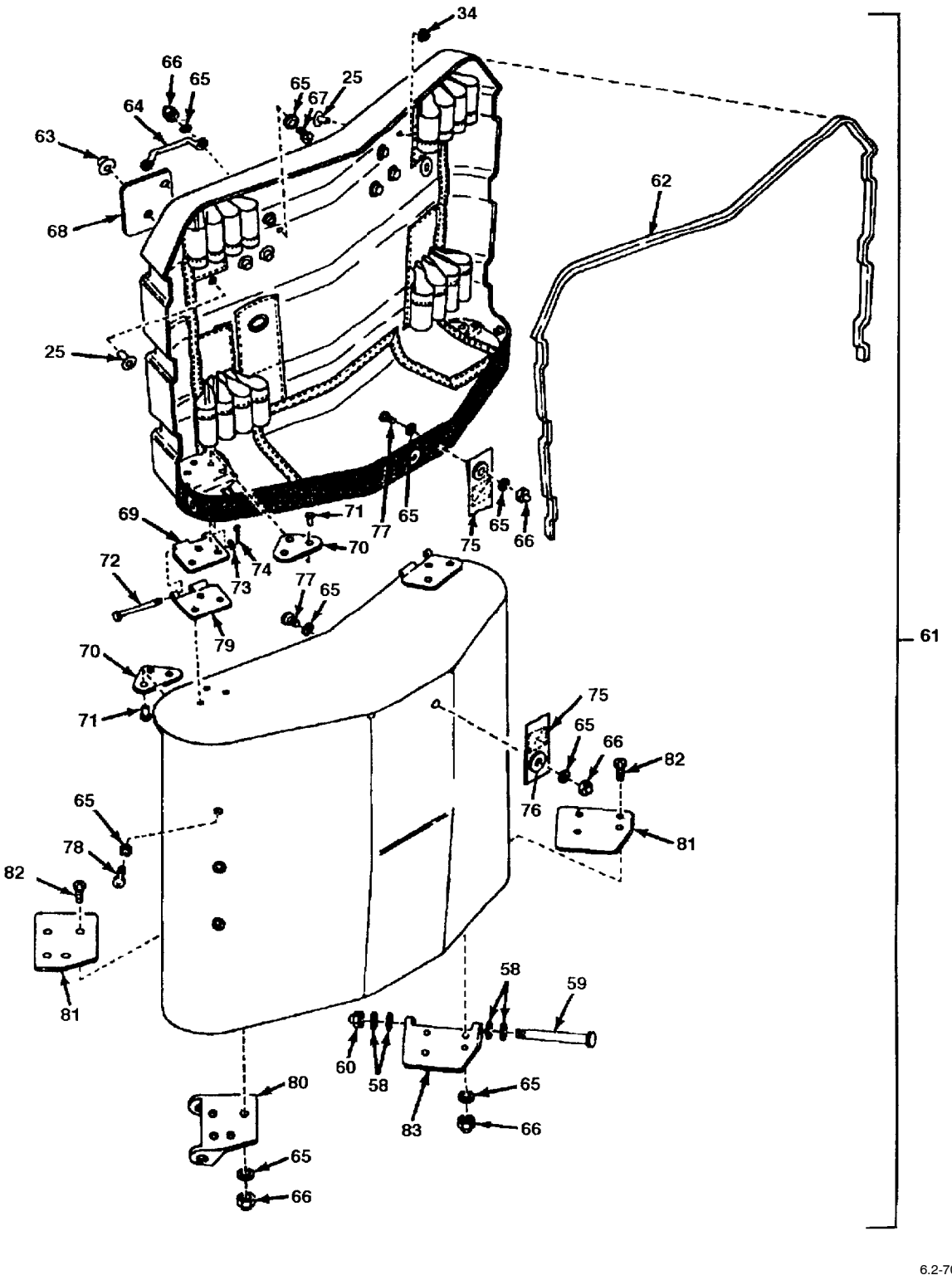


Figure 1. A/P22P-11 Emergency Egress Crew Backpack Assembly (Sheet 7 of 8)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
69	123AB50518-3	. . . . HINGE ASSEMBLY	2		XBGZZ
70	123AB50530-17	. . . . STIFFENER	6		XBGZZ
71	NAS1200M5-5	. . . . RIVET	9		PAGZZ
72	MS20392-2C51	. . . . PIN, STRAIGHT	2		PAGZZ
73	NAS620C10L	. . . . WASHER, FLAT	2		PAGZZ
74	MS24665-151	. . . . PIN, COTTER	2		PAGZZ
75	123AB50551-1	. . . STOP ASSEMBLY	1		MGGZZ
76	MS20230BS10	. . . . GROMMET ASSEMBLY	2		PAGZZ
77	1581A3R2	. . . . SCREW, PANHEAD	2		PAGZZ
78	AS553R3-3-8S	. . . . SCREW, CAPTIVE	3		PAGZZ
79	123AB50518-11	. . . . HINGE ASSEMBLY	2		XBGZZ
80	123AB50501-11	. . . . FITTING, LEFT	1		XBGZZ
81	123AB50530-27	. . . . STIFFENER	2		XBGZZ
82	MS24694S50	. . . . SCREW, PANHEAD	8		PAGZZ
83	123ABM50501-12	. . . . FITTING, RIGHT	1		XBGZZ
84	123AB50512-3	. SEAT SURVIVAL KIT, SKK-9/P22-11 (BREAKDOWN, NAVAIR 13-1-6.1, NAVAIR 13-1-6.3)	1		AGOGG
85	269D200-3	. SYSTEM ASSEMBLY, EMERGENCY OXYGEN (ASSEMBLY W/SUPPORT BREAKDOWN IN NAVAIR 13-1-6.4-1)	1		AGOGG

Figure 1. A/P22P-11 Emergency Egress Crew Backpack Assembly (Sheet 8 of 8)

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ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

A/P28S-32 PERSONNEL PARACHUTE ASSEMBLY

PART NO. MBEU147710, MBEU147710-1, MBEU147711, MBEU147712, MBEU147713, and MBEU148030

List of Effective Work Package Pages

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Reference Material

Organizational and Intermediate Maintenance, Illustrated Parts Breakdown,
A/P28S-32 (V) 1 to 6 Personnel Parachute Assembly ..... WP 026 04

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Manual Override System (MOR)	8

Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 629	11 Sept 97	SJU-17(V)1-A Canopy Breaker	1 Jun 98	31 Dec 2002

1. INTRODUCTION

a. The A/P28S-32 series of Personnel Maneuverable, Recovery Parachute assemblies are integral to the SJU-17 series of Aircrew Automated Ejection Seat Escape Systems.

b. There are five variants of the A/P28S-32 parachute assembly. Each variant is basically similar, the difference being confined to the shape and size of the canopy breakers on the parachute container (Table 1).

2. DESCRIPTION.

a. The parachute assembly comprises a GQ Parachutes Type 5000 aeroconical canopy, withdrawal line, deployment sleeve, suspension line stowage tray, and forward and aft risers. These items are packed into a rigid metal container closed by a metal lid assembly.

b. The 21 ft. inflated diameter, multi-colored (white, international orange, olive green and sand shade) nylon, aeroconical canopy is constructed of 20 gores. The canopy is modified with water deflation pockets on alternate gores and suspension lines. The canopy is stowed in a deployment sleeve which is attached to a withdrawal line. The withdrawal line is connected to the parachute deployment rocket motor when the assembly is installed on the seat.

c. The canopy has two Le-Moigne slots to provide diretional control and forward velocity on command. The Le-Moigne slots are located 180-degrees apart in gores 6 and 16, and are locked in the closed position by toggle and handle to ensure that the parachute descends vertically on initial opening. Directional control and forward velocity is initially selected by pulling down the two handles between the risers. This action unlocks the toggle from its loop securing the Le-Moigne slots in the closed position. Once the handle and toggle, securing the Le-Moigne slots, are pulled and the tension is released from the steering lines the Le-Moigne slots open and provide forward drive to the canopy. To turn the canopy, the aircrew pulls down on the appropriate steering line handle. Pulling down the left hand (LH) steering line handle will close the LH slot, turning the canopy left and vice versa. Pulling down both steering line handles simultaneously will close both slots, decreasing the forward velocity of the canopy.

d. The two steering lines consist of upper and lower portions. The upper portion is permanently attached to the rings of the Le-Moigne slots and is joined to the lower portion. The lower portion incorporates a handle and is temporarily secured between the front and rear harness risers by velcro fasteners.

e. Each parachute riser terminates at one end in a detachable connector link which attaches the suspension lines of the personnel parachute to the risers. At the other end, the front and rear risers connect to a canopy release fitting which connects with the male fitting of the aircrews PCU-33/P or PCU-56/P parachute restraint harness.

f. Connected to the canopy release fitting end of the risers are short straps which terminate in roller fittings, thru which the webbing straps of the shoulder harness reel are passed before the lugs are secured in the upper harness locks.

g. Two cross-connector straps, attached between the two front and two rear riser connector links, prevent the risers from spreading too far laterally on canopy extraction and opening. The straps also prevent total collapse of the canopy should one riser release fitting become detached from the PCU-33/P or PCU-56/P parachute restraint harness during parachute descent.

Table 1. Configuration Table of Parachute Assemblies

Parachute Assembly	Aircraft Type	Seat Position
A/P28S-32(V)1	F/A-18C T45A	Forward Aft
A/P28S-32(v)2	F/A-18D, E, F T45A	Forward Forward
A/P28S-32(V)3	F-14D	Forward
A/P28S-32(V)4	F-14D	Aft
A/P28S-32(V)6	F/A-18D, F	Aft

h. To restrain the risers to the front of the parachute container when exposed to the airstream, a riser retention strap, which has a lug at each end, is attached by a retaining loop sewn to the front face of the LH front riser. The strap passes across the front of the risers and the lugs engage in the harness reel upper locks to retain the risers to the seat until aircrew/seat separation occurs.

i. The parachute harness sensing release units (PHSRU) provide an automatic backup method of releasing the risers after the aircrew makes a sea water entry.

j. The aeroconical canopy is packed into a deployment sleeve assembly, which is then packed into a rigid container. The rigid container attaches to the upper forward face of the ejection seat and serves as a headrest for the aircrew.

k. The parachute container is constructed of a light alloy material and is fitted with canopy penetrators, rigid lid, and lid locking mechanism.

l. The PCU-33/P or PCU-56/P parachute restraint harness assembly integrates the aircrews parachute harness, lapbelt assembly, shoulder restraint harness, and torso vest.

m. When seated in the ejection seat, the aircrew connects the canopy release fittings on the risers to the fittings on the PCU-33/P or PCU-56/P parachute restraint harness assembly. The lapbelt release assemblies on the seat survival kit are connected to the lapbelt fittings on the PCU-33/P or PCU-56/P parachute restraint harness.

3. CONFIGURATION.

a. The general configuration of the A/P28S-32 parachute assembly is shown in Figure 1. Refer to WP 026 04 for detailed information on subassemblies.

4. SUBASSEMBLY CONFIGURATIONS.

a. The subassemblies listed below make up the personnel parachute assembly A/P28S-32 and are shown in (Figures 1 and 2).

Withdrawal Line Assembly

Deployment Sleeve Assembly

Canopy Assembly and Steering Lines

Suspension Line Stowage Tray

Riser Assembly and Cross Connector Straps

Parachute Harness Sensing Release Units

Lid Assembly

Personnel Parachute Container

5. PRINCIPLES OF OPERATION.

6. AUTOMATIC OPERATION - LOW SPEED/LOW ALTITUDE SEQUENCE (BELOW 8,000 FT.).

a. When an aircrew ejects from the aircraft in the low altitude/low speed sequence the following functions take place:

(1) The drogue deployment catapult fires and the drogue is deployed to extract the bridle, to stabilize and decelerate the seat.

(2) The drogue bridle is released, and the parachute deployment rocket motor fires, unlocking the container rigid lid and extending the withdrawal line.

(3) The withdrawal line withdraws the personnel parachute in it's sleeve and pulls the suspension lines and connector links from the suspension line stowage tray until the load is taken by the risers attached to the PCU-33/P or PCU-56/P parachute restraint harness.

(4) As the load is applied, the sleeve is drawn off the parachute canopy. The parachute canopy begins to inflate, the thread ties securing each pair of suspension line links break, and the canopy deploys fully.

(5) At the same time the harness release system operates and the aircrew separates from the seat between 0.65 and 1.50 seconds after initiation of the ejection sequence.

7. INTERMEDIATE ALTITUDE SEQUENCE (BETWEEN 8,000 AND 18,000 FT.).

a. The sequence is similar to the low speed/low altitude sequence described in Paragraph 6, except that aircrew/seat separation occurs 3.10 seconds after ejection initiation. This timing is applicable throughout the airspeed range of 0-700 KEAS between 8,000 and 18,000 feet.

8. HIGH ALTITUDE SEQUENCE (ABOVE 18,000 FT.).

a. When the aircrew ejects from the aircraft in the high altitude all speed sequence the following functions take place.

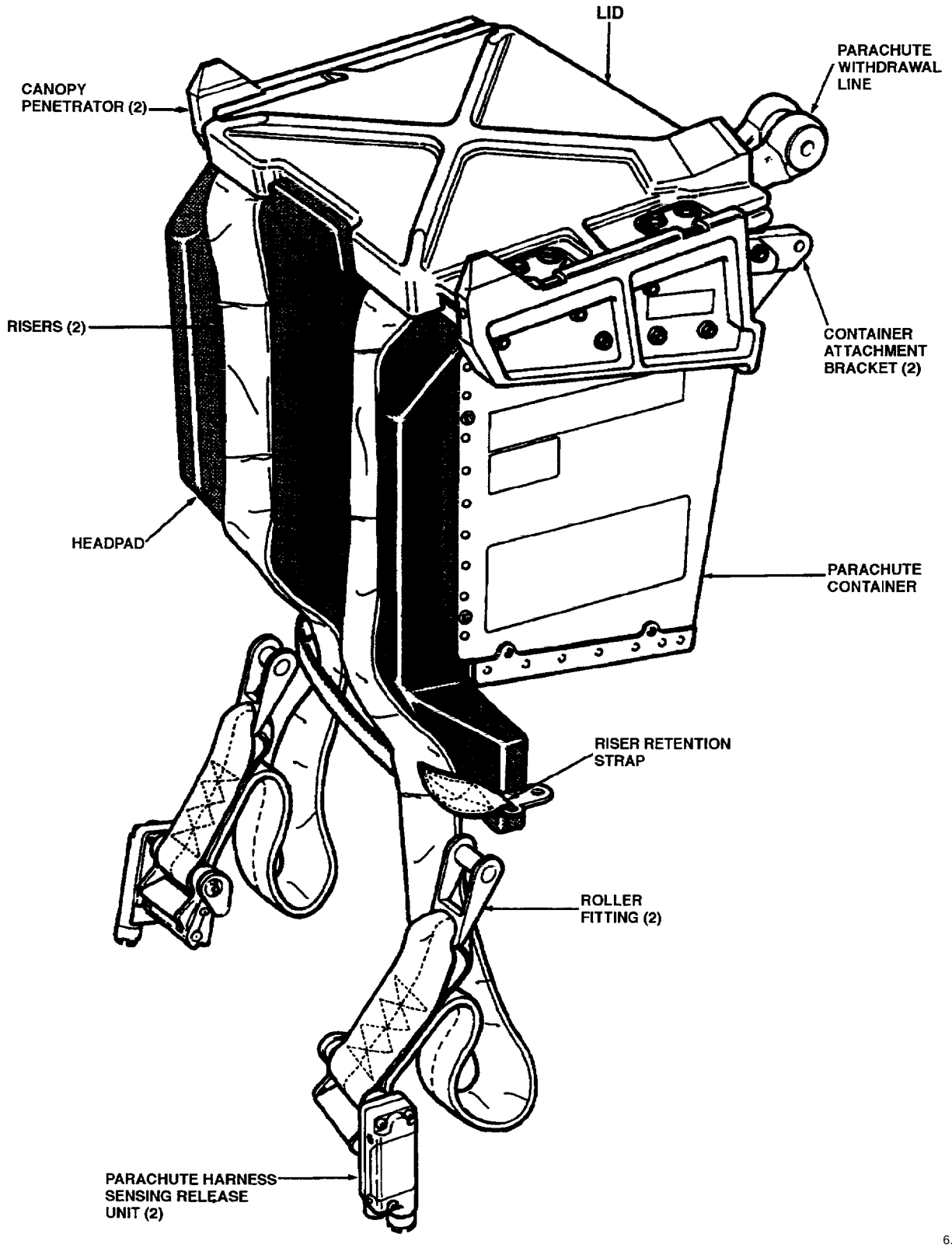

Figure 1. A/P28S-32 Personnel Parachute Assembly

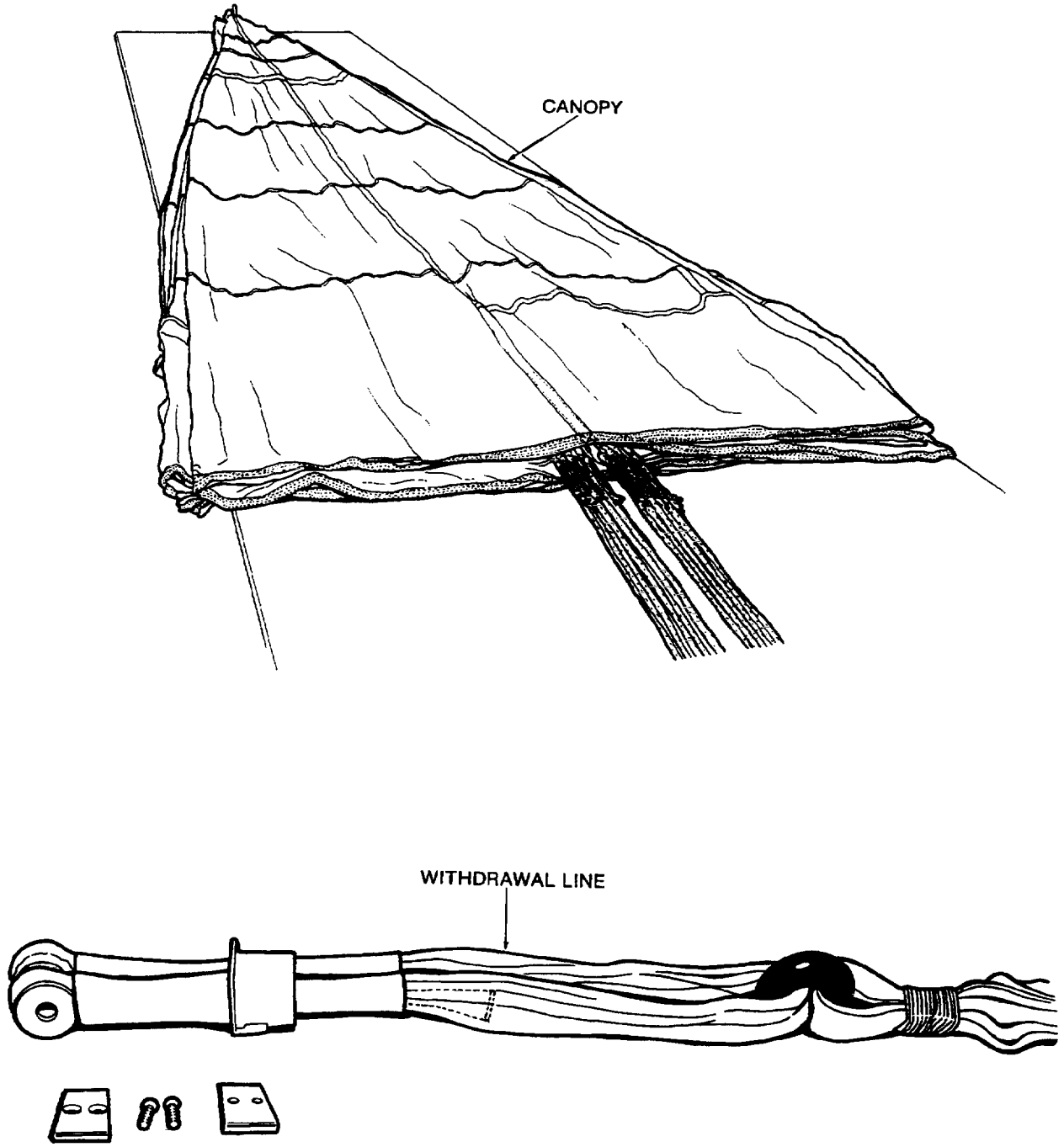

Figure 2. A/P28S-32 Subassemblies (Sheet 1 of 3)

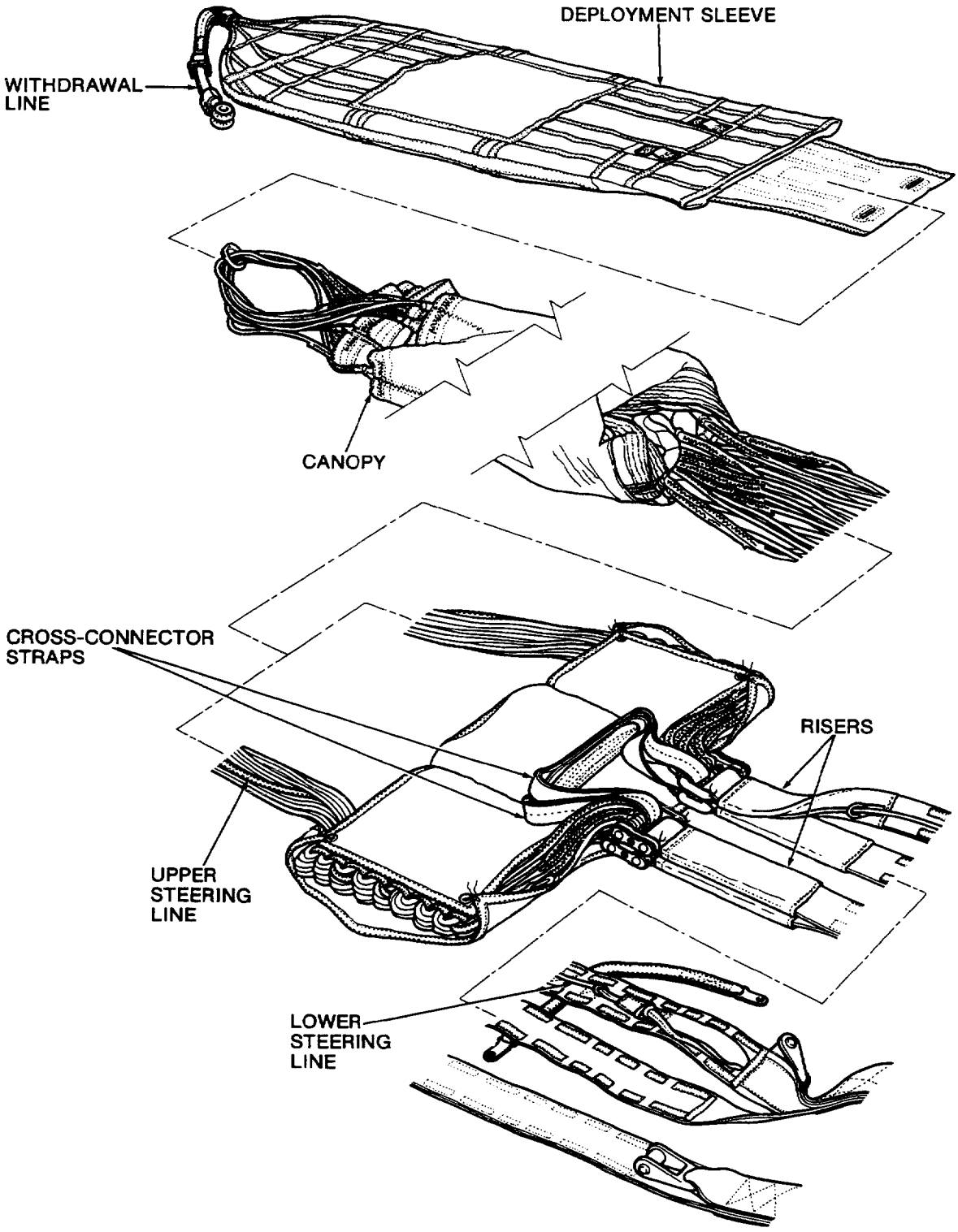

Figure 2. A/P28S-32 Subassemblies (Sheet 2 of 3)

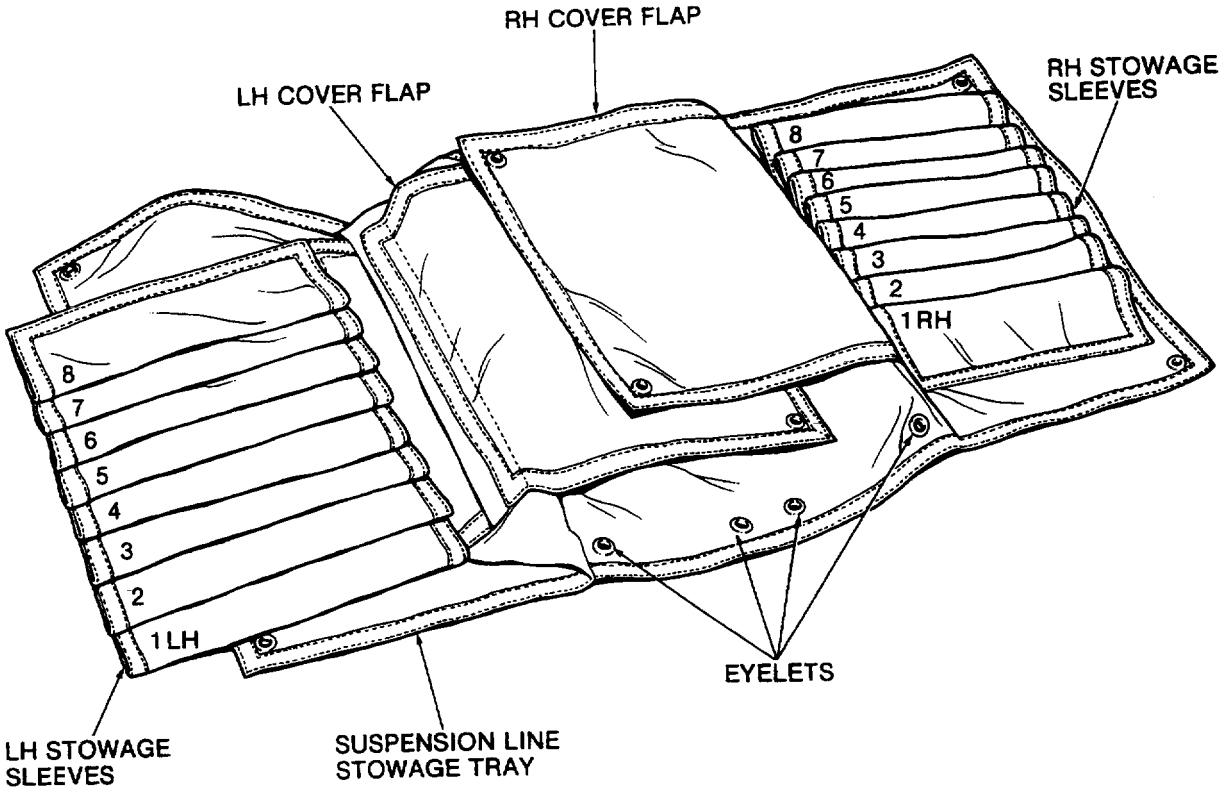

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Figure 2. A/P28S-32 Subassemblies (Sheet 3 of 3)

(1) The drogue deployment catapult fires and the drogue is deployed to extract the bridle, to stabilize and decelerate the seat.

(2) The drogue bridle remains connected to the seat until the seat has descended to 18,000 feet.

(3) The drogue bridle is then released and the parachute deployment rocket motor fires, unlocking the container lid and extending the withdrawal line.

(4) The withdrawal line withdraws the personnel parachute in it's sleeve and pulls the suspension lines and connector links out of the suspension line stowage tray until the load is taken by the risers attached to the PCU-33/P or PCU-56/P parachute restraint harness.

(5) As the load is applied, the sleeve is drawn off the parachute canopy. The parachute canopy begins to inflate, the thread ties securing each pair of suspension line links break, and the canopy deploys fully.

(6) At the same time, the harness release system operates and the aircrew separates from the seat.

9. MANUAL OVERRIDE SYSTEM (MOR).

a. If, after ejection, the automatic system fails, operation of the emergency restraint release MOR handle allows the following functions to take place:

(1) A cartridge situated in the MOR breech fires. MOR breech gas operates the upper and lower harness locks and initiates the parachute deployment unit rocket motor.

(2) The container lid is released by the parachute deployment unit rocket motor and the withdrawal line is extended.

(3) The personnel parachute in its sleeve is withdrawn from the parachute container and the suspension lines and connector links are drawn out of the suspension line stowage tray until the load is taken by the risers attached to the PCU-33/P or PCU-56/P parachute restraint harness.

(4) As the parachute deployment unit rocket motor continues to apply a load, the sleeve is drawn off the parachute canopy and the canopy begins to inflate.

(5) The thread ties, securing each pair of suspension line links, break, and the parachute deploys fully.

10. DELETED.

ORGANIZATIONAL MAINTENANCE

REPAIR PROCEDURES

A/P28S-32 PERSONNEL PARACHUTE ASSEMBLY

PART NUMBERS MBEU147710, MBEU147710-1, MBEU147711, MBEU147712, MBEU147713, and MBEU148030

List of Effective Work Package Pages

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PHSRU Battery and Sensor Plug Replacement	2
PHSRU Torque Seal Replacement	2
Riser Assembly	3
Fabrication and Installation of Lower Riser Cover	4
Installation of Lower Riser Cover	5
Installation of Upper Riser Cover	4
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Steering Line Lanyard Pull Loop Tackings Replacement	3

Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 629	11 Sept 97	SJU-17(V)1-A Canopy Breaker	1 Jun 98	31 Dec 2002

1. INTRODUCTION.

a. This work package (WP) contains instructions for organizational level repair to ensure that the parachute assembly remains in ready-for-issue (RFI) status.

b. When performing repairs detailed in this WP, follow these guidelines:

(1) Review all applicable instructions prior to starting repair.

(2) Ensure all necessary support equipment and materials required are available prior to starting repair.

(3) To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

(4) A quality assurance (QA) inspector shall examine the finished work.

2. PARACHUTE HARNESS SENSING RELEASE UNIT (PHSRU).

3. PHSRU TORQUE SEAL REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Torque loose screws to a value of 11 to 13 in-lbs.

b. Apply torque seal to the plug assembly, sensor plug, and electronics package assembly attaching screws (Figure 1).

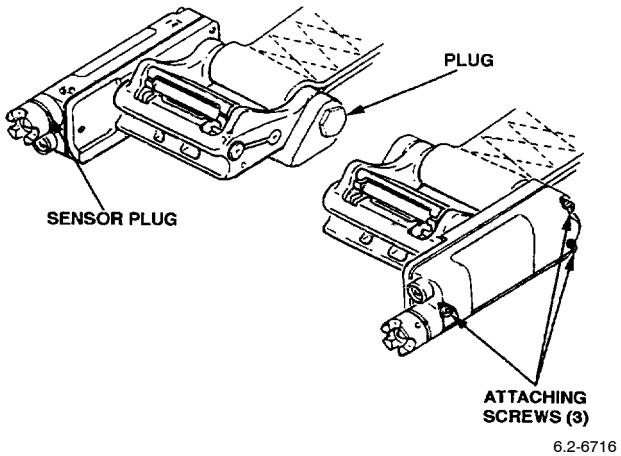

Figure 1. Replacement of Torque Seal on PHSRU

4. PHSRU BATTERY AND SENSOR PLUG REPLACEMENT.

Support Equipment Required

Specification or Part Number	Nomenclature
FLUKE-77	Multimeter
SA852AS112	Torque Driver
SA852AS113	Torque Tool, Sensor Plug
GGG-W-641	Socket Handle, 1/4-in. Drive
3405AS101-2	Socket, Special 7/16 x 1/4-in. Drive

a. Perform PHSRU Organizational Level Maintenance in accordance with WP 024 02 for the following tasks:

(1) Removal of battery.

(2) Installation of battery.

(a) Conduct the following:

1) Battery voltage check.

2) Battery polarity check.

3) Battery installation.

4) Final check.

(3) Removal of sensor plug.

(4) Installation of sensor plug.

(a) Conduct the following:

1) Sensor plug resistance check.

2) Final check.

5. RISER ASSEMBLY.

6. STEERING LINE PULL LOOP TACKINGS REPLACEMENT.

Materials Required

Specification or Part Number	Nomenclature
GGG-N-202	Needle, Sailmakers
V-T-295	Thread, Nylon, Size A, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Separate the risers as necessary to expose the steering line, guide ring, and pull loop.

b. Ensure the eye in the steering line is over the loop on the riser (Figure 2).

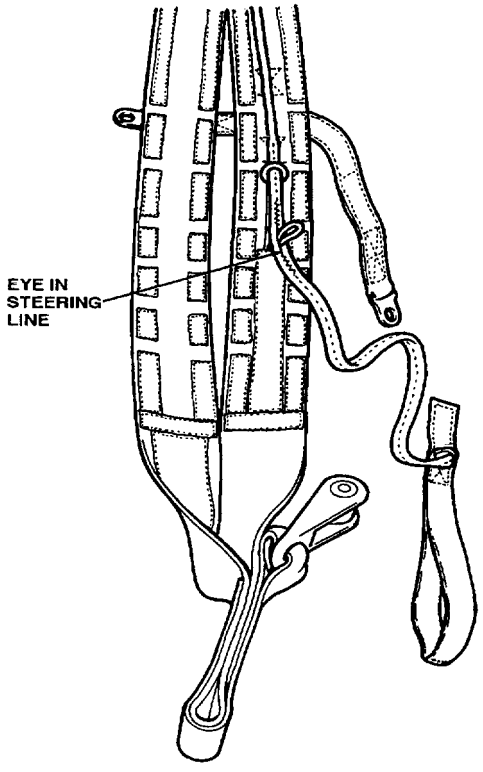

Figure 2. Eye in Steering Line

c. Ensure the steering handle tab is positioned in the loop on the riser (Figure 3), and the hook and pile fastener on the steering handle and riser are mated.

d. Form the excess steering line from the handle into a loop and lay the loop alongside the red handle (Figure 3).

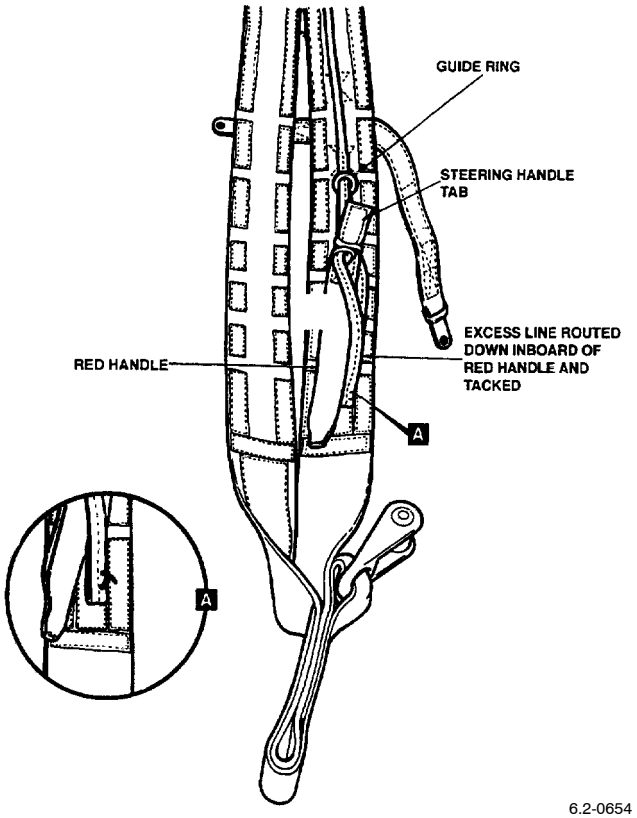

Figure 3. Replacement of Steering Line Pull Loop Tackings

e. Using a needle and a single length of thread, pass the needle down thru the loop in the steering line and the riser about 1/4-in. from the end of the loop, insure tacking does not pass thru red handle, then back up thru the riser, making sure that the needle reappears to one side of the steering line loop and not thru it; tie off (Figure 3).

f. Ensure the steering line is routed centrally between the risers, mate the risers using the hook and pile fastener and reposition the riser on the headpad using the hook and pile fastener.

7. INSTALLATION OF UPPER RISER COVER.

NOTE

Riser cover will be changed every 728 day inspection or removed anytime for cause.

a. Remove old or worn riser cover.

b. Tuck riser cover as far as possible under the container lid lip (Figure 4).

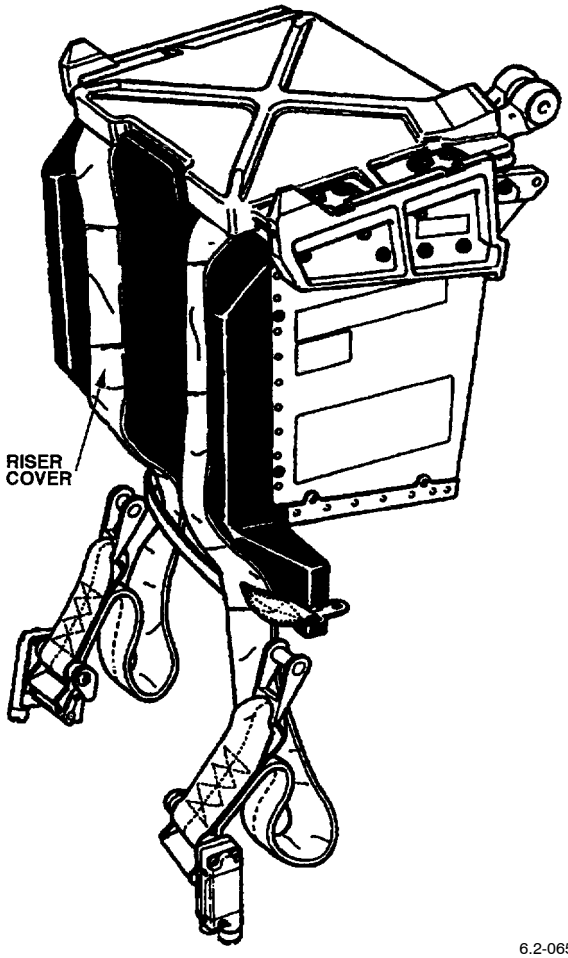

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Figure 4. Installation of Riser Cover

c. Install the riser cover on the riser by folding it over the top webbing layer of the riser. Secure the hook fastener to the pile tape.

d. Secure front and rear risers together by securing riser pile fastener tape to riser hook fastener tape. (QA)

e. Repeat step c for the other riser.

8. RISER COVER MODIFICATION.

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon OD, Type IX, 3-in., Class 1, 1A, or 2
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove new riser covers from package.

b. Cut 3-inch length of 3-in. webbing. Sear cut ends.

c. On connector link cover end, mark 1 1/2-in. from end.

d. On riser cover, fastener pile side, lay 3-in. length of webbing on seared end at mark on riser cover, with excess length toward connector link.

e. Sew a 1/2-in. box-X, 1/8-in. from webbing edge, using size E thread, backstitch 1/2-in.

f. Repeat steps b thru e for opposite cover.

g. During installation of riser covers on risers, remove headpad and route 3-in. wide webbing under cover lid lip.

h. Install headpad.

9. FABRICATION AND INSTALLATION OF LOWER RISER COVER.

Support Equipment Required

Part Number	Nomenclature
—	Hot Knife
—	Shears
—	Square

Materials Required

Specification or Part Number	Nomenclature
MIL-C-7219	Cloth, Nylon Type III, Class 1 Sage Green
MIL-F-21840	Fastener Tape, Hook, 5/8-in. Wide, Type II, Class 1, Sage Green
MIL-F-21840	Fastener Tape, Pile 5/8-in. Wide, Type II, Class 1, Sage Green
V-T-295	Thread, Nylon, Size E, Type I or II, Class A, Sage Green

NOTE

If several riser covers are to manufactured, it is recommended that a flat pattern (Template) be fabricated to ensure consistent repeatability.

a. Lay out a 15 1/4 x 5-in. rectangle (Figure 5).

b. On the bottom left side measure and mark in 4 3/8-in. Repeat procedure on the top line.

c. Using square and starting on the bottom line, at the 4 3/8-in. mark, measure up 3/8-in.

d. Using square, on the top line, at the 4 3/8-in. mark, measure down 3/8-in.

e. On the far right side, measure and mark 3/8-in. from top and 3/8-in. from the bottom.

f. Using straight edge, connect the top 3/8-in. marks.

g. Using straight edge, connect the bottom 3/8-in. marks.

h. Using hot knife and straight edge sear cut on lines measured and drawn in the above steps.

i. At the 4 3/8-in. mark, sear cut a slit an additional 3/8-in. down from top and up from bottom. This is to allow the outside edges to be folded.

j. Fold edges over 3/8-in. and sew 1/16-in. from seared edge.

k. Cut two pieces of 5/8-in. hook fastener tape 10-in. long. With folded side up, starting at the 3/8-in. slit, place fastener tape 1/16-in. from top edge and sew in place with a box stitch. Box stitch should be 1/16-in. inboard of fastener tape.

l. Repeat step k for bottom edge.

m. Cut two pieces of 5/8-in. pile fastener tape 10-in. long. With folded side down, starting at the 3/8-in. slit, place fastener tape 1/16-in. from top edge and sew in place with a box stitch. Box stitch should be 1/16-in. inboard of fastener tape.

n. Repeat step m for bottom edge.

o. Cut a 4-in. piece of pile fastener tape. Place fastener tape 1/16-in. from top left edge and sew down with ”E” thread. Box stitch should be 1/16-in. inboard of fastener tape.

p. Cut a 4-in. piece of hook fastener tape. Place the top edge of fastener tape, hook side facing fold, 1/8-in. from bottom left edge. Sew in place with single stitch, backstitch 1/2-in. each end.

q. Installation:

(1) At Parachute Harness Sensing Release Unit (PHSRU) end of riser, separate front and rear riser.

(2) Starting with larger riser end, install lower riser cover on each rear riser by mating pile fastener on cover to hook fastener on riser webbing.

(3) Ensure the lower riser cover is installed as close as possible to the riser stitching that secures the chaff webbing to the riser loop end.

(4) Ensure the hook and pile fasteners on lower riser cover and rear risers are mated.

(5) Join front and rear riser webbing together.

10. INSTALLATION OF LOWER RISER COVER.

Materials Required

Specification or Part Number	Nomenclature
1979AS500-100	Riser Cover Assembly

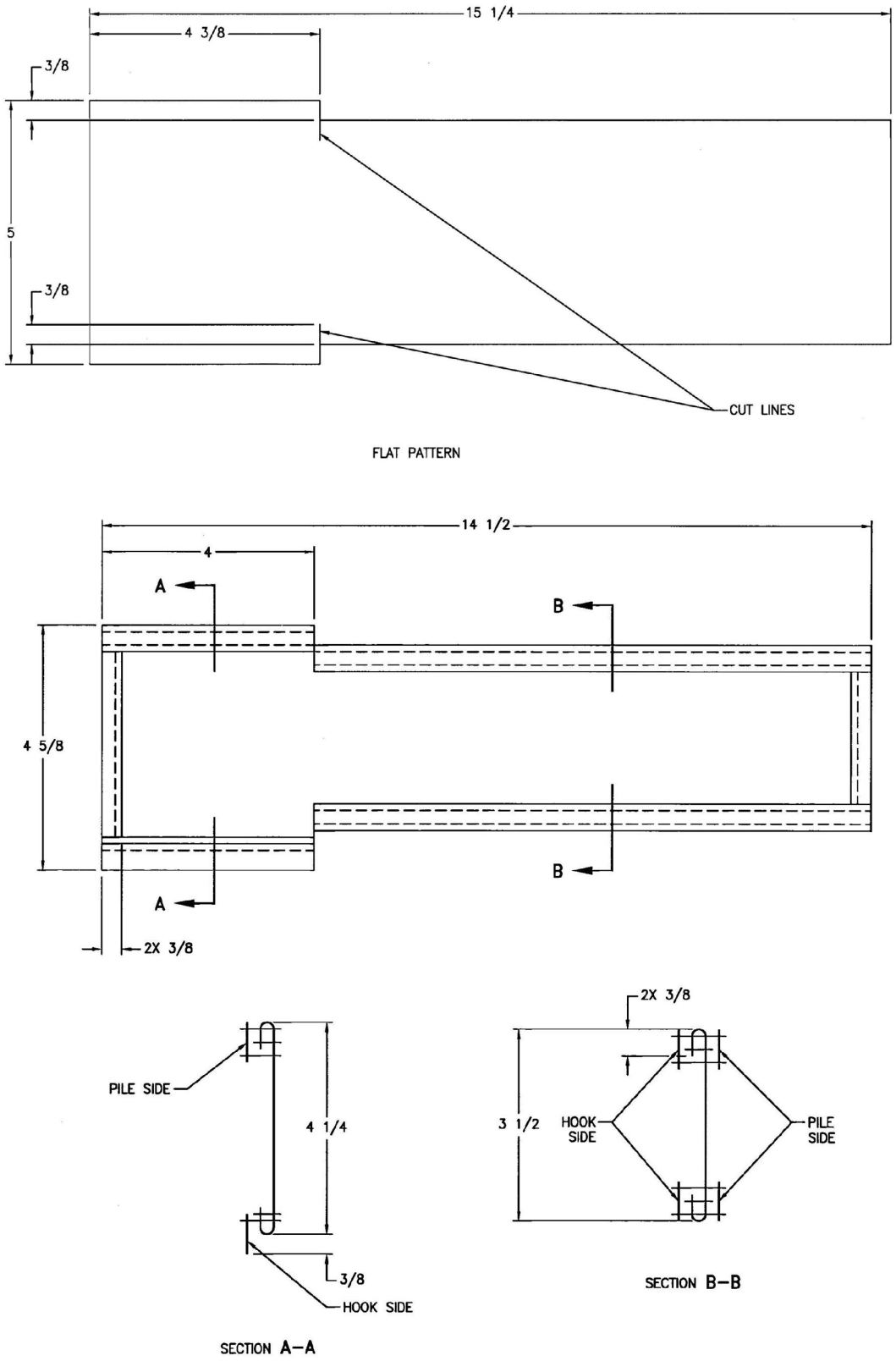

Figure 5. Lower Riser Cover Fabrication

NOTE

One parachute riser cover, P/N 1979AS500-100, consisting of one left and one right riser cover will be sufficient to retrofit the left and right risers of two A/P28S-32(V) parachute assemblies.

a. Remove one new riser cover, P/N 1979AS500-100, from supply package.

b. From top edge of cover with short (4-inch) extension, measure down 14 1/2-in., mark, and sear cut.

c. Using the cut riser cover as a template, lay it over the remaining portion of the cover, mark and sear cut an exact duplicate of the first cover. (There will be excess riser cover remaining that will be disposed of.)

d. At parachute harness sensing release unit riser end, separate front and rear riser. Starting with riser cover end opposite sear cut end, install modified riser cover on each rear riser by mating pile fastener on cover to hook fastener on riser webbing. Ensure modified riser cover is installed as close as possible to the riser stitching that secures the chaff webbing to the riser loop end. Ensure hook and pile fasteners on modified riser covers and rear risers are mated. Join front and rear riser webbing together.

e. Inspect riser and riser covers to ensure that modified riser covers are mated to the rear risers and the front and rear risers are mated together.

f. Repeat steps a thru e for opposite side riser.

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INTERMEDIATE MAINTENANCE

PACKING PROCEDURES

A/P28S-32 PERSONNEL PARACHUTE ASSEMBLY

PART NUMBERS MBEU147710, MBEU147710-1, MBEU147711, MBEU147712, MBEU147713, and MBEU148030

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1 thru 2	11	9	11	18 thru 19	11	31	11
3 thru 8	9	10 thru 17	9	20 thru 30	9		

Reference Material

Cartridge Actuated Devices (CADS) and Propellant Actuated Devices (PADS) (IETM) . . . . . NAVAIR 11-100-1.1
Introduction, Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdowns, Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration . . . . . WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment . . . . . WP 005 00
Parachute Packing Press, GSU-342/E . . . . . NAVAIR 16-30-710

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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 629	11 Sept 97	SJU-17(V)1-A Canopy Breaker	1 Jun 98	31 Dec 2002
ACC 672 Amendment 2	30 Jan 03	A/P28S-32(V) 1, 2, 3, 4, 6 Parachute Lower Riser Cover Installation (RAMEC PAX 4613-02-02)	1 Apr 03	30 Jun 2007

1. GENERAL.

a. Packing instructions are provided with the assumption that they will be carried out under ideal conditions in a parachute loft, Work Package (WP) 003 00. When a parachute assembly must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

b. In no case shall the packing procedure be interrupted after the operation has started. If the packing operation is interrupted due to unforseen circumstances, the parachute assembly shall be completely repacked as detailed in this WP.

NOTE

Parachute assemblies may be left unattended in the SOAK mode out of normal working hours at the discretion of the users governing authority.

c. Quality Assurance (QA) points have been included in the packing procedures. When a procedural step is followed by "(QA)", there is a quality assurance requirement. Witnessing of QA steps may be delayed by QA if their satisfactory completion is verified in later steps.

d. During the unpacking/packing procedures, packer shall be positioned on left side of packing table, and helper on right side when viewed from riser end of table.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
MBEU143001	Block, Support, RH
MBEU143002	Block, Support, LH
MBEU143003	Block, Support, Front
MBEU143004	Block, Support, Rear
MBEU143005	Block, Support, Lower
MBEU143000	Box Assembly, Packing
MBEU149008	Block, Packing, Short
MBEU149009	Block, Packing, Intermediate
MBEU149010	Block, Packing, Long
MBEU149516	Block, Packing, Loose-Large
MBEU149517	Block, Packing, Loose-Withdrawal Line
MBEU149526	Block, Packing, Loose-Small
PIA-C-5040	Cord, Nylon, Type 1
MBEU149527	Stowage Aid, Deployment Sleeve
GGG-G-17C	Gauge, Feeler, 0.002-in.
TMA2	Hex Head Driver 1/16 in. Bit
Refer to WP 005 00	Hook, Packing (2)
11-1-3512	Line Separator, Small
MBEU149533	Block, Packing, Support, LH
MBEU149535	Block, Packing, Support, Front
MBEU149524	Pin, Removal Tool
MBEU143026	Press, Parachute Packing GSU-342/E
F-900 Torque Seal (Color Optional)	Sealing Compound
LM	Rubber Mat
LM	Padded Block
—	Screwdriver, Torque Tip, Size 8
MBEU149518	Spacer, RH
—	Long Bar
MIL-T-50036A	Talc, Technical (Dusting Powder)
TSQ6	Torque Meter
Refer to WP 005 00	Shot Bag (4)
—	Wrench, Socket, 3/8-in.

Part Number	Nomenclature
Refer to WP 005 00	Tool, Securing, Mouthlocks (4)
MBEU149534	Wedge, Lid, Fitting
—	Wrench, Torque, 0-25 in-lbs.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size A, Type I or II, Class A
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

a. Ensure that all support equipment and materials required are available prior to starting.

b. Inspect packing tools for nicks, burrs, or sharp edges that may cause damage to the parachute assembly.

c. Count and record number of packing tools.

d. Clean packing table.

3. PREPARING THE PARACHUTE PACKING PRESS.

a. Prepare the parachute packing press and locate the packing box assembly as follows (Figures 1 and 2):

(1) Perform preoperational test of the parachute packing press as detailed in NAVAIR 16-30-710.

(2) Make sure:

(a) Personnel in adjacent work area are aware that press is to start operation.

(b) Soak switch to SOAK OFF.

(c) Electrical power supply connected.

(d) Press table is at lower limit (alarm canceled) as detailed in preoperational test.

(e) Both displays show 0.0T's.

4. UNPACKING THE PARACHUTE ASSEMBLY.

a. Place assembly on rubber mat on packing table, headpad uppermost.

b. Remove the four pan head bolts securing the headpad and remove the headpad.

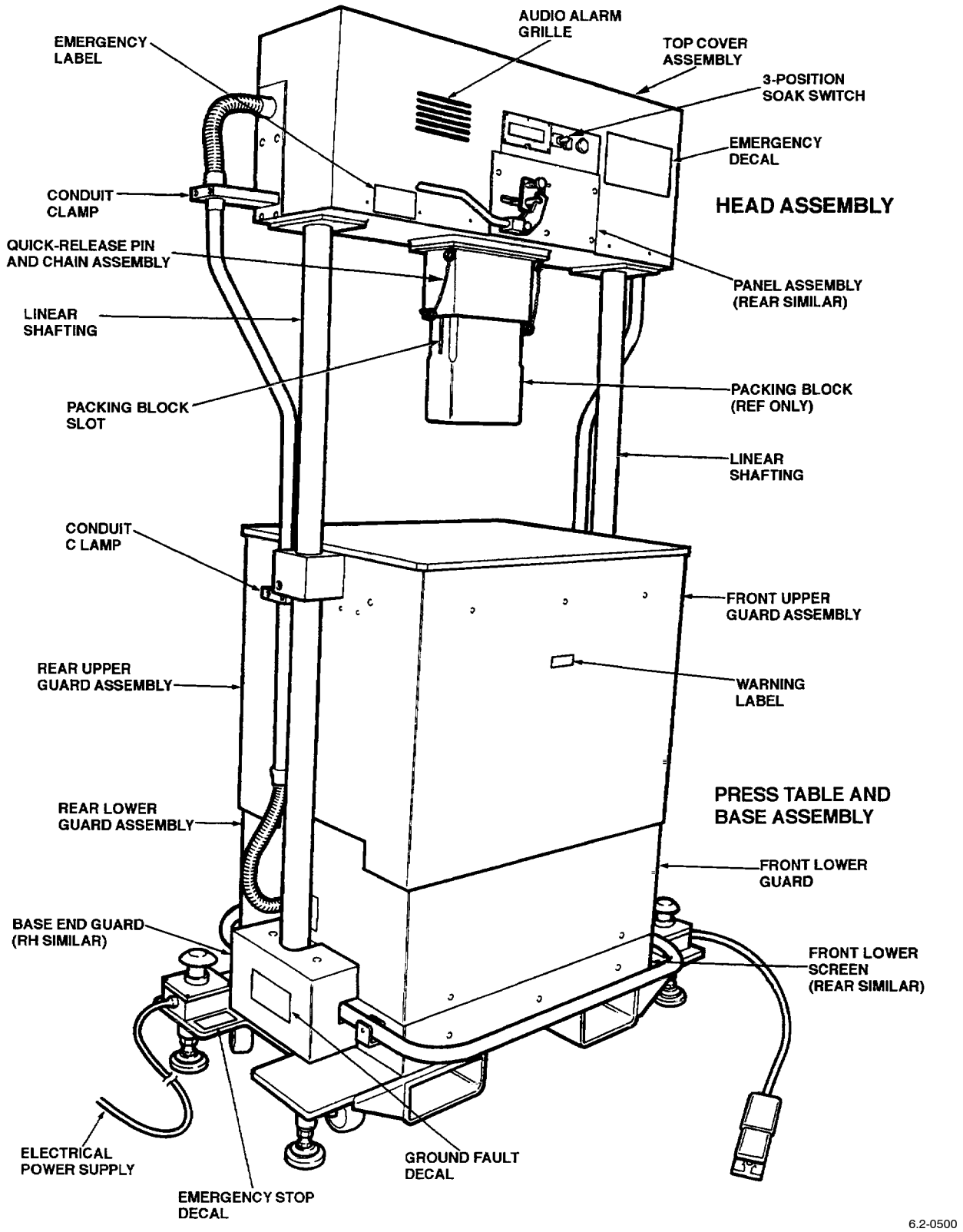

Figure 1. The Parachute Packing Press GSU-342/E

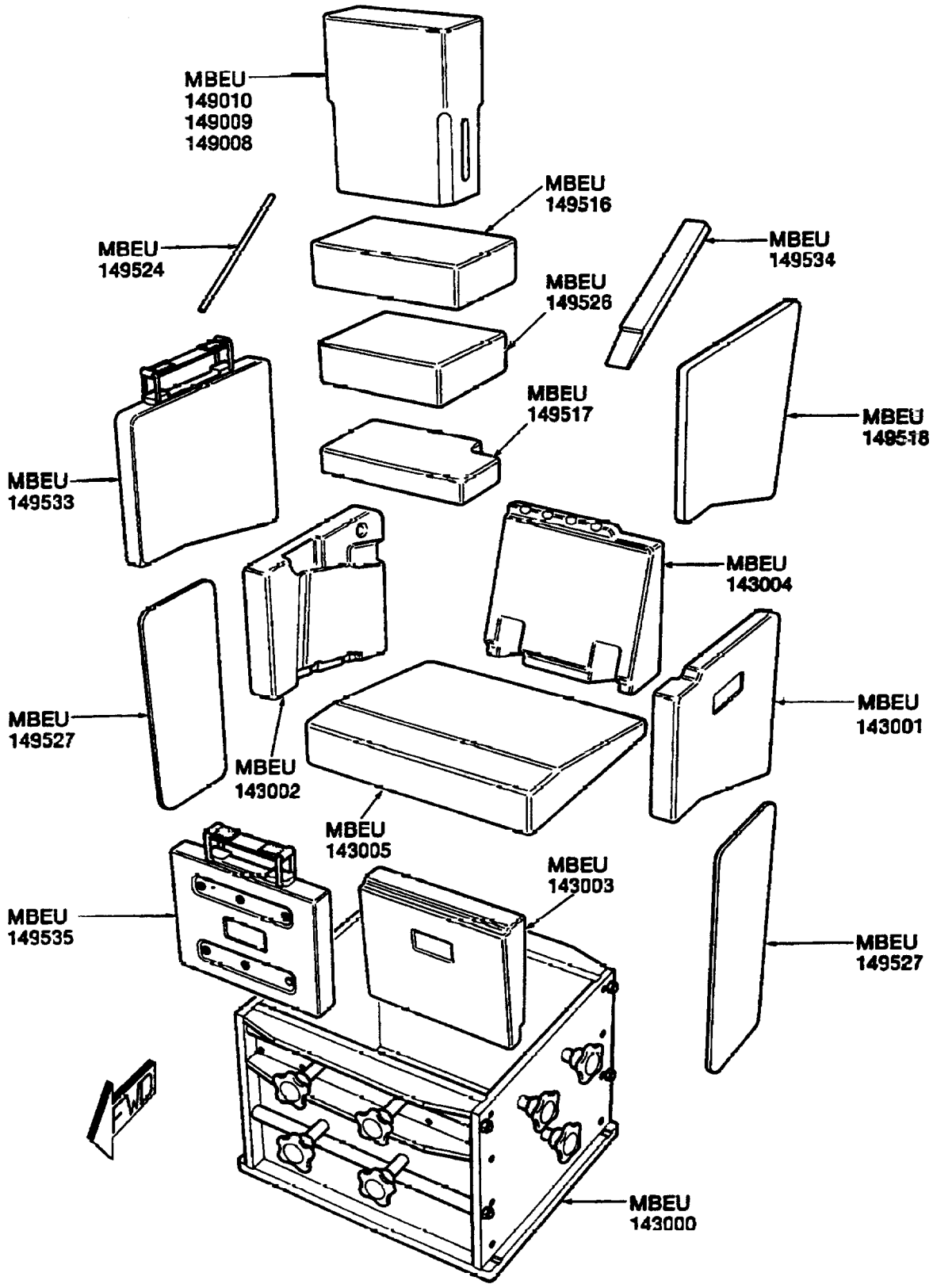

Figure 2. Parachute Packing Accessory Set MBEU149530

c. Remove the lid locking pin securing bolt at the rear LH side of the container, save for reuse (Figure 3). (QA)

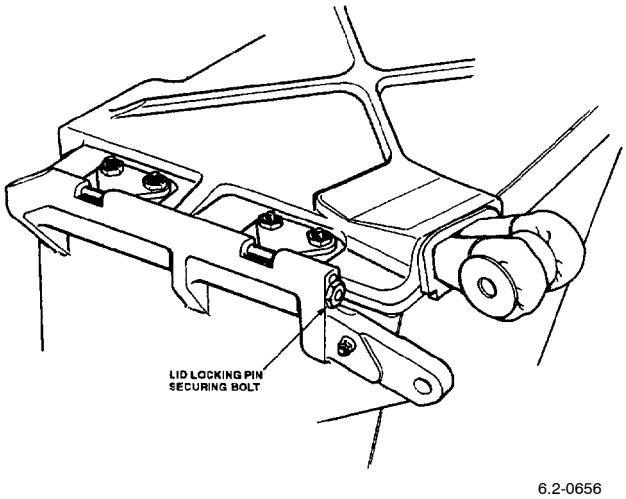

Figure 3. Removing the Lid Locking Pin Securing Bolt

d. Place the packing box on the press table with the four clamp handwheels towards the front (SOAK switch side) of the press.

NOTE

References to RH/LH are as viewed from the front of the press (SOAK switch side) or front of packing box (four handwheels).

e. Unscrew the front and RH packing box handwheels until they are flush on the inside of the packing box.

NOTE

To ensure correct installation, shallow end of lower support block (MBEU143005) must be inserted into packing box first.

CAUTION

Extreme care must be used when handling all support blocks. To prevent damage to blocks.

f. Install the lower support block (MBEU143005) in the support box, shallow end first and facing aft.

g. Install the LH support block (MBEU143002) nameplate aft, shallow end upward, and rear support blocks (MBEU143004).

h. Position the parachute assembly in the packing box, risers forward and routed down the front of the packing box and located against rear block.

i. Install the RH support block (MBEU143001).

j. Install the LH support packing block (MBEU149533) and the RH spacer (MBEU149518).

k. Install the front support block (MBEU143003) with lower cutaway towards parachute container and then install front support packing block (MBEU149535).

l. Tighten the RH handwheels and the front handwheels evenly until the pack is firmly supported.

m. Install the long packing block (MBEU149010) into the packing press and secure with the quick-release pins.

CAUTION

Use padded block to protect container.

n. Place padded block on parachute pack lid. Position the loose-small packing block (MBEU149526) placed slightly to right, flat on the parachute pack lid, using the foot pedal, raise the press table to bring the loose-small packing block up to, and just in contact with, the long packing block (MBEU149010). Align packing box slightly left to centralize long packing block (MBEU-149010) on loose-small packing block (MBEU149526).

o. Make sure both displays show LOAD 0.0T's and UP DEMAND.

p. Make sure that the packing box and packing blocks are correctly centered and aligned.

CAUTION

To prevent damage to parachute assembly, when performing next step apply only sufficient pressure to achieve removal of lid locking pin.

q. Insert the pin removal tool (MBEU149524) in the foward lid locking pin hole.

r. Using the foot pedal, carefully raise the press table and ensure the following:

(1) Packing box is positioned correctly.

(2) Packing blocks are positioned correctly.

(3) Both displays show the load indicated in T's.

s. Carefully apply gentle pressure by raising the press table until a slight gap exists between the upper surface of the lid securing lugs and the underside of the lid securing pin.

t. Remove the lid locking pin by continually tapping the pin removal tool (MBEU149524) driving out forward to aft. Inspect the lid locking pin for damage, and retain for reinstallation. (QA)

u. Remove the pin removal tool.

v. Fully lower the press table using the footbar, and ensure the following:

(1) Long packing block (MBEU149010) is restrained as table lowers and lid rises.

(2) Load displays indicate 0.0T's as load is released.

(3) Press table is fully lowered.

w. Remove the loose-small packing block (MBEU149526) from the lid, and remove the lid from the parachute assembly. Remove the long packing block (MBEU149010).

x. Fully release the front and RH handwheels on the packing box.

y. Remove the front support packing block (MBEU149535), front support block (MBEU143003), and LH support packing block (MBEU149533).

z. Remove the parachute assembly from the packing box and place on a rubber mat at the foot end of the packing table, aft face down, open end towards the head of the table.

5. REMOVING THE PARACHUTE FROM THE CONTAINER.

a. Restrain the container at the foot of the table.

b. Grasp the withdrawal line and pull the deployment sleeve from the container.

c. Continue pulling until all the suspension lines are extracted from the stowage tray in the container.

d. Continue to pull until all suspension lines are pulled from the deployment sleeve, and the deployment sleeve is pulled off the canopy.

e. Attach tension strap hook to canopy vent lines, insert tension hooks into connector links and insert hooks into packing table, and apply tension.

f. Remove the four nuts and sealing washers from the studs in the lower sides of the container and retain for reuse. Remove the stowage tray. (QA)

g. Pull on the suspension lines adjacent to the container to break the thread securing ties, extract the connector links from the stowage tray and lay the risers on the packing table either side of the container.

h. Remove the parachute container, lid, stowage tray, and deployment sleeve from the packing table. Retain the lid locking pin securing bolt with the container, but do not reinstall bolt.

i. Remove any loose equipment/debris (broken thread ties) from the packing table.

j. Remove and scrap used riser covers.

6. INSPECTION (SPECIAL).

a. Maximum scheduled repack cycle is 2190 days.

7. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Parachute Harness Sensing Release Unit Cartridge) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be rebased if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Components without a service/total life shall be removed from service if the components do not pass inspection, as determined by Quality Assurance Representative (QAR) or Collateral Duty Inspector (CDI).

g. Change lower steering lines when canopy is replaced.

h. Check date placed in-service and date of manufacture on each parachute part for service/total life as follows:

Nomenclature	Service Life (Yr)	Total Life (Yr)
Battery	4	4
Canopy Assembly	None	15
Cartridge MW19	Refer to NAVAIR 11-100-1.1	
Cross-Connector Strap	(See Note 1)	(See Note 1)
Deployment Sleeve	None	15
Electronics Package Assembly	None	8
Parachute Withdrawal Line	None	15
Riser Assembly	None	15
Stowage Tray	None	15

NOTE 1: Replace at Riser Assembly replacement.

(1) Check markings for completeness, legibility, and agreement with information on Parachute Record (OPNAV 4790/101), mark if necessary.

(2) Compare configuration of parachute assembly to that shown in WP 026 04 Illustrated Parts Breakdown and Record of Applicable Technical Directives.

8. PARACHUTE WITHDRAWAL LINE.

a. Webbing for contamination, cuts, fraying, deterioration, and loose or broken stitching.

b. Spool for attachment and condition.

c. Clamp for attachment and condition. Verify countersunk half is at bottom. Check location dimension (Figure 4). (QA)

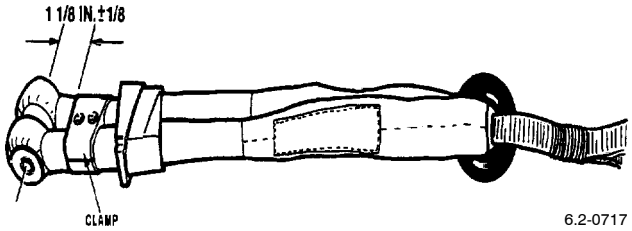

Figure 4. Condition of Withdrawal Line Clamp

d. Seal for condition and location over clamp (Figure 5).

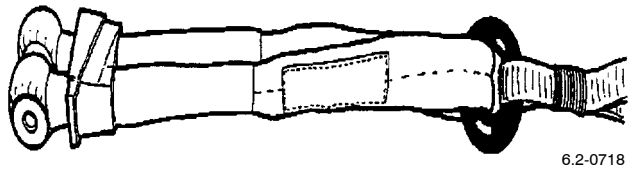

Figure 5. Seal for Location

9. DEPLOYMENT SLEEVE AND STOWAGE TRAY.

a. Withdrawal line attachment to deployment sleeve (Figure 5). (QA)

b. Upper ring on deployment sleeve for nicks, burrs, and corrosion.

c. Deployment sleeve fabric, seams, tapes, elastic for cuts, holes, ruptures, contamination, and elastic failure.

d. Security of suspension line hesitator loops.

10. CANOPY ASSEMBLY.

a. Canopy skirt hem, fabric surface, radial seams, vent hem, cross seams, water deflation pockets, pocket retaining tapes, and netted panels for cuts, hole ruptures, contamination, deterioration, and loose or broken stitching.

b. Le-Moigne slots for condition.

c. Suspension lines for fraying, contamination, burns, presence of twists, snags, and loops.

d. Attachment and condition of steering lines at suspension lines 5 and 16.

e. Steering line rings for attachment and corrosion.

f. Correct steering line installation. (QA)

11. RISER ASSEMBLY.

a. Webbing for contamination, rust at points of contact with metal parts, cuts, twists, fading, wear, fraying, abrasions, loose or broken stitching and broken tackings.

b. Steering line handle for wear, broken stitches, and correct attachment to the lower steering line.

c. Hook and pile tape on left and right riser assemblies for serviceable condition and security of attachment.

d. Steering line riser tackings for security of attachment.

e. Parachute riser retention strap for wear, broken stitches, and correct attachment to left riser.

f. Steering line handle secured to riser by hook and pile fastener tape.

g. Roller fitting assembly for corrosion, damage, and security of attachment.

h. Retention strap lug assembly for corrosion, distortion, sharp edges, and security of attachment.

i. Cross-connector straps for contamination, cuts, fraying, and loose or broken stitching.

j. Proper attachment of cross-connector straps to connector links.

12. SUSPENSION LINE CONTINUITY CHECK.

a. Suspension lines for dips, twists, and proper sequencing (Figure 6). (QA)

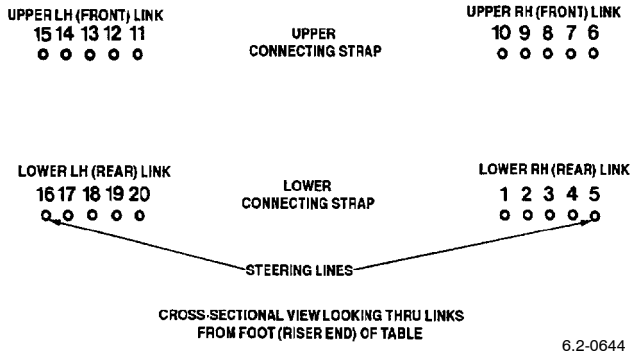

Figure 6. Suspension Line Continuity Check

b. Steering lines are attached to line 5 and 16.

c. Torque seal unbroken with yoke and plate assemblies installed with knurled portion facing up and screwheads facing outboard (Figure 7). (QA)

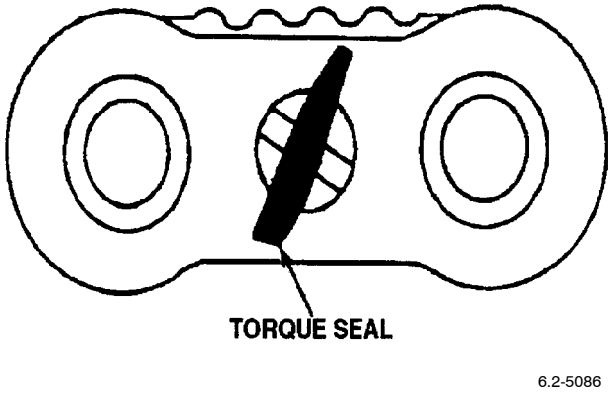

Figure 7. Torque Seal on Connector Link

d. Connector links for corrosion, distortion, bends, dents, nicks, burrs, sharp edges, and cracks.

e. Connector links for defective yoke and plate assemblies. Maximum of 1/32 in. of play allowed in the plate.

f. Connector link tie, installed, and security of attachment.

13. CONTAINER ASSEMBLY.

a. Interior of headbox for foreign objects, corrosion, and structural integrity.

b. Security of bolted on fittings.

c. Container water seal for damage and security of attachment.

d. Container lid for damage, distortion, security of securing lugs, water seal for damage, and security of attachment.

e. Container headpad for cracks, cuts, wear, contamination, hook and pile fastener tape for presence, and security of attachment.

f. Container for cracks, chips, dents, and deterioration.

g. Decals and labels for presence and security of attachment.

14. PREPARATION OF CANOPY.

15. WHIPPING AND FOLDING CANOPY. Whip and fold canopy per (Figure 8).

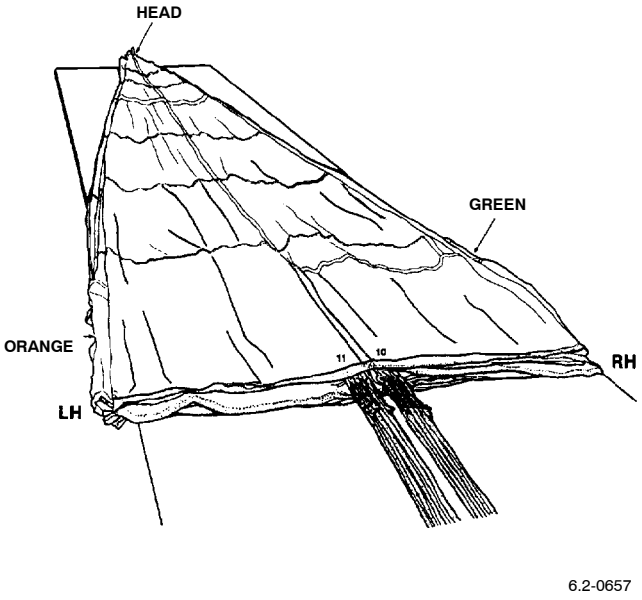

Figure 8. Canopy On Table and Apex Attached To Table Hook

NOTE

Neatness in folding the canopy is important since it will assist stowing into the deployment sleeve which, in turn, contributes towards correct deployment.

a. Packer and helper shall lift suspension lines numbered 11 and 10 up and outward. While holding suspension lines up, packer and helper shall whip gore hanging from line outward.

b. Raise next suspension line upward toward line previously held in hand. Use a rapid circular motion.

c. Continue whipping operation for all gores. Move whipped gores rapidly back and forth across table. Ensure that radial seams are not overlapped by gore material.

d. Stretch the two groups of suspension lines to edges of packing table with gores hanging over sides. Packer and helper, while holding suspension line groups at edges of packing table, shall simultaneously flap hanging gores rapidly up and down, in a whipping motion, to end wrinkles.

e. Packer shall flap top gore up and down at skirt hem center while helper holds bottom gore at skirt hem center.

f. On signal, packer and helper shall pull their respective gores at skirt hem centers toward table edges and at the same time, bring suspension line groups to center of packing table.

g. Packer and helper shall insert suspension line groups into their respective slots in the small line separator. Packer shall place shot bag across suspension lines. Packer shall place another shot bag across skirt hem on packer's side of suspension lines.

h. Helper shall rotate all gores as a group, except bottom gore, from helper's side to packer's side of table.

i. Helper shall straighten and smooth bottom gore on helper's side throughout its length from skirt hem to apex.

j. Packer shall return and smooth folded gores on top of shot bag, one at a time, to helper's side of packing table.

k. Place shot bag across skirt hem on helper's side of packing table.

l. Packer shall rotate all folded gores as a group, except bottom gore, from packer's side to helper's side of packing table.

m. Packer shall straighten and smooth bottom gore on packer's side throughout its length from skirt to apex.

n. Helper shall return and smooth folded gores on top of shot bag, one at a time, to packer's side of packing table (Figure 9).

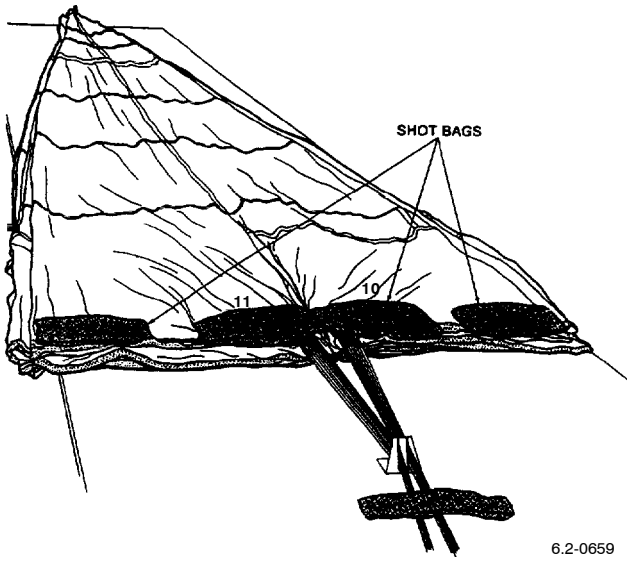

Figure 9. Canopy Folded

o. Remove shot bag from gores. Packer and helper shall grasp skirt hem at gore midsections and rotate toward suspension lines.

p. Packer and helper shall align and count each fold when placing folds back on table. Skirt shall be made neat by having pocket bands aligned in same direction inward on top of each other and gore 11 (orange) is on top (Figure 8).

q. Fold the LH and RH groups of gores at the skirt inboard and upward to the center by grasping the skirt hems at the corners and rotating inboard (Figure 10).

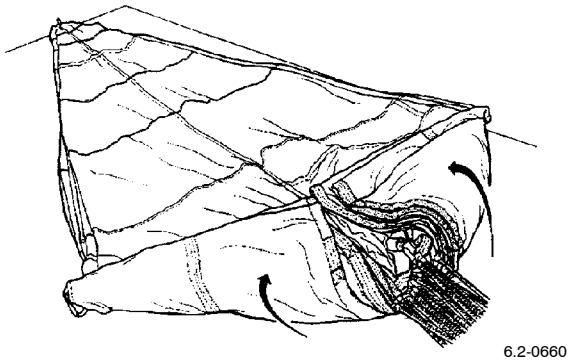

Figure 10. Folding The Canopy Skirt Gores Inboard

r. Fold the RH canopy gores progressively from the skirt to the apex inboard to cover the central seam and then similarly fold the LH group on top of the RH group, aligning the LH gores with the RH outer edge and position shot bags to retain the folds (Figure 11). (QA)

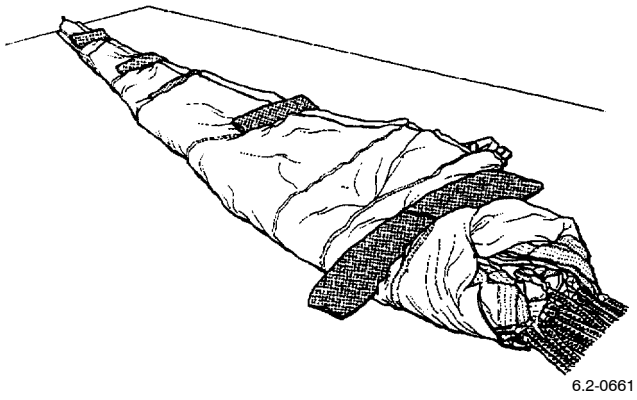

Figure 11. Canopy Folded, Shot Bags Positioned

s. Release the tensioner and connector links, disconnect the apex bridle from the table hook and pull the canopy down the table enough to enable the deployment sleeve to be positioned between the canopy apex and table hook.

16. PREPARATION OF DEPLOYMENT SLEEVE.

a. Position the deployment sleeve at the table head and attach the apex to the table hook, mouthlocks side uppermost (Figure 12).

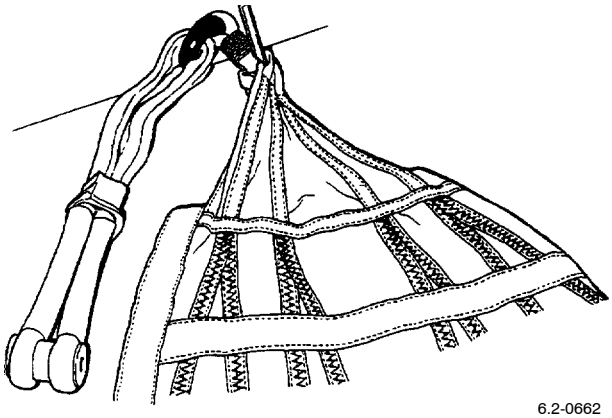

Figure 12. Deployment Sleeve Attached to Table Hook

b. Roll bottom end of deployment sleeve back to first mouthlock loop slots. Further roll the sleeve back over itself to expose the first canopy stowage locking loops (Figure 13).

Figure 13. Deployment Sleeve Folded Back to First Mouthlock Loops

17. STOWING CANOPY IN DEPLOYMENT SLEEVE.

a. Fold the canopy apex bridle down the RH side of the canopy and position the apex in the mouth of the deployment sleeve (Figure 14).

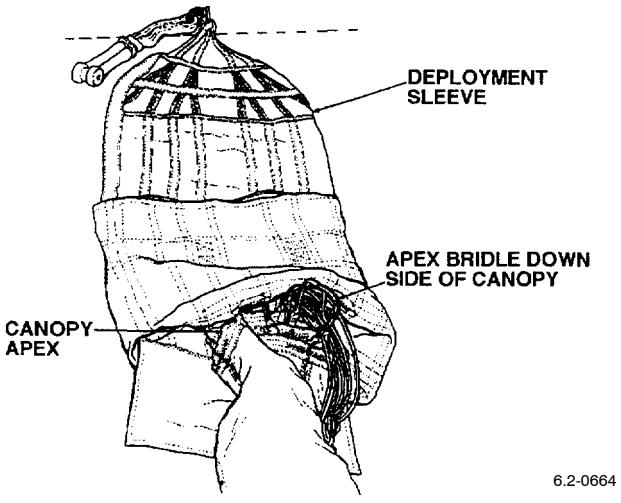

Figure 14. Canopy Apex Located in Mouth of Sleeve

NOTE

Remove shot bags from canopy as canopy is stowed.

b. Locate the canopy apex in the top RH corner of the deployment sleeve with the apex lines routed outboard (Figure 15, Stage 1). (QA)

c. S-fold the canopy into the deployment sleeve RH to LH and LH to RH until the canopy is level with the first mouthlock loops. In stage 2 there should be 6 folds, 80-in. of canopy in the sleeve with the canopy exiting outboard of the RH mouthlock loop (Figure 15, Stage 2). (QA)

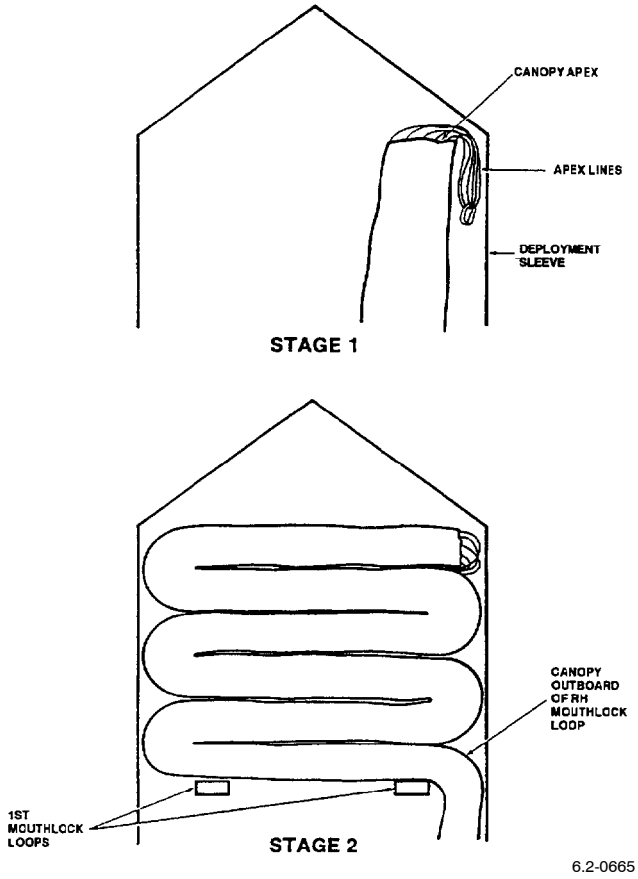

Figure 15. Stowing the Canopy-Stages 1 and 2

d. Pull deployment sleeve down to expose the first mouthlock loops. Pull the first mouthlock loops thru the slots in the deployment sleeve and temporarily secure with the securing tools (Figure 16) ensuring that canopy exits outboard of RH mouthlock loop (Figure 15, Stage 2). Stow bag loop flap toward canopy. (QA)

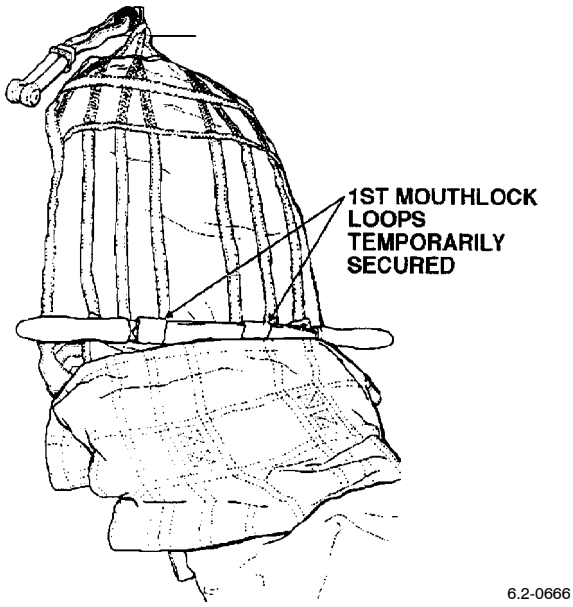

Figure 16. First Mouthlock Loops Secured

e. Continue stowing the canopy in S-fold fashion, RH to LH and LH to RH, into the deployment sleeve until the canopy is level with the second mouthlock loops. In stage 3, there should be 6 folds, 53-in. of canopy in the sleeve with the canopy exiting outboard of the RH mouthlock loop (Figure 17). (QA)

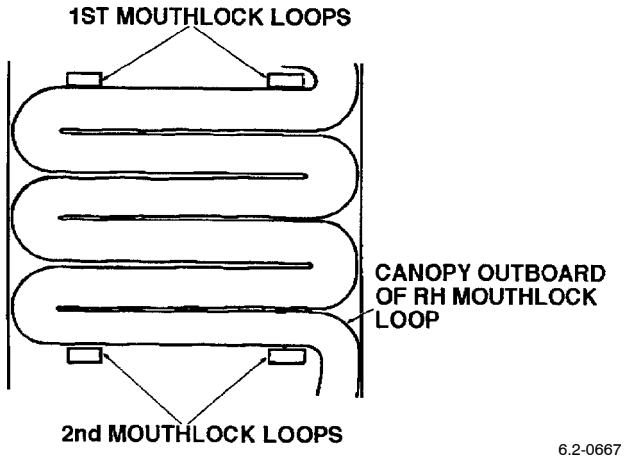

Figure 17. Stowing the Canopy - Stage 3

f. Pull deployment sleeve down. Pull the second mouthlock loops thru the slots in the sleeve and temporarily secure with the securing tools (Figure 18).

g. Remove the shot bags from the periphery of the canopy and pull the deployment sleeve fully down over the canopy (Figure 18). (QA)

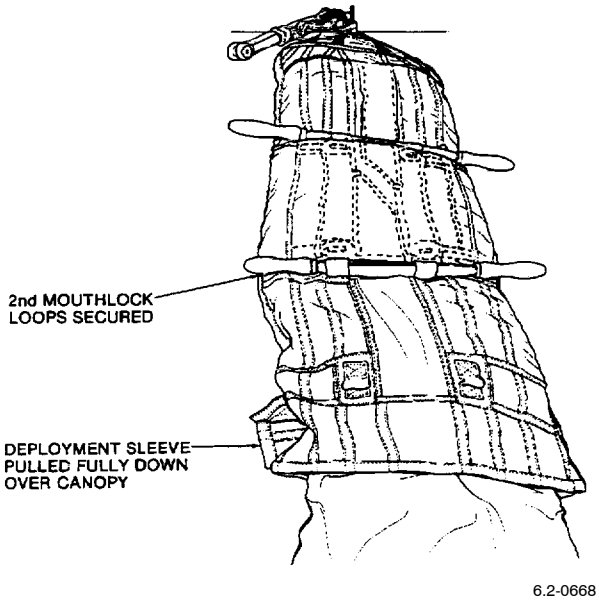

Figure 18. Second Mouthlock Secured, Sleeve Pulled Down Over Canopy

h. Continue to S-fold the canopy into the deployment sleeve, there should be about 40-in. of canopy to be stowed. Stow the canopy skirt fully into the mouth of the sleeve with the suspension lines emerging on the RH and LH sides of the sleeve (Figure 19). Remove small line separator. Make sure that the suspension line double sewn ends are positioned approximately equal on the sleeve (Figure 19). (QA)

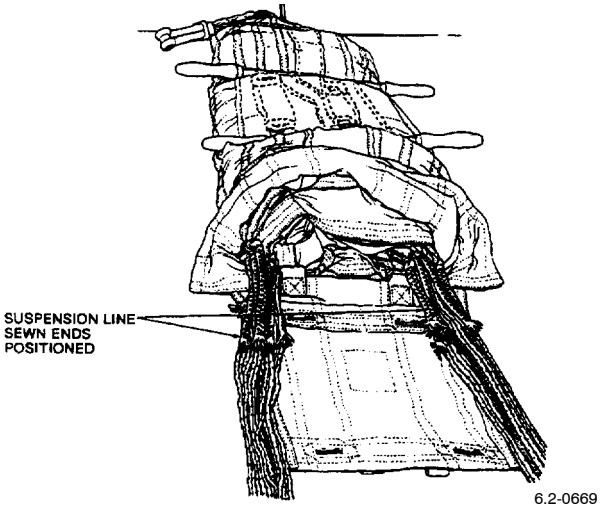

Figure 19. Canopy Skirt Stowed

i. Pass a stowage hook thru the LH elastic loop from outboard to inboard, form a bight in the LH suspension lines and pull the bight thru the elastic loop from inboard to outboard. Make sure that about 2-in. of lines are outboard of the loop and that the double sewn ends are about 1-in. inboard of the loop (Figure 20 and 21).

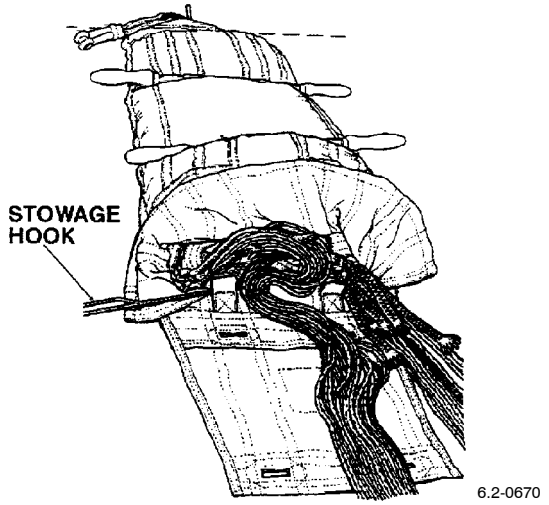

Figure 20. Stowing Suspension Lines in Elastic Loops

j. Pass a stowage hook thru the RH elastic loop from outboard to inboard, form a bight in the RH suspension lines and pull the bight thru the elastic loop from inboard to outboard. Make sure that about 2 in. of lines are outboard of the loop and that the double sewn ends are about 1-in. inboard of the loop (Figure 21). (QA)

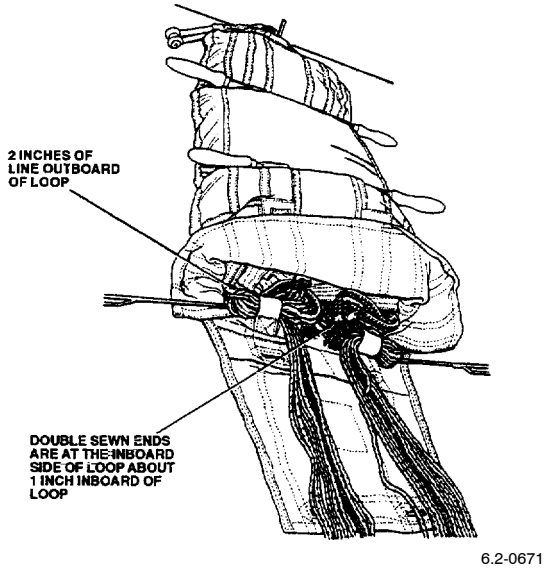

Figure 21. Suspension Lines Stowed in Elastic Loops

k. Remove the stowage hooks. Route the suspension lines centrally on the deployment sleeve bottom flap between the two pairs of slots. (QA)

l. Fold the mouth opening cover outboard edges inboard and the top down to cover the canopy skirt. (QA)

m. Fold the bottom flap up and over the sleeve and pass the two elastic loops on the sleeve upper surface thru the corresponding slots in the flap. Secure the loops with stowage hooks inserted from outboard to inboard (Figure 22). (QA)

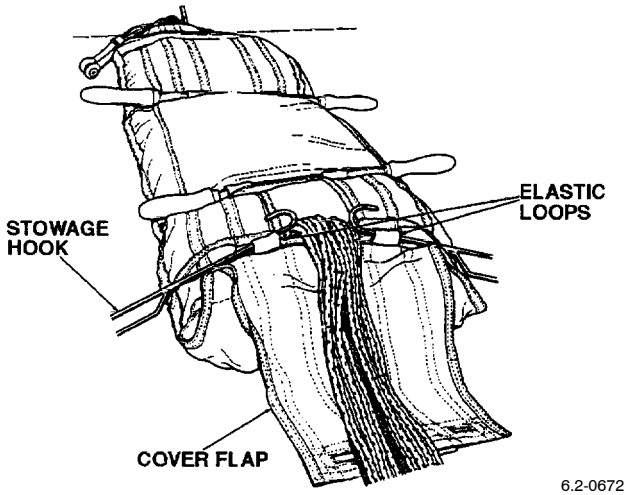

Figure 22. Bottom Flap Lower Elastic Loops Secured

n. Form a bight with all suspension lines and pull thru the LH elastic loop using the stowage hook from inboard to outboard, so that about 2 in. of lines are protruding outboard of the loop (Figure 23). (QA)

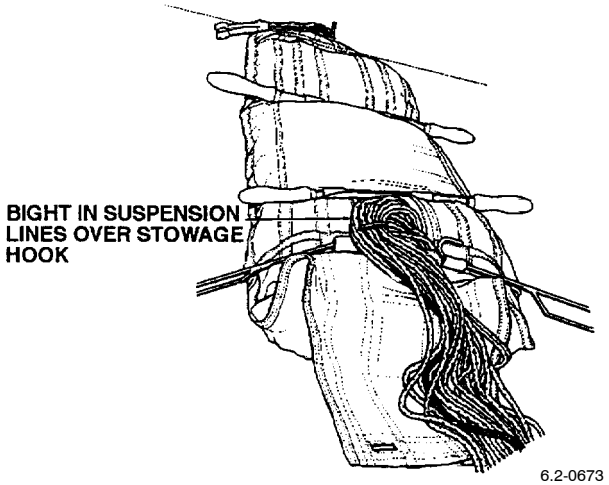

Figure 23. Stowing Suspension Lines in LH Elastic Loop

o. Form a bight with all suspension lines and pull thru the RH elastic loop using the stowage hook from inboard to outboard, so that about 2 in. of lines are protruding outboard of the loop (Figure 24). (QA)

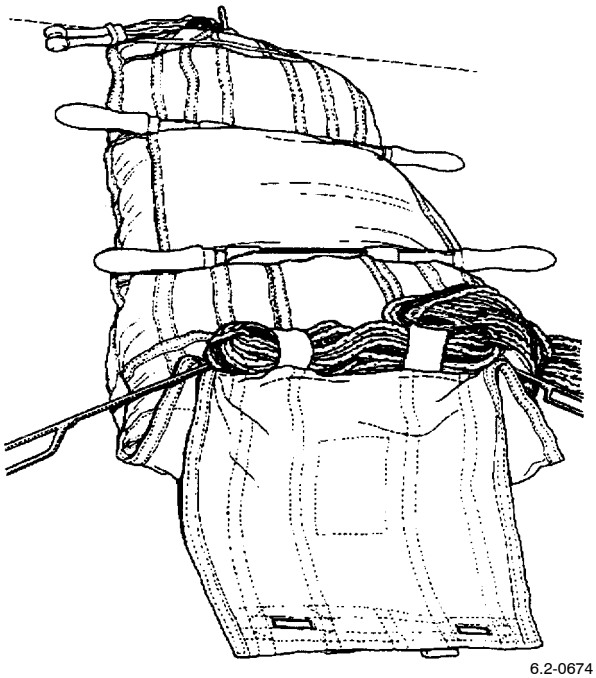

Figure 24. Suspension Lines Stowed in LH/RH Elastic Loops

p. Remove the packer's stowage hooks.

q. Form a large bight in the lines and pass the lines centrally thru the protection tunnel on the deployment sleeve (Figure 25). (QA)

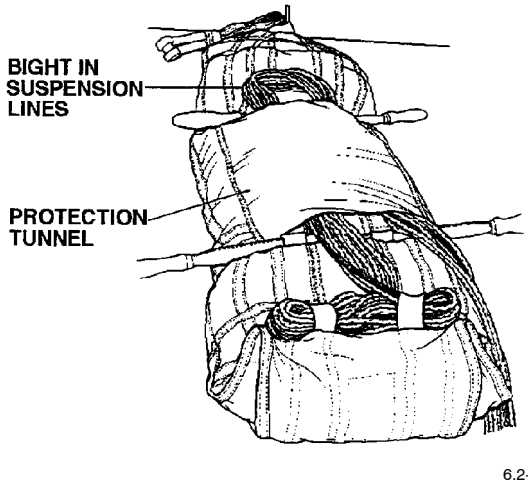

Figure 25. Suspension Lines Passed Thru Protection Tunnel

r. Carefully remove the upper mouthlocks securing tools and insert stowage hooks thru loops from outboard to inboard. (QA)

s. Make a loop in the suspension lines and draw thru the LH loop from inboard to outboard. Cover the LH group of lines in the tunnel with the flap. Make a loop in the suspension lines and draw thru the RH loop from inboard to outboard (Figure 26). (QA)

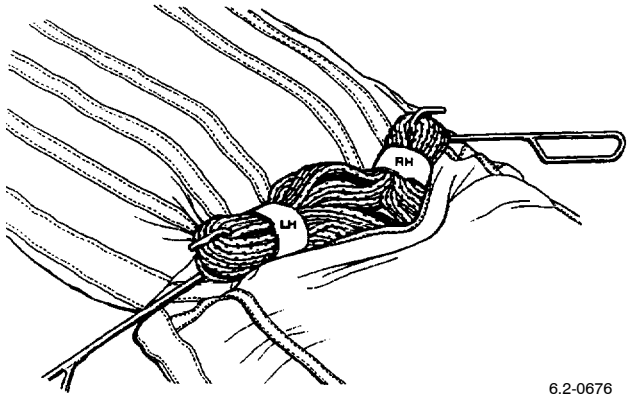

Figure 26. Suspension Lines Stowed in 1st Mouthlock Loops

t. Adjust the loops so that about 1 1/2-in. of lines protrude outboard of the LH and RH loops (Figure 26). (QA)

u. Remove the packer's stowage hooks.

v. Pull up the top end of the protection tunnel to cover the lines stowed in the elastic loops. Arrange the unstowed suspension lines to emerge centrally from the protection tunnel and lay centrally on top of the tunnel leading away to the right. Cover the LH group of lines in the tunnel with the flap (Figure 27).

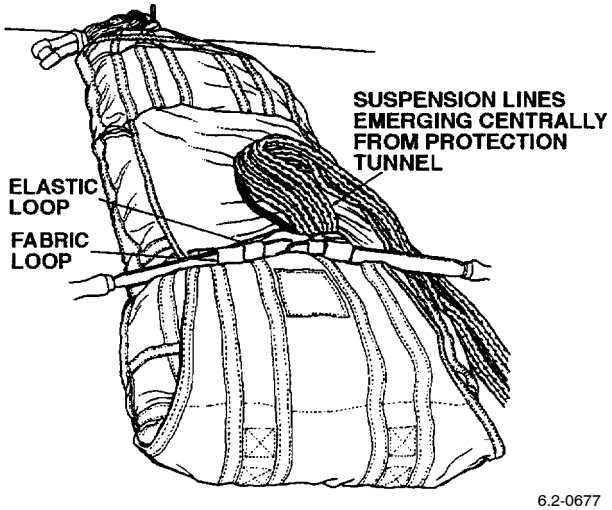

Figure 27. Bottom Cover Flap Temporarily Closed and Secured

w. Fold the bottom cover flap over the lower end of the deployment sleeve so that the two slots in the flap are aligned with the two fabric locking loops adjacent to the end of the protection tunnel (Figure 27).

x. Remove the locking tool from the LH fabric loop, pass the loop thru the matching flap slot and secure the fabric loop and the LH elastic loop on the flap with the locking tool. (QA)

y. Remove the locking tool from the RH fabric loop, pass the loop thru the matching flap slot and secure the fabric loop and the RH elastic loop on the flap with the locking tool. (QA)

z. Carefully remove the locking tools from each pair of loops and insert suspension line stowage hooks, outboard to inboard (Figure 28).

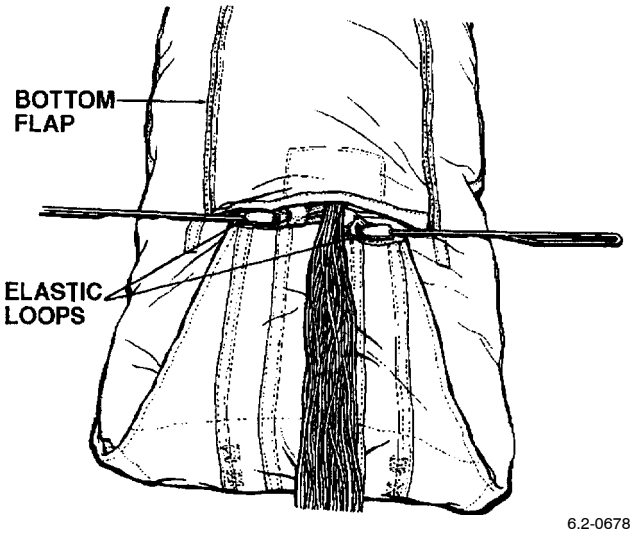

Figure 28. Bottom Cover Flap Temporarily Secured, Suspension Lines Positioned

aa. Route the suspension lines centrally on the bottom flap and between the stowage loops (Figure 28).

ab. Form a 3 in. bight in the suspension lines, and using the stowage tool, draw the loop thru the LH elastic and fabric loops so that about 1 1/2-in. of lines protrude beyond the outboard loop (Figure 29). Ensure that there is enough slack in the lines under the protective tunnel between this stowage and the previous stowage. This will prevent withdrawal of the lines from either stowage due to flexing of the sleeve during installation into the parachute container. (QA)

ac. Form a 3-in. bight in the suspension lines and draw the bight thru both the RH elastic and fabric loops. Make sure that about 1 1/2-in. of lines protrude beyond the outboard loop (Figure 29) and that the portion of lines between the stowages is taut. (QA)

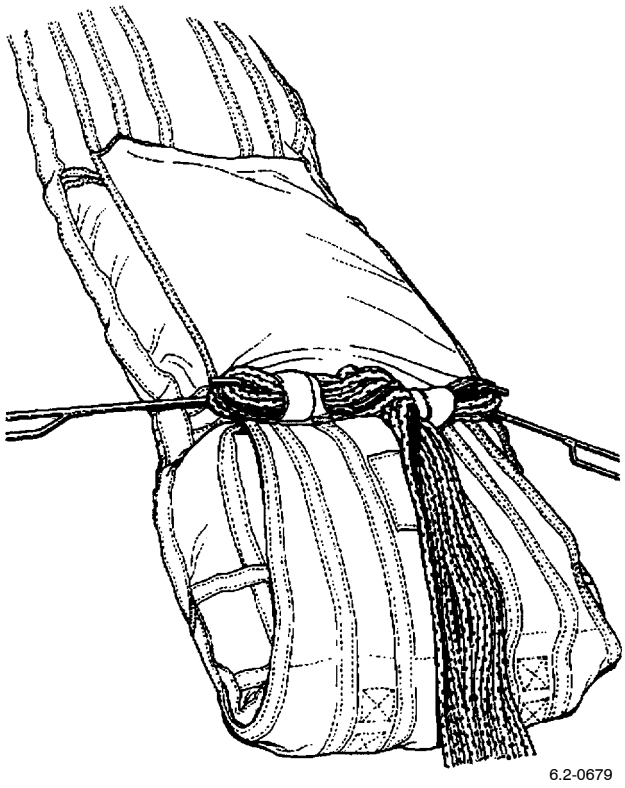

Figure 29. Suspension Lines Stowed in Bottom Flap Locking Loops

ad. Arrange the unstowed portion of suspension lines to lead away centrally from between the two pairs of bottom flap locking loops. Lay the lines centrally on the bottom flap (Figure 30). (QA)

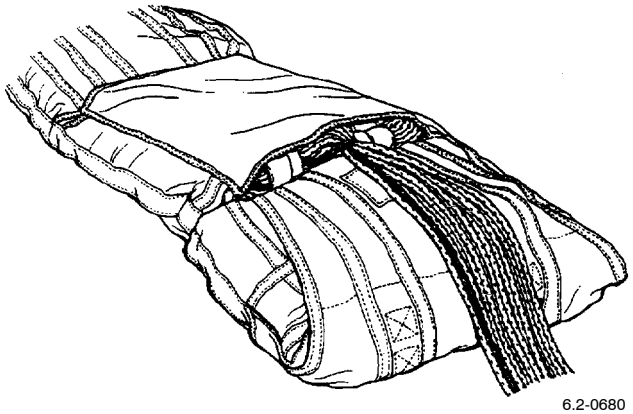

Figure 30. Canopy Stowage Completed

ae. Pull down the protection tunnel to cover the suspension lines stowed in the bottom flap locking loops. (QA)

af. Gently pummel the deployment sleeve to spread the bulk and attain a neat, even shape.

18. STOWING SUSPENSION LINES.

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Remove tension hooks, and tie connector link ties with one turn of size FF thread, single and waxed; tie off (Figure 31).

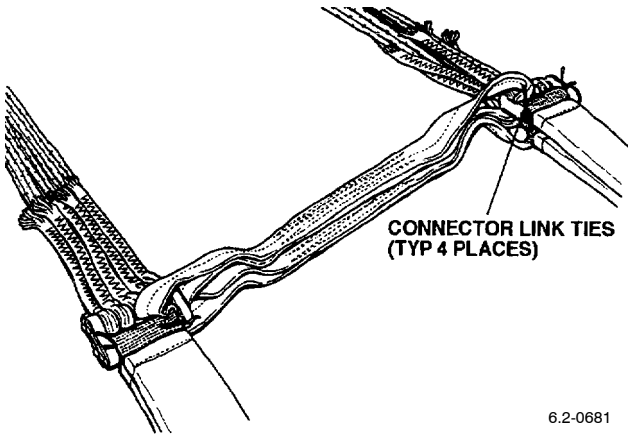

Figure 31. Suspension Line Link Tackings

b. Position the suspension line stowage tray under the suspension lines (Figure 32).

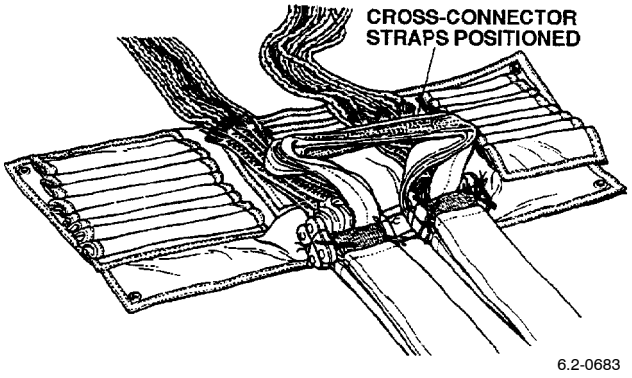

Figure 32. Connector Links Secured, Cross-Connector Straps Positioned

c. Fold the LH/RH cover flaps inboard to lay flat in the center of the stowage tray, straighten the suspension lines and position the cross-connector straps centrally on top of the suspension lines (Figure 32).

d. Tie off the suspension line connector links to the stowage tray using a single turn of waxed size FF thread thru each stowage tray eyelet and around the lower section of each pair of connector links; tie off (Figure 33). (QA)

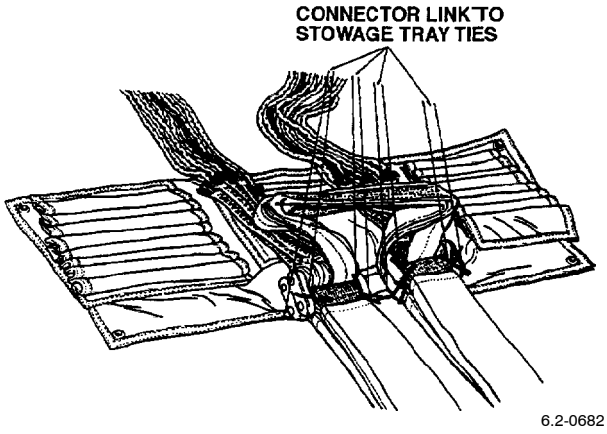

Figure 33. Stowage Tray Positioned, Securing Stowage Tray Ties

e. Route the LH and RH groups of suspension lines outboard along the base of No. 1 LH and No. 1 RH stowage sleeves and outboard of the LH/RH sides of the stowage tray (Figure 34).

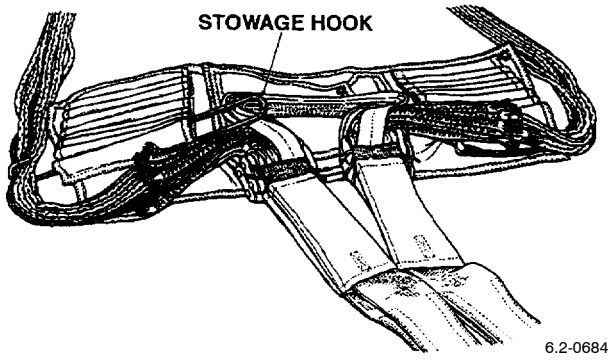

Figure 34. Stowing LH Group of Suspension Lines - Stage 1

CAUTION

To prevent damage to suspension line stowage tray sleeves make sure that suspension line stowage hook diameter does not exceed diameter of stowage tray sleeves.

f. Insert stowage hook into No. 1 LH stowage sleeve from inboard to outboard (Figure 34).

g. Stow the first bight of the LH group of suspension lines in sleeve No. 1 LH using the stowage hook. Make sure that the lines outside the base of No. 1 sleeve are taut and that bights protrude about 1/2 to 3/4-in. from inboard end (Figure 35).

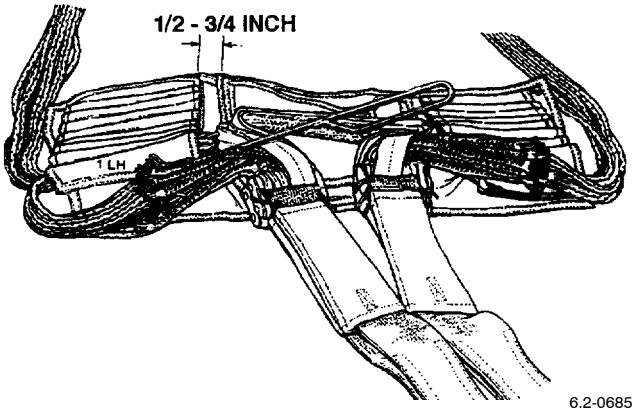

Figure 35. Stowing LH Suspension Lines - Stage 2

h. Repeat the procedure in Subparagraph g, keeping all outboard ends taut for No. 1 RH stowage sleeve, then 2 LH, 2 RH and so on until all sleeves are filled. This method keeps the suspension lines neat on the table and the stowage tray comes up to the deployment sleeve evenly (Figure 36). Suspension lines shall be 40 plus/minus 3-in. from last stow to stowage tray. (QA)

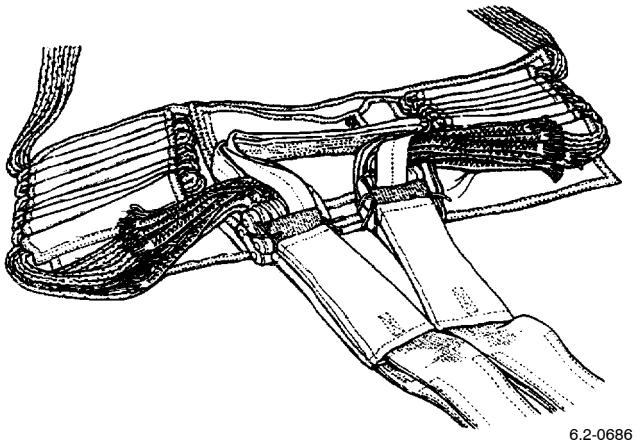

Figure 36. LH and RH Suspension Lines Stowed

i. Fold the LH and RH cover flaps over to cover the suspension line stowage sleeves.

j. Using size A thread single and waxed, tie tacking thru each corner of the suspension line stowage tray and cover flap eyelets; tie off (Figure 37). (QA)

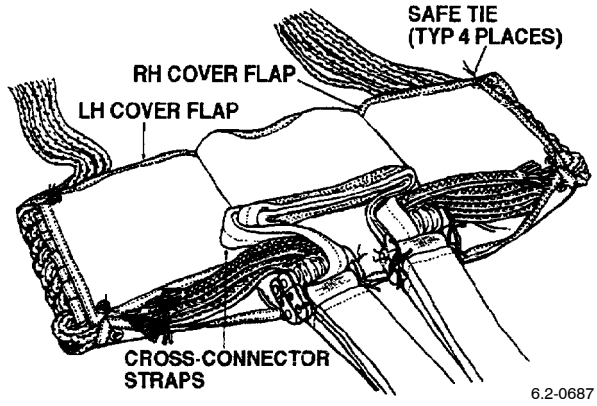

Figure 37. Suspension Line Stowage Cover Flaps Secured

k. Reposition the cross-connector straps on the stowage tray (Figure 37).

l. Install new riser covers on the LH and RH risers.

m. Fold the LH and RH stowage trays inboard to the vertical position (Figure 38).

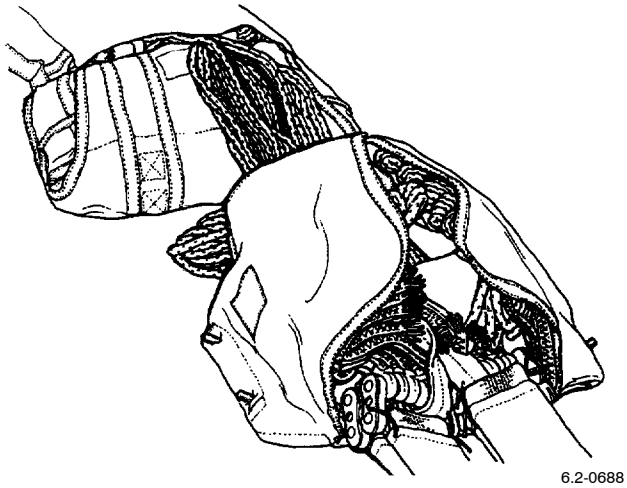

Figure 38. Suspension Line Stowage Trays Positioned Vertically

NOTE

The operations detailed in this WP require the assistance of a helper.

19. PREPARATION OF PARACHUTE ASSEMBLY FOR INSTALLATION INTO CONTAINER.

a. Make sure the parachute container protection cover assembly is outside the container. Fold over and temporarily secure using a tie of nylon cord Type 1 thru each flap eyelet and around the bottom container mounting brackets.

b. Position the parachute container on the packing table on a suitable rubber mat. Place aft downward open end towards deployment sleeve (Figure 39).

c. Lift the risers, position the container opening next to the suspension line stowage tray and lay the risers over the forward face of the container (Figure 39).

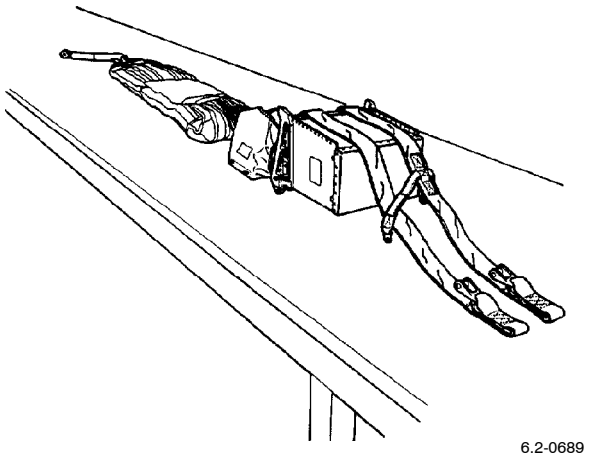

Figure 39. Parachute Container Positioned

20. INSTALLING STOWAGE TRAY IN CONTAINER.

a. Lift the stowage tray, position in the bottom of the container and locate the four securing studs into the holes in the lower LH/RH container sides (Figure 40).

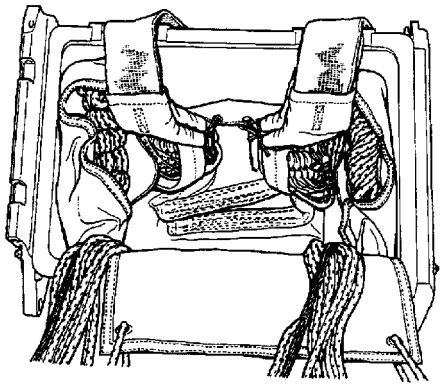

Figure 40. Stowage Tray Positioned in Container

b. With container on aft face, reinstall sealing washers and nuts to the stowage tray securing studs and torque 18 to 25 in-lbs (Figure 41). (QA)

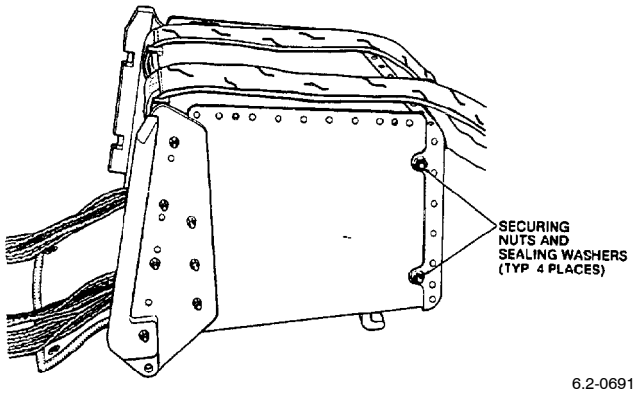

Figure 41. Stowage Tray Secured

c. Apply torque seal to the four securing nuts. (QA)

d. Turn container upright, position cross-connector straps side by side in bottom of container, connector links in lower forward edge of container (Figure 42).

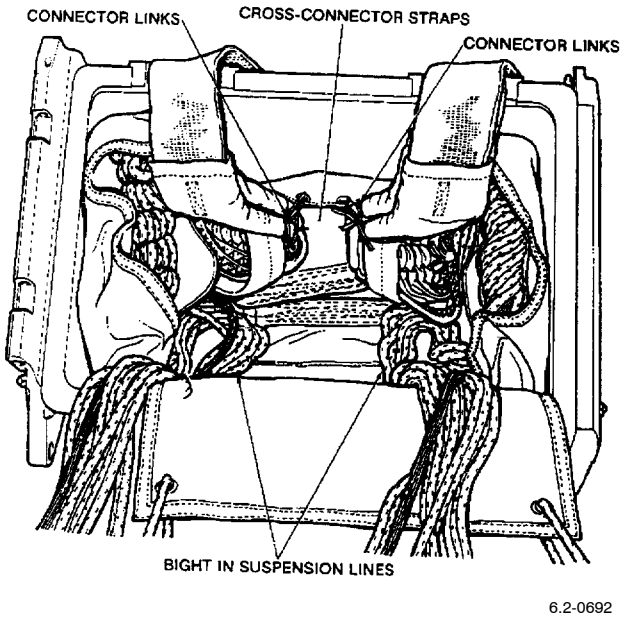

Figure 42. Cross-Connector Straps, Connector Links and Suspension Lines Positioned

e. Release cover flap ties from bottom mounting brackets. Place parachute container in packing box assembly (Figure 43).

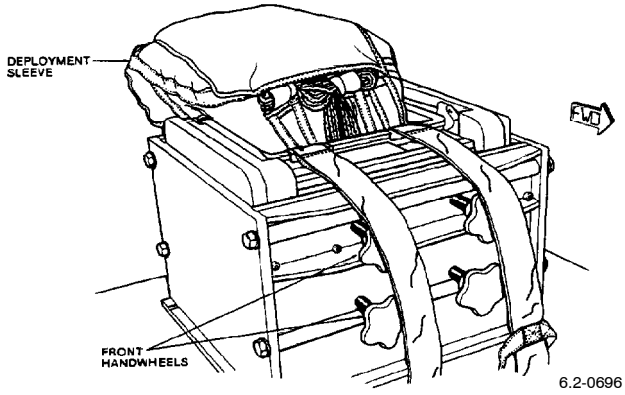

Figure 43. Parachute Pack Positioned in Packing Box Assembly

f. Position the LH support block (MBEU143002) and the rear support block (MBEU143004).

g. Install LH support packing block (MBEU149533).

h. Install the front support block (MBEU143003) lower cutaway towards parachute container and then the front support packing block (MBEU149535) between the front support block and packing box assembly. Tie parachute container protection cover to packing box assembly securing bolts.

i. Tighten the RH handwheels evenly and then the front handwheels. Do not overtighten. Apply only enough pressure to ensure that the parachute container is evenly supported.

j. Form a bight of the LH/RH groups and position the bight in the bottom of the container (Figure 44).

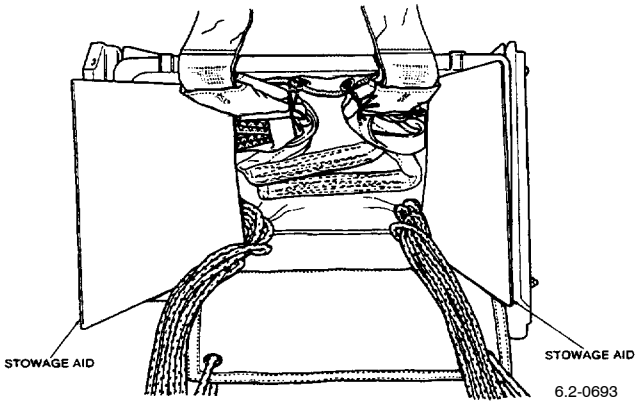

Figure 44. Deployment Sleeve Stowage Aids Positioned

k. Position the deployment sleeve stowage aids (MBEU149527) in the container LH/RH sides, locating them in the bight in the suspension lines and outboard of the connector links. Push down as far as possible (Figure 44).

21. POSITIONING DEPLOYMENT SLEEVE IN CONTAINER.

a. Position the deployment sleeve in the container opening, route the suspension lines down the center and stow in the rear of the container base as neatly as possible. Position riser covers (Figure 45).

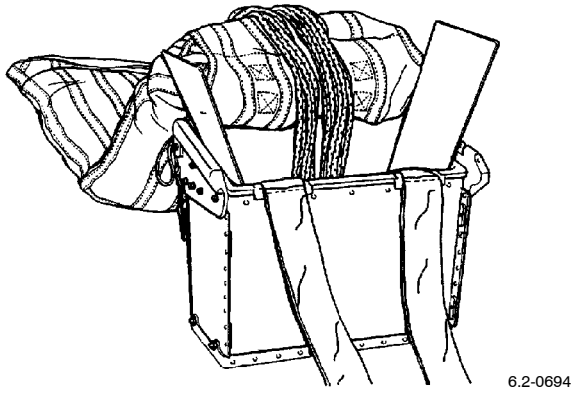

Figure 45. Deployment Sleeve Positioned in Container Opening

22. PRESSING DEPLOYMENT SLEEVE INTO CONTAINER.

a. Push the deployment sleeve down into the container as far as possible, locating the base of the sleeve in the bottom of the container (Figure 46 and 47).

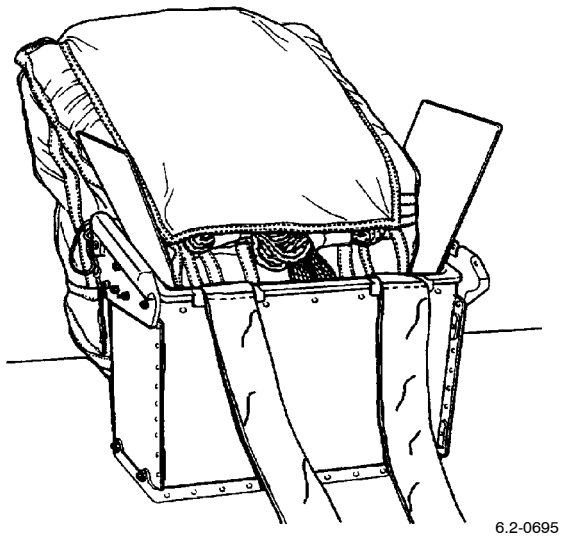

Figure 46. Deployment Sleeve Positioned in Container

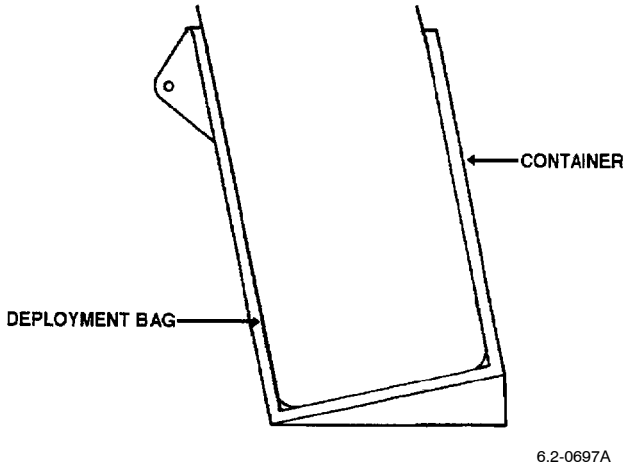

Figure 47. Stowing Deployment Sleeve - Stage 1

c. Fold forward and lay the sleeve over the forward edge of the container (Figure 48).

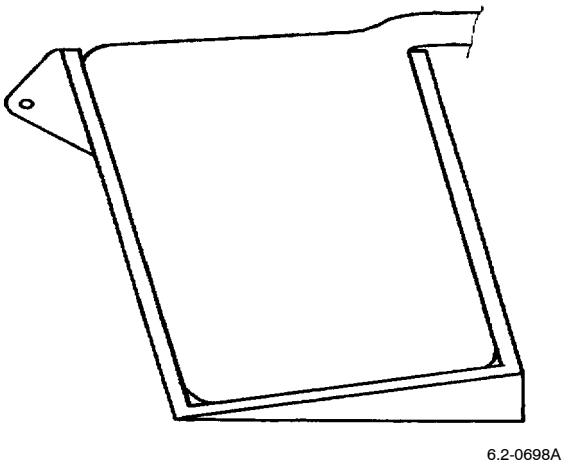

Figure 48. Stowing Deployment Sleeve - Stage 2

NOTE

Parachute assemblies may be left unattended in the SOAK mode out of normal working hours at the discretion of the users governing authority.

23. COMPRESSION STAGE 1.

NOTE

During the press operations use a combination of press packing block and loose packing block to suit the operation and the height of the operator. It is advantageous to keep the press table as low as possible.

a. Locate the short packing block (MBEU149008) in the press and secure with the quick-release pins.

b. Position the loose-large packing block (MBEU-149516) in the container, slightly aft of forward, align the packing box and blocks and raise the press table until the blocks are just in contact (Figure 49).

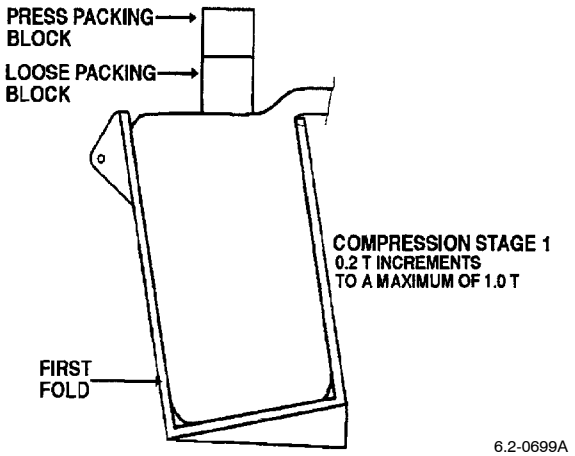

Figure 49. Compressing Deployment Sleeve - Stage 1

c. Make sure that the risers are located so that the riser cover abuts the rear of the container rubber seal and that riser webbings are located in the groove in the seal.

NOTE

When applying pressure it may be necessary to pull the risers up to maintain the correct position. The stitching line on the risers shall be maintained at about 1 in. forward of the forward edge of the container.

d. Make sure both press displays indicate 0.0 T's and SOAK selected OFF.

WARNING

Make sure the packing box and packing blocks are correctly aligned.

CAUTION

Make sure the packing box and packing blocks are correctly aligned, that packing blocks are not contacting the container and that the deployment sleeve is not trapped at the front of the container.

NOTE

During the following operations the helper shall support the sleeve and make sure that a gap is maintained between the sleeve and inner forward edge of the container.

e. Using the footpedal, apply a load of 1.0 T's, in 0.2 T increments, checking at intervals that the packing blocks are not contacting the container and that the sleeve is not trapped at the front of the container.

f. Using a long bar, tuck in the sleeve down the sides.

g. Leave the sleeve under pressure for a minimun 1 hr.

h. Fully lower the press table using the footbar and ensure that the load displays indicate 0.0 T's.

i. Remove the loose-large packing block (MBEU-149516) from the container.

24. COMPRESSION STAGE 2.

a. Fold the deployment sleeve to the rear and push down into the container as far as possible by hand, ensure that the fold is butted against the forward inside of the container (Figure 50).

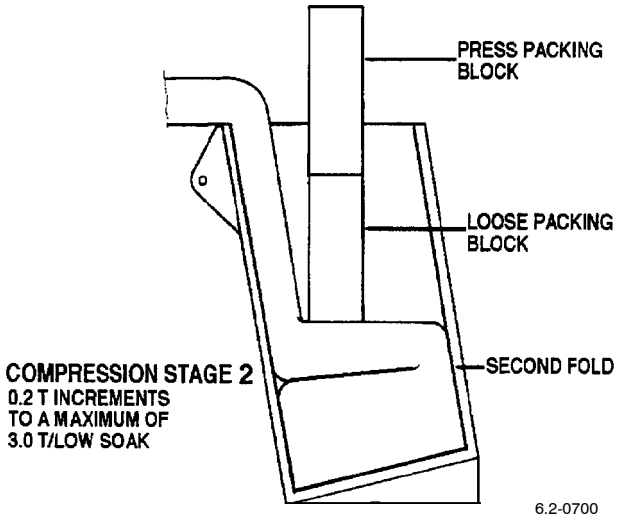

Figure 50. Compressing Deployment Sleeve - Stage 2

b. Position the loose-large packing block (MBEU-149516) in the container on the deployment sleeve, slightly forward of center. Align the support box and packing blocks and raise the press table until the blocks are just in contact (Figure 50).

WARNING

Make sure the packing box and packing blocks are correctly aligned.

CAUTION

Make sure the packing box and packing blocks are correctly aligned, that packing blocks are not contacting the container and that the deployment sleeve is not trapped at the rear of the container.

c. Using the footpedal, raise the press table to apply a load between 2.5 to 2.7 T's in increments of 0.2 T's. Check at intervals that the deployment sleeve is not trapped at the rear of the container.

d. Using a long bar, tuck in the sleeve down the sides of the container.

e. Select 'SOAK LOW' position and make sure that:

(1) Audio alarm sounds (4 sec) as it makes pressure adjustments.

(2) Displays indicate LOAD SET at 3.0 T's.

(3) Both indicator lights illuminate after alarm stops and press table starts to raise.

(4) Both displays indicate progressively increasing load up to a maximum of 3.3 T's.

f. Monitor the load indications which shall be between 2.8 T's and 3.3 T's.

g. Leave the assembly on 'SOAK LOW' for a minimum of 1 hr.

h. At intervals check the riser positions and length, adjusting as required by pulling on the risers to maintain the riser cover abutting the rear of the container rubber seal and the stitch line 1 in. forward of the container forward edge.

i. Select 'SOAK OFF' position and make sure that:

j. Position the loose-large packing block (MBEU-149516) in the container, slightly aft of center.

(1) Both indicator lights extinguish.

(2) Both displays, LOAD SET display indicates value extinguished; LOAD display indicates load applied.

k. Using the footbar, fully lower the press table.

l. Remove the loose-large packing block (MBEU-149516) from the container.

25. COMPRESSION STAGE 3.

a. Fold the deployment sleeve to the front, push down as flat as possible ensuring that the fold is abutting the aft face of the container (Figure 51).

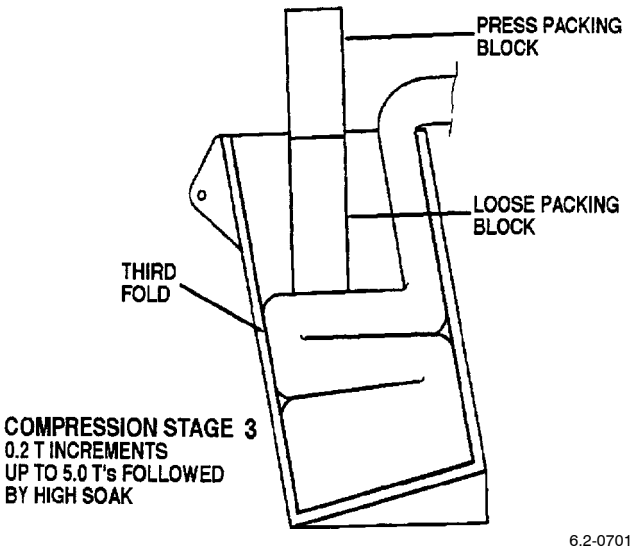

Figure 51. Compressing Deployment Sleeve - Stage 3

WARNING

Make sure the packing box and packing blocks are correctly aligned.

CAUTION

Make sure the packing box and packing blocks are correctly aligned, that packing blocks are not contacting the container and that the deployment sleeve is not trapped at the front of the container.

c. Make sure that the packing box and packing blocks are still aligned and that the sleeve is not trapped at the front of the container.

d. Using the footpedal, raise the press table until the packing blocks are just in contact, continue using the footpedal, raise the press table in increments of 0.2 T's until the displays indicate a LOAD of 4.8 to 5.5 T's. Check at intervals that the sleeve is not trapped, and tuck the sleeve down the sides as required.

e. Ensure that packers finger's can be inserted at the front, between the sleeve and the container. Check the position of the risers as the load is applied.

f. Select 'SOAK HIGH' position and make sure that:

(1) Audio alarm sounds (4 sec) as it makes pressure adjustments.

(2) Both displays indicate LOAD SET at 5.0 T's.

(3) After alarm stops, both indicator lights illuminate and press table starts to raise.

(4) Both displays indicate progressively increasing load up to a maximum of 5.3 T's.

g. Monitor the LOAD indications which shall be between 4.8 and 5.3 T's.

h. Leave the assembly on 'SOAK HIGH' for a minimum of 1 hr.

i. Select 'SOAK OFF' position and make sure that:

(1) Both indicator lights extinguish.

(2) Both displays; LOAD SET value extinguished; LOAD indicates load still applied.

j. Using the footbar, fully lower the press table. Displays will indicate 0.0 T's.

k. Remove the loose-large packing block (MBEU-149516).

l. Remove the two deployment sleeve stowage aids (MBEU149527) from the container.

26. COMPRESSION STAGE 4.

a. Fold the deployment sleeve to the rear, crease the sleeve at the rear and tuck well down into the container. Push the sleeve well down so that the fold is against the front of the container (Figure 52).

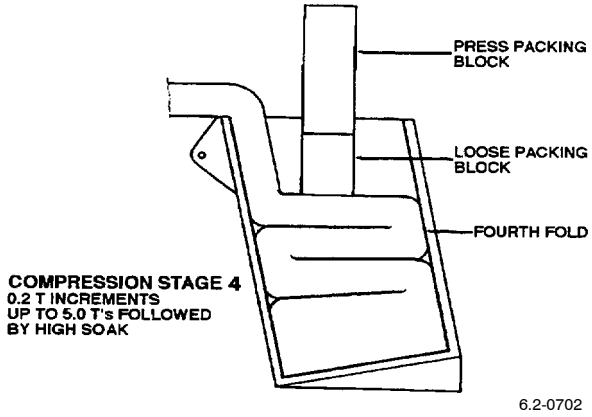

Figure 52. Compressing Deployment Sleeve - Stage 4

b. Position the loose-large packing block (MBEU-149516) in the container, slightly forward of center.

WARNING

Make sure the packing box and packing blocks are correctly aligned.

CAUTION

Make sure the packing box and packing blocks are correctly aligned, that packing blocks are not contacting the container and that the deployment sleeve is not trapped at the rear of the container.

c. Make sure the packing box and packing blocks are correctly aligned and using the footpedal, raise the press table until the packing blocks are just in contact (Figure 52).

d. Using the footpedal, raise the press table until the packing blocks are just in contact, continue using the footpedal, raise the press table in increments of 0.2 T's until the displays indicate a LOAD of 4.8 to 5.5 T's. Check at intervals that the sleeve is not trapped, and tuck the sleeve down the sides as required.

e. Ensure that packers finger's can be inserted at the front, between the sleeve and the container. Check the position of the risers as the load is applied.

f. Select 'SOAK HIGH' position and make sure that:

(1) Audio alarm sounds (4 sec) as it makes pressure adjustments.

(2) Both displays indicate LOAD SET at 5.0 T's.

(3) After alarm stops, both indicator lights illuminate and press table starts to raise.

(4) Both displays indicate progressively increasing load up to a maximum of 5.3 T's.

g. Monitor the LOAD indications which shall be between 4.8 and 5.3 T's.

h. Leave the assembly on 'SOAK HIGH' for a minimum of 1 hr.

i. Select 'SOAK OFF' position and make sure that:

(1) Both indicator lights extinguish.

(2) Both displays; LOAD SET value extinguished; LOAD indicates load still applied.

j. Using the footbar, fully lower the press table. Displays will indicate 0.0 T's.

k. Remove the short packing block (MBEU149008) and the loose large packing block (MBEU149516).

27. COMPRESSION STAGE 5.

a. Fold the deployment sleeve to the front, crease the sleeve at the front and tuck well down into the container. Push the sleeve well down and ensure that the fold at the rear abuts the rear face of the container (Figure 53).

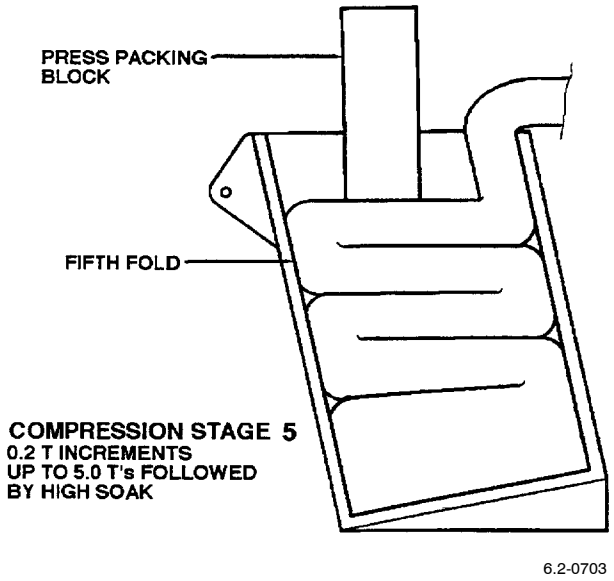

Figure 53. Compressing Deployment Sleeve - Stage 5

b. Locate the long packing block (MBEU149010) into the container slightly aft of center, and align the block and packing box, and using the footpedal, raise the press table until the packing block is in contact with the sleeve in the container (Figure 53).

WARNING

Make sure the packing box and packing blocks are correctly aligned.

CAUTION

Make sure the packing box and packing blocks are correctly aligned, that packing blocks are not contacting the container and that the deployment sleeve is not trapped at the front of the container.

c. Using the footpedal, raise the press table until the packing blocks are just in contact, continue using the footpedal, raise the press table in increments of 0.2 T's until the displays indicate a LOAD of 4.8 to 5.5 T's. Check at intervals that the sleeve is not trapped, and tuck the sleeve down the sides as required.

d. Ensure that packers finger's can be inserted at the front, between the sleeve and the container. Check the position of the risers as the load is applied.

e. Select 'SOAK HIGH' position and make sure that:

(1) Audio alarm sounds (4 sec) as it makes pressure adjustments.

(2) Both displays indicate LOAD SET at 5.0 T's.

(3) After alarm stops, both indicator lights illuminate and press table starts to raise.

(4) Both displays indicate progressively increasing load up to a maximum of 5.3 T's.

f. Monitor the LOAD indications which shall be between 4.8 and 5.3 T's.

g. Leave the assembly on 'SOAK HIGH' for a minimum of 1 hr.

h. Select SOAK OFF' position and make sure that:

(1) Both indicator lights extinguish.

(2) Both displays; LOAD SET value extinguished; LOAD indicates load still applied.

i. Using the footbar, fully lower the press table. Displays will indicate 0.0 T's.

NOTE

It is mandatory that either compression stage 6 or 7 be left overnight or a minimum of 12 hrs.

28. COMPRESSION STAGE 6.

a. Fold the deployment sleeve to the rear, crease the sleeve at the rear and tuck the sleeve in at the front and rear, leaving only the end of the sleeve and withdrawal line outside the rear of the container (Figure 54).

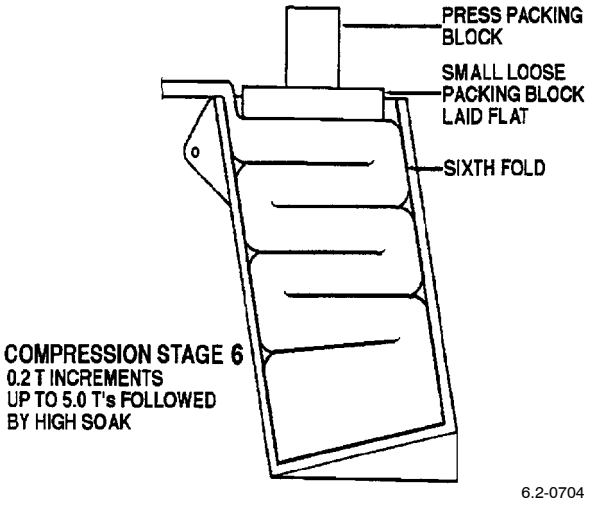

Figure 54. Compressing Deployment Sleeve - Stage 6

b. Position the loose-small packing block (MBEU-149526) flat on the sleeve ensuring that it is central and not in contact with the container (Figure 54).

WARNING

Make sure the packing box and packing blocks are correctly aligned.

CAUTION

Make sure the packing box and packing blocks are correctly aligned, that packing blocks are not contacting the container and that the deployment sleeve is not trapped at the rear of the container.

c. Using the footpedal, raise the press table until the packing blocks are just in contact, continue using the footpedal, raise the press table in increments of 0.2 T's until the displays indicate a LOAD of 4.8 to 5.5 T's. Check at intervals that the sleeve is not trapped, and tuck the sleeve down the sides as required.

d. Ensure that packers finger's can be inserted at the front, between the sleeve and the container. Check the position of the risers as the load is applied.

e. Select 'SOAK HIGH' position and make sure that:

(1) Audio alarm sounds (4 sec) as it makes pressure adjustments.

(2) Both displays indicate LOAD SET at 5.0 T's.

(3) After alarm stops, both indicator lights illuminate and press table starts to raise.

(4) Both displays indicate progressively increasing load up to a maximum of 5.3 T's.

f. Monitor the LOAD indications which shall be between 4.8 and 5.3 T's.

g. Leave the assembly on 'SOAK HIGH' for a minimum of 1 hr.

h. Select 'SOAK OFF' position and make sure that:

(1) Both indicator lights extinguish.

(2) Both displays; LOAD SET value extinguished; LOAD indicates load still applied.

i. Using the footbar, fully lower the press table. Displays will indicate 0.0 T's.

j. Remove the loose-small packing block (MBEU-149526).

29. COMPRESSION STAGE 7.

a. Fold the end of the sleeve to the front and position the withdrawal line with the ring laid flat (Figure 55).

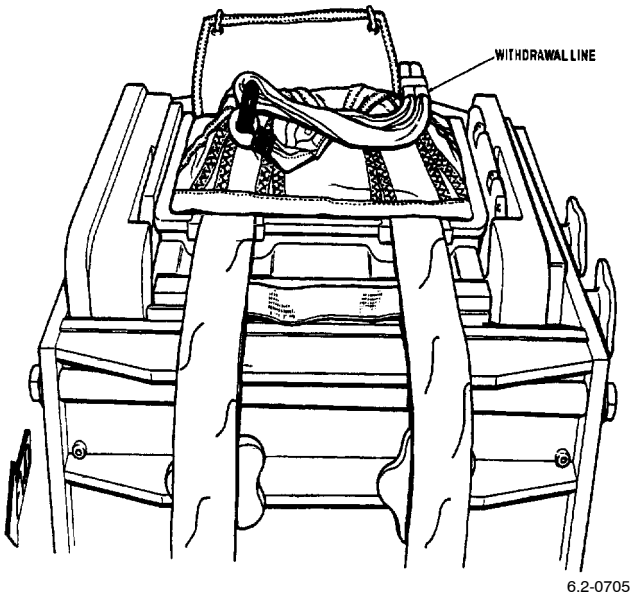

Figure 55. Withdrawal Line Positioned

b. Position the loose-withdrawal line packing block (MBEU149517) on top of the withdrawal line with the cutout adjacent to the withdrawal line spool in the RH rear corner (Figure 56).

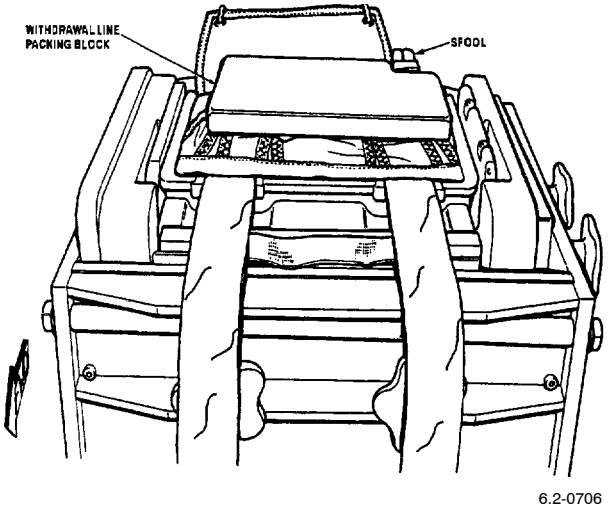

Figure 56. Withdrawal Line Packing Block Positioned

c. Position the loose-small packing block (MBEU149526) on top of the loose-withdrawal line packing block (MBEU149517) (Figure 57).

WARNING

Make sure the packing box and packing blocks are correctly aligned.

WARNING

Make sure the packing box and packing blocks are correctly aligned, that packing blocks are not contacting the container and that the deployment sleeve is not trapped at the rear of the container.

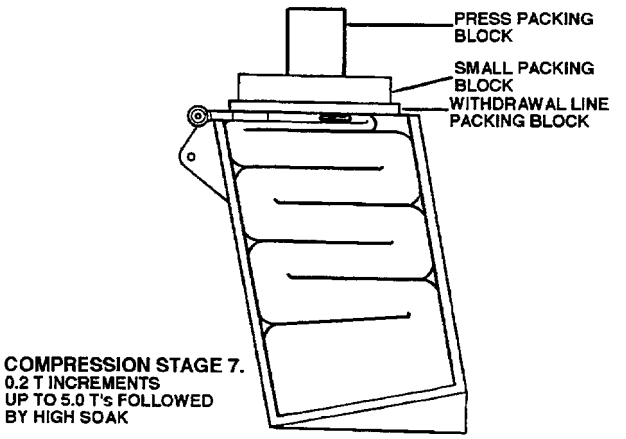

Figure 57. Compressing Deployment Sleeve - Stage 7

d. Using the footpedal, raise the press table until the packing blocks are just in contact, continue using the footpedal, raise the press table in increments of 0.2 T's until the displays indicate a LOAD of 4.8 to 5.5 T's. Check at intervals that the sleeve is not trapped, and tuck the sleeve down the sides as required.

e. Ensure that packers finger's can be inserted at the front, between the sleeve and the container. Check the position of the risers as the load is applied.

f. Select 'SOAK HIGH' position and make sure that:

(1) Audio alarm sounds (4 sec) as it makes pressure adjustments.

(2) Both displays indicate LOAD SET at 5.0 T's.

(3) After alarm stops, both indicator lights illuminate and press table starts to raise.

(4) Both displays indicate progressively increasing load up to a maximum of 5.3 T's.

g. Monitor the LOAD indications which shall be between 4.8 and 5.3 T's.

h. Leave the assembly on 'SOAK HIGH' for a minimum of 1 hr.

i. Select 'SOAK OFF' position and make sure that:

(1) Both indicator lights extinguish.

(2) Both displays; LOAD SET value extinguished; LOAD indicates load still applied.

j. Using the footbar, fully lower the press table. Displays will indicate 0.0 T's.

k. Remove the loose-small packing block (MBEU149526) and the loose-withdrawal line packing block (MBEU149517).

30. INSTALLING CONTAINER LID.

a. Prepare the lid by applying technical talc to the lip of the rubber seal. Also apply technical talc to the rubber seal on the withdrawal line (Figure 58).

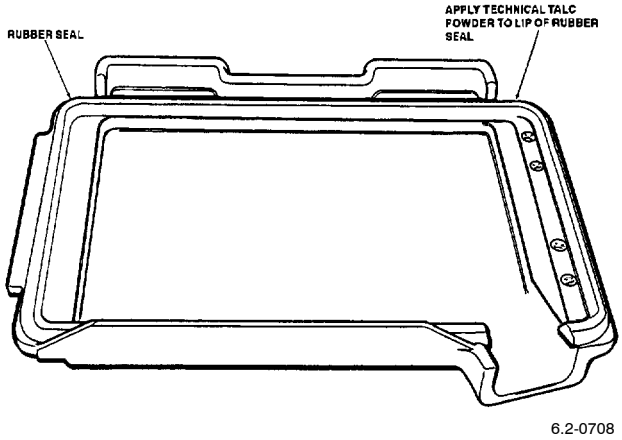

Figure 58. Parachute Container Lid

b. Fold down the protection cover, pulling the cords forward and routing them outboard of the risers (Figure 59).

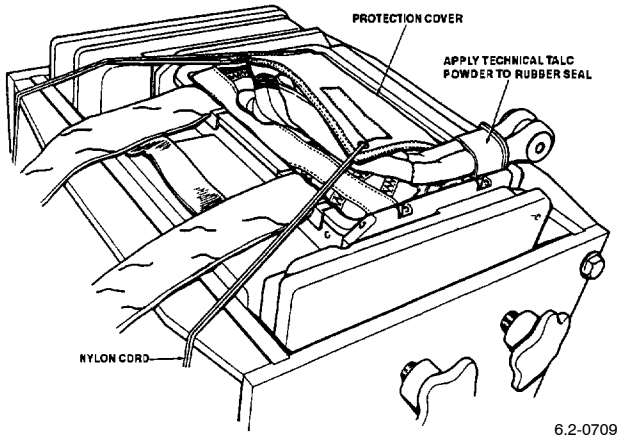

Figure 59. Protection Cover Positioned

c. Install rubber seal of the withdrawal line into the lid. Install lid on LH side of container, install lid into groove of container, as far as possible, press down and place padded block flat on lid. Place loose-small packing block (MBEU149526) on top of padded block. Align padded block and loose-small packing block (MBEU149526) aft and on right side (Figure 60).

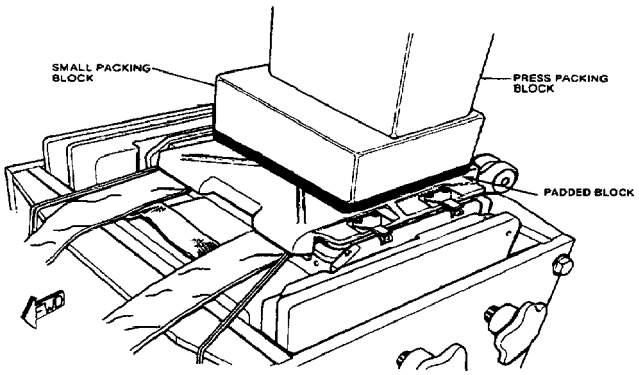

Figure 60. Closing Lid - Stage 1

CAUTION

To prevent possible damage to lid and/or rim of container make sure lid is correctly positioned.

d. Install block aft and on right side. Carefully raise press table using footpedal until blocks are just in contact. Make sure the protection cover panel cords are routed outboard of risers and that withdrawal line is located correctly in rear of container. Using the footpedal apply gentle pressure to lid (Figure 60).

e. Insert lid fitting wedge down RH side of lid, flat side inboard and make sure lugs are located so that they will engage in slots in container, if necessary tap lid to rear to locate. Pull nylon cords to make sure the protection cover panel is fully forward and remove cords (Figure 61). (QA)

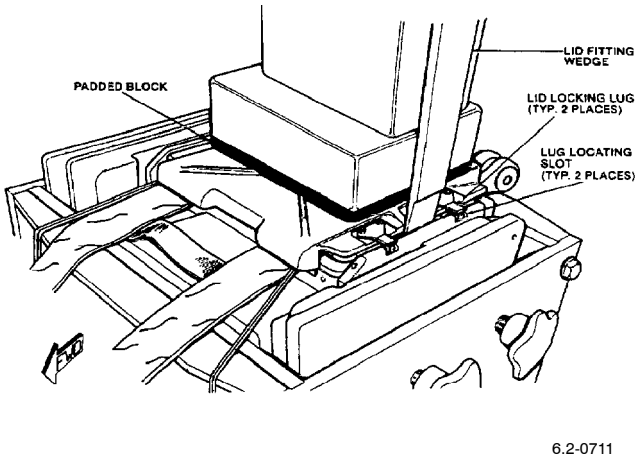

Figure 61. Closing Lid - Stage 2

WARNING

Make sure the packing box and packing blocks are correctly aligned.

CAUTION

Extreme care must be taken, when applying pressure to engage the lugs into the slots. There is a possibility to bend the parachute container when too much pressure is applied.

f. Using the footpedal, carefully apply pressure until the lugs are fully engaged in the slots and at the same time ensuring that the withdrawal line and riser seals are correctly located. (QA)

g. Secure the lid by inserting the securing pin from the rear (Figure 62). (QA)

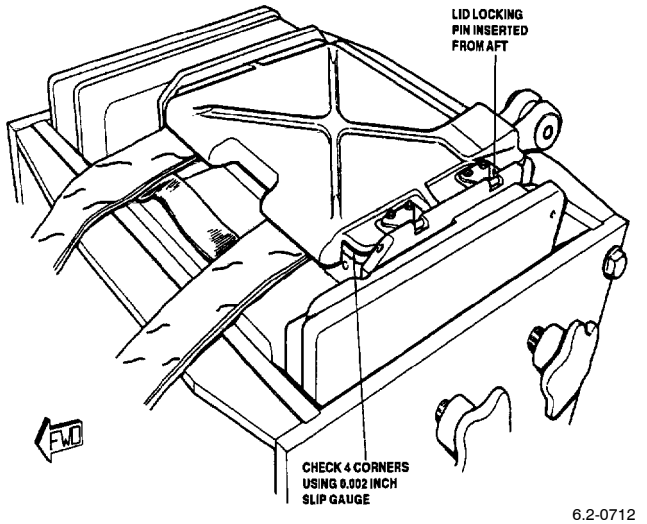

Figure 62. Parachute Container Lid Closed

h. Lower the press table to release the pressure and remove the loose-small packing block (MBEU149526) and the loose-large packing block (MBEU149010).

i. Using a 0.002 in. slip gauge check that there are no gaps at each corner of the pack (gauge should not enter). If gauge enters, remove the lid and recompress the deployment sleeve until the fitted lid parameters are met (Figure 62). (QA)

j. Release front and side handwheels fully, remove the front support packing block (MBEU139535) and front support block (MBEU143003), LH support packing block (MBEU149533).

k. Remove the parachute assembly from the support box and place on a suitable rubber mat on the packing table, face down.

NOTE

If socket will not fit on the bolt, align lid with the lid fitting wedge (MBEU149534).

l. Fit the lid locking pin securing bolt and torque to a value of 23 to 27 in-lbs. Apply torque seal to the locking pin securing bolt (Figure 63) (QA).

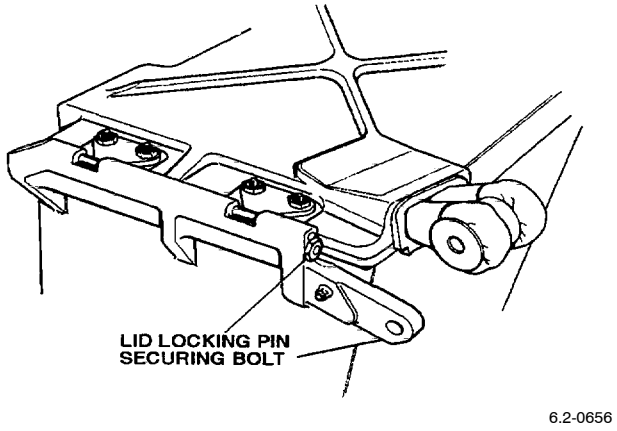

Figure 63. Lid Locking Pin Securing Bolt Fitted

31. PARACHUTE HARNESS SENSING RELEASE UNIT (PHSRU), MXU-746/P AND MXU-747/P.

a. Measure the knurled actuating lever torque as follows:

(1) Hold locking lever in the open position and insert the torque meter with 1/16-in. hex head driver into actuating lever cavity.

(2) Rotate actuating lever to just prior to contact with body. Acceptable torque values are 28 to 50 in-oz. (Figure 64). (QA)

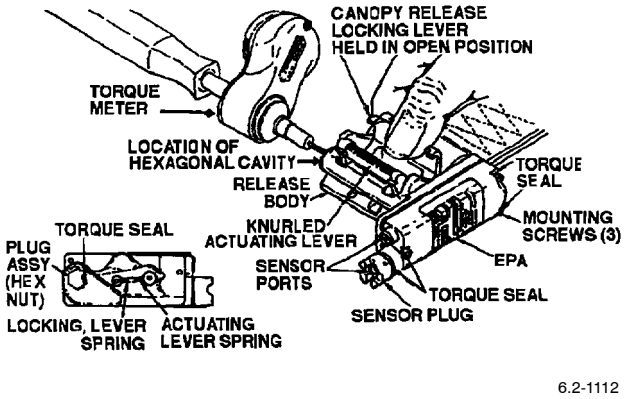

Figure 64. Rotate Actuating Lever

b. Check battery voltage as follows:

(1) Install test leads in multimeter observing proper polarity.

(2) Select VDC and scale exceeding 26 VDC.

CAUTION

Avoid touching the meter probes together when making this test. Firing of the PHSRU may result.

(3) Contact negative (black) probe to sensor plug assembly center conductor. Contact positive (red) probe to EPA sensor center conductor.

(4) Reading of +22.5 volts DC or greater indicates PHSRU is serviceable. (QA)

c. If plug assembly was removed, perform the following:

(1) Forward complete packed parachute assembly to either non-destructive inspection lab or medical facility for X-ray.

(2) From review of X-ray (Figure 65), if plug assembly is suspected or known to be partially or fully recessed, the unit shall have a shear pin integrity check per WP 024 02.

(3) Record inspection on Parachute Record (OPNAV 4790/101).

(4) Attach X-rays to the Parachute Record (OPNAV 4790/101).

(5) If voltage is below +22.5 volts DC, replace battery per WP 024 02.

(6) Record voltage for each EPA in the Local Use Block on the Parachute Record (OPNAV 4790/101).

32. FINAL CHECKOUT.

a. Turn the parachute assembly over and lay face up on the rubber mat.

b. Fit the headpad and secure with the four bolts and torque bolts to 20 in-lbs.

c. Route the risers down the front of the headpad and secure with the hook and pile fastener.

d. Insure that riser covers are tight against lid so no riser is exposed.

e. Account for all packing tools. (QA)

f. Inspect packed parachute assembly for general condition. (QA)

g. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA)

h. QA inspector shall inspect completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

i. QA inspector shall sign Parachute Record (OPNAV 4790/101).

j. Lower table to the lowest point and unplug from electrical source (if possible). Secure packing press.

k. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

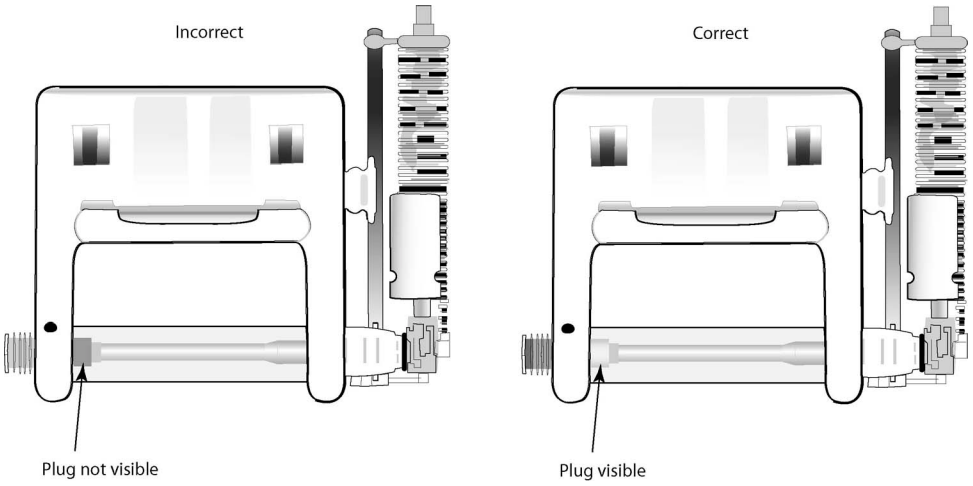

Figure 65. PHSRU X-Ray

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INTERMEDIATE MAINTENANCE

REPAIR PROCEDURES

A/P28S-32 PERSONNEL PARACHUTE ASSEMBLY

PART NUMBERS MBEU147710, MBEU147710-1, MBEU147711, MBEU147712, MBEU147713, and MBEU148030

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

Common Repairs . . . . . WP 004 00
Intermediate and Depot Maintenance, Original Issue Rigging Procedures, Parachute Harness Sensing Release Units (PHSRU), MXU-746/P and MXU-747/P . . . . . WP 024 01
Introduction . . . . . WP 002 00

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Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 629	11 Sept 97	SJU-17(V)1-A Canopy Breaker	1 Jun 98	31 Dec 2002

1. INTRODUCTION.

a. This work package (WP) contains instructions for the maintenance, repair, replacement and fabrication of various parachute parts or subassemblies to ensure that appropriate items of equipment remain in a ready-for-issue (RFI) status. For common repairs refer to WP 004 00.

2. REPLACEMENT OF RISER ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon, Size A, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot topped with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Lay the canopy/risers assembly on the packing table, risers front uppermost and canopy gores 10 and 11 on top. Attach the canopy apex to the table hook. Disconnect the lower steering lines as follows:

(1) Separate the front and rear risers to gain access to the lower steering lines.

(2) Cut and remove the scarlet thread ties securing the steering lines to the front risers.

(3) Remove the steering line handle tab from riser loop. Separate the eye in the steering line from the loop on the riser (Figure 1).

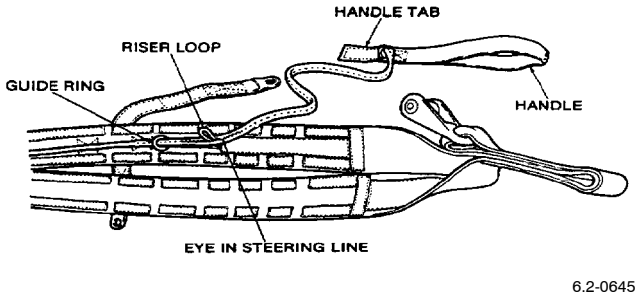

Figure 1. Location of Eye in Lower Steering Line

(4) Remove the steering line handle from the steering line.

(5) Pull the steering lines back thru the metal guide rings on each front riser until they are clear of the risers.

(6) Remove the lower steering lines from the upper steering lines by disconnecting at the upper steering line metal ring.

b. Loosen the upper right hand (RH) connector link, slide serrated plate forward and remove. Remove old riser. Install new riser ensuring that the inertia reel fitting is facing up and the risers are not twisted (Figure 2). Reinstall serrated plate. Ensure that serrated edge is facing up. Slide serrated plate into locking position. Tighten screw.

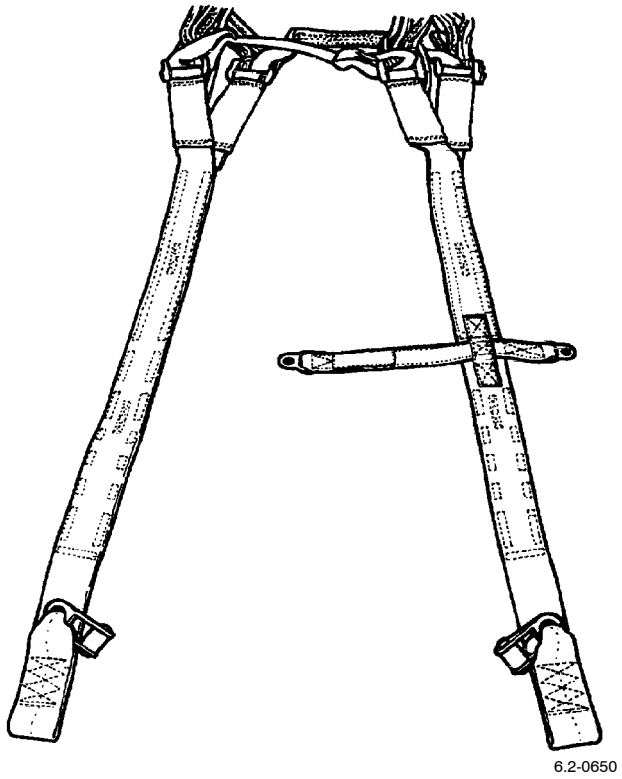

Figure 2. Risers Complete with Steering Lines

c. Loosen the lower right hand (RH) connector link, slide serrated plate forward and remove. Remove old riser. Install new riser ensuring that the inertia reel fitting is facing up and the risers are not twisted (Figure 2). Reinstall serrated plate. Ensure that serrated edge is facing up. Slide serrated plate into locking position. Tighten screw.

d. Attach lower steering line thru upper steering line metal ring with larks head knot. Ensure that the lower steering line eye is at the opposite end. Route lower steering line thru the three metal guide rings on the riser. Insert riser loop thru lower steering line eye. Attach steering line handle to steering line. Replace steering line handle tab thru the steering line riser loop. Tack loop to riser with one turn of size A thread single. Tie off. Attach the front and rear risers, ensuring the lower steering line is not outside the riser.

e. Repeat step b for the upper left hand (LH) (front) riser, cross-connector strap and suspension lines 6 thru 10.

f. Repeat step c for the lower left hand (LH) (rear) riser, cross-connector strap and suspension lines 1 thru 5.

g. Repeat step d to reconnect the left hand (LH) lower steering line.

h. Torque connector link screw to 20 to 25 in-lbs.

i. Apply a torque seal to screwheads. (QA)

j. Install PHSRU per WP 024 01.

3. REPLACEMENT OF CANOPY ASSEMBLY.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
V-T-295	Thread, Nylon Size A, Type I or II Class A

a. Lay the canopy/risers assembly on the packing table, risers front uppermost and canopy gores 10 and 11 on top. Attach the canopy apex to the packing table hook. Disconnect the lower steering lines as follows:

(1) Loosen the connector links, slide serrated plate forward and remove. Remove the canopy suspension lines from the links.

(2) Dispose of canopy per current supply directives.

(3) Lay the replacement canopy on the packing table with gores 10 and 11 uppermost and attach the apex to the table hook.

b. Attach lower RH (rear) canopy suspension lines, 1 thru 5, (Figure 3), to connector link one at a time. Ensure that the heat sealed end of the cross-connector strap is to the right and facing up. Pass the loop of the cross-connector strap over the link. Reinstall the serrated plate, ensuring the serrated edge is facing up. Slide serrated plate to locking position. Tighten screw.

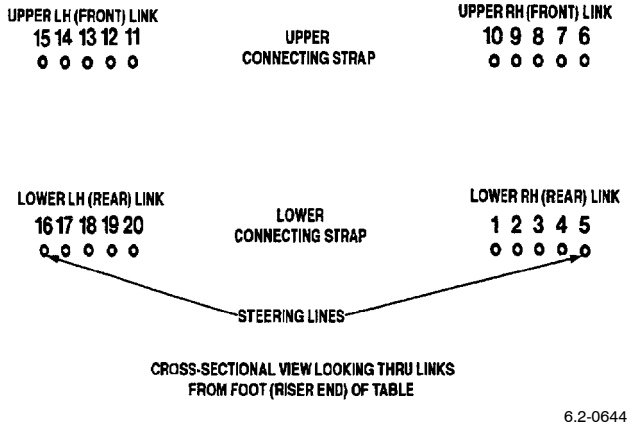

Figure 3. Suspension Line to Attachment Link Sequence

c. Attach upper RH (front) canopy suspension lines 6 thru 10 (Figure 3), to connector link one at a time. Ensure that the heat sealed end of the cross-connector strap is to the right and facing down. Pass the loop of the cross-connector strap over the link. Reinstall the serrated plate, ensuring the serrated edge is facing up. Slide serrated plate to locking position. Tighten screw.

d. Repeat step c for the upper LH (front) riser, cross-connector strap and suspension lines 11 to 15.

e. Repeat step b for the lower LH (rear) riser, cross-connector strap and suspension lines 16 thru 20.

f. Perform suspension line continuity check per Figure 3. (QA)

g. Torque connector link screw to 20 to 25 in-lbs. (QA)

h. Apply a torque seal to screwheads. (QA)

i. Fit the lower steering lines and upper steering lines per Paragraph 2.

4. INSTALLATION OF PARACHUTE HARNESS SENSING RELEASE UNITS.

a. Install per WP 024 01.

5. REPLACEMENT OF DEPLOYMENT SLEEVE WITHDRAWAL LINE.

Materials Required

Specification or Part Number	Nomenclature
MIL-T-50036A	Talc, Technical

a. Lay the deployment sleeve flat with the mouthlocks side uppermost.

b. Slide the withdrawal line rubber sleeve clear of clamp (Figure 4).

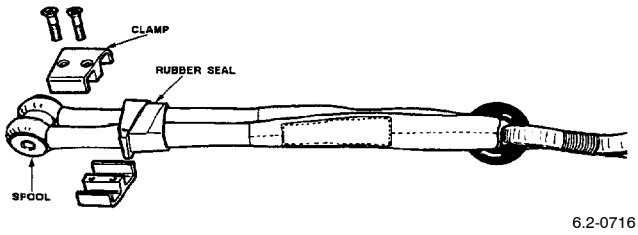

Figure 4. Seal and Spool fitted to Withdrawal Line

c. Remove the two screws and the two clamp halves (Figure 4).

d. Slide the withdrawal line rubber protection sleeves away from the spool and remove the loops from the spool (Figure 5).

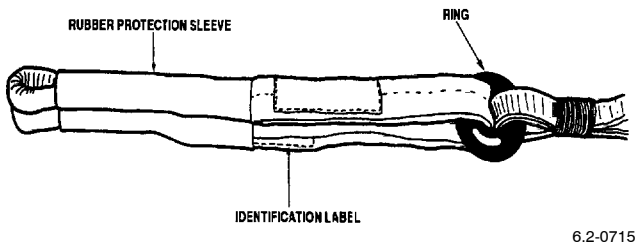

Figure 5. Withdrawal Line Located

e. Remove the withdrawal line from the deployment sleeve ring and discard (Figure 5).

f. Locate the replacement withdrawal line thru the ring of the deployment sleeve, ensuring that the identification label is uppermost (Figure 5).

g. With the two end loops aligned and laid flat, fit the rubber protection seal over the loops on to the withdrawal line (Figure 4).

h. Fit one side of the double spool into the lower loop of the withdrawal line and then fit the upper loop onto the remaining half of the double spool. Pull the withdrawal line rubber protection sleeves towards the loops, closing the loops and choking the spool.

i. Fit the two clamp halves, square ends adjacent to the spool end and the half with the countersunk screw holes uppermost (Figure 4).

j. Install the two clamp securing screws, loosely at this stage, so that the clamp can be moved along the withdrawal line.

k. Position the clamp so that the edge nearest the spool is 1 1/8-in. ± 1/8-in. from the centerline of the spool and tighten the bolts (Figure 6).

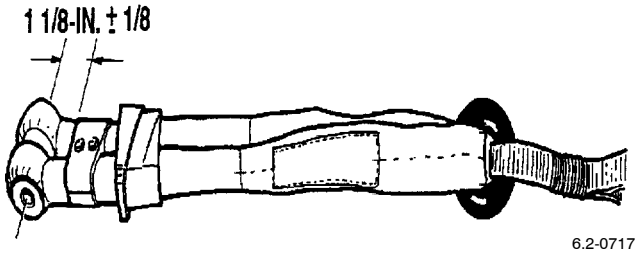

Figure 6. Clamp Attached to Withdrawal Line

l. Apply talc technical to the line protectors, clamp and seal and slide the seal into position on the clamp (Figure 7).

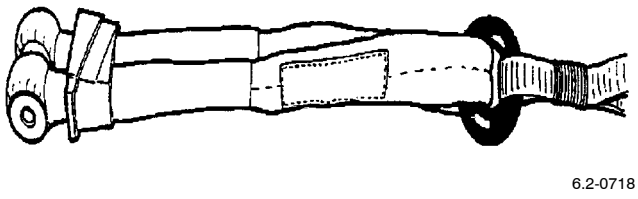

Figure 7. Seal Positioned Over Clamp

6. REPLACEMENT OF SCOTCHCAL LABEL.

Materials Required

Specification or Part Number	Nomenclature
—	Cloth Wipers
P-D-680, Type 2	Solvent, Dry Cleaning
—	Approved Solvent

a. Scotchcal Labels. Replace Scotchcal labels as follows:

(1) Saturate a paper towel or cloth wiper with an approved dry cleaning solvent and place over the label to be removed for 3 to 4 min.

(2) Remove the saturated material and most of the label. Clean off any residue then clean the surface using a clean wiper moistened with the solvent. Wipe the surface dry before the solvent evaporates.

(3) Ensure fingers do not contact the cleaned surface.

(4) Remove the protective paper from the adhesive side of the replacement label. Do not contaminate the adhesive surface.

(5) Position one edge of the label on the mounting surface and progressively work the remainder down to the opposite edge.

(6) Press the label firmly to the surface, applying pressure to the entire face and paying particular attention to the edges and corners.

(7) If wrinkles, bubbles or distortion are evident, remove the label and replace with a new label.

7. REPLACEMENT OF METALCAL LABEL.

Materials Required

Specification or Part Number	Nomenclature
—	Cloth wipers
P-D-680, Type 2	Solvent, Dry Cleaning
—	Approved Solvent

a. Metalcal labels. Replace metalcal labels as follows:

(1) Remove the old label, clean the mounting surface using an approved dry cleaning solvent, and while the surface is still wet, wipe thoroughly with a clean, dry wiper.

(2) Place the new label on a flat surface, stamp the relevant information on the label and roll out the label on both sides to remove the indentations caused by stamping.

(3) Hold the Metalcal on the edges and peel away the backing paper, taking care not to let the fingers come into contact with the adhesive.

(4) Fit the label to the part in the required position and press firmly in place using a roller, firm hand pressure or other suitable means which does not damage the face of the label. Apply pressure over the entire surface, paying particular attention to the edges and corners.

8. REPLACEMENT OF CONTAINER PANEL ASSEMBLY.

a. Defective container panel assemblies may be replaced as follows:

(1) Remove the five locking nuts from the panel securing studs and remove the panel assembly.

NOTE

Replacement panels are supplied complete with integral stud plates.

(2) Locate the replacement panel on the container, free end downward, fit the securing nuts and torque 16 to 23 in.-lbs.

(3) Treat ends of studs, nuts and any damaged painted areas as detailed in Paragraph 9.

9. REPAIR TO PAINT FINISH.

Materials Required

Specification or Part Number	Nomenclature
—	Soft Brush
MIL-P-85582	Primer, Epoxy, Waterborne
MIL-C-85285B	Paint, Polyurethane, Type 1, Lusterless, Black
	or
MIL-P-23377	Primer, Epoxy
MIL-C-83286	Paint, Polyurethane, Flat, Black

a. Minor damage to painted areas may be repaired as follows:

WARNING

Epoxy primer and polyurethane paint are flammable and toxic to eyes, skin and respiratory tract. Skin/ eye protection required. Avoid repeated/prolonged contact. Use only in well ventilated areas. Keep away from open flame or other sources of ignition.

(1) Touch up chipped/damaged paint areas using primer and polyurethane paint with brush only. Take care that paint does not contaminate container interior or fabric parts.

10. MODIFICATION OF UPPER RISER COVER.

Materials Required

Specification or Part Number	Nomenclature
PIA-W-4088	Webbing, Nylon OD, Type IX, 3-in., Class 1, 1A, or 2
V-T-295	Thread, Nylon, Size E, Type I or II, Class A

a. Remove new riser covers from package.

b. Cut 3-in. length of 3-in. webbing. Sear cut ends.

c. On connector link cover end, mark 1 1/2-in. from end.

d. On riser cover, fastener pile side, lay 3-in. length of webbing, on seared end at mark on riser cover, with excess length toward connector link.

e. Sew a 1/2-in. box-X, 1/8-in. from webbing edge, using size E thread, backstitch 1/2-in.

f. Repeat steps b thru e for opposite cover.

g. During installation of riser covers on risers, remove headpad and route 3-in. wide webbing under cover lid lip.

h. Install headpad.

11. FABRICATION AND INSTALLATION OF LOWER RISER COVER.

Support Equipment Required

Part Number	Nomenclature
—	Hot Knife
—	Shears
—	Square

Materials Required

Specification or Part Number	Nomenclature
MIL-C-7219	Cloth, Nylon Type III, Class 1 Sage Green
MIL-F-21840	Fastener Tape, Hook, 5/8-in. Wide, Type II, Class 1, Sage Green
MIL-F-21840	Fastener Tape, Pile 5/8-in. Wide, Type II, Class 1, Sage Green
V-T-295	Thread, Nylon, Size E, Type I or II, Class A, Sage Green

NOTE

If several riser covers are to be manufactured, it is recommended that a flat pattern (Template) be fabricated to ensure consistent repeatability.

a. Lay out a 15 1/4 x 5-in. rectangle (Figure 8).

b. On the bottom left side measure and mark in 4 3/8-in. Repeat procedure on the top line.

c. Using square and starting on the bottom line, at the 4 3/8-in. mark, measure up 3/8-in.

d. Using square, on the top line, at the 4 3/8-in. mark, measure down 3/8-in.

e. On the far right side, measure and mark 3/8-in. from top and 3/8-in. from the bottom.

f. Using straight edge, connect the top 3/8-in. marks.

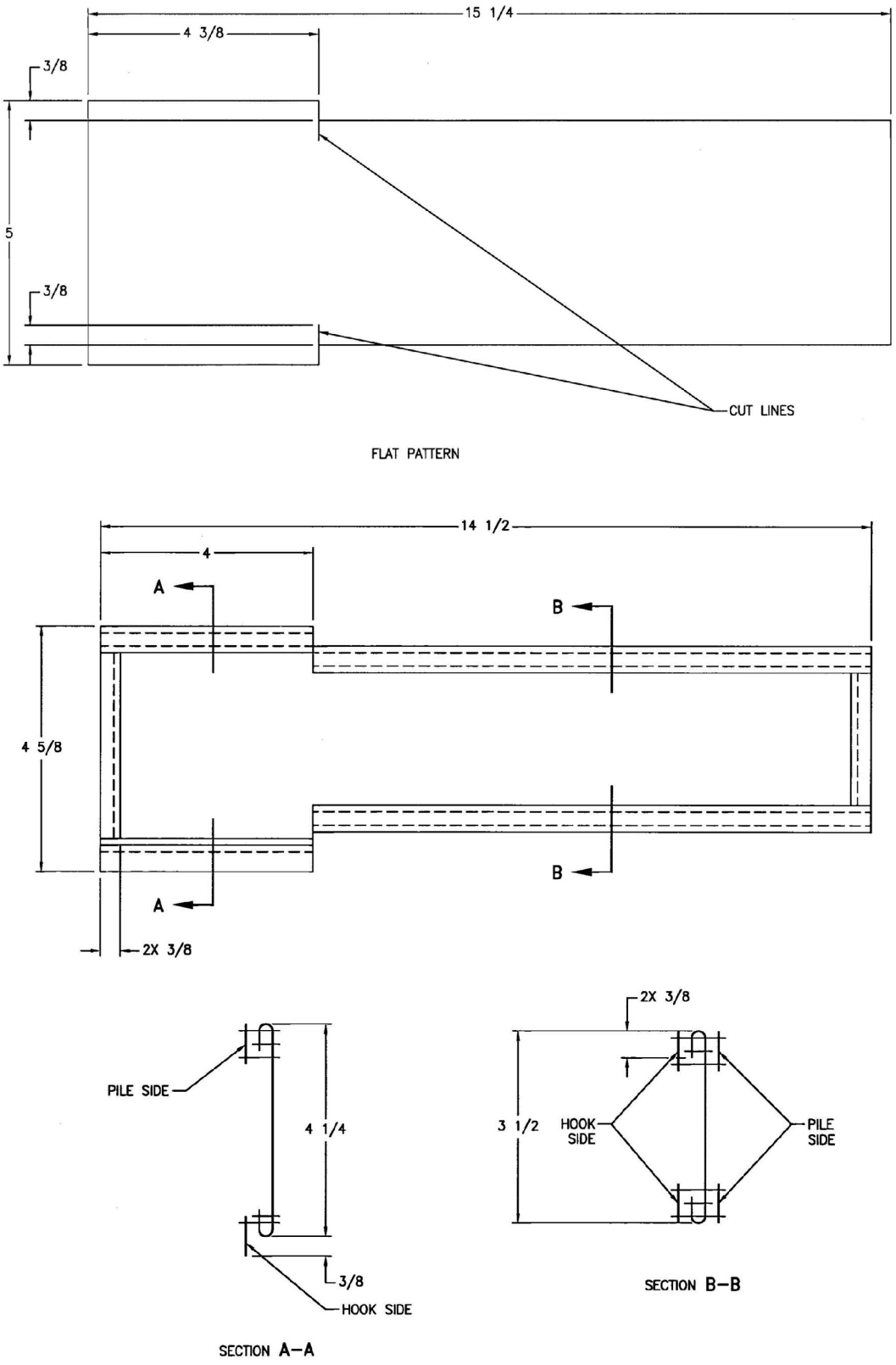

Figure 8. Lower Riser Cover Fabrication

g. Using straight edge, connect the bottom 3/8-in. marks.

h. Using hot knife and straight edge sear cut on lines measured and drawn in the above steps.

i. At the 4 3/8-in. mark, sear cut a slit an additional 3/8-in. down from top and up from bottom. This is to allow the outside edges to be folded.

j. Fold edges over 3/8-in. and sew 1/16-in. from seared edge.

k. Cut two pieces of 5/8-in. hook fastener tape 10-in. long. With folded side up, starting at the 3/8-in. slit, place fastener tape 1/16-in. from top edge and sew in place with a box stitch. Box stitch should be 1/16-in. inboard of fastener tape.

l. Repeat step k for bottom edge.

m. Cut two pieces of 5/8-in. pile fastener tape 10-in. long. With folded side down, starting at the 3/8-in. slit, place fastener tape 1/16-in. from top edge and sew in place with a box stitch. Box stitch should be 1/16-in. inboard of fastener tape.

n. Repeat step m for bottom edge.

o. Cut a 4-in. piece of pile fastener tape. Place fastener tape 1/16-in. from top left edge and sew down with "E" thread. Box stitch should be 1/16-in. inboard of fastener tape.

p. Cut a 4-in. piece of hook fastener tape. Place the top edge of fastener tape, hook side facing fold, 1/8-in. from bottom left edge. Sew in place with single stitch, backstitch 1/2-in. each end.

q. Installation:

(1) At Parachute Harness Sensing Release Unit (PHSRU) end of riser, separate front and rear riser.

(2) Starting with larger riser end, install lower riser cover on each rear riser by mating pile fastener on cover to hook fastener on riser webbing.

(3) Ensure the lower riser cover is installed as close as possible to the riser stitching that secures the chaff webbing to the riser loop end.

(4) Ensure the hook and pile fasteners on lower riser cover and rear risers are mated.

(5) Join front and rear riser webbing together.

12. INSTALLATION OF LOWER RISER COVER.

Materials Required

Specification or Part Number	Nomenclature
1979AS500-100	Riser Cover Assembly

NOTE

One parachute riser cover, P/N 1979AS500-100, consisting of one left and one right riser cover will be sufficient to retrofit the left and right risers of two A/P28S-32(V) parachute assemblies.

a. Remove one new riser cover, P/N 1979AS500-100, from supply package.

b. From top edge of cover with short (4-inch) extension, measure down 14 1/2-in., mark, and sear cut.

c. Using the cut riser cover as a template, lay it over the remaining portion of the cover, mark and sear cut an exact duplicate of the first cover. (There will be excess riser cover remaining that will be disposed of.)

d. At parachute harness sensing release unit riser end, separate front and rear riser. Starting with riser cover end opposite sear cut end, install modified riser cover on each rear riser by mating pile fastener on cover to hook fastener on riser webbing. Ensure the modified riser cover is installed as close as possible to the riser stitching that secures the chaff webbing to the riser loop end. Ensure hook and pile fasteners on modified riser covers and rear risers are mated. Join front and rear riser webbing together.

e. Inspect riser and riser covers to ensure that modified riser covers are mated to the rear risers and the front and rear risers are mated together.

f. Repeat steps a thru e for opposite side riser.

13. REPLACEMENT OF CANOPY BREAKER.

Materials Required

Specification or Part Number	Nomenclature
MS24693-047	Screw
MBEU148009	Breaker
MBEU147592-1	Lid Assembly

a. Remove breaker from damaged headbox lid assembly by removing the two countersunk screws that attach it in place.

b. Obtain new lid assembly and remove pan-head screws from the two holes on top of the lid assembly.

c. Position breaker on top of lid assembly such that the edge of the breaker attachment plate is even with the rear edge of the lid assembly and the holes in the breaker attachment plate are aligned with the holes in the lid assembly.

d. Obtain two screws (MBEU24693-047), insert them in the holes in the breaker attachment plate, and screw them in place tightly with screws fully seated. (QA)

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ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

A/P28S-32(V) 1 to 6 PERSONNEL PARACHUTE ASSEMBLY

PART NUMBERS MBEU147710, MBEU147710-1, MBEU147711, MBEU147712, MBEU147713, and MBEU148030

List of Effective Work Package Pages

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Reference Material

Intermediate Maintenance, Packing Procedures, A/P28S-32 Personnel Parachute Assembly ..... WP 026 02

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Service/Total Life	1
Usable on Codes	1

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A/P28S-32(V) 1 to 6 Personnel Parachute Assembly	2

Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date
ACC 629	11 Sept 97	SJU-17(V)1-A Canopy Breaker	1 Jun 98	31 Dec 2002

1. INTRODUCTION.

a. This work package (WP) contains information for ordering and indentifying parts for the A/P28S-32(V) 1 to 6 Personnel Parachute Assembly (Figure 1).

2. USABLE ON CODES.

a. The usable on codes in this WP refer to aircraft application for the A/P28S-32(V) 1 to 6 Personnel Parachute Assembly.

b. The following usable on code apply to this WP.

A - F/A-18/C, E and T-45A (Aft)

B - F/A-18D, F (Fwd) and T45A (Fwd)

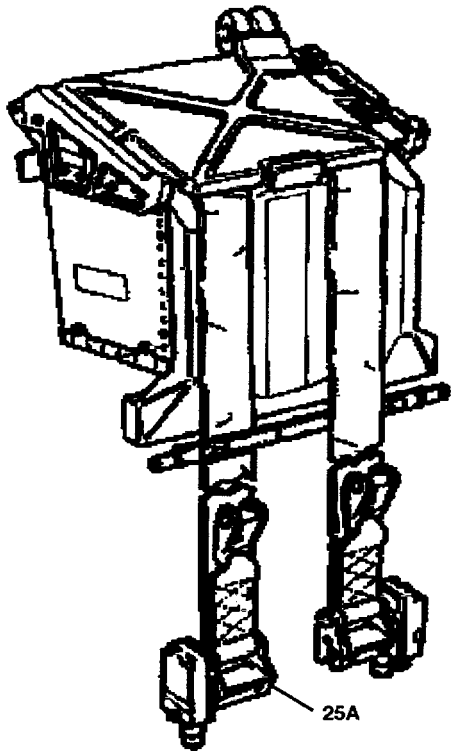
C - F-14D (Fwd)

D - F-14D (Aft)

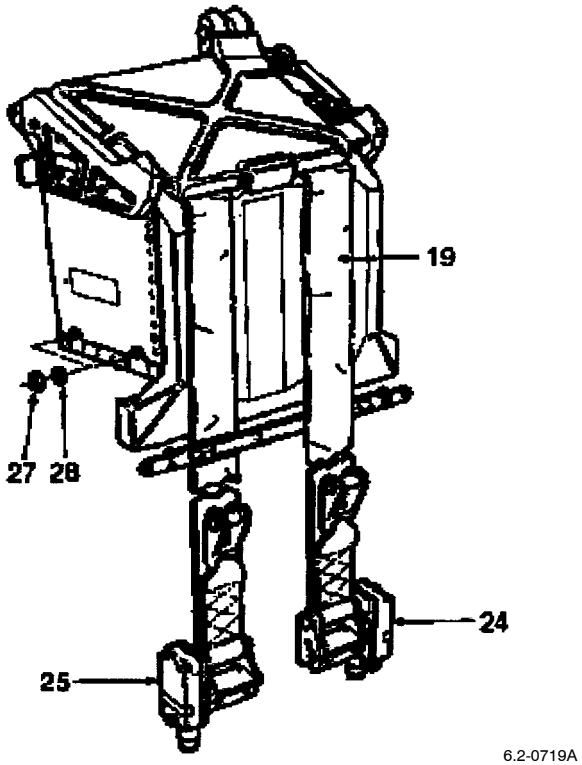
E - F/A-18D, F (Aft)

3. SERVICE/TOTAL LIFE.

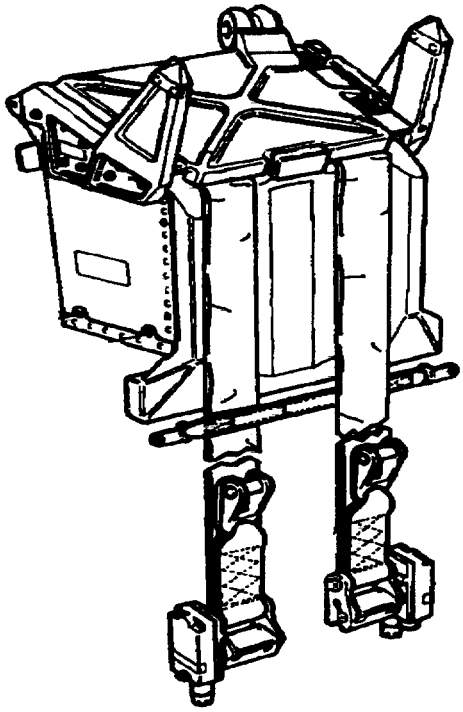
a. The service/total life information is contained in WP 026 02.



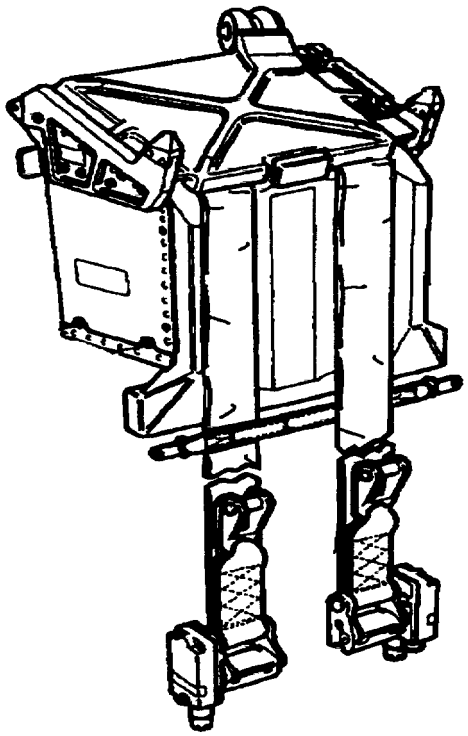
A/P28S-32(V)1 (F/A-18C, E AND T-45A AFT)



A/P28S-32(V)2 (F/A-18D, F FORWARD AND T-45A FORWARD)

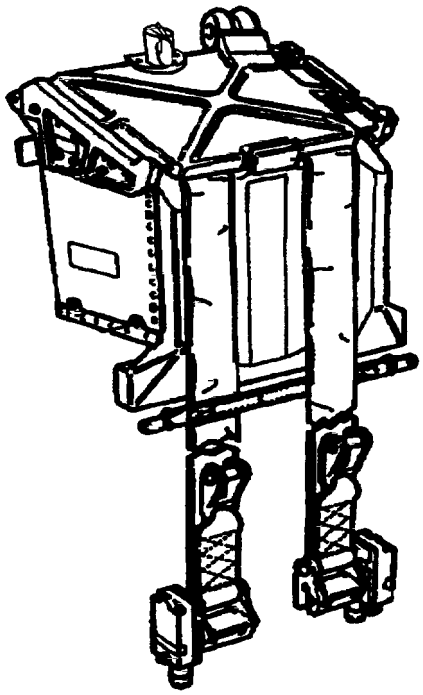


A/P28S-32(V)3 (F-14D FORWARD)



A/P28S-32(V)4 (F-14D AFT)

Figure 1. A/P28S-32(V) 1 to 6 Parachute Assembly (Sheet 1 of 6)



6.2-0719E

A/P28S-32(V)6 (F/A-18D, F AFT)

Figure 1. A/P28S-32(V) 1 to 6 Parachute Assembly (Sheet 2 of 6)

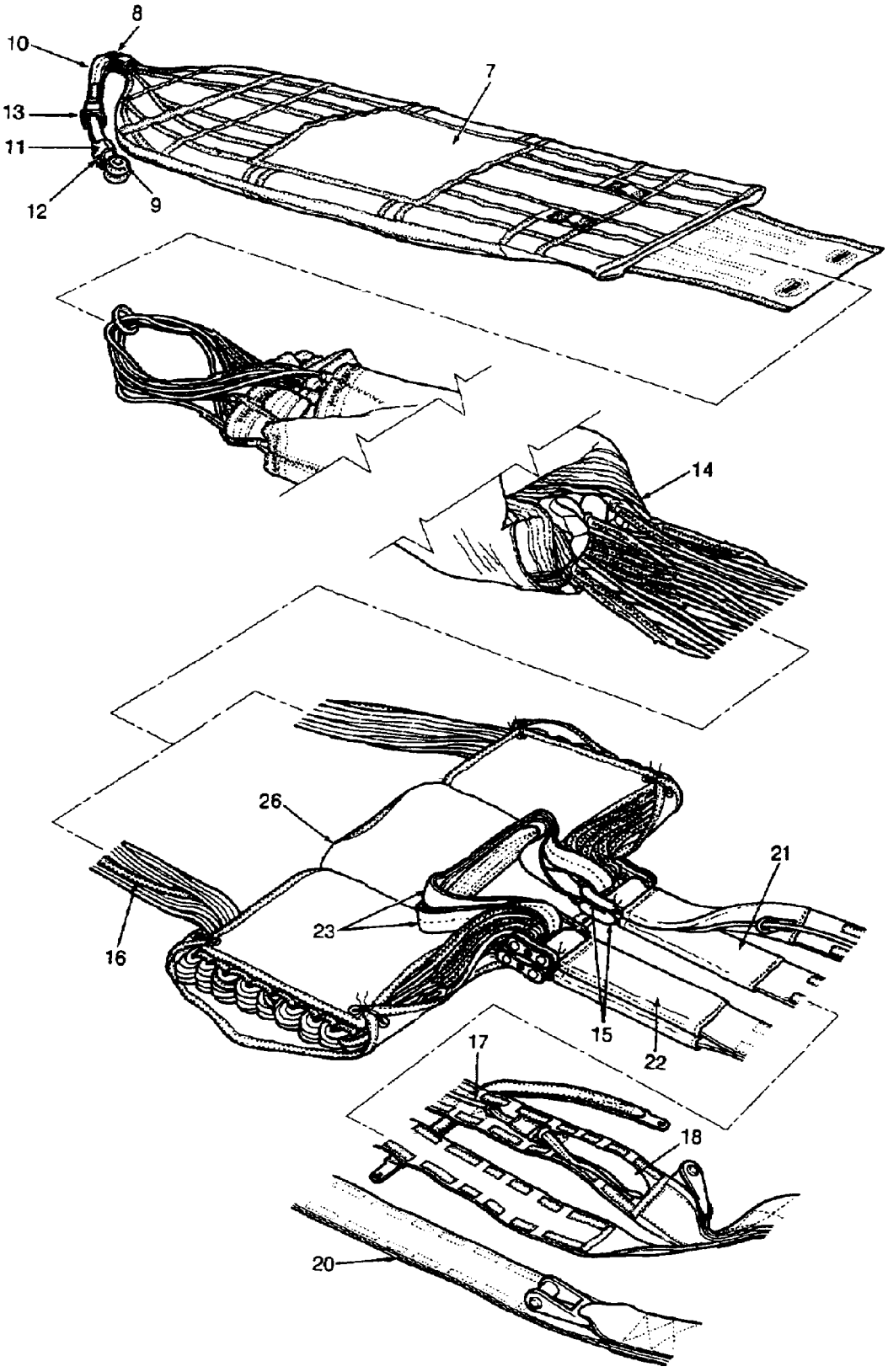


Figure 1. A/P28S-32(V) 1 to 6 Parachute Assembly (Sheet 3 of 6)

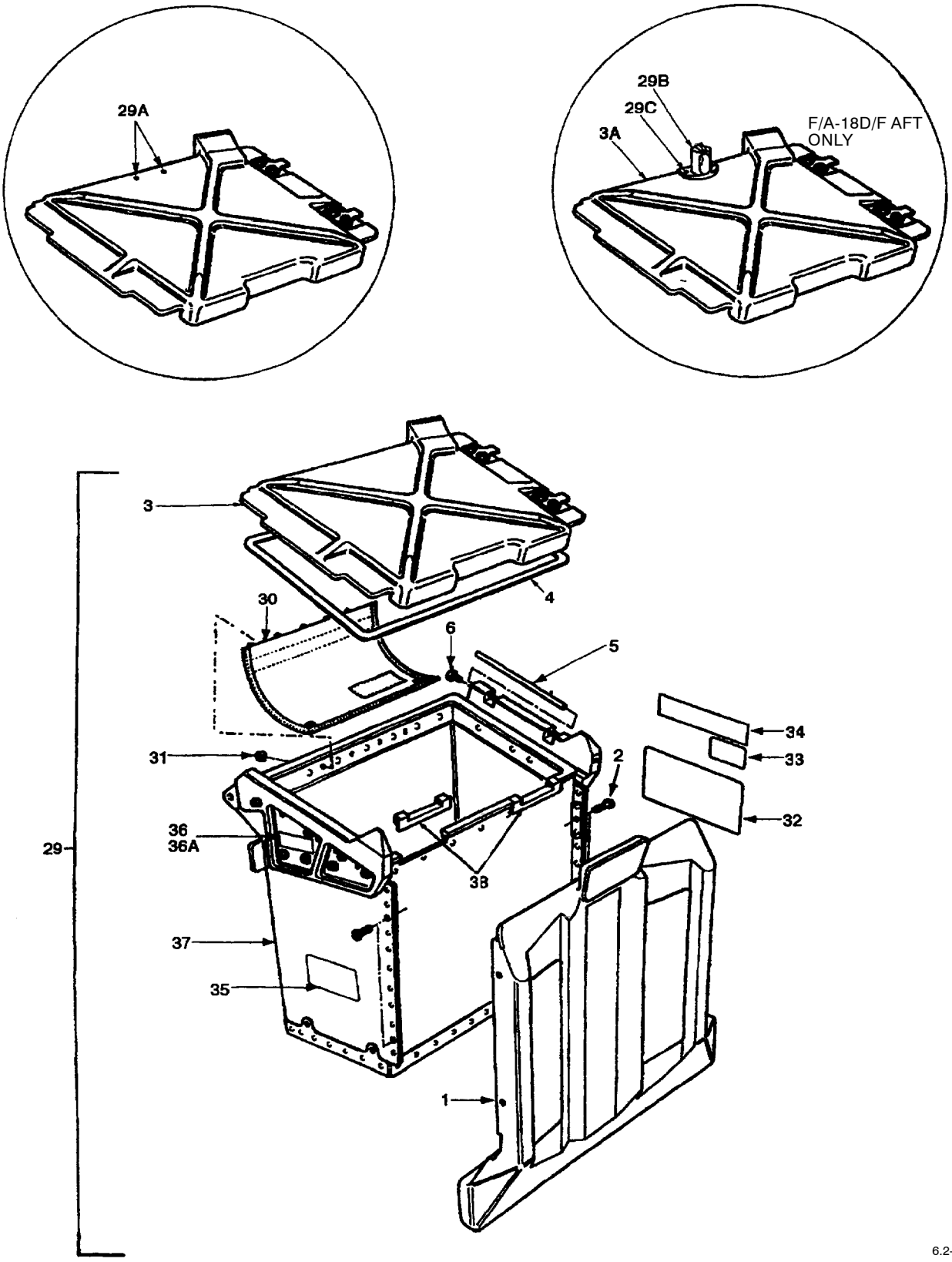


Figure 1. A/P28S-32(V) 1 to 6 Parachute Assembly (Sheet 4 of 6)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	MBEU147710	PARACHUTE, PERSONNEL, ASSEMBLY, ... A/P28S-32(V) 1 (30003)	1	A	PDOHH
	MBEU147710-1	PARACHUTE, PERSONNEL, ASSEMBLY, ... A/P28S-32(V) 1 (30003)	1	A	PDOHH
	MBEU147711	PARACHUTE, PERSONNEL, ASSEMBLY, ... A/P28S-32(V) 2 (30003)	1	B	PDOHH
	MBEU147712	PARACHUTE, PERSONNEL, ASSEMBLY, ... A/P28S-32(V) 3 (30003)	1	C	PDOHH
	MBEU147713	PARACHUTE, PERSONNEL, ASSEMBLY, ... A/P28S-32(V) 4 (30003)	1	D	PDOHH
	MBEU148030	PARACHUTE, PERSONNEL, ASSEMBLY, ... A/P28S-32(V) 6 (30003)	1	E	PDOHH
1	MBEU147673	. HEADPAD, ASSEMBLY . . . . . (ATTACHING PARTS)	1		PAOZZ
2	NAS1218-R08E2	. BOLT, PAN HEAD, 8-32 UNC	4		PAOZZ
3	MBEU147592	. LID, ASSEMBLY	1	A, B, C, D	PAHHH
3A	MBEU147592-1	. LID, ASSEMBLY	1	B, C, D, E	PAHHH
4	MBEU147591	. . SEAL	1		PAHZZ
5	MBEU146337	. PIN, LOCKING . . . . . (ATTACHING PARTS)	1		PAHZZ
6	NAS6303-U1	. BOLT, 10-32 UNF . . . . . ---*---	1		PAOZZ
7	MBEU147716	. SLEEVE, DEPLOYMENT, ASSEMBLY	1		PAHZZ
8	MBEU146959	. . RING	1		XAZZZ
9	MBEU142818	. SPOOL	1		PAHZZ
10	MBEU147607	. LINE, WITHDRAWAL	1		PCHZZ
11	MBEU147609	. CLAMP . . . . . (ATTACHING PARTS)	1		PAHZZ
12	MS24693C29	. SCREW, 6-32 UNC . . . . . ---*---	2		PAHZZ
13	MBEU147642	. SEAL	1		PAHZZ
14	MBEU147610	. CANOPY, PARACHUTE, ASSEMBLY	1		PAHHH
	GQ 31420	. CANOPY, PARACHUTE, ASSEMBLY	1		PAHHH
15	MS22021-1	. LINK, REMOVABLE CONNECTOR, ...	4		PAHZZ
16	MBEU147883	. LINE, STEERING, UPPER	2		PAHZZ
17	MBEU147884	. LINE, STEERING, LOWER	2		PAHZZ
18	MBEU147885	. HANDLE, STEERING LINE	2		PAHZZ
19	1612AS201-10	. COVER ASSEMBLY, RISER	2		PAOZZ
20	MBEU147689	. RISERS, ASSEMBLY	1		PAHHH
21	MBEU147692	. . RISER, LH, ASSEMBLY	1		XAHZZ
22	MBEU147690	. . RISER, RH, ASSEMBLY	1		XAHZZ
23	MBEU141488	. . STRAP, CROSS CONNECTOR	2		XAHZZ

Figure 1. A/P28S-32(V) 1 to 6 Parachute Assembly (Sheet 5 of 6)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
24	852AS117-3	. SENSING RELEASE UNIT PARACHUTE ..... HARNESS MXU-746/P LEFT SIDE	1		AGGGG
25	852AS117-4	. SENSING RELEASE UNIT PARACHUTE ..... HARNESS MXU-747/P RIGHT SIDE	1		AGGGG
25A	990055-1	. . RELEASE ASSEMBLY, CANOPY/99449/	2	*	PAGZZ
	015-10307-5	. . RELEASE ASSEMBLY, CANOPY/99449/ .... (USE UNTIL EXHAUSTED)	2	*	PAGZZ
26	MBEU147599	. TRAY, SUSPENSION LINE, ASSEMBLY ..... (ATTACHING PARTS)	1		PAHZZ
27	NAS679C3MW	. NUT, 10-32 UNF ..... ---*---	4		PAHZZ
28	AGS1186-3	. WASHER, DOWTY	4		PAHZZ
29	MBEU147816	. CONTAINER, PARACHUTE, ASSEMBLY	1	A	PAHHH
	MBEU147816-1	. CONTAINER, PARACHUTE, ASSEMBLY	1	A	PAHHH
29A	MS51957-40	. . SCREW	2		PAHHH
	MBEU147820	. CONTAINER, PARACHUTE, ASSEMBLY	1	B	PAHHH
	MBEU147824	. CONTAINER, PARACHUTE, ASSEMBLY	1	C	PAHHH
	MBEU147828	. CONTAINER, PARACHUTE, ASSEMBLY	1	D	PAHHH
	MBEU148031	. CONTAINER, PARACHUTE ASSEMBLY	1	E	PAHHH
29B	MBEU148009	. . BREAKER	1	E	PAHZZ
29C	MS24693-C47	. . SCREW	2	E	PAHZZ
30	MBEU147765	. . PROTECTION COVER, ASSEMBLY ..... (ATTACHING PARTS)	1		PAHZZ
31	NAS1291-CO8M	. . NUT, SELF LOCKING, 8-32 ..... ---*---	5		PAHZZ
32	MBEU145691	. . LABEL, CHECKLIST (SCOTCHAL)	1		MDOZZ
33	MBEU66468	. . LABEL, ACTUATOR (SCOTCHAL)	1		MDOZZ
34	MBEU66473	. . LABEL, WARNING (SCOTCHAL)	1		MDOZZ
35	MBEU147865	. . LABEL, MODIFICATION (METALCAL)	1		MDOZZ
36	MBEU147576	. . LABEL, IDENTIFICATION (SCOTCHAL)	2	A	MDOZZ
	MBEU147577	. . LABEL, IDENTIFICATION (SCOTCHAL)	2	B	MDOZZ
	MBEU147578	. . LABEL, IDENTIFICATION (SCOTCHAL)	2	C	MDOZZ
	MBEU147579	. . LABEL, IDENTIFICATION (SCOTCHAL)	2	D	MDOZZ
36A	MBEU148032	. . LABEL, IDENTIFICATION ..... (F/A-18D AFT)	2	E	MDOZZ
37	MBEU147817	. . CONTAINER SUBASSEMBLY ..... PARACHUTE	1	A, E	PAHHH
	MBEU147821	. . CONTAINER SUBASSEMBLY ..... PARACHUTE	1	B	PAHHH
	MBEU147825	. . CONTAINER SUBASSEMBLY ..... PARACHUTE	1	C	PAHHH
	MBEU147829	. . CONTAINER SUBASSEMBLY ..... PARACHUTE	1	D	PAHHH
38	MBEU147652	. . . SEAL	2		PAHZZ

Figure 1. A/P28S-32(V) 1 to 6 Parachute Assembly (Sheet 6 of 6)

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ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

A/P22P-21 CREW BACKPACK ASSEMBLY

PART NO. 3615AS0100-9

List of Effective Work Package Pages

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Replacement Schedule	2

Record of Applicable Technical Directives

None

1. DESCRIPTION.

2. **GENERAL**. The A/P22P-21 Crew Backpack Assembly is designed to replace the NB-8 Backpack Assembly. The A/P22P-21 Crew Backpack Assembly is 18.5 inches in length, 14.75 inches wide, 6.0 inches thick, and weighs 17 pounds. The main canopy is a 26-foot extended skirt canopy, made from low-porosity material that is vacuum sealed to protect the main canopy from physical and environmental hazards. The canopy assembly consists of a main canopy, cross connector straps, a slider, diaper, steering handles, upper risers, and suspension lines made of Spectra material. The container is made up of Cordura material and is used to store the sealed canopy assembly and pilot parachute. The harness is used for securing and supporting the crewmember.

3. **CONFIGURATION**. The A/P22P-21 Crew Backpack Assembly has only one configuration and that is shown in Figure 1. Refer to the Illustrated Parts Breakdown WP 027 04 for the exact configuration requirements.

4. **SUBASSEMBLY CONFIGURATION**. The subassemblies listed below make up the A/P22P-21 Crew Backpack Assembly and are shown in Figure 1. Refer to the Illustrated Parts Breakdown WP 027 04 for the exact configuration requirements.

Pilot Parachute Assembly

Pilot Parachute Bridle Cord

Sealed Canopy Bridle Cords

PCU-71/P22P-21 Sealed Canopy Assembly

Harness/Container Assembly

Ripcord and Ripcord Housing

5. PRINCIPLES OF OPERATION.

6. **MANUAL OPERATION**. After emergency bailout, the following operation takes place:

a. The aircrew manually pulls the ripcord handle which removes the ripcord pin from the closing loop to initiate the parachute deployment process. This allows the spring loaded pilot parachute to open the flaps and spring out into the air current.

b. The aircrew falls away from the inflated pilot parachute, causing the pilot parachute bridle cord to pull on the sealed canopy bridle cords. This action tears open the vacuum-sealed bag, causing the suspension lines to be extracted from the deployment bag, followed by main canopy. Upon main canopy deployment, a slider attached to the suspension lines will slide down the suspension lines toward the aircrew to reduce canopy opening shock. The main canopy begins to inflate during this operation.

c. Force is applied to the soft links, causing the main canopy to inflate. The aircrew descends, suspended in the harness.

d. During descent, the aircrew can use the steering handles located on the back side of the rear risers to maneuver the parachute to a less hazardous landing site.

e. Upon landing, the aircrew releases the A/P22P-21 Crew Backpack Assembly by opening the three parachute harness snap ejectors (Chest and 2 leg straps).

7. REPLACEMENT SCHEDULE.

a. Scheduled replacement of the PCU-71/P22P-21 Sealed Canopy Assembly is 2008 days.

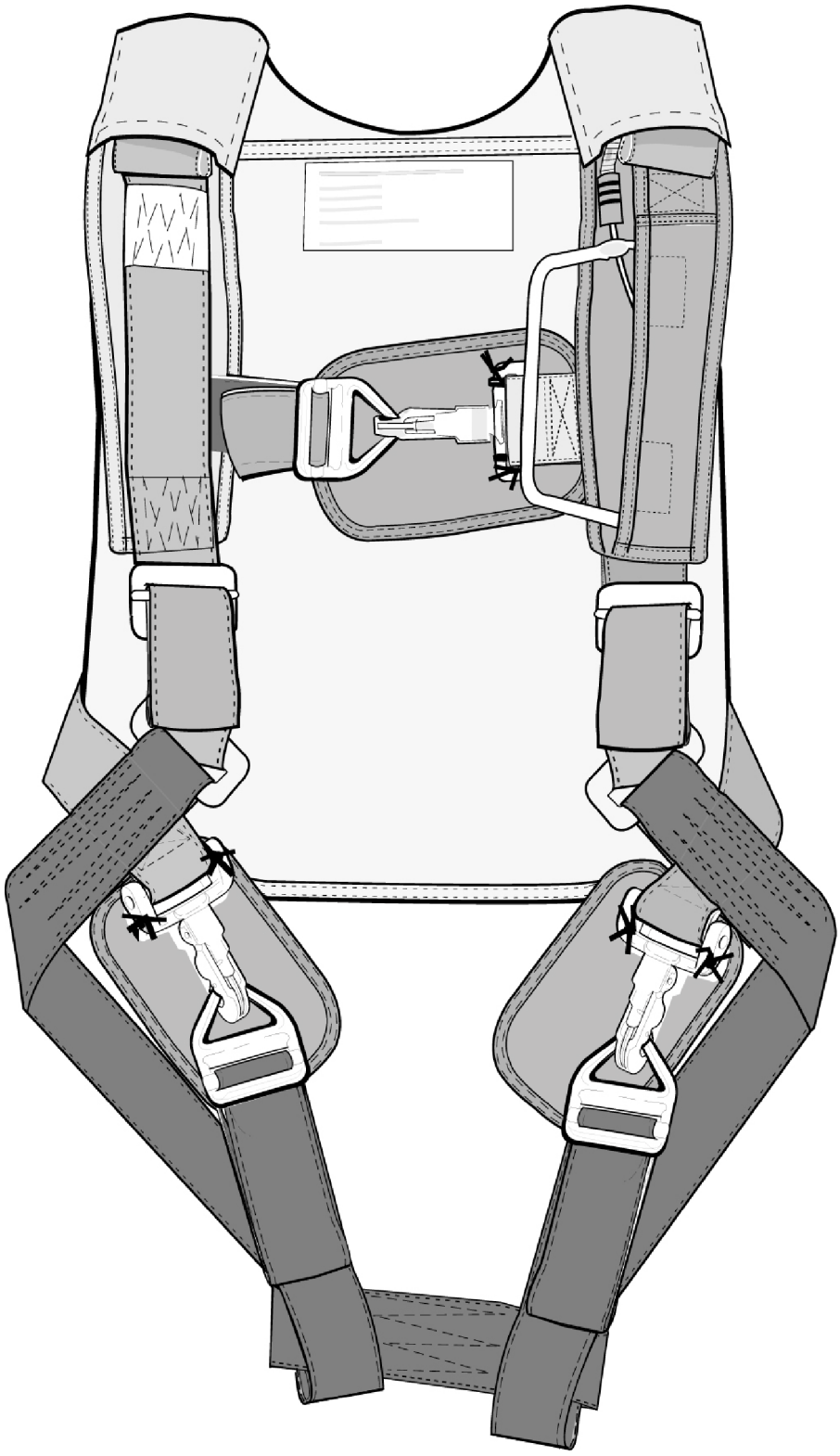
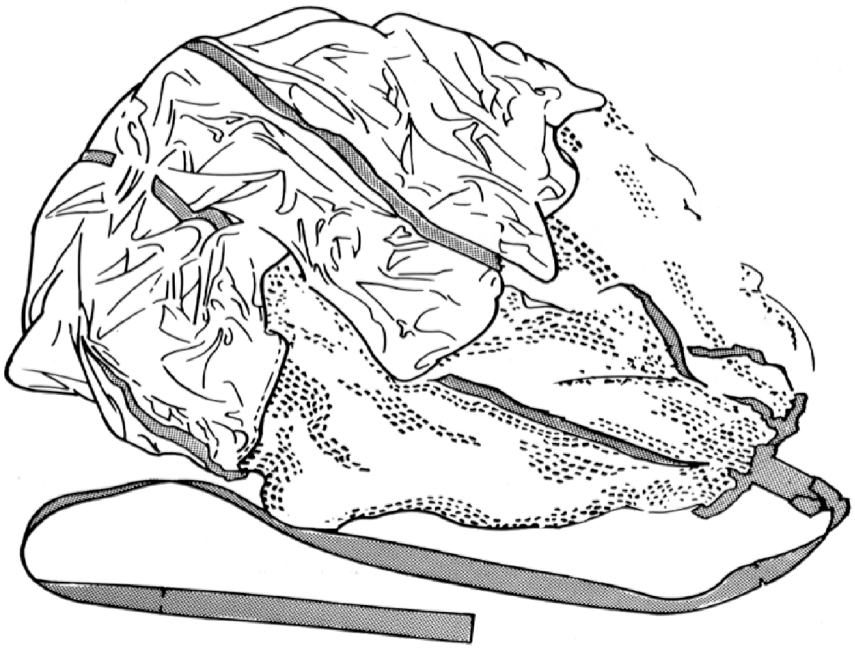


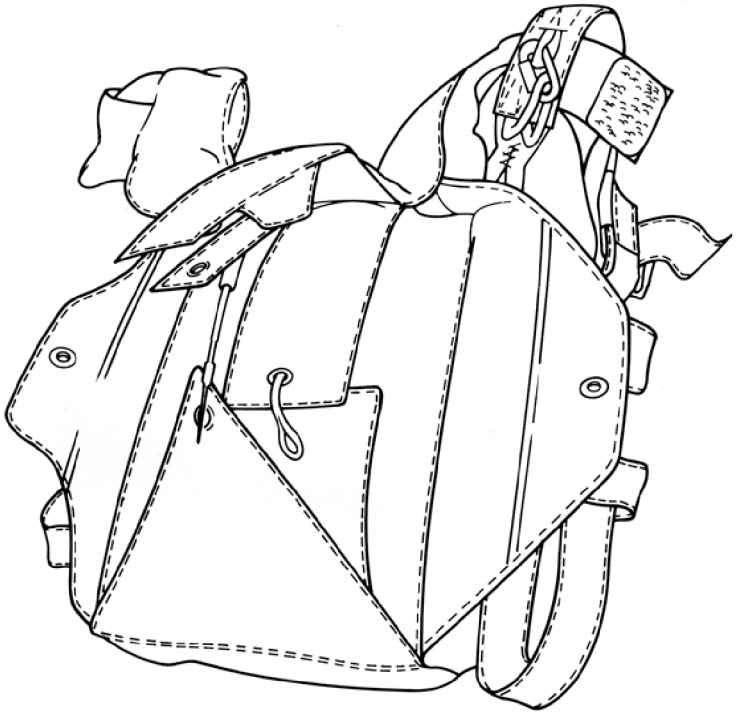
Figure 1. A/P22P-21 Crew Backpack Assembly (Sheet 1 of 3)



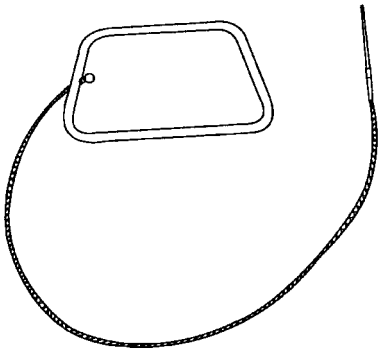
PILOT PARACUTE AND PILOT PARACHUTE BRIDLE CORD

PCU-71/P22P-21 SEALED CANOPY ASSEMBLY AND SEALED CANOPY BRIDLE CORDS

Figure 1. A/P22P-21 Crew Backpack Assembly (Sheet 2 of 3)



HARNESS/CONTAINER ASSEMBLY



RIPCORD ASSEMBLY

RIPCORD HOUSING

Figure 1. A/P22P-21 Crew Backpack Assembly (Sheet 3 of 3)

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ORGANIZATIONAL MAINTENANCE

REPAIR PROCEDURES

A/P22P-21 CREW BACKPACK ASSEMBLY

PART NO. 3615AS0100-9

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Comfort Pad Tacking Replacement	7
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Rapide Link Torque and Sealing Replacement	5
Ripcord Housing Tacking Replacement	4
Ripcord Pin Secure Tie Replacement	3
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Sealed Canopy Assembly	2

Record of Applicable Technical Directives

Type/No.	Date	Title and ECP No.	Date Inc.	Rescission Date

1. INTRODUCTION.

a. This work package (WP) contains instructions for Organization level to ensure that the A/P22P-21 Crew Backpack Assembly remains in Ready-For-Issue (RFI) status.

b. When performing repairs detailed in this WP, follow these guidelines:

(1) Review all applicable instructions prior to starting repairs.

(2) Ensure all necessary support equipment and materials required are available prior to starting repairs.

(3) When required remove enough material from its source for immediate use only. Ensure that the material identification ticket remains with the source material at all times. Material that cannot be identified will not be used.

(4) To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

(5) A Quality Assurance (QA) inspector shall examine the finished work.

2. PARACHUTE ASSEMBLY.

3. SEALED CANOPY ASSEMBLY.

a. If container assembly is soft (pillowed) when squeezed, this will indicate that the sealed canopy assembly has lost its vacuum.

NOTE

Loss of vacuum does not adversely affect the operation of the parachute assembly. The parachute assembly may remain in service until the completion of the deployment or when a replacement is made available.

b. Repair is limited to the removal of the parachute assembly from the aircraft and forwarding to the Intermediate Maintenance Department for replacement and disposition.

c. Initiate a Quality Deficiency Report (QDR), and info NAWCWD China Lake, Code 461000D.

4. HARNESS/CONTAINER REPAIR.

5. HARNESS/CONTAINER TACKING REPLACEMENT.

Support Equipment Required

Part Number	Nomenclature
-------	Needle, Sewing Curved

Materials Required

Specification or Part Number	Nomenclature
A-A-52080-B-2	Tape, Lacing & Tying Finish B, Size 2, Type I, Natural

WARNING

Do not tack the tuck flap to bottom parachute flap. Failure to follow this warning will result in parachute container not opening.

a. Tack using Tape, Lacing & Tying 12-in. long and a curved needle. Tack through tuck flap seam on outer top cover to top closing flap seam using one turn, single, tied with a surgeon's knot, followed by a square knot. Trim off excess. Repeat process on other side (Figures 1 and 2). (QA)

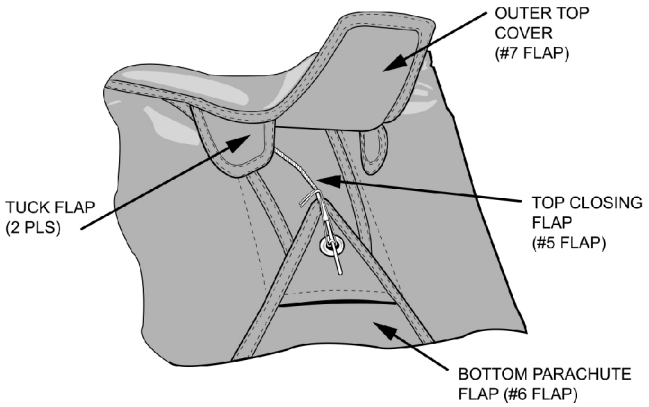

Figure 1. Tacking Tuck Flaps

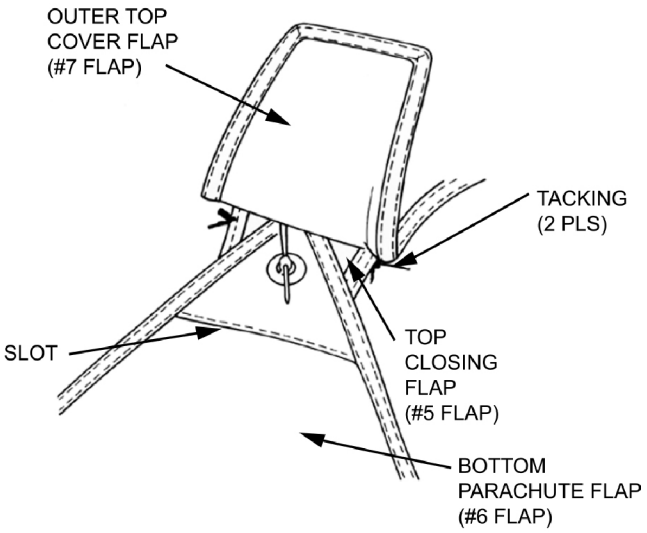

Figure 2. Tacking Tuck Flaps

b. Insert outer top cover flap end into bottom parachute flap slot.

6. CHEST STRAP SNAP EJECTOR TACKING REPLACEMENT.

Support Equipment Required

Part Number	Nomenclature
-------	Needle, Sewing

Materials Required

Specification or Part Number	Nomenclature
A-A-52080-B-2	Tape, Lacing & Tying Finish B, Size 2, Type I, Natural

a. Cut tacking securing comfort pad to snap ejector (4 places). Retain comfort pad.

b. Tack using Tape, Lacing & Tying 12-in. long and a needle. Tack through chest strap snap ejector stiffener and around webbing slot of snap ejector using two turns, single, tied with a surgeon's knot, followed by a square knot. Trim off excess. Repeat process on other side (Figures 3 and 4).

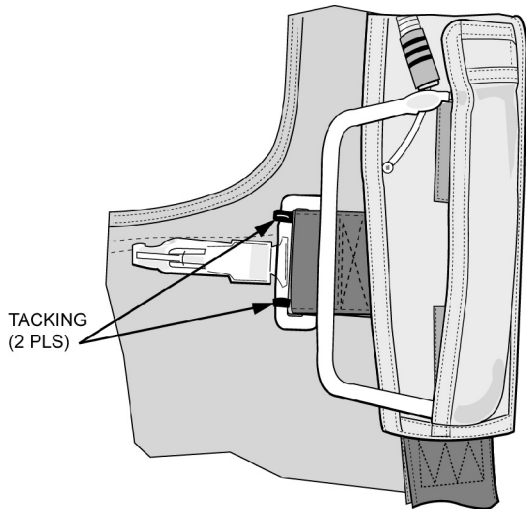

Figure 3. Chest Strap Snap Ejector Strap Stiffener Tacking (Front View)

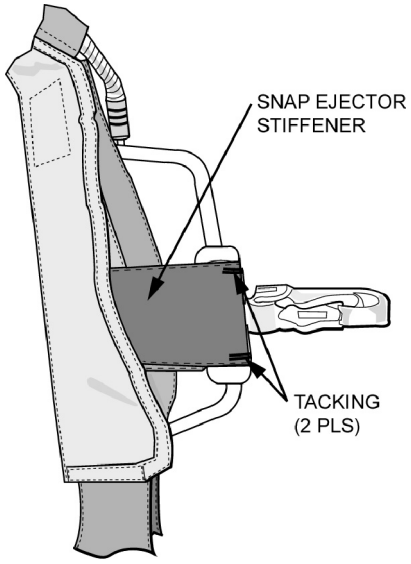

Figure 4. Chest StrapSnap Ejector Strap Stiffener Tacking (Back View)

c. Replace comfort pad per this WP.

7. RIPCORD PIN SECURE TIE REPLACEMENT.

Support Equipment Required

Part Number	Nomenclature
-------	Needle, Sewing Curved

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size A, Type I or II, Class A
A-A-52080-B-2	Tape, Lacing & Tying, Finish B, Size 2, Type I, Natural

a. Cut tacking securing tuck flaps to top closing flap two places. Remove broken thread from ripcord pin.

b. Position ripcord pin so it is fully seated when taper on pin is touching or 1/4-in. from top edge of grommet.

c. Using a 12-in. length of size A thread, single and waxed, form lark's head knot above ripcord pin ferrule. Tie two half hitches around ripcord cable above ripcord pin ferrule. Separate thread and route one thread under ripcord pin and against closing loop, tie with a surgeon's knot, followed by a square knot followed by a binders knot. Trim off excess thread (Figure 5).

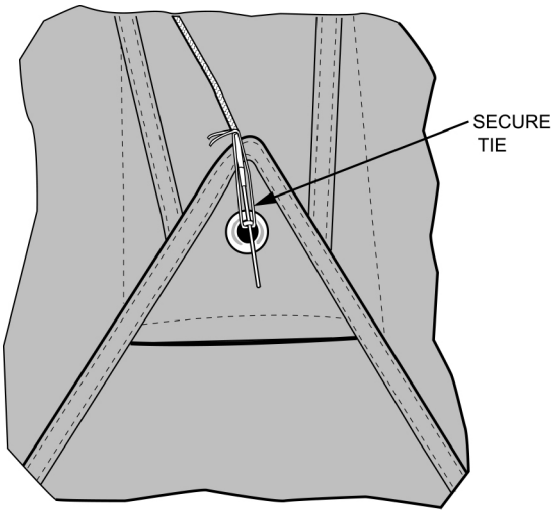

Figure 5. Ripcord Secure Tie

WARNING

Do not tack the tuck flap to bottom parachute flap. Failure to follow this warning will result in parachute container not opening.

d. Tack using Tape, Lacing & Tying 12-in. long and a curved needle. Tack through tuck flap seam on outer top cover flap to top closing flap seam, using one turn, single, tied with a surgeon's knot, followed by a square knot. Trim off excess. Repeat process on other side (Figures 6 and 7). (QA)

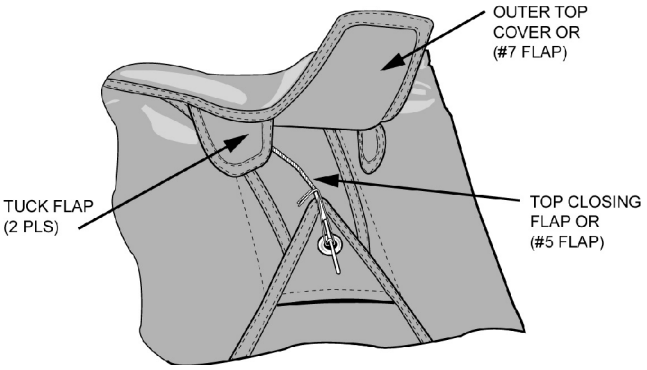

Figure 6. Tacking Tuck Flaps

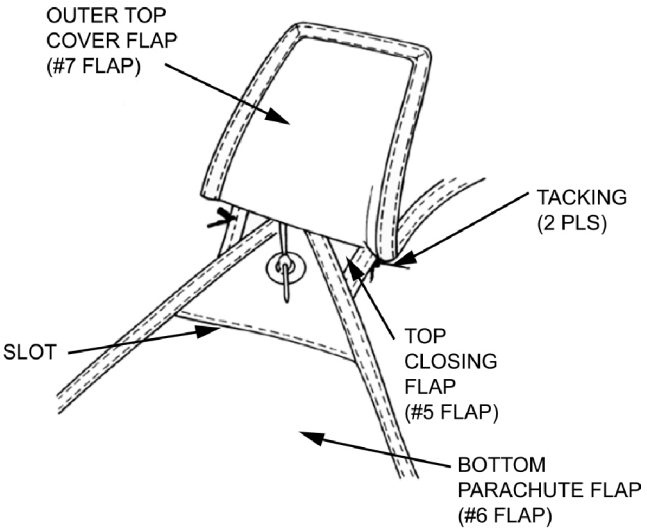

Figure 7. Tacking Tuck Flaps

e. Insert outer top cover flap end into bottom parachute flap slot.

8. RIPCORD HOUSING TACKING REPLACEMENT.

Support Equipment Required

Part Number	Nomenclature
-------	Needle, Sewing

Materials Required

Specification or Part Number	Nomenclature
A-A-52080-B-2	Tape, Lacing & Tying Finish B, Size 2, Type I, Natural

a. Tack using Tape, Lacing & Tying 12-in. long, and a needle. Tack ripcord housing end to tack loop next to ripcord handle, ensure ferrule is even with tack loop edge. Tie through tack loop and around housing using three turns, single, tied with a surgeon's knot, followed by a square knot. Trim off excess lace (Figure 8).

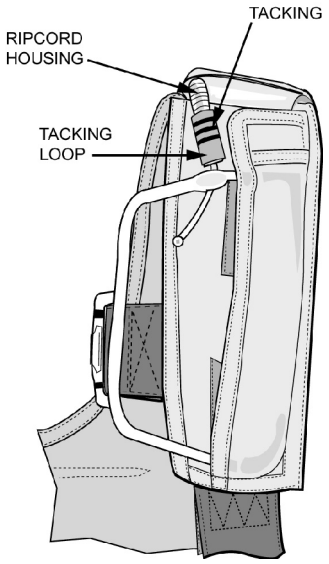

Figure 8. Tacking Ripcord Housing

9. RAPIDE LINK TORQUE AND SEALING REPLACEMENT.

Support Equipment Required

Part Number	Nomenclature
OEX100	Wrench combination 5/16-in.
TMRX10	Crowfoot, Socket Wrench 5/16-in.
TQS6	Driver, Torque, in-lbs.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

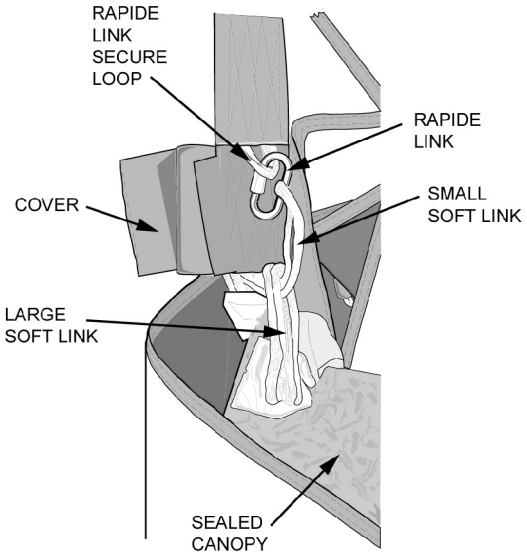

Figure 9. Rapide Link

a. Using 5/16-in. wrench, break loose nut on Rapide link and back it off (Figure 9).

b. Clean off old sealing compound from Rapide link.

c. Hand-tighten Rapide link nut.

d. Torque Rapide link to 10 ± 2 in-lbs (value has been computed already). (QA)

NOTE

Ensure that sealing compound is applied to the thread side of the Rapide link nut.

e. Apply sealing compound to nut and thread area on Rapide link.

f. Secure Rapide link in place with cover and secure to hook fastener.

g. Close shoulder cover and secure pile to hook fastener.

10. SNAP EJECTOR REPLACEMENT.

11. Snap Ejector Removal.

Support Equipment Required

Specification or Part Number	Nomenclature
-------	Bolt cutter

CAUTION

Do not nick or cut the webbing. Any nick or cut on webbing from bolt cutter is cause for replacing the harness/container.

a. Using bolt cutters, cut snap ejector on both sides of webbing slot. Remove snap ejector (Figure 10).

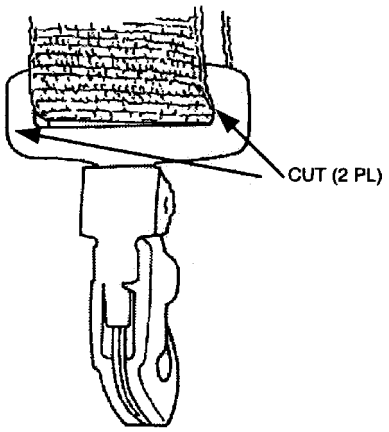

Figure 10. Snap Ejector Removal

12. Snap Ejector Installation.

Support Equipment Required

Specification or Part Number	Nomenclature
68D37721-3	Snap Ejector, w/removable pin
-------	Screwdriver, Flat

Materials Required

Specification or Part Number	Nomenclature
MIL-S-22473	Sealing Compound

a. Remove screw pin from ejector snap.

b. Insert roller through webbing loop in chest or leg strap.

c. Apply one drop of sealing compound to first three threads of screw pin.

d. Insert webbing between snap ejector prongs. Insert screw pin through ejector snap prongs and roller, and then tighten screw pin (Figure 11).

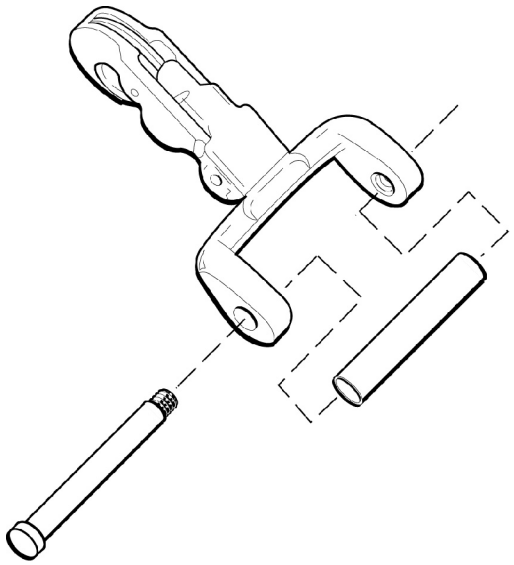

Figure 11. Snap Ejector Installation

13. COMFORT PAD REPLACEMENT.

Support Equipment Required

Specification or Part Number	Nomenclature
-------	Needle, Sewing
-------	Scissors

Materials Required

Specification or Part Number	Nomenclature
A-A-52080-B-2	Tape, Lacing & Tying Finish B, Size 2, Type I, Natural

14. Comfort Pad Removal.

a. Cut tacking securing comfort pad to snap ejector (4 places) (Figure 12).

15. Comfort Pad Replacement.

a. Using Tape, Lacing & Tying 10-in. long and a needle. Tack replacement comfort pad to snap ejector in 4 places using one turn, doubled, tied with a surgeon's knot, followed by a square knot. Trim off excess. Repeat for remaining tacks (Figure 12).

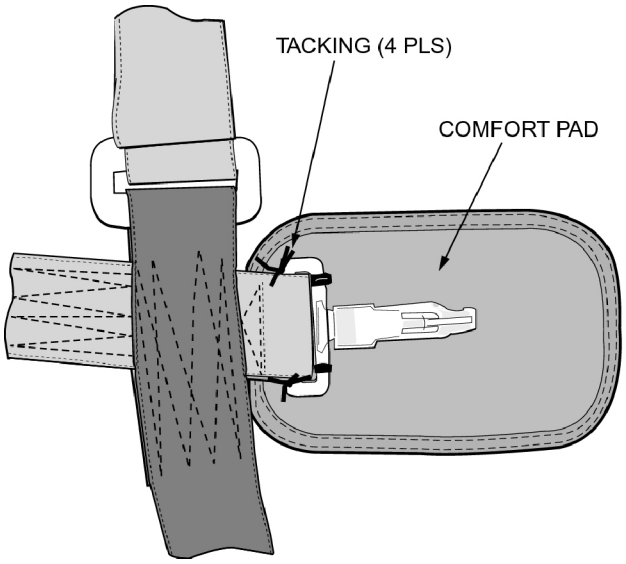

Figure 12. Comfort Pad Replacement

16. COMFORT PAD TACKING REPLACEMENT.

Support Equipment Required

Specification or Part Number	Nomenclature
-------	Needle, Sewing
-------	Scissors

Materials Required

Specification or Part Number	Nomenclature
A-A-52080-B-2	Tape, Lacing & Tying Finish B, Size 2, Type I, Natural

a. Using Tape, Lacing & Typing 10-in. long and a needle. Tack replacement comfort pad to snap ejector in four places using one turn, doubled, tied with a surgeon's knot, followed by a square knot. Trim off excess. Repeat for remaining tacks (Figure 12).

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INTERMEDIATE AND DEPOT MAINTENANCE

ASSEMBLE/DISASSEMBLE PROCEDURES

A/P22P-21 CREW BACKPACK ASSEMBLY

PART NO. 3615AS0100-9

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Ripcord Pin Pull Test	12

Record of Applicable Technical Directives

None

1. GENERAL.

2. This Work Package (WP) provides assemble and disassemble instructions for the A/P22P-21 Crew Backpack Assembly.

3. The A/P22P-21 Crew Backpack Assembly consists of assembling and disassembling of components. There is no packing of the main canopy. The packer should refer to WP 003 00 for any additional parachute loft requirements and administration instructions.

4. Quality Assurance (QA) points are included in the packing procedures. When a procedural step is followed by (QA), a quality assurance requirement exists. Witnessing of the QA step may be delayed by QA, if their satisfactory completion is verified in a later step.

5. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
DPP-50	Tester, Spring Resiliency
S7320	Leverage Closing Device
OEX100	Wrench Combination 5/16-in.
TMRX10	Crowfoot, Socket Wrench 5/16-in.
TQS6	Driver, Torque, in-lbs.
-------	Temporary Closing Pin
-------	Needle, Sewing Curved
-------	Scissors
-------	Ruler, 12-in.
-------	Pull-up Cord 100 lb
Refer to WP 005 00	Roll Bar

Materials Required

Specification or Part Number	Nomenclature
A-A-52080-B-2	Tape, Lacing & Tying Finish B, Size 2, Type I, Natural
V-T-295	Thread, Nylon, Size A, Type I or II, Class A
F-900 Torque Seal (Color Optional)	Sealing Compound
3516AS0570-1	Closing Loop Assembly

6. LAYOUT/DISASSEMBLE PARACHUTE ASSEMBLY.

CAUTION

When performing disassembling procedures watches and rings must be removed to prevent puncturing or tearing of the sealed canopy assembly bag.

a. Position harness/container on packing table with bottom edge of harness/container facing packer.

b. Remove outer top cover flap from slot on bottom parachute flap.

c. Cut tacking securing tuck flap to top closing flap (2 places).

d. Open outer top cover flap. Remove cut tacking.

CAUTION

When opening parachute container care must be taken to prevent pilot parachute from tearing the vacuum seal initiators.

e. Remove ripcord handle from ripcord pocket. Place one hand over ripcord pin, with firm pressure. Pull ripcord handle to extract ripcord pin from closing loop. Maintain control of the pilot parachute as it exits through the container flaps and fully extended.

f. Remove pilot parachute from parachute container and position it next to parachute container. Open parachute container flaps, and both shoulder flaps.

g. Remove thread from ripcord pin.

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h. Loosen Lark's head knot on pilot parachute. Route bottom of pilot parachute through large loop of pilot parachute bridle cord. Remove pilot parachute bridle cord from pilot parachute loop.

CAUTION

When separating the pilot parachute bridle cord from the sealed canopy bridle cords care must be taken to prevent tearing the vacuum seal initiators.

i. Loosen Lark's head knot on pilot parachute bridle cord and sealed canopy bridle cords. Remove pilot parachute bridle cord from four large loops on the sealed canopy bridle cord.

NOTE

Do not remove the four (4) sealed canopy bridle cords. These will be shipped with the sealed canopy assembly.

Deleted.

j. Deleted.

k. Deleted.

l. Carefully lift and slide the sealed canopy assembly forward to expose securing loops (2 places).

CAUTION

Do not puncture sealed canopy assembly while performing step m.

m. Cut tacking (2 places) at the bottom corners on harness/container securing sealed canopy assembly to harness/container (Figure 1). Remove cut tacking.

n. Open cover securing Rapide link (Figure 2).

CAUTION

Care must be used when removing small soft link from Rapide link. Rapide link nut must be backed off completely to prevent fraying or tearing of the small soft link.

o. Using 5/16-in. wrench, break loose the nut on Rapide link. Back off nut and remove small soft link from Rapide link. Leave Rapide link attached to Rapide link secure loop.

p. Repeat step n and o for opposite side.

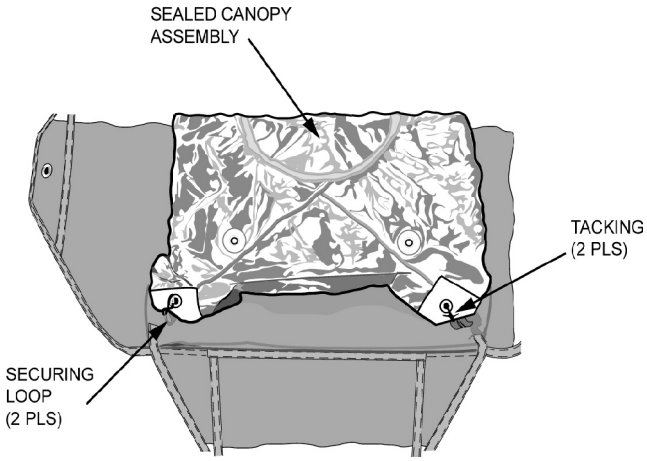

Figure 1. Cut Sealed Canopy Assembly Tacking

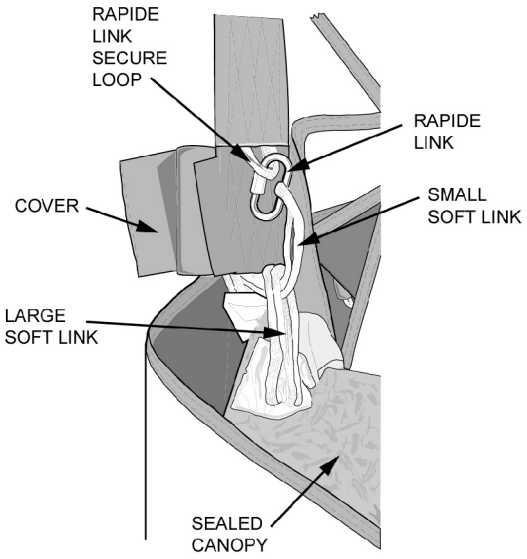

Figure 2. Rapide Link

q. Remove small soft link from large soft link. Slowly pull and remove large soft link from sealed canopy assembly hole.

r. Repeat step q for opposite side.

CAUTION

Sealed canopy assembly is easy to puncture or tear when not protected. Special precaution for storage of the sealed canopy assembly is important. Do not store in dirt or grit contaminated area. A soft, smooth, clean, dry storage area is required.

s. Remove sealed canopy assembly (PCU-71/P22P-21) with sealed canopy bridle cords installed and forward to supply for disposition.

t. Remove and discard closing loop assembly.

7. INSPECTION (SPECIAL).

a. Scheduled replacement of the Sealed Canopy Assembly (PCU-71/P22P-21) is 2008 days.

8. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Parachute Harness Sensing Release Unit Cartridge) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be re-based if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Check date Placed-In-Service and date of manufacture on each parachute component for service life as follows:

Nomenclature	Total Life (Yr)
Harness/Container Assembly	14
Pilot Parachute Assembly	14
Pilot Parachute Bridle Cord	14
Sealed Canopy Bridle Cords	14
Sealed Canopy Assembly	5 1/2

(1) Check markings for completeness, legibility, and accuracy with information on parachute record. (QA)

(2) Compare configuration of parachute assembly to that shown WP 027 04 Illustrated Parts Breakdown.

9. INSPECTION OF PILOT PARACHUTE AND PILOT PARACHUTE BRIDLE CORD.

a. Inspect fabric surfaces and seams for cuts, tears, burns, fraying, and loose or broken stitching.

b. Inspect seam area at crown for seam separation.

c. Inspect coil spring assembly for distortion, cracks, crimped ferrule secure, and corrosion.

d. Inspect loose or broken tacking (8 places) at bottom of coil spring assembly.

e. Inspect pilot parachute bridle cord for cuts, fraying, loose or broken stitching.

10. INSPECTION OF SEALED CANOPY ASSEMBLY AND SEALED CANOPY BRIDLE CORDS.

a. Inspect replacement sealed canopy assembly vacuum bag for softness (indicating the sealed assembly has an air leak), cuts, tears, or punctures.

CAUTION

If initiator cuts are missing do not use sealed canopy assembly.

Care must be taken when verifying the initiator cuts.

NOTE

If red tape piece(s) are missing on initiator cuts, still use sealed canopy assembly but verify initiator cuts have been made in heat seal seam.

b. Verify that 15 red tape pieces are present to protect initiator cuts. (QA)

(1) Five (5) red tape pieces on top edge (soft link end).

(2) Three (3) red tape pieces on left side.

(3) Three (3) red tape pieces on right side.

(4) Four (4) red tape pieces on top, next to 4 sealed canopy bridle cord attachment grommets.

c. Deleted.

d. Deleted.

e. Inspect sealed canopy bridle cords for cuts, fraying, and loose or broken stitching.

11. INSPECTION OF HARNESS/CONTAINER AND SOFT LINK.

a. Inspect webbing for contamination, rust at points of contact with metal parts, cuts, fading, wear, fraying, abrasions, and loose or broken stitching.

b. Deleted.

c. Inspect adjustable v-rings for damage, corrosion, and security of attachment.

d. Inspect parachute harness snap ejectors and quick adjusters for damage, corrosion, security of attachment, and ease of operation.

e. Inspect Rapide links for damage, corrosion, bent, and ease of operation.

f. Ensure Rapide link is a size #4.

g. Inspect container fabric for seam separation, loose or broken stitching, cuts, tears, contamination, deterioration, and wear.

h. Inspect flap grommets for security of attachment, cracks, bent, and corrosion.

i. Inspect soft link cords for cuts, wear, fraying, and loose or broken stitching.

j. Inspect comfort pads for cuts, tears, contamination, deterioration, wear, and broken tracking.

12. INSPECTION OF RIPCORD ASSEMBLY AND RIPCORD HOUSING.

a. Inspect cable for corrosion, bends, fraying, broken strands, and security of swaged terminal ball.

b. Inspect locking pin for bends or cracks.

c. Inspect grip for bends, cracks, and corrosion.

d. Inspect housing for corrosion, bends, loose ferrules, breaks, and cracks.

e. Inspect ripcord housing for tacking on both ends.

f. Inspect ripcord pocket for proper securing of the ripcord grip.

13. INSPECTION OF CLOSING LOOP.

NOTE

Closing loop shall be replaced each time the container assembly is opened.

a. Inspect replacement closing loop for cuts, fraying, and loose or broken stitching and washer is attached.

b. Perform closing loop measurement on replacement closing loop. Measure from the top of washer to the top of closing loop. Measurement shall be 2 1/4-in. ±1/8-in. (QA)

14. FABRICATION OF CLOSING LOOP.

a. Fabricate replacement closing loop per WP 027 03.

15. ASSEMBLE PARACHUTE ASSEMBLY.

CAUTION

When performing assembly procedures watches and rings must be removed to prevent puncturing or tearing of the sealed canopy assembly bag.

16. INSTALLATION OF RIPCORD.

a. Route ripcord pin and cable through ripcord housing.

NOTE

Ensure wide end of grip goes into pocket.

b. Secure ripcord handle in ripcord pocket.

17. INSTALLATION OF SEALED CANOPY ASSEMBLY.

a. Position harness/container on packing table with flaps open and bottom edge of harness/container facing packer.

b. Turn bottom launch flap (#2 flap) and bottom closing flap (#6 flap) under the harness/container to expose two securing loops.

CAUTION

When installing sealed canopy assembly into container care must be taken to prevent punctures or tears.

c. Install sealed canopy assembly (PCU-71/P22P-21) into compartment of harness/container with labeling facing down, and taped corners with no grommets towards top of container.

NOTE

Carefully fold left and right edges of bag material downward over sides.

d. Tack bottom grommet on sealed canopy assembly to harness/container securing loop, using Tape, Lacing & Tying 25-inches long, making two turns, doubled. Route Tape, Lacing & Tying through harness/container, secure loop, up through the grommet, and back through the harness/container, secure loop, and back up through the grommet. Pull snug. Tie with a surgeon's knot, followed by a square knot. Trim off excess 1/2-inch from knot (Figure 3).

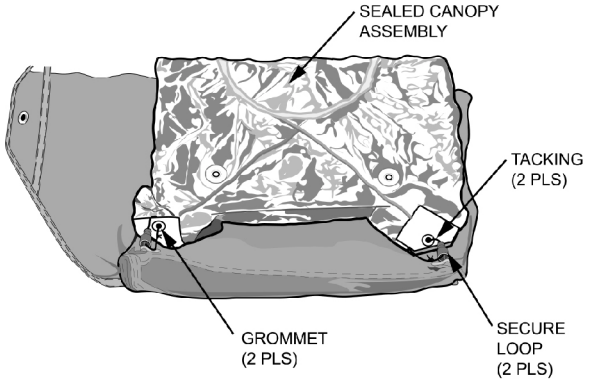

Figure 3. Tacking Sealed Canopy Assembly

e. Repeat step d for opposite side. (QA)

f. Return bottom launch flap (#2 flap) and bottom closing flap (#6 flap) on harness/container to normal position.

WARNING

Failure to connect soft links to Rapide link will cause a malfunction in the deployment of the system.

g. Connect soft link to sealed canopy assembly by routing 12-in. long pull-up cord through large soft link loop and up through the bottom of the sealed canopy assembly taped hole. Pull large soft link 4-inches through sealed canopy assembly taped hole. Ensure no twists are in the large soft link, and riser.

h. Repeat step g for opposite side.

CAUTION

Care must be used when routing Rapide link through small soft link to prevent fraying or tearing of the link. Rapide link nut must be backed off completely.

i. Route small soft link through large soft link and connect to Rapide link. Ensure no twists are in the small soft link and Rapide link secure loop. Hand tighten nut (Figure 4).

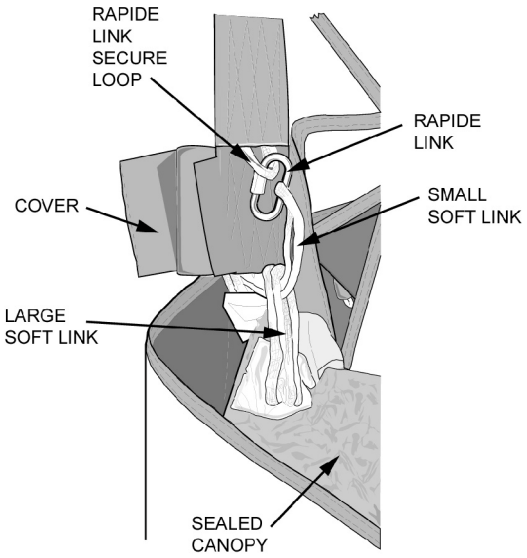

Figure 4. Soft Link Routing

j. Repeat step i for opposite side.

k. Torque Rapide link to 10 ± 2 in-lbs. (value has been computed already). (QA)

l. Repeat step k for opposite side.

NOTE

Ensure that sealing compound is applied to the thread side of the Rapide link nut.

m. Apply sealing compound to nut and thread area on Rapide link.

n. Repeat step m for opposite side.

o. Allow sealing compound to dry thoroughly, close cover. (QA)

18. SEALED CANOPY BRIDLE CORDS.

CAUTION

Care must be taken not to tear the initiator cuts when attaching sealed canopy bridle cords to sealed canopy assembly.

a. Verify that bridle cords are present and installed correctly. The small loops should be routed down through grommets, bridle cord big loop passed through small loop, and pulled forming a loose Lark's head knot.

b. Deleted.

19. ATTACHING PILOT PARACHUTE BRIDLE CORD.

CAUTION

Care must be taken not to tear the initiator cuts when attaching pilot parachute bridle cord to the sealed canopy bridle cords.

NOTE

When routing the pilot parachute bridle cord start at the upper right hand corner and work clockwise.

a. Route small loop on pilot parachute bridle cord through the four large loops on the sealed canopy bridle cords.

b. Pass large loop on pilot parachute bridle cord through the small loop on pilot parachute bridle cord to form a Lark's head knot. Pull snug.

20. ATTACHING PILOT PARACHUTE.

a. Route large loop of pilot parachute bridle cord through pilot parachute loop. Take large loop on pilot parachute bridle cord and pass it over the top cap of the pilot parachute. Pass the entire pilot parachute through large loop of pilot parachute bridle cord to form a Lark's head knot. Pull snug. (QA)

21. INSTALLATION OF CLOSING LOOP.

a. Deleted.

b. Install closing loop in top pilot parachute launch flap (#1 flap) by inserting from bottom up through grommet (Figure 5).

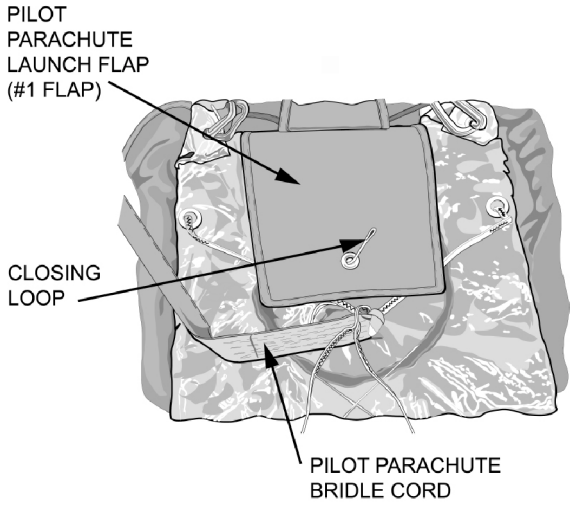

Figure 5. Install Closing Loop

22. CLOSING HARNESS/CONTAINER ASSEMBLY.

NOTE

The following steps will require the use of the tape card to ensure that all red tape pieces are accounted for.

a. Position pilot parachute and pilot parachute bridle cord on left side of harness/container.

b. Annotate serial number of the sealed canopy assembly on tape card (Figure 6).

c. Remove (3) red tape pieces from the left side of the sealed canopy assembly. Verify small cuts have been made at seam edge, and place red tape pieces in their corresponding space on tape card (Figure 6).

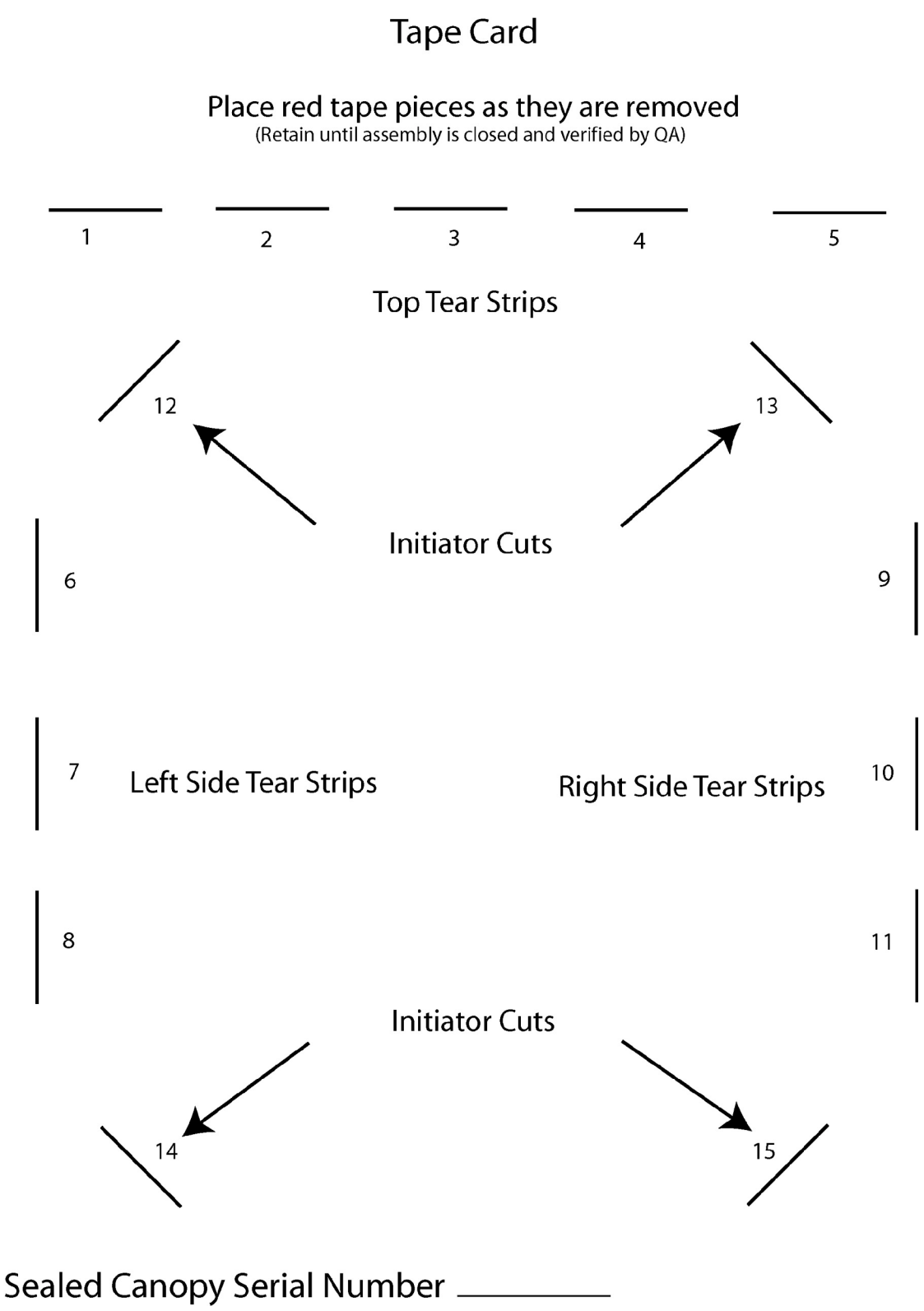

Figure 6. Tape Card

d. Remove (3) red tape pieces from the right side of the sealed canopy assembly. Verify small cuts have been made at seam edge, and place red tape pieces in their corresponding space on tape card (Figure 6).

e. Verify top edge bag material has remained folded up and back. Initiator cuts with (5) red tape pieces should be folded on the top of the sealed canopy assembly. Remove (5) red tape pieces from the top of the sealed canopy assembly. Verify initiator cuts have been made in heat seal seam, and place red tape pieces in their corresponding space on tape card (Figure 6).

f. Verify (11) red tape pieces on tape card (Figure 6). (QA)

g. Route pull-up cord through the closing loop and up through the grommet of the bottom pilot parachute launch flap (#2 flap). Pull the closing loop through the bottom pilot parachute launch flap grommet and secure with a temporary closing pin (Figure 7).

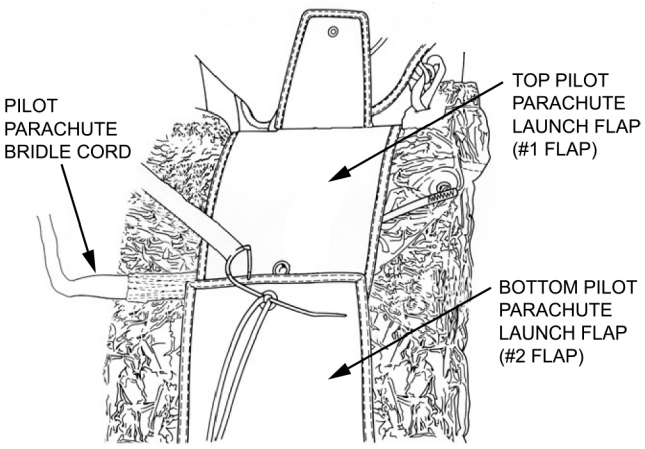

Figure 7. Closing the Bottom Pilot Parachute Launch Flap (#2 flap)

h. Route pilot parachute bridle cord up between bottom and top pilot parachute launch flap (#2 and #1 flaps) on left side of grommet, forward (Figure 8).

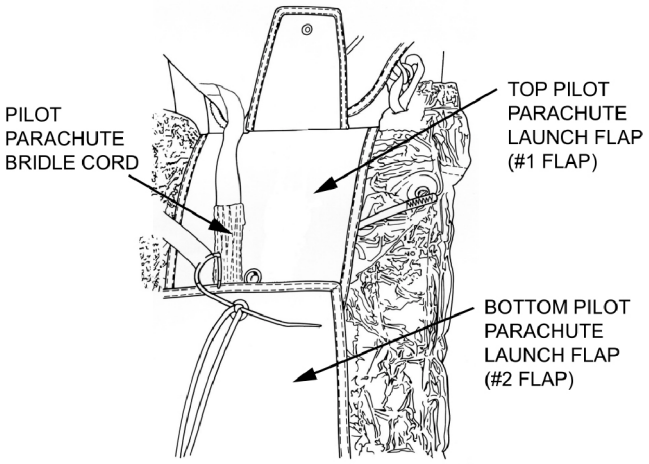

Figure 8. Routing Pilot Parachute Bridle Cord

NOTE

A helper will be required to compress and stabilize the pilot parachute.

i. Route pull-up cord up through the center of the pilot parachute and out the top grommet.

j. Stand pilot parachute on the center of the pilot parachute launch flaps (#1 and #2 flaps).

k. Route pilot parachute bridle cord attached to the pilot parachute forward remove twists in bridle cord.

l. While helper compresses and stabilizes the pilot parachute, remove temporary closing pin, pull closing loop up through pilot parachute grommet. Secure with a temporary closing pin.

m. While helper stabilizes the pilot parachute, pull pilot parachute netting and canopy free from spring (Figure 9).

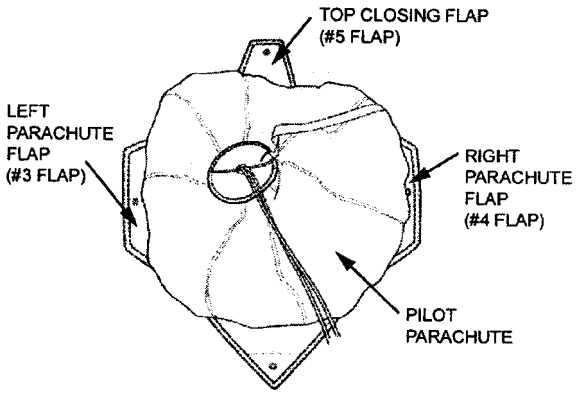

Figure 9. Separate Netting and Canopy From Spring

n. While helper stabilizes the pilot parachute, starting at the top, roll the pilot parachute netting and canopy under to approximately 2-in. from the edge of the pilot parachute center cap (Figure 10).

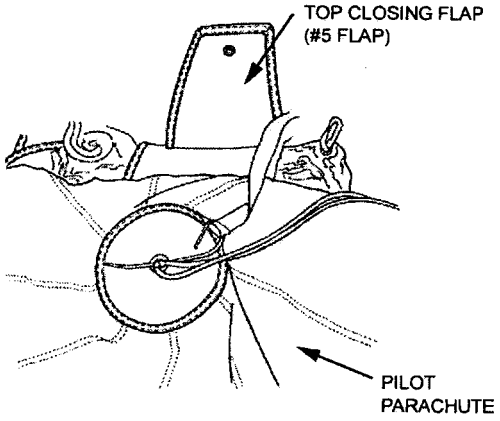

Figure 10. Roll Pilot Parachute Netting

o. Roll bottom pilot parachute netting and canopy under to approximately 2-in. from the edge of the pilot parachute center cap (Figure 11).

p. Roll left pilot parachute netting and canopy under to approximately 3-in. from the edge of the pilot parachute center cap (Figure 11).

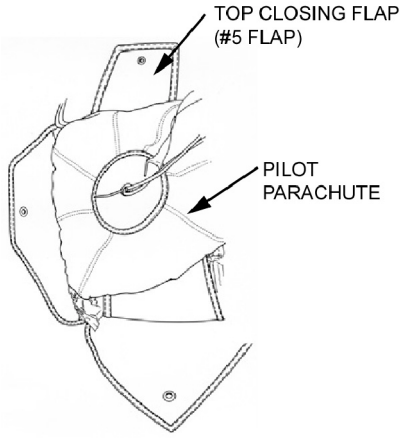

Figure 11. Roll Pilot Parachute Netting

q. Roll right pilot parachute netting and canopy under to approximately 3-in. from the edge of the pilot parachute center cap.

CAUTION

Care must be taken when removing red tape from main initiator cuts, as vacuum will be lost if torn.

r. Remove four (4) red tape pieces from the main initiator cuts. Place red tape pieces in their corresponding space on tape card (Figure 6). (QA)

s. Verify (15) red tape pieces on tape card (Figure 6). (QA)

t. Ensure initiator cuts lay flat. They should be carefully folded down over edges, with no tension or tears past the inboard tear marks.

u. While helper stabilizes the pilot parachute, take left parachute flap (#3 flap) and bring it up to the pilot parachute grommet.

NOTE

The following steps may require the use of a roll bar or leverage closing device.

v. Route pull-up cord from bottom of flap #3, up through grommet, and pull closing loop up. Remove temporary closing pin, and pull closing loop up through grommet. Secure with temporary closing pin (Figure 12).

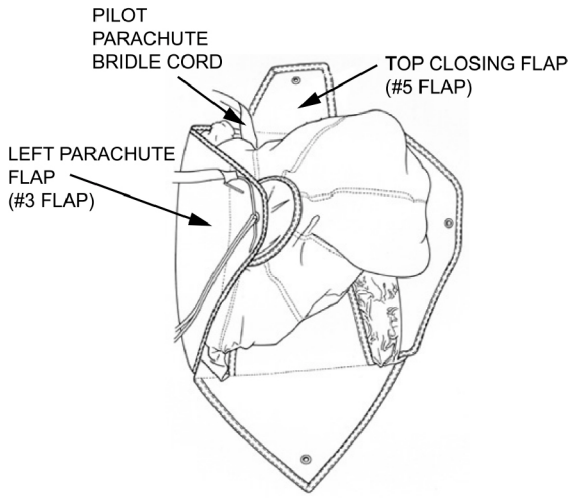

Figure 12. Close Left Parachute Flap (#3 Flap)

w. While helper stabilizes the pilot parachute, take right side parachute flap (#4 flap) and bring it up to the pilot parachute grommet.

x. Route pull-up cord from bottom of flap #4, up through grommet, and pull closing loop up. Remove temporary closing pin, and pull closing loop up through grommet. Secure with temporary closing pin (Figure 13).

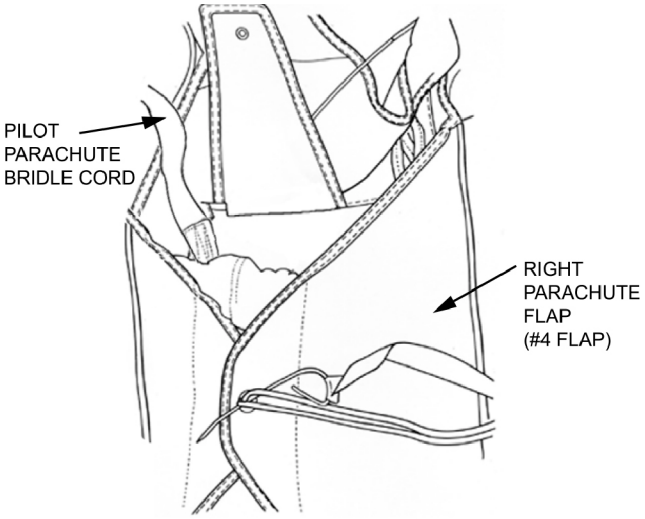

Figure 13. Close Right Parachute Flap (#4 Flap)

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y. Take pilot parachute bridle cord that is attached to the sealed canopy bridle cords and S-fold it back and forth 4-in. in length and position in the middle under top closing flap (#5 flap) (Figure 14).

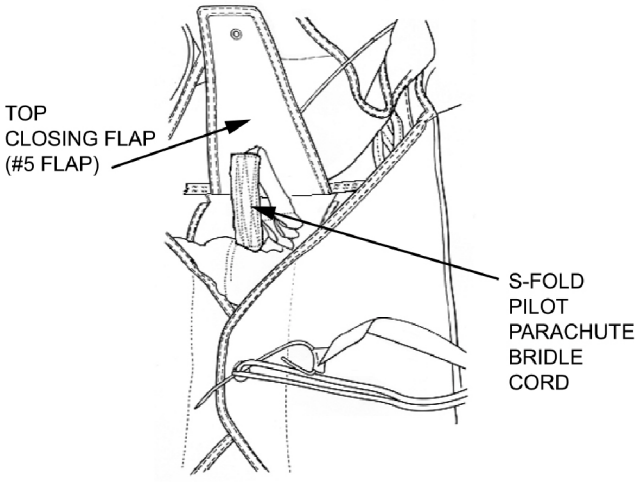

Figure 14. S-Fold Pilot Parachute Bridle Cord

z. Route pull-up cord from bottom of flap #5, up through grommet, and pull closing loop up. Remove temporary closing pin, and pull closing loop up through grommet. Secure with temporary closing pin (Figure 15).

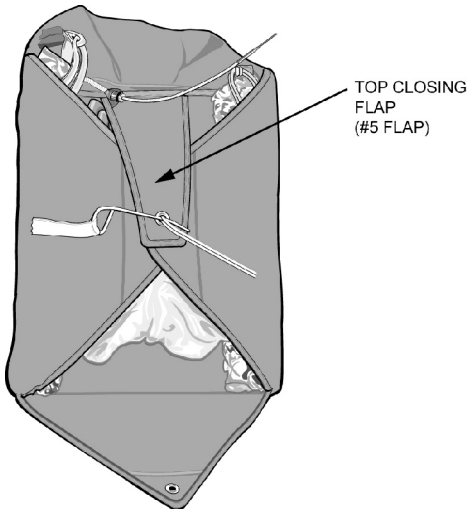

Figure 15. Close Top Closing Flap (#5 Flap)

NOTE

Prior to closing bottom parachute flap (#6 flap) ensure pilot parachute canopy material is tucked under left and right parachute flaps (#3 and #4 flaps).

aa. Close bottom parachute flap (#6 flap), ensuring that left and right parachute flap (#3 and #4 flaps) corners are tucked under the bottom parachute flap (Figure 16).

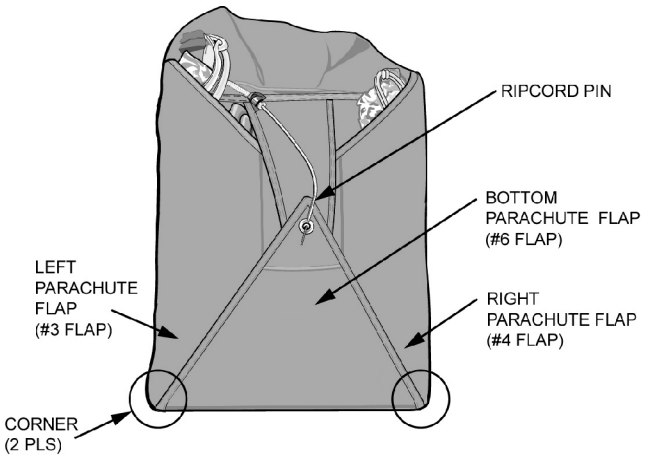

Figure 16. Close Bottom Parachute Flap (#6 Flap)

ab. Route pull-up cord from bottom of flap #6, up through grommet, and pull closing loop. Remove temporary closing pin, and pull closing loop up through grommet. Secure with ripcord pin. Cut pull-up cord next to closing loop. Remove pull-up cord SLOWLY (Figure 16).

ac. Using hands only, dress up parachute assembly. Ensure that all sealed canopy bag material and pilot parachute material are not exposed between flap assemblies. Lightly tuck as required.

23. RIPCORD PIN PULL TEST.

Deleted

a. Set spring tester to zero.

b. Helper shall hold parachute steady on packing table and observe pin movement.

c. Remove ripcord handle from pocket.

d. Attach spring tester to ripcord handle with nylon cord.

e. Apply a straight steady pull on ripcord handle until initial movement of ripcord pin is observed. Maximum allowable force is 20 lbs. (QA)

f. Reposition ripcord pin so it is 1/2-in. (±1/16-in.) beyond the outer edge of the grommet.

g. Stow ripcord handle in ripcord pocket.

24. FINAL CLOSING.

a. Using a 12-in. length of size A thread, single and waxed, form Lark's head knot above ripcord pin ferrule. Tie two half hitches around ripcord cable above ripcord pin ferrule. Separate thread and route one thread under ripcord pin and against closing loop, tie with a surgeon's knot, followed by a square knot followed by a binders knot. Trim off excess thread (Figure 17).

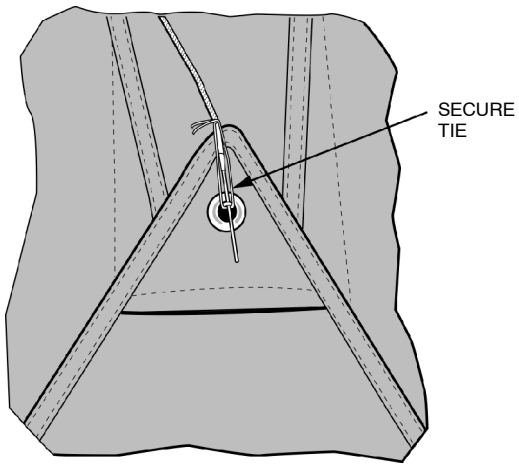

Figure 17. Ripcord Secure Tie

b. Stand parachute up, close shoulder cover, and secure hook fastener to pile fastener.

c. Repeat step b for opposite side.

d. Secure tuck flap under top closing flap (#5 flap) and pull down on outer top cover end (#7 flap) to help position flap (Figure 18).

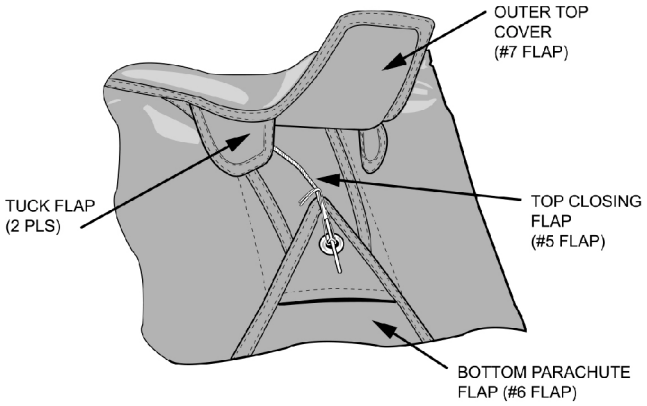

Figure 18. Outer Top Cover Flap (#7 Flap) Closing

WARNING

Do not tack tuck flap to bottom parachute flap. Failure to follow this warning will result in parachute container not opening.

e. Tack using Tape, Lacing & Tying 12-inches long and a curved needle. Tack through tuck flap seam on outer top cover to top closing flap seam using one turn, single, tied with a surgeon's knot, followed by a square knot. Trim off excess. Repeat for other side (Figure 19). (QA)

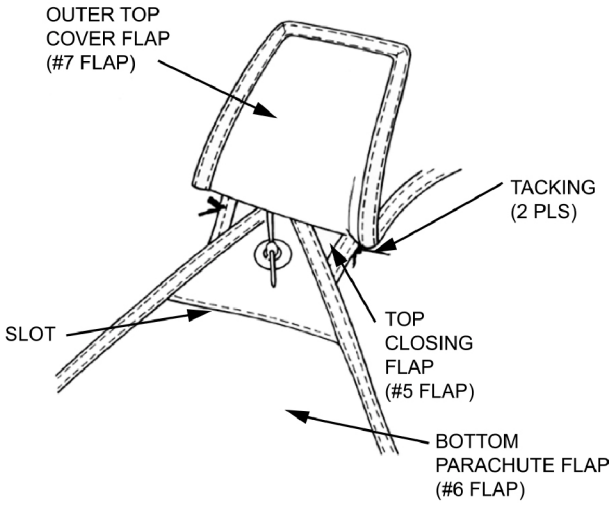

Figure 19. Tacking Tuck Flaps

f. Insert outer top cover flap end into bottom parachute flap slot.

25. FINAL CHECKOUT

a. Account for all packing tools. (QA)

b. Inspect packed A/P22P-21 Crew Backpack Assembly for general condition. (QA)

c. Verify all (15) red tape pieces on tape card are accounted for (Figure 6). (QA)

d. Tape card may be discarded at this time. (QA)

e. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA)

f. QA inspector shall inspect completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

g. QA inspector shall sign Parachute Record (OPNAV 4790/101).

h. Send a (legible) copy of the new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

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INTERMEDIATE AND DEPOT MAINTENANCE

REPAIR PROCEDURES

A/P22P-21 CREW BACKPACK ASSEMBLY

PART NO. 3615AS0100-9

List of Effective Work Package Pages

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1 thru 8	11						

Reference Material

Intermediate and Depot Maintenance Assemble/Disassemble Procedures,
A/P22P-21 Crew Backpack Assembly ..... WP 027 02
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration ..... WP 003 00
Organizational Maintenance, Repair Procedures, A/P22P-21 Crew Backpack Assembly ..... WP 027 01

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Replacement Procedures	2
Replacement of Pilot Parachute	2
Replacement of Pilot Parachute Bridle Cord	3
Replacement of Pilot Parachute Tacking	2
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Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains instructions for the maintenance, repair, replacement, and fabrication of various parachute parts or subassemblies to ensure that items of equipment remain in a Ready-For-Issue (RFI) status. The maintainer should refer to WP 003 00 for any additional parachute loft requirements and administration instructions. Selected repairs shall be documented on the Parachute Record (OPNAV 4790/101).

2. PARACHUTE ASSEMBLY.

3. SEALED CANOPY ASSEMBLY.

WARNING

Do not handle the (pillowed) canopy assembly any more than is required to prepare for shipping. A receiving inspection will be performed on all failed canopy assemblies to determine reason for failure.

a. Upon receipt of a parachute assembly that has lost its vacuum, remove per WP 027 02.

b. Prepare Sealed Canopy Assembly for shipment and turn into supply for disposition.

c. Order replacement Sealed Canopy Assembly and install per WP 027 02.

d. After sealed canopy replacement, the original Parachute Record (OPNAV 4790/101) will no longer reflect the proper serial number or the current Packer/ Quality Assurance (QA) inspector. It will be necessary to perform the following:

(1) On the original Parachute Record (OPNAV 4790/101), draw a single red line through any information that pertains to the old sealed canopy.

(2) The replacement sealed canopy information will be annotated on the next available line of the Parachute Record (OPNAV 4790/101).

(3) The QA who witnessed the task shall apply the QA stamp to the right of the entry and attach the new sealed canopy Parachute Record (OPNAV 4790/101) to the back of the original Parachute Record (OPNAV 4790/101).

(4) Complete and sign the VIDS/MAF.

4. REPLACEMENT PROCEDURES.

5. REPLACEMENT OF PILOT PARACHUTE TACKING.

Support Equipment Required

Part Number	Nomenclature
-------	Needle, Sewing

Materials Required

Specification or Part Number	Nomenclature
A-A-52080-B-2	Tape, Lacing & Tying, Finish B, Size 2, Type I, Natural

a. Tack using Tape, Lacing & Tying 6-in. long and a needle. Tack through pilot parachute seam to bottom coil on spring using two turns, single tied with a surgeons knot, followed by a square. Trim off excess.

6. REPLACEMENT OF PILOT PARACHUTE.

a. Pilot Parachute Removal.

NOTE

To prevent double Lark's head knot, ensure pilot parachute is routed through large loop of pilot parachute bridle cord correctly.

(1) Loosen Lark's head knot on pilot parachute. Route bottom of pilot parachute through large loop of pilot parachute bridle cord. Remove pilot parachute bridle cord from pilot parachute loop.

b. Pilot Parachute Installation.

(1) Route large loop of pilot parachute bridle cord through pilot parachute loop. Take large loop on pilot parachute bridle cord and pass it over the top cap of the pilot parachute. Pass the entire pilot parachute through large loop of pilot parachute bridle cord to form a Lark's head knot. Pull tight.

(2) Mark date Placed-In-Service on pilot parachute per this WP. (QA)

(3) Make proper entries on Parachute Record (OPNAV 4790/101).

7. REPLACEMENT OF PILOT PARACHUTE BRIDLE CORD.

a. Pilot Parachute Bridle Cord Removal.

CAUTION

When separating the pilot parachute bridle cord from the sealed canopy bridle cords care must be taken to prevent tearing the vacuum seal initiators.

(1) Loosen Lark's head knot on pilot parachute bridle cord and sealed canopy bridle cords. Remove pilot parachute bridle cord from four large loops on the sealed canopy bridle cords.

(2) Pilot Parachute Bridle Cord Installation.

CAUTION

Care must be taken not to tear the initiator cuts when attaching pilot parachute bridle cord to sealed canopy assembly.

NOTE

When routing the pilot parachute bridle cord start at the upper right hand corner and work clockwise.

a. Route small loop on pilot parachute bridle cord through the four large loops on the sealed canopy bridle cords.

b. Pass large loop on pilot parachute bridle cord through the small loop on pilot parachute bridle cord to form a Lark's head knot. Pull tight.

c. Mark date Placed-In-Service on bridle cord per this WP. (QA)

d. Make proper entries on Parachute Record (OPNAV 4790/101).

8. REPLACEMENT OF SEALED CANOPY BRIDLE CORDS.

a. Sealed Canopy Bridle Cords Removal.

CAUTION

When separating the sealed canopy bridle cords from the sealed canopy assembly care must be taken to prevent tearing the vacuum seal initiators.

(1) Loosen the Lark's head knot on sealed canopy bridle cord and remove.

(2) Repeat sub-step (1) for the remaining three sealed canopy bridle cords.

b. Sealed Canopy Bridle Cords Installation.

CAUTION

Care must be taken not to tear the initiator cuts when attaching sealed canopy bridle cords to sealed canopy assembly.

(1) Route small loop on sealed canopy bridle cord through top of grommet. Route large loop through small loop on sealed canopy bridle cord to form a Lark's head knot. Pull tight.

(2) Repeat sub-step (1) for the remaining three sealed canopy bridle cords.

(3) Make proper entries on Parachute Record (OPNAV 4790/101).

9. HARNESS/CONTAINER REPAIR.

10. REPLACEMENT OF HARNESS/CONTAINER TACKING.

a. Refer to WP 027 01 for procedures.

11. REPLACEMENT OF CHEST STRAP SNAP EJECTOR TACKING.

a. Refer to WP 027 01 for procedures.

12. REPLACEMENT OF RIPCORD PIN SECURE TIE.

a. Refer to WP 027 01 for procedures.

13. REPLACEMENT OF RIPCORD HOUSING TACKING.

Support Equipment Required

Part Number	Nomenclature
-------	Needle, Sewing

Materials Required

Specification or Part Number	Nomenclature
A-A-52080-B-2	Tape, Lacing & Tying Finish B, Size 2, Type I, Natural

a. Tack using Tape, Lacing & Tying 12-in. long, tack ripcord housing end to tack loop. Ensure ferrule is even with tack loop edge, tie through tack loop and around housing using three turns, single, tied with a surgeon's knot, followed by a square knot. Trim off excess (Figures 1 and 2).

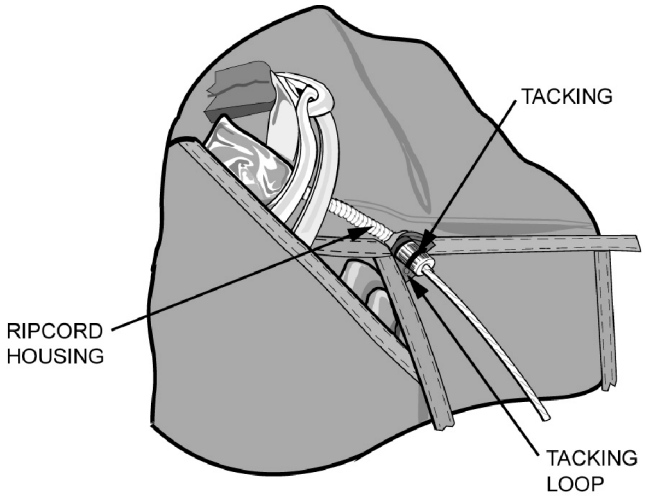

Figure 1. Tacking Ripcord Housing

Figure 2. Tacking Ripcord Housing

14. REPLACEMENT OF RIPCORD HOUSING.

a. Ripcord Housing Removal.

Support Equipment Required

Specification or Part Number	Nomenclature
-------	Temporary Closing Pin
-------	Scissors

(1) Cut tacking securing tuck flap to top closing flap (two places). Cut secure tie on ripcord pin. Undue both shoulder covers. Open outer top cover flap (#7 flap).

(2) Press down over ripcord pin and insert temporary closing pin through closing loop and remove ripcord pin.

(3) Cut ripcord housing tacking (two places). Remove ripcord assembly and ripcord housing. (Retain ripcord assembly).

b. Ripcord Housing Installation.

Support Equipment Required

Specification or Part Number	Nomenclature
-------	Curved Needle
-------	Scissors

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size A, Type I or II, Class A
A-A-52080-B-2	Tape, Lacing & Tying Finish B, Size 2, Type I, Natural

(1) Insert ripcord housing through ripcord housing channel and tacking loops.

(2) Tack using Tape, Lacing & Tying 12-in. long. Tack ripcord housing ends to tack loop, ensure ferrule is even with tack loop edge using three turns, single, tied with a surgeon's knot followed by a square knot. Trim off excess.

(3) Repeat sub-step (2) for other end.

NOTE

Ensure wide end of grip goes into pocket.

(4) Insert ripcord pin through ripcord housing. Secure ripcord handle into ripcord pocket. Push down over temporary closing pin and insert ripcord pin into closing loop. Remove temporary closing pin.

(5) Using a 12-in. length of size A thread, single and waxed, form Lark's head knot above ripcord pin ferrule. Tie two half hitches around ripcord cable above ripcord pin ferrule. Separate thread and route one thread under ripcord pin and against closing loop, tie with a surgeon's knot, followed by a square knot, followed by a binders knot. Trim off excess thread (Figure 3).

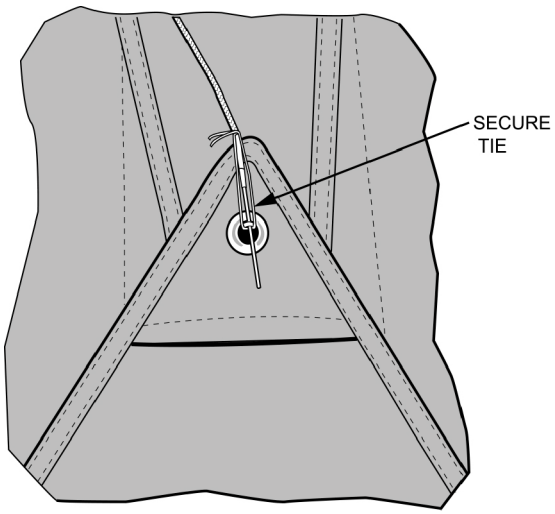

Figure 3. Ripcord Pin Secure Tie

WARNING

Do not tack tuck flaps to bottom parachute flap. Failure to follow this warning will result in parachute container not opening.

(6) Tack using Tape, Lacing & Tying 12-in. long and a curved needle. Tack through tuck flap seam on outer top cover flap (#7 flap) to top closing flap (#5 flap) seam, using one turn, single, tied with a surgeon's knot, followed by a square knot. Trim off excess. Repeat process on other side (Figures 4 and 5). (QA)

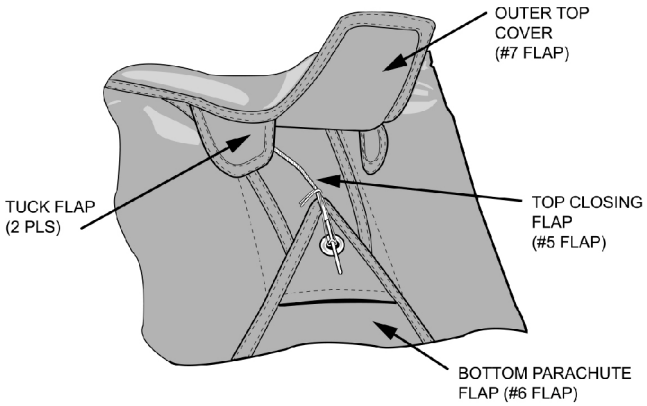

Figure 4. Outer Top Cover Flap (#7 Flap) Closing

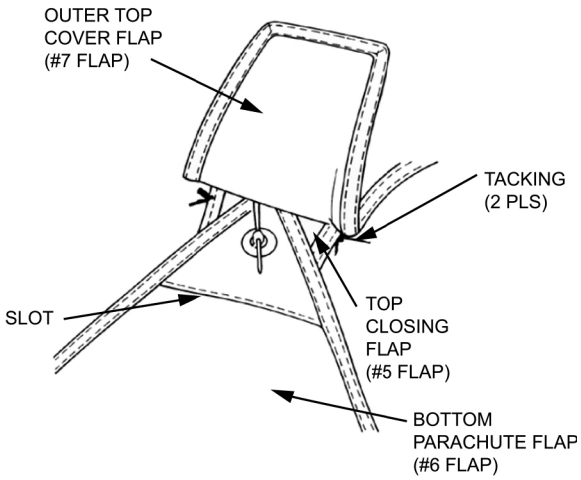

Figure 5. Tacking Tuck Flaps

15. REPLACEMENT OF SNAP EJECTOR.

a. Refer to WP 027 01 for procedures.

16. REPLACEMENT OF RAPIDE LINK.

Support Equipment Required

Specification or Part Number	Nomenclature
OEX100	Wrench, Combination, 5/16-in.

a. Rapide Link Removal.

CAUTION

Care must be used when removing Rapide link from Rapide link secure loop and small soft link. Rapide link nut must be backed off completely to prevent Rapide link secure loop and small soft link from tearing or fraying.

(1) Using 5/16-in. wrench, brake loose the Rapide link nut. Back off nut and remove the Rapide link from the small soft link and Rapide link secure loop. Discard Rapide link (Figure 6).

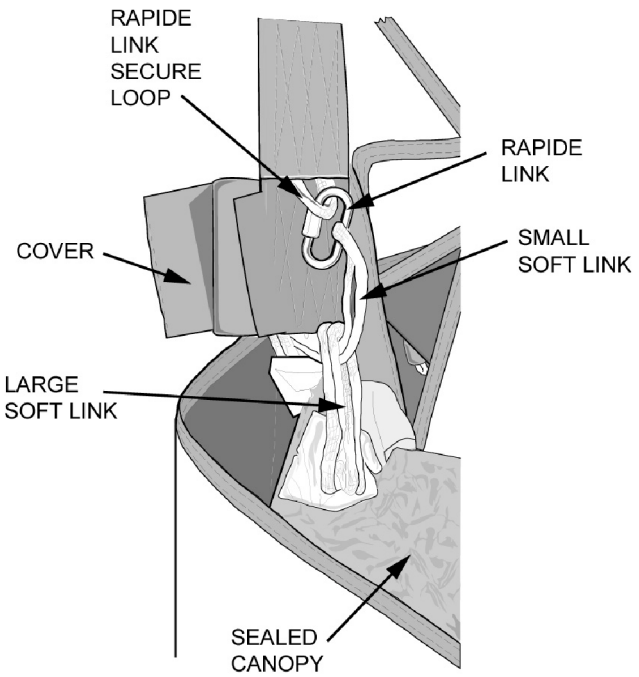

Figure 6. Rapide Link

b. Rapide Link Installation.

Support Equipment Required

Specification or Part Number	Nomenclature
TMRX10	Crowfoot, Socket Wrench, 5/16-in.
TQS6	Driver, Torque, in-lbs.

Materials Required

Specification or Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
A-A-52080-B-2	Tape, Lacing & Tying, Finish B, Size 2, Type I, Natural

WARNING

Soft links must be connected with size #4 Rapide Link to function properly.

Failure to connect soft links to Rapide link will cause a malfunction in the deployment of the system.

CAUTION

Care must be used when routing Rapide link through Rapide link secure loop and small soft link to prevent fraying or tearing of the secure loop and small link. Rapide link nut must be backed off completely.

(1) Connect Rapide link to Rapide link secure loop (Figure 6).

(2) Make sure small soft link is passed through large soft link (Figure 6).

(3) Connect small soft link to Rapide link, ensure no twists are in the small soft link, and Rapide link secure loop. Hand tighten nut (Figure 6).

(4) Torque Rapide link to 10 ±2 in-lbs. (value has been computed already). (QA)

NOTE

Ensure that sealing compound is applied to the thread side of the Rapide link nut.

(5) Apply sealing compound to nut and thread area on Rapide link.

(6) Secure Rapide link in place with cover and secure to hook fastener.

17. REPLACEMENT OF HARNESS/CONTAINER.

a. Harness/Container Installation.

(1) Transfer A/P22P-21 crew backpack serial number from old or damaged harness/container to new replacement harness/container.

(2) Apply markings Placed-In-Service and serial number per this WP. (QA)

(3) Make proper entries on Parachute Record (OPNAV 4790/101). (QA)

18. REPLACEMENT OF COMFORT PAD.

a. Refer to WP 027 01 for procedures.

19. REPLACEMENT OF COMFORT PAD TACKING.

a. Refer to WP 027 01 for procedures.

20. FABRICATION OF CLOSING LOOP.

Materials Required

Specification or Part Number	Nomenclature
9512-300-UNT Suggested Source: CSR Inc 3235 State Road Sellersville, PA 18960 Phone (215) 453-0600	Cord, Spectra 300 lb, Untreated

a. Cut a length of 300 lb Spectra 14-in. long.

b. Fold in half, approximately 6 5/8-in.

c. From loop end, mark 5/8-in. on the lower most piece of cord.

d. Insert bodkin in the lower most end of Spectra.

e. Carefully work the bodkin in the center of Spectra and exit at the 5/8-in. mark.

f. Draw the other end of Spectra back through center of cord. Forming a 5/8-in. loop (Figure 7).

g. Fingertrap shall extend the whole length of cord.

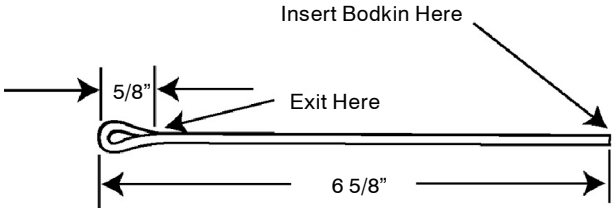

Figure 7. Fabrication of Closing Loop

21. ROUTING OF CLOSING LOOP.

a. Route closing loop per illustration (Figure 8).

b. Measure and leave approximately 2 1/8-in. from the washer to the end of the loop.

c. On the back side, form a double overhand knot (Figure 8).

d. Verify measurement.

e. Form an overhand knot behind the double overhand knot (Figure 8).

f. Measure and make any adjustments necessary.

g. Set knots by pretensioning using 240 ± 20 in-lbs. between washer and loop.

h. Verify 2 1/4 ± 1/8-in. from washer to loop end. (QA)

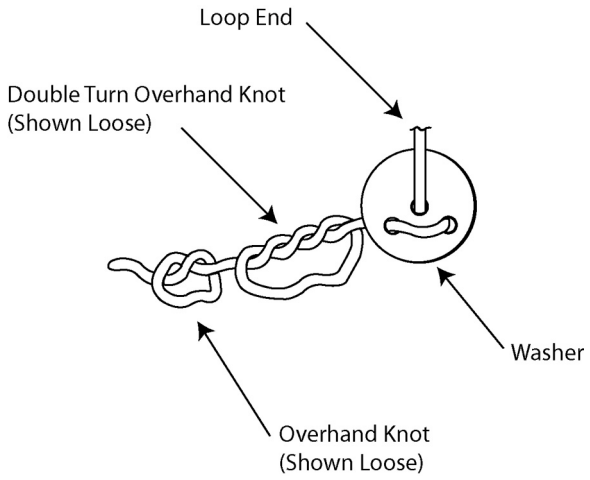

Figure 8. Routing and Tying of the Closing Loop

22. APPLICATION OF MARKINGS.

Support Equipment Required

Specification or Part Number	Nomenclature
-------	Marker Permanent, Sharpie Fine Point
-------	Stamp Pad
-------	Rubber Stamp Kit

Materials Required

Specification or Part Number	Nomenclature
MIL-I-6903	Ink, Marking, Parachute Light Blue

a. When a part is Placed-In-Service (PIS), the month/year of the opening of the manufacturer's individual shipping container shall be stamped on the part.

(1) When using a stamp pad, moisten pad with ink. Pad must be evenly coated and free of clots.

(2) Make a test impression to determine correctness of marking and inking.

(3) When adding serial number or Placed-In-Service date make the marking clear and legible.

(4) Stamp parts as follows:

(a) Harness/container:

1. The A/P22P-21 Crew Backpack Assembly system label serial number shall be marked after the title Serial No. using a permanent marker.

2. Placed-In-Service date shall be marked after the initials (PIS) using a permanent marker.

NOTE

When stamping canopy material, place paper towels behind area to be stamped to prevent smearing or blotching.

(b) Pilot Parachute: Stamp PIS date under nameplate information. Stamp shall be 1/2-in. high.

(c) Pilot Parachute Bridle Cord: Mark the PIS date after the initials (PIS) using a permanent marker.

(d) Sealed Canopy Assembly: Mark the PIS date after the initials (PIS) using a permanent marker.

ORGANIZATIONAL, INTERMEDIATE AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

A/P22P-21 CREW BACKPACK ASSEMBLY

PART NO. 3615AS0100-9

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

None

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Usable-On Codes	1

List of Figures

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A/P22P-21 Crew Backpack Assembly	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This work package (WP) contains information for ordering and identifying parts for the A/P22P-21 Crew Backpack Assembly (Figure 1).

2. USABLE-ON CODES.

a. The usable-on codes in this WP refer to the aircraft applications for the A/P22P-21 Crew Backpack Assembly.

b. The following usable-on codes apply to this WP:

A - P-3

3. SERVICE/TOTAL LIFE

a. The service/total life information is contained in WP 027 02.

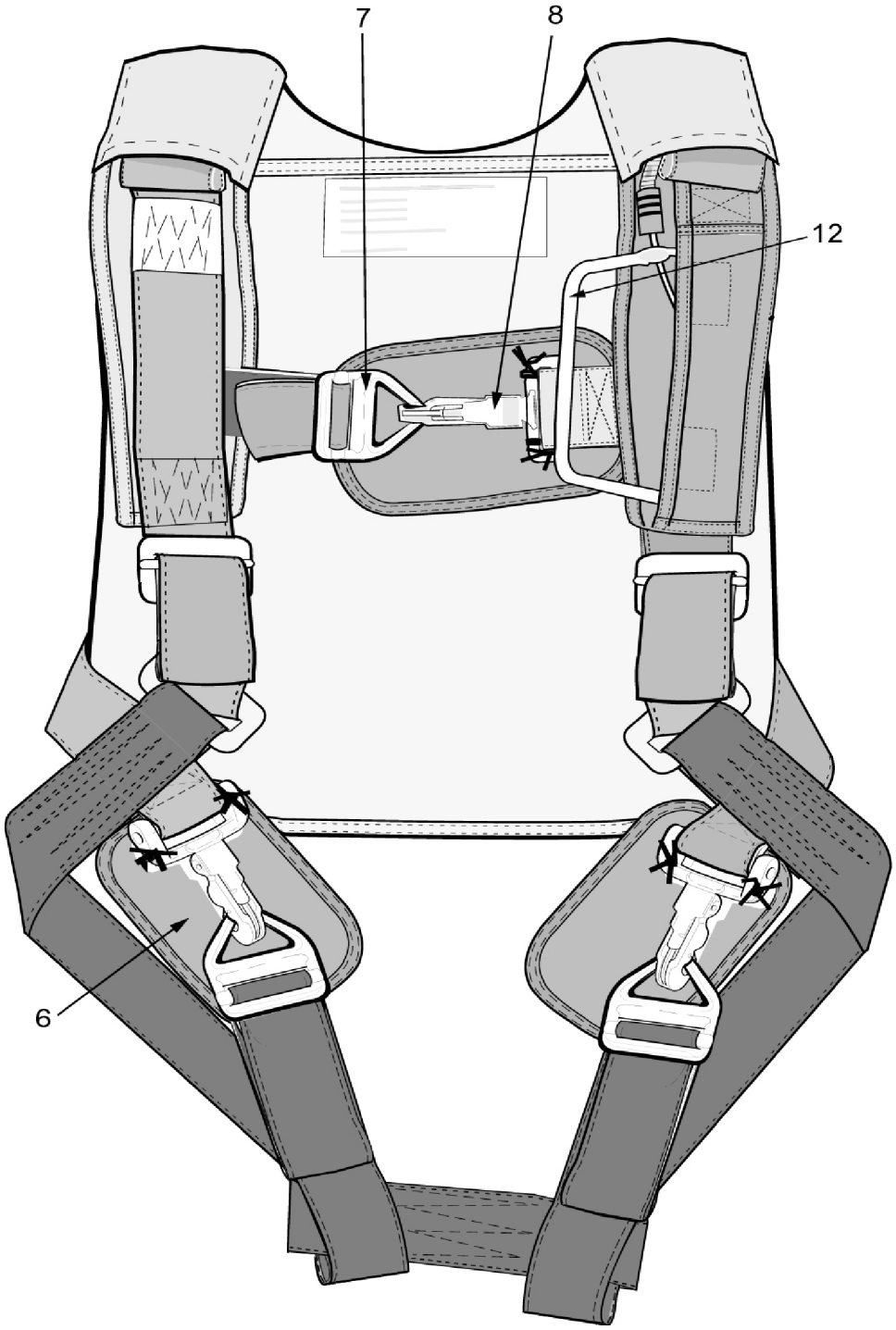

Figure 1. A/P22P-21 Crew Backpack Assembly (Sheet 1 of 4)

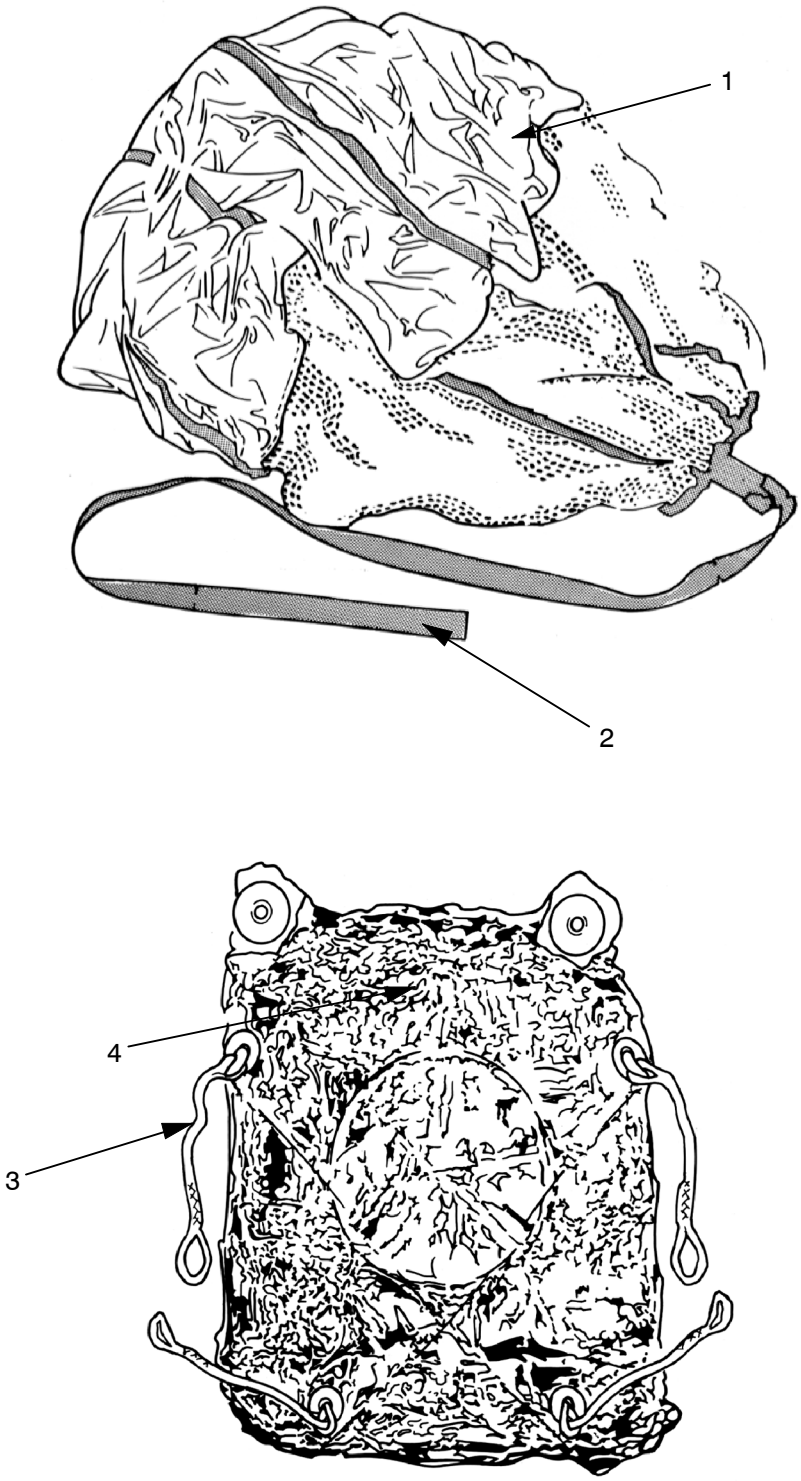

Figure 1. A/P22P-21 Crew Backpack Assembly (Sheet 2 of 4)

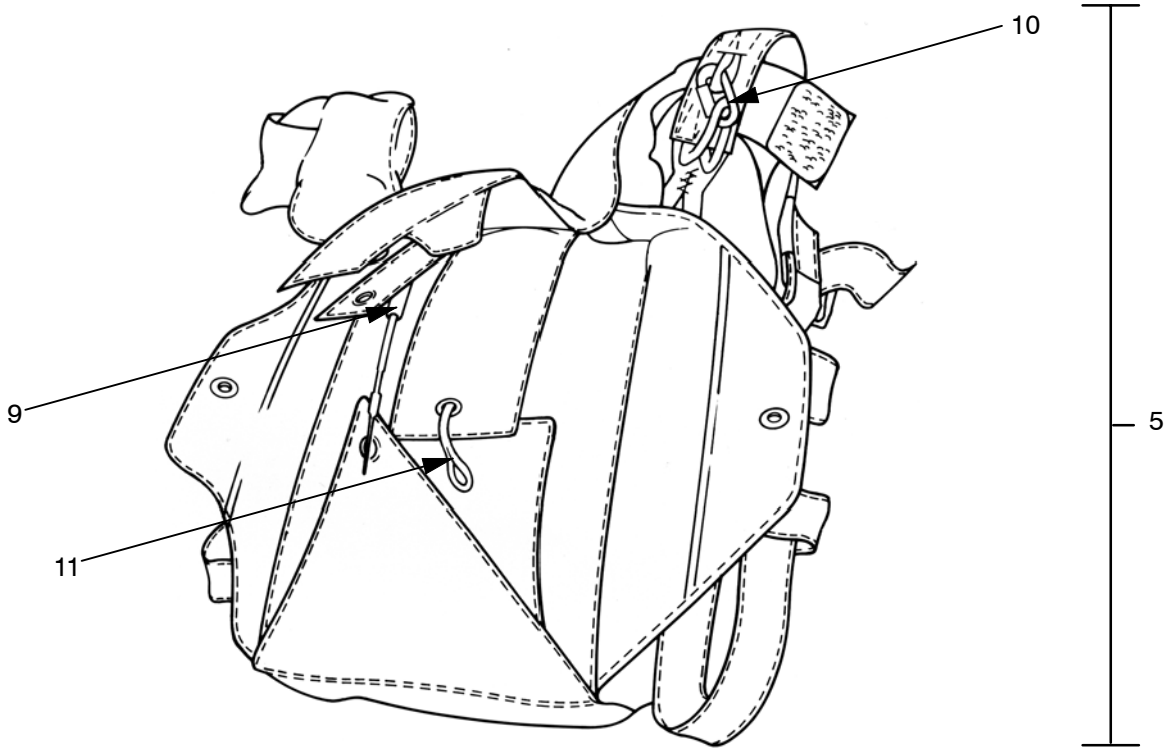

Figure 1. A/P22P-21 Crew Backpack Assembly (Sheet 3 of 4)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
.....	3615AS0100-9	CREW BACKPACK ASSEMBLY, A/P22P-21	REF	A	AGGGD
1	3615AS0530-1	• PILOT PARACHUTE ASSEMBLY	1		PAGZZ
2	3615AS0510-1	• PILOT PARACHUTE BRIDLE CORD	1		PAGZZ
3	3615AS0520-3	• KIT, SEALED CANOPY BRIDLE CORD /SEE NOTE 1/ . .	1		PAGZZ
4	3615AS1000-5	• SEALED CANOPY ASSEMBLY, PCU-71/P22P-21	1		PAGDD
	3615AS1300-3	• • CANOPY ASSEMBLY	1		XADDD
5	3615AS2000-7	• HARNESS/CONTAINER ASSEMBLY	1		PAGZZ
6	3615AS2010-1	• • COMFORT PADS	3		PAOZZ
7	MS27765	• • ADJUSTABLE V-RING	3		PAGZZ
8	MS22017	• • QUICK EJECTOR SNAP /SEE NOTE 2/	3		PAGZZ
9	3615AS2165-1	• • HOUSING, RIPCORD	1		PAGZZ
10	3615AS6009-1	• • LINK, RAPIDE (SIZE #4)	2		PAGZZ
11	3615AS0570-1	• CLOSING LOOP ASSEMBLY	1		PAGZZ
12	3615AS0550-1	• RIPCORD ASSEMBLY	1		PAGZZ

NOTE 1: 3615AS0520-3 CONSISTS OF A KIT OF FOUR SEALED CANOPY BRIDLE CORDS.
NOTE 2: USE PART NUMBER 68D37721-3 AS A REPLACEMENT PART.

Figure 1. A/P22P-21 Crew Backpack Assembly (Sheet 4 of 4)

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ORGANIZATIONAL, INTERMEDIATE, AND DEPOT MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

A/P22P-20 CREW BACKPACK ASSEMBLY

PART NO. 3516AS2000-1

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

Aviation-Crew Systems Manual, Oxygen Systems (Aircraft Equipment Masks and Other Systems) . . . NAVAIR 13-1-6.4-1
Organizational, Intermediate and Depot Maintenance, Illustrated Parts Breakdown,
A/P22P-20 Crew Backpack Assembly . . . . . WP 028 06

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Subassembly Configuration	2
Description	2
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Principles of Operation	2
Manual Operation Above 14,000 ft. Altitude	2
Manual Operation Below 14,000 ft. Altitude	8

Record of Applicable Technical Directives

None

1. DESCRIPTION.

2. GENERAL.

a. Emergency Egress Backpack Assembly (crew backpack) is designated A/P22P-20, and was developed for use in the E-2C aircraft. It is installed in the aircrew seats. The backpack contains three major components: Parachute Assembly, Seat Survival Kit Assembly, and Emergency Oxygen System Assembly (Figure 1).

b. The crew backpack is installed on the aircrew seat parachute support pad. The lap belt fittings are secured in place by the seat retaining pins. During emergency egress or removal of the crew backpack for maintenance, the crew backpack lap belt fittings are released from the retaining pin cavities and inertia reel by means of actuating the emergency equipment release handle located on the right side of the seat bucket.

c. The crew backpack measures approximately, 15-in. wide, 8-in. thick, 25-in. in length, and weights approximately 43 lbs.

3. CONFIGURATION.

a. The crew backpack container is constructed of 1000 Denier Cordura material.

b. The upper compartment houses the vacuum sealed canopy, Soft Link Assembly (risers), drogue parachute assembly, pilot parachute assembly, and the Model 2400 Automatic Actuation Device (AAD). The canopy assembly is a maneuverable, tri-vent, circular parachute, 26 foot in diameter, constructed of low porosity nylon material consisting of 24-Gores, (multi-colored: white, olive green, international orange and sand shade).

c. The lower compartment houses the survival kit SRU-41/P22-20 subassembly, which consists of a vacuum sealed LRU-29/P22P-20 one man life raft assembly made up of a LRU-16 life raft and FLU-10 CO2 bottle assembly. The LRU-29/P22P-20 life raft assembly is vacuum sealed and is inflated by a manual pull of the Beaded Handle. The survival kit SRU-41/ P22P-20 houses the SRU-31A/P survival kit pocket and an emergency oxygen assembly. The emergency oxygen system assembly contains a removable 50 cubic inch emergency oxygen bottle. Refer to NAVAIR 13-1-6.4-1.

d. The crew backpack functions as the seat back with a back cushion assembly. The parts are identified in (Figure 1).

(1) Refer to the Illustrated Parts Breakdown WP 028 06 for the exact configuration requirements.

4. SUBASSEMBLY CONFIGURATION.

a. The subassemblies listed below make up the A/P22P-20 Crew Backpack Assembly parachute compartment only, and are shown in (Figures 2 thru 9). Refer to the Illustrated Parts Breakdown WP 028 06 for the exact configuration requirements.

Pilot Parachute Assembly

Pilot Parachute Bridle Cord

Drogue Parachute Assembly

Drogue Bridle Assembly

PCU-68/P22P-20 Sealed Canopy Assembly

Canopy Bridle Cords (4 ea.)

Universal Water Activated Release System (UWARS)

Automatic Actuation Device (Model 2400-AAD)

Container Assembly

Manual Drogue Release Assembly/Drogue Release Cover Assembly

Soft Link Assemblies (Risers)

Ripcord Assembly (Primary)

5. PRINCIPLES OF OPERATION.

6. MANUAL OPERATION ABOVE 14,000 FT. ALTITUDE.

a. After emergency bailout, the following operation occurs:

(1) The aircrew manually pulls the ripcord handle. This removes the ripcord pin from the closing loop, and initiates the parachute deployment sequence, allowing the pilot parachute to spring from the open container and inflate.

(2) As the aircrew falls away from the inflated pilot parachute, (which acts as an anchor initiating the drogue deployment) the drogue parachute assembly inflates, and the drogue bridle pays out which in turn pulls the AAD arming cable, arming the automatic opener.

(3) The aircrew remains stabilized under the drogue parachute until increasing air pressure causes the automatic opener aneroid to contract. As the preset altitude is reached (14,000 ± 1000 ft.), a two second time delay sequence begins, initiating canopy deployment.

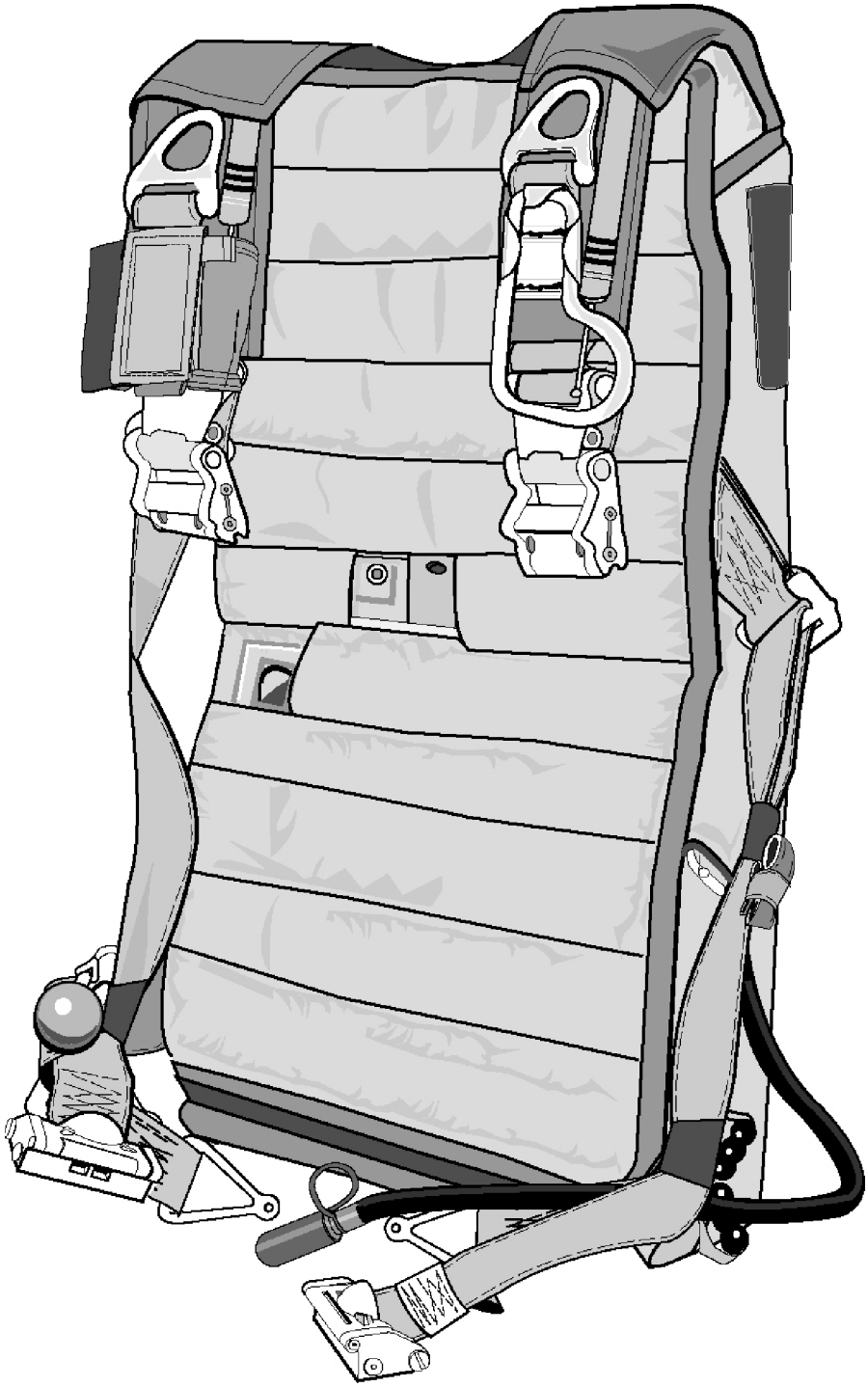

Figure 1. A/P22P-20 Crew Backpack Assembly

Figure 2. Pilot Parachute and Pilot Parachute Bridle Cord

Figure 3. PCU-68/P22P-20 Sealed Canopy Assembly and Canopy Bridle Cords

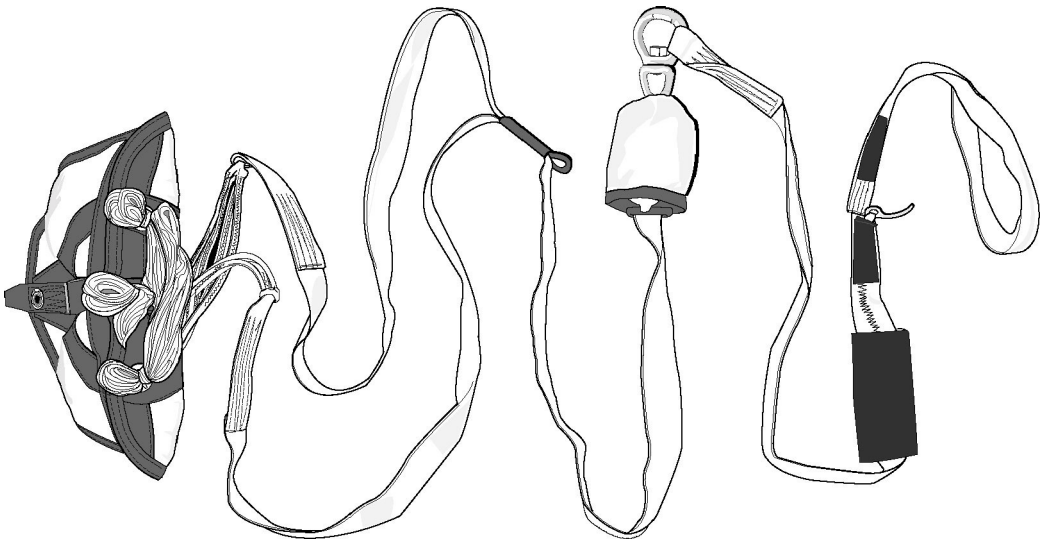

Figure 4. Drogue Assembly

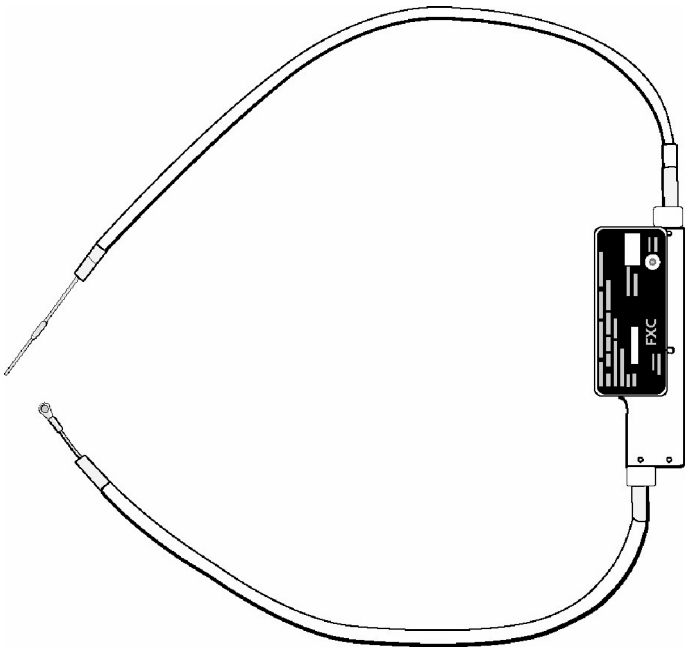

Figure 5. Model 2400 Automatic Actuation Device

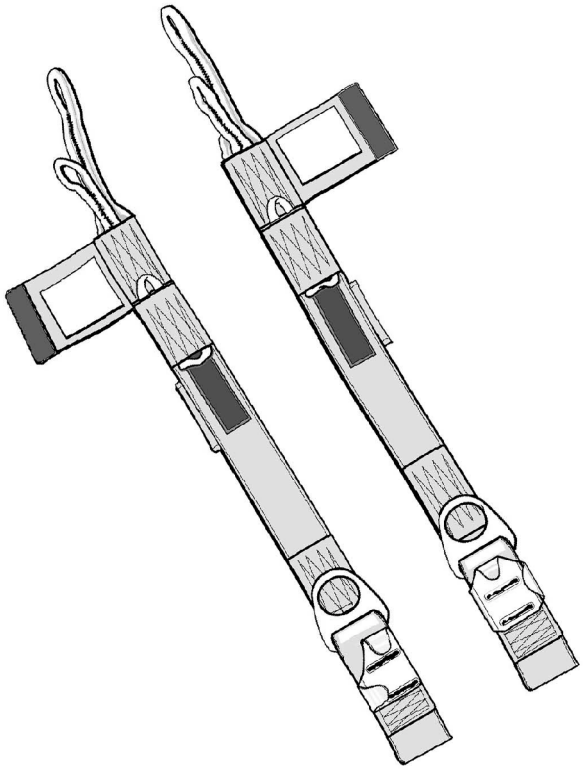

Figure 6. Soft Link Assemblies (Risers Left and Right)

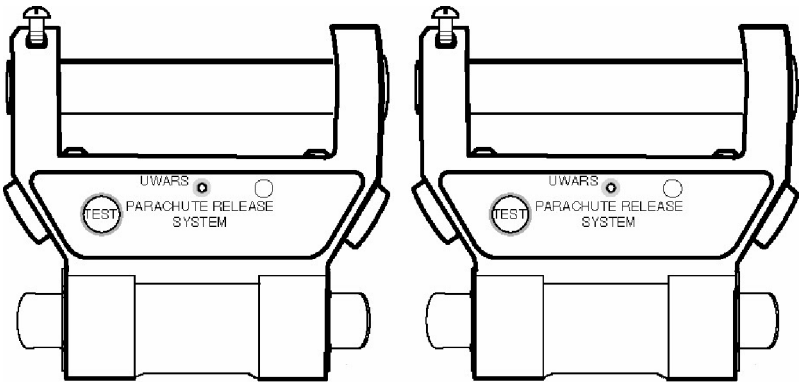

Figure 7. Universal Water Activated Release System (UWARS)

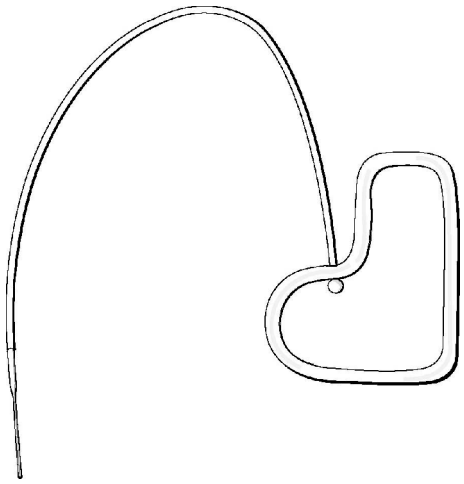

Figure 8. Ripcord Assembly (Primary)

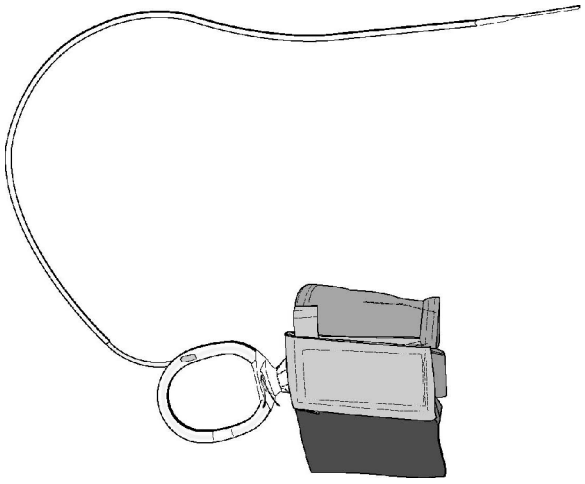

Figure 9. Manual Drogue Release Assembly/Drogue Release Cover Assembly

(4) The aircrew descends suspended in the PCU-72/P parachute restraint harness. During decent the aircrew can manually maneuver to a less hazardous landing site by using steering handles.

(5) Upon landing, the aircrew disengages the canopy from the PCU-72/P parachute restraint harness by actuation of the canopy release assemblies.

(6) The Universal Water Activated Release System (UWARS) provides an automatic backup method of releasing the parachute risers in the event the aircrew makes a seawater entry.

7. MANUAL OPERATION BELOW 14,000 FT. ALTITUDE.

a. After emergency bailout, the following operation takes place:

(1) The aircrew manually pulls the ripcord handle. This removes the ripcord pin from the closing loop, and initiates the parachute deployment sequence, allowing the pilot parachute to spring from the open container and inflate.

(2) As the aircrew falls away from the inflated pilot parachute, (which acts as an anchor initiating the drogue deployment) the drogue parachute assembly inflates, as the drogue bridle pays out this in turn pulls the AAD arming cable arming the automatic opener.

(3) The aircrew remains stabilized under the drogue parachute for two seconds, at which time the sequence begins initiating canopy deployment.

(4) The aircrew descends suspended in the PCU-72/P parachute restraint harness. During decent the aircrew can manually maneuver to a less hazardous landing site by using steering handles.

(5) Upon landing, the aircrew disengages the canopy from the PCU-72/P parachute restraint harness by actuation of the canopy release assemblies.

(6) The Universal Water Activated Release System (UWARS) provides an automatic backup method of releasing the parachute risers in the event the aircrew makes a seawater entry.

8. DELETED.

ORGANIZATIONAL MAINTENANCE

REPAIR PROCEDURES

A/P22P-20 CREW BACKPACK ASSEMBLY

PART NO. 3516AS2000-1

List of Effective Work Package Pages

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Reference Material

Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdown Emergency Personnel and Drogue Parachute Systems . . . . . WP 002 00

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Replacement of Canopy Release and Harness Connection Strap Canopy Release Assembly	3
Container Assembly Repair	3
Drogue Override Handle Cover Assembly	4
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Replacement of Back Pad	4
Replacement of Emergency Oxygen Housing Flap Lacing	3
Replacement of Main Ripcord Housing Tacking	4
Replacement of Survival Gear Compartment Ripcord Housing Tacking	4
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Ripcord Assembly Repairs	5
Replacement of Ripcord Grip Retainer	5
Soft Link Assemblies	2
Replacement of Riser Tacking	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains instructions for Organization level repair to ensure that the A/P22P-20 Crew Backpack Assembly remains in Ready-For-Issue (RFI) status.

b. When performing repairs detailed in this WP follow these guidelines:

(1) Review all applicable instructions prior to starting repairs.

(2) Ensure all necessary support equipment and materials required are available prior to starting repairs.

(3) When required remove enough material from its source for immediate use only. Ensure that the material identification ticket remains with the source material at all times. Material that cannot be identified will not be used.

(4) To ensure conformity, all repair work shall be carefully inspected and compared to applicable instructions at completion of work.

(5) A Quality Assurance (QA) inspector shall examine the finished work.

2. SOFT LINK ASSEMBLIES.

3. REPLACEMENT OF RISER TACKING.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size FF, Type I or II, Class A

NOTE

Tie off all tackings with a surgeon's knot followed with a square knot, followed with a binder knot per WP 002 00. Trim off excess leaving 1/2-in.

a. Hand tack anti-rotation straps as shown in Figure 1. Tack right and left risers using one turn single FF thread waxed.

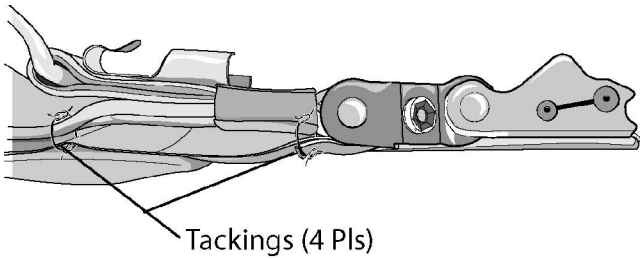

Figure 1. Tacking Anti-Rotation Straps

4. CANOPY RELEASE AND LAP BELT RESTRAINT ASSEMBLY.

NOTE

The canopy and lap belt restraint releases are identical and interchangeable. Differences in nomenclature are used to clarify positions on the assembly.

a. Repair of the canopy release assembly is limited to the following:

(1) Replacement of broken torque seal on screw head.

(2) Cleaning of dirt, grease, and other contaminating agents.

b. Replace canopy release assembly for any of the following:

(1) Failure of actuating lever to meet torque requirement.

(2) Inoperable release.

(3) Corrosion, contamination, pitting, cracks, dents, and other damage. Inspect the release lever left and right arms for cracks.

5. REPLACEMENT OF CANOPY RELEASE AND HARNESS CONNECTION STRAP CANOPY RELEASE ASSEMBLY.

Support Equipment Required

Specification or Part Number	Nomenclature
—	Flat Tip, Screw Driver
TQS-050 (Cage 557190) or TQS6 (Cage 55719)	Meter, Torque
TMA2 (Cage 55719) for use w/TQS6	Driver, Hex Head 1/16-in. bit
990055-1	Release Assembly, Canopy
122-10935-3	Set Screw
F-900 Torque Seal (Color Optional)	Sealing Compound

Materials Required

None

a. To remove the canopy release assembly, proceed as follows:

(1) Remove canopy release fitting clip from canopy release assembly.

(2) Using a wooden dowel, depress the retractable pins securing the canopy release assembly to the UWARS.

(3) Inspect replacement canopy release and harness connection strap assemblies for broken springs, corrosion, dents or sharp edges. Measure torque of knurled actuating lever as follows:

(a) Hold locking lever in open position and insert torque meter into either hexagonal cavity.

(b) Rotate actuating lever to a point just prior to contact with body. The allowable torque is 28 to 50 in-oz.

(c) Engage the male adapter (with trapezoidal notch) with canopy release or harness connection strap assembly.

(d) Verify full locking of the canopy release or harness connection strap assembly by lifting the locking lever and attempting to disengage adapter.

b. To reinstall canopy release proceed as follows:

(1) Depress spring-loaded UWARS retractable pins and slide UWARS body between lobes on canopy release assembly. Retractable pins should move freely and should spring back with no binding.

c. To remove the harness connection strap assembly, proceed as follows:

(1) Remove setscrew on backside of lap belt restraint assembly.

(2) Slide retention pin out.

NOTE

Ensure mounting of the harness connection strap assembly on the harness webbing is correct.

(3) Insert lobes of harness connection strap assembly into drogue/lap belt webbing. Insert retention pin thru webbing loop.

NOTE

Ensure setscrew is seated properly into groove of retention pin.

(4) Insert setscrew in hole on backside of lap belt restraint assembly and tighten.

(5) Apply torque seal to setscrew and body of canopy release assembly.

6. CONTAINER ASSEMBLY REPAIR.

7. REPLACEMENT OF EMERGENCY OXYGEN HOUSING FLAP LACING.

Support Equipment Required

Specification or Part Number	Nomenclature
—	—

Materials Required

Specification or Part Number	Nomenclature
PIA-C-5040	Cord, Nylon, Type I or IA

a. Cut a 30-in. length of Type I nylon cord. Starting at the green apple end, lace flaps together through every eye. Tie with a surgeon's knot, followed by a square knot. Trim off excess 1/2-in. from knot.

8. DROGUE OVERRIDE HANDLE COVER ASSEMBLY.

WARNING

If the tacking on the drogue override handle is missing or broken while inspecting, the parachute assembly will be removed from service and forwarded to Intermediate Level Maintenance to ensure drogue has not been released.

a. There are no repairs authorized for the cover.

9. FABRICATION AND REPLACEMENT OF ELASTIC WEBBING KEEPER.

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Size E, Type I or II, Class A
MIL-W-5664	Webbing, Elastic, Type I, Class 2, 1-in.

a. Webbing keepers.

(1) Cut a 5-in. length of elastic webbing.

(2) Pass webbing around harness. Place both ends together and sew 1/4-in. from the end and 1/8-in. from the edges, with three rows of E thread.

(3) Turn webbing inside out.

10. REPLACEMENT OF BACK PAD.

a. Remove back pad from container fastener tape.

NOTE

Ensure that the oxygen gage and AAD windows are visible through the back pad view ports when installing the back pad.

b. Secure replacement back pad to container fastener tape. (QA)

11. REPLACEMENT OF SURVIVAL GEAR COMPARTMENT RIPCORD HOUSING TACKING.

Support Equipment Required

Part Number	Nomenclature
—	Needle, Sewing

Materials Required

Specification or Part Number	Nomenclature
A-A-52080-B-2	Tape, Lacing & Tying, Finish B, Size 2, Type I, Natural

a. Tack cable housing to tacking loop on survival equipment compartment flap #5. Cable housing shall be flush with edge of tacking loop. Tack using three turns, single waxed lacing tape, tied with a surgeon's knot, followed by a square knot. Trim off excess.

b. Secure tuck flaps.

c. Tack cable housing to container harness webbing at the end of cable housing with three turns, single waxed lacing tape. The end of the cable housing shall be 1-in. from the container, tied off with a surgeon's knot followed by a square knot. Trim off excess.

12. REPLACEMENT OF MAIN RIPCORD HOUSING TACKING.

Support Equipment Required

Part Number	Nomenclature
—	Needle, Sewing

Materials Required

Specification or Part Number	Nomenclature
A-A-52080-B-2	Tape, Lacing & Tying, Finish B, Size 2, Type I, Natural

a. Route Ripcord housing through channel on left shoulder pad. Route through taking loop on Flap 7. Tack with three turns single waxed lacing tape on tacking loop. Tie off with a surgeon's knot followed by a square knot.

b. Tack housing to channel at ripcord end with three turns single waxed lacing tape. Tie off with a surgeon's knot followed by a square knot.

13. RIPCORD ASSEMBLY REPAIRS.

14. REPLACEMENT OF RIPCORD GRIP RETAINER.

Support Equipment Required

Part Number	Nomenclature
A-A-52080-B-2	Tape, Lacing & Tying Finish B, Size 2, Type 1, Natural
- or -	
V-T-295	Thread, Nylon, Size 6, Type I or II, Class A

NOTE

Tie off all tackings with a surgeons knot topped with a square knot, followed with a binder knot. Trim off excess leaving 1/2-in.

a. Remove ripcord grip retainer and stitching from riser.

b. Position replacement retainer is same location as removed retainer and handstitch or riser with size 6 thread, doubled and waxed; tie off.

c. Perform ripcord grip pull test as follows:

(1) Fully seat ripcord grip in ripcord retainer.

(2) Set scale to zero. Attach spring scale to ripcord grip using nylon cord.

(3) Using a straight steady pull, remove grip from retainer. The pull force required to remove grip from retainer shall be 15 ±5 lbs. (QA)

d. If pull force is not within limits, use a pliers to adjust clip. Ensure plier jaws are covered with protective material. After adjustment, repeat ripcord grip pull test.

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INTERMEDIATE AND DEPOT MAINTENANCE

PACKING PROCEDURES

PCU-69/P22P-20 DROGUE ASSEMBLY

PART NO. 3516AS6400-1

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Reference Material

Intermediate and Depot Maintenance, Packing Procedures, A/P22P-20 Crew Backpack Assembly ..... WP 028 04
Organizational, Intermediate and Depot Maintenance, Illustrated Parts Breakdown, A/P22P-20 Crew Backpack Assembly ..... WP 028 06
Organizational, Intermediate and Depot Maintenance with Illustrated Parts Breakdown Emergency Personnel and Drogue Parachute Systems ..... WP 002 00
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration ..... WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment ..... WP 005 00

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Record of Applicable Technical Directives

None

1. GENERAL.

a. This Work Package (WP) provides packing procedures with the assumption that they will be carried out under ideal conditions in a parachute loft in accordance with WP 003 00. When the PCU-69/P22P-20 drogue assembly must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

b. In no case shall the packing procedures be interrupted after the operation has started. If the packing operation is interrupted due to unforeseen circumstances, the drogue parachute shall be completely repacked as detailed in this WP.

c. Quality Assurance (QA) points are included in the packing procedures. When a procedural step is followed by (QA), a quality assurance requirement exists. Witnessing of the QA steps may be delayed by QA if their satisfactory completion is verified in later steps.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
Refer to WP 005 00	Shot Bag (4)
—	Packing Aids/Bodkin
—	Ruler

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon, Type I or II, Class A, Size E

a. Ensure all support equipment and material required are available prior to starting.

b. Clean packing table.

3. LAYOUT/DISASSEMBLE OF DROGUE ASSEMBLY.

a. Refer to WP 028 04 for disassemble drogue procedures.

4. INSPECTION (SPECIAL).

a. Maximum scheduled repack cycle is 1792 days.

5. LAYOUT OF DROGUE PARACHUTE ASSEMBLY.

a. Remove drogue parachute from drogue deployment bag. Remove tacking attaching drogue parachute to drogue deployment bag.

b. Attach tension strap hook to drogue assembly apex.

6. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Universal Water Activated Release System) can be replaced without a parachute repack.

NOTE

Upon initiation of any Quality Deficiency Report (QDR), contact the In-Service Support Team at NAWCWD, China Lake, CA.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be re-based if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of Manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Components without a service/total life shall be removed from service if the components do not pass inspection, as determined by Quality Assurance Representative (QAR) or Collateral Duty Inspector (CDI).

g. Check date placed in-service and date of manufacture on each drogue parachute assembly component for service life as follows:

Nomenclature	Service Life	Total Life
Drogue Parachute Deleted	None	14

(1) Check markings for completeness, legibility, and accuracy with information on parachute record (OPNAV 4790/101). (QA)

(2) Compare configuration of parachute assembly to that shown on NAVAIR 13-1-6.2 Record of Applicable Technical Directives and Illustrated Parts Breakdown, WP 028 06.

(3) Early production drogue parachute canopy gores were produced without numbered gores. Gores must be marked legibly per this WP.

7. INSPECTION OF DROGUE PARACHUTE ASSEMBLY.

a. Inspect canopy fabric surfaces, seams for seam separation and suspension lines at canopy apex for contamination, mildew, cuts tears, or fraying, and loose or broken stitching.

b. Inspect canopy apex to drogue deployment bag attachment loop for loose or broken tackings connecting suspension lines.

c. Inspect suspension lines for cuts tears, fraying, and loose or broken stitching.

d. Inspect riser straps for cuts tears, fraying, and loose or broken stitching.

e. Inspect swivel cover assembly for contamination, cuts tears, and loose or broken stitching.

f. Inspect swivel for corrosion, and freedom of rotation.

g. Inspect drogue parachute bridle strap for cuts, fraying, and loose or broken stitching.

h. Inspect curved pin for cracks, bends, nicks, burrs and corrosion. Check drogue parachute bridle strap for security of attachment.

i. Inspect pile fastener (4 places) on bridle strap for loose or broken stitching.

8. INSPECTION OF DROGUE PARACHUTE DEPLOYMENT BAG.

a. Inspect grommets (8 places) for security of attachment, cracks, bent, and corrosion.

b. Inspect drogue deployment bag for contamination, cuts tears, and loose or broken stitching.

c. Inspect drogue deployment bag flute channels for loose or broken stitching.

9. CONTINUITY CHECK.

a. Lay drogue parachute on table with information label facing up, centered, and drogue parachute arming loop facing upward. Perform a continuity check (Figure 1).

Figure 1. Drogue Parachute Layout Identification Label Centered

b. Locate suspension lines 1 and 10 and follow them to the riser. Remove all twists. Repeat for remaining lines. Ensure drogue parachute suspension lines are sequentially attached to riser (Figure 2).

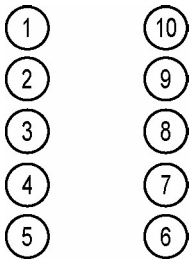

Figure 2. Suspension Lines Orientation

c. Split suspension lines between lines 1 and 10 in equal numbers on each side and ensure no twists (Figure 3). (QA)

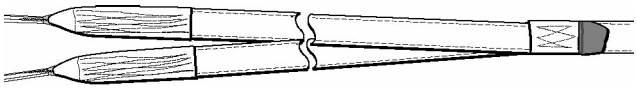

Figure 3. Split Suspension Lines

10. FOLDING OF DROGUE PARACHUTE ASSEMBLY.

a. Position deployment bag so locking loops are facing up and stowage flutes on deployment bag are down on table surface. Turn deployment bag inside out (Figure 4). (QA)

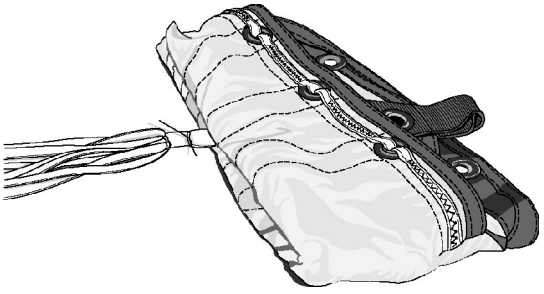

Figure 4. Deployment Bag Position

b. Attach vent lines by passing one turn single "E" thread through the drogue attachment loop, around the vent lines, then route thread back through the drogue attachment loop. Form a 1/2-in. loop, tie off knot at the deployment bag attachment loop with a surgeons knot followed by a square knot and a binders knot. Trim to 1/2-in. (Figures 5 and 6).

Figure 5. Attachment of Vent Lines

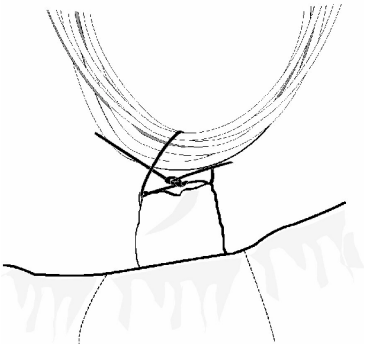

Figure 6. Vent Line Tie-Off

c. Attach the drogue parachute apex to the apex tension strap hook.

d. Insert tension hook into packing table. Attach drogue bridle strap to tension hook. Apply light tension to the drogue bridle strap to hold in place (Figure 7).

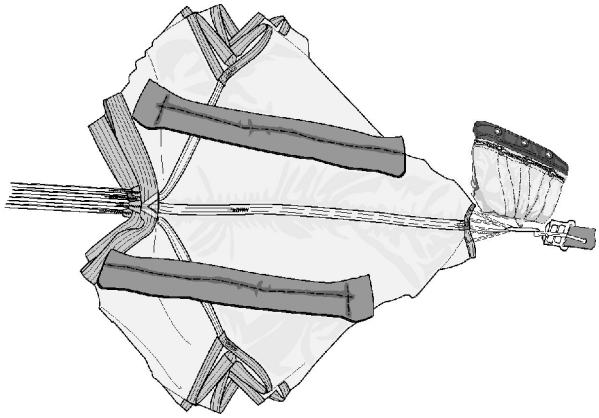

Figure 7. Flaked Panels

e. Align and straighten the apex.

f. Keep tension on suspension lines, and flake panels 1 through 10.

g. Hold in place with shot bags (Figure 7).

NOTE

Ensure there are five (5) flat panels to each side of the suspension lines.

h. Place one-shot bag across the top of the drogue parachute canopy (Figure 8).

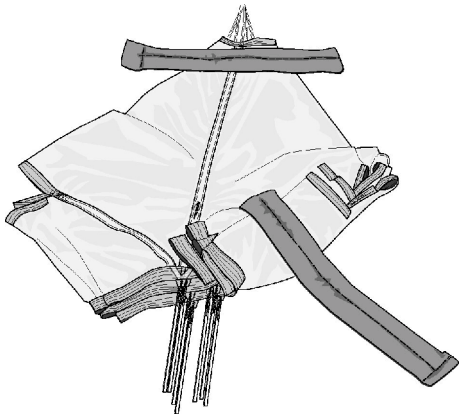

Figure 8. Drogue Parachute Canopy Right Fold

i. Fold five (5) small canopy panels right side, up and inward. Hold in place with shot bag (Figure 8).

j. Repeat step i, for left side and reposition shot bags (Figure 9).

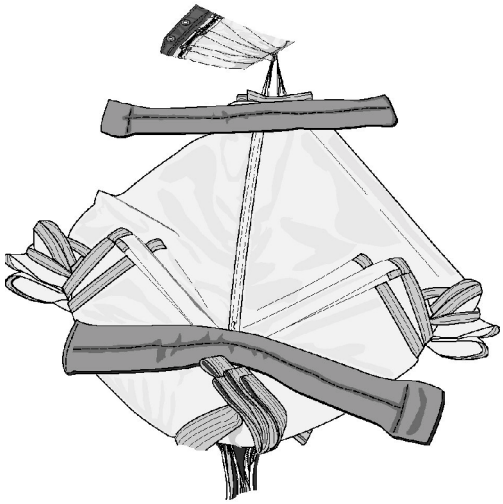

Figure 9. Drogue Parachute Canopy (Leftside) Panel Fold

k. Take the leading edge and fold the five (5) right-side panels inward (#6-10 panels) and parallel to the suspension lines. Hold in place with shot bags (Figure 10).

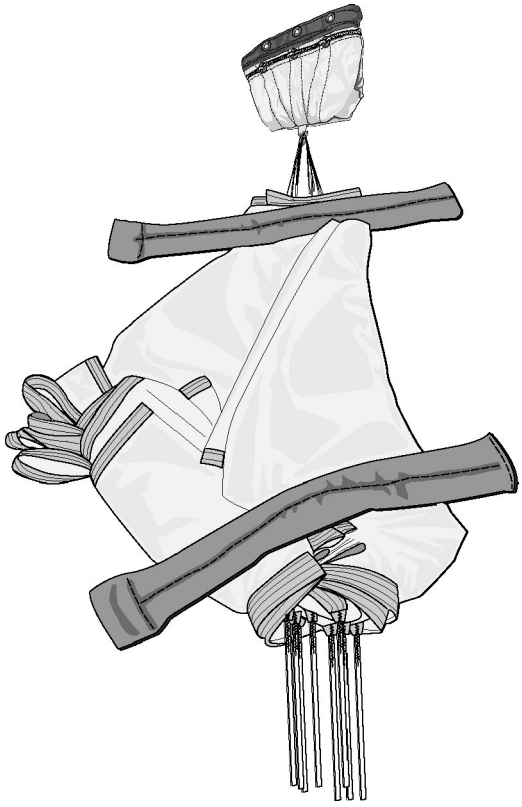

Figure 10. Right Side Panels 6-10 Folded

l. Take the leading edge and fold the five (5) left-side panels inward (#1-5 panels) and parallel to the suspension lines, over the previously folded panels until the folded width is equal to the width of the deployment bag (Figure 11).

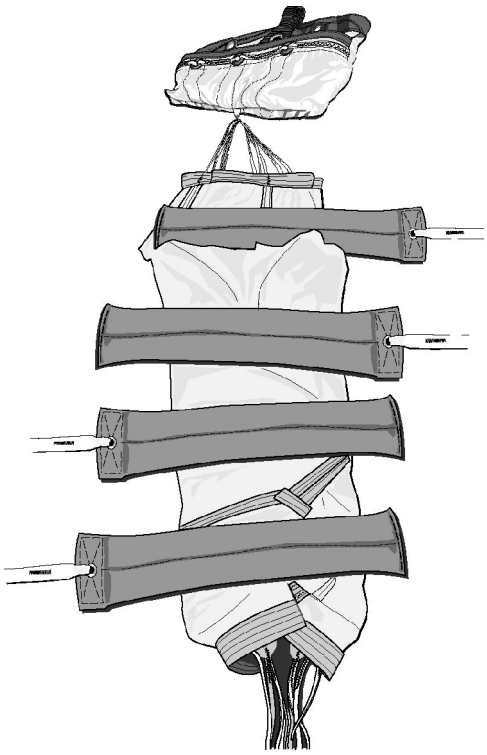

Figure 11. Left Side Panels 1-5 Folded

m. Reposition shot bags.

n. Drogue canopy should be approximately 9-in. wide when second fold is made.

o. Disconnect drogue parachute apex from apex tension strap hook.

p. Start at the skirt end making 3-in. folds, S-fold the drogue parachute four (4) places working toward the apex (Figure 12).

Figure 12. Drogue Parachute S-fold

q. Place apex of drogue parachute to the right on top of folds. Hold in place with shot bag (Figure 13).

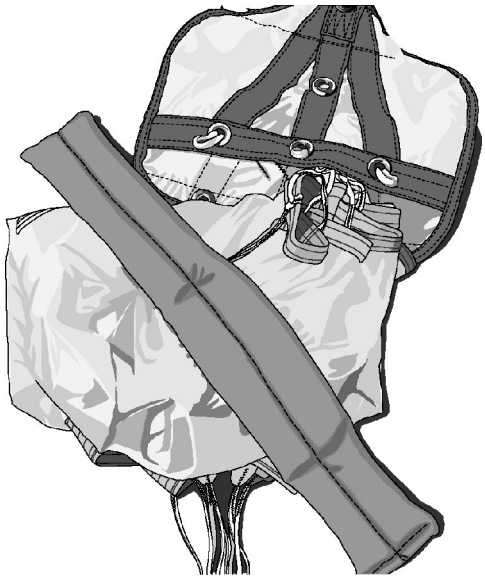

Figure 13. Apex Placement

r. Turn deployment bag right side out and position it so that the stowing flutes side of the bag faces the table and the locking loops face up.

s. Remove shot bag. Stow the folded drogue parachute into the deployment bag.

t. Place drogue parachute in deployment bag with suspension line attachment points to the left side of the deployment bag (Figure 13).

11. CLOSING OF DROGUE PARACHUTE DEPLOYMENT BAG.

a. Verify the suspension line group exists in the left side of the deployment bag (Figure 14).

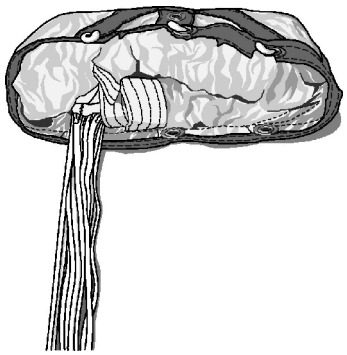

Figure 14. Suspension Line Group Placement

b. Route pull up cord through middle locking loop and up through the corresponding grommet. Secure loop in place with a temporary pin.

c. Make the first (of 3) stows by forming a loop in the suspension line group, wrap pull up cord around the suspension line group and pull it through the middle locking loop until 1 to 1 1/2-in. protrude past the loop (Figure 15).

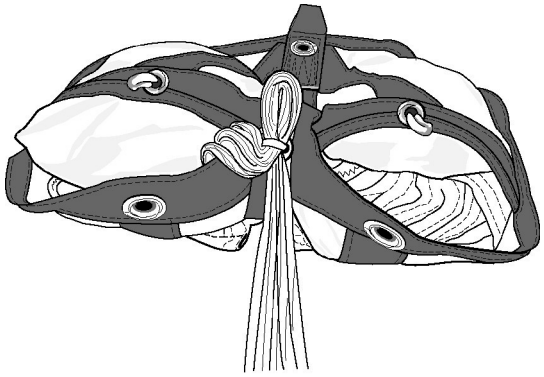

Figure 15. First Suspension Line Group Stow

d. Route pull up cord through right side and pull, pull up cord through locking loop.

e. Make the second stow on the right-side by forming a loop in the suspension line group, wrap pull up cord around the suspension line group and pull it through the right locking loop until 1 to 1 1/2-in. protrude past the loop (Figure 16).

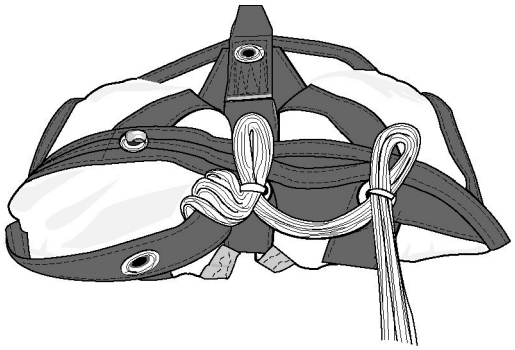

Figure 16. Second Suspension Line Group Stow

f. Route pull up cord through left side and pull, pull up cord through locking loop.

g. Make the third stow on the left-side by forming a loop in the suspension line group, wrap pull up cord around the suspension line group and pull it through the left locking loop until 1 to 1 1/2-in. protrude past the loop. Remove pull up cords (Figure 17).

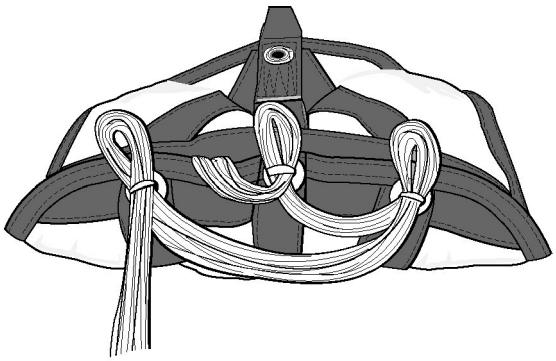

Figure 17. Third Suspension Line Group Stow

h. Dress up the deployment bag. (QA).

12. STOWAGE OF SUSPENSION LINES.

NOTE

Stow ends of suspension line groups even with ends of stowage flutes.

a. Rotate the deployment bag assembly over so stowing flutes are facing upward.

b. Route the suspension line group between the stowage flutes. Form a loop in the suspension line group; wrap pull up cord around the suspension line group and route pull cord up through the upper left stowage flute. Pull suspension line group through stowage flute until suspension line group is even with edge of stowage flute (Figure 18).

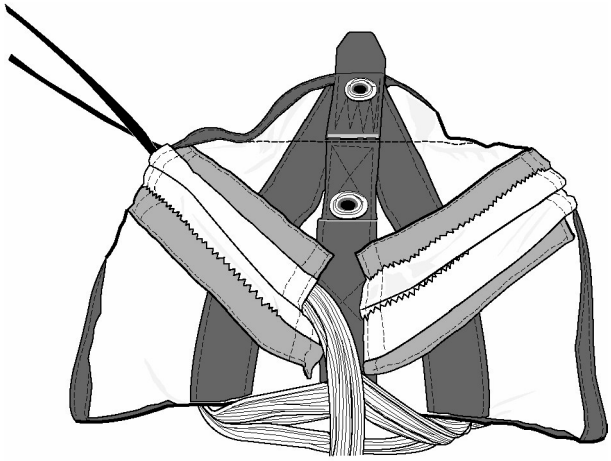

Figure 18. First Stow in Upper Left Stowage Flute

c. Make second stow in the upper right stowage flute (Figure 19).

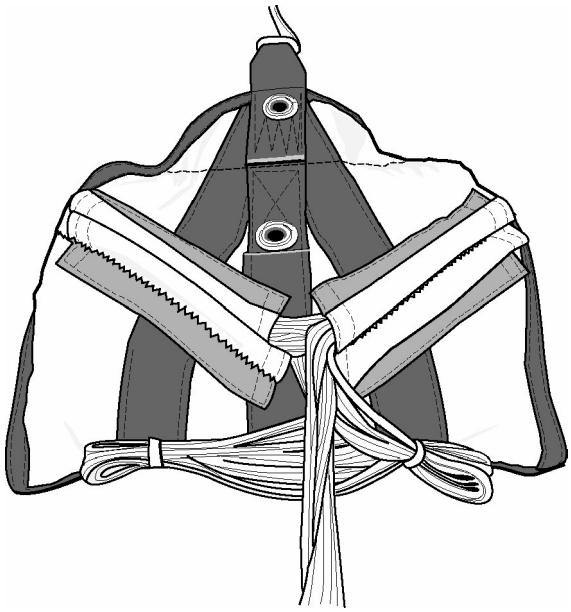

Figure 19. Second Stow in Upper Right Stowage Flute

d. Make alternating stows until finger trapped area of suspension lines are even with the bottom of the deployment bag. Last suspension line group stow may not fill stowage flute (Figures 20 and 21). (QA)

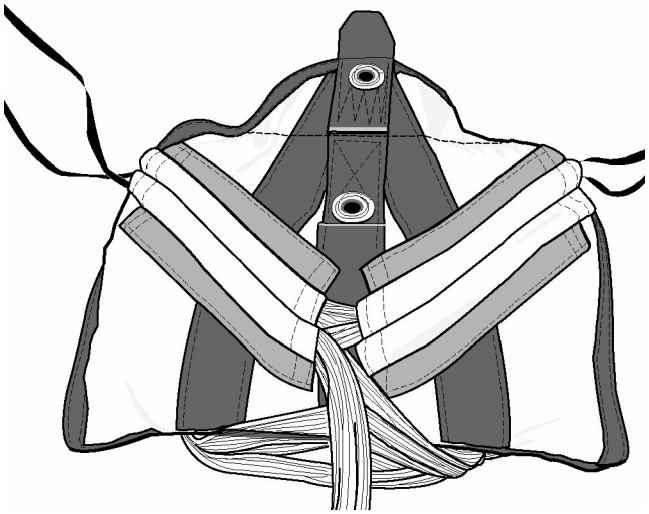

Figure 20. Alternating Stows of Suspension Lines

NOTE

Last suspension line group stow may not fill stowage flute. Remove pull up cord.

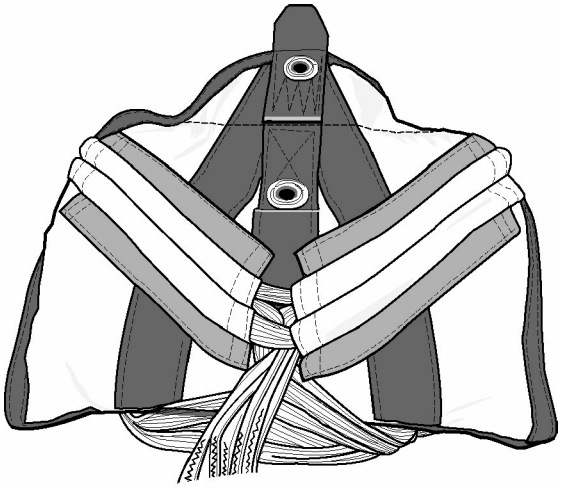

Figure 21. Last Stow of Suspension Lines

13. FINAL CHECK.

a. Inspect packed Drogue Assembly for general condition. (QA)

b. Account for all packing tools. (QA)

INTERMEDIATE MAINTENANCE

ORIGINAL ISSUE, SPECIAL INSPECTION, AND REPAIR PROCEDURES

A/P22P-20 CREW BACKPACK ASSEMBLY

PART NO. 3516AS2000-1

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Aviation-Crew Systems Manual, Seat Survival Kits (Oxygen Hoses and Non-SKU Series Set Kits) . . . . . NAVAIR 13-1-6.3-1
Intermediate and Depot Maintenance, Final Closing Procedures, A/P22P-20 Crew Backpack Survival Equipment Compartment . . . . . WP 028 05
Intermediate and Depot Maintenance, Maintenance Procedures, PCU-63(V)1/P Universal Water Activated Release System (UWARS) . . . . . WP 029 02
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration . . . . . WP 003 00
Organizational Maintenance Repair Procedures, A/P22P-20 Crew Backpack Assembly . . . . . WP 028 01

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Record of Applicable Technical Directives

None

1. GENERAL.

a. This Work Package (WP) provides original issue instructions for the A/P22P-20 Crew Backpack Assembly.

b. The A/P22P-20 Crew Backpack Assembly consists of three distinct systems, (1) Parachute Assembly, (2) Survival Kit Assembly, and (3) Emergency Oxygen System Assembly.

c. Upon receipt of the Crew Backpack Assembly, the assembly must be made Ready-For-Issue (RFI).

d. Quality Assurance (QA) points are included in the packing procedures. When a procedural step is followed by (QA), a quality assurance requirement exists. Witnessing of the QA step may be delayed by QA, if their satisfactory completion is verified in a later step.

2. ORIGINAL ISSUE PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
—	Curved Upholstery Needle
—	Packing Table
—	Scissors
—	Calibrated Scale

Materials Required

Specification or Part Number	Nomenclature
V-T-295	Thread, Nylon Type I or II, Class A, Size E

a. Ensure that all support equipment and materials required are available prior to starting.

b. Inspect packing tools for nicks, burrs, or sharp edges which may cause damage to the parachute.

c. Count and record number of packing tools.

d. Clean the packing table.

3. INSPECTION.

NOTE

If discrepancies are discovered, submit a Quality Deficiency Report (QDR) and notify: Commander, Code 461000D, NAVAIRWARCENWPNDIV, Fleet Support Team, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

a. Remove A/P22P-20 from shipping container.

b. Inspect Crew Backpack Assembly for any signs of damage which may have been caused by shipping.

c. Lay Crew Backpack Assembly on packing table, container closing flaps facing up.

d. On upper portion of Crew Backpack Assembly, open the ripcord pin protector flap (Figure 1).

Figure 1. Ripcord Pin Security

e. Ensure lead shipping seal is intact and ripcord pin is properly seated. If lead seal is missing or safety tie is broken, the Crew Backpack Assembly is Not-Ready-For-Issue (NFRI), submit a QDR per note.

NOTE

The A/P22P-20 is shipped from the manufacturer without the Universal Water Activated Release System (UWARS) units and the day/night flare installed. Installation of these items and the servicing of the oxygen assembly must be accomplished before the parachute assembly may be made Ready-For-Issue (RFI).

4. INSTALLATION OF UNIVERSAL WATER ACTIVATED RELEASE SYSTEM (UWARS) UNITS.

a. Install UWARS per WP 029 02.

b. Document lot numbers, serial numbers and date of manufacture on Parachute Record (OPNAV 4790/101).

5. REMOVAL OF SURVIVAL KIT AND OXYGEN SYSTEM.

6. OPENING SURVIVAL KIT COMPARTMENT.

a. Position harness/container on packing table with bottom edge of survival compartment facing packer.

b. Open top cover flap on survival compartment.

c. Ensure lead shipping seal is intact and ripcord pin is properly seated. If lead seal is missing or safety tie is broken, the Crew Backpack Assembly is Not-Ready-For-Issue (NFRI), submit a QDR per note.

d. Place one hand over ripcord pin with firm pressure. With other hand, pull on survival ripcord cable to remove ripcord pin from closing loop.

e. Open survival compartment flaps.

f. Disconnect yellow lanyard hook.

g. Remove Survival Equipment Kit/Liferaft module and forward to appropriate work section for Place-in-Service Inspection per NAVAIR 13-1-6.3-1.

7. REMOVAL OF EMERGENCY OXYGEN SYSTEM.

a. Cut and remove Type I nylon cord securing emergency oxygen system (2 places) at green apple stowage flute and lacing at O2 bottle flap.

b. Remove emergency oxygen (CRU-109/P22P-20), and forward to appropriate work section for inspection/maintenance and filling per NAVAIR 13-1-6.4-1.

8. INSTALLATION OF OXYGEN SYSTEM AND SURVIVAL KIT.

a. Refer to WP 028 05 for installation and final closing procedures.

9. CANOPY MODULE LOSS OF VACUUM PROCEDURES.

NOTE

If the canopy module develops a leak, it will be necessary to vent the module to allow the module to breathe. This will prevent the aircrew from being forced forward in the seat due to expansion of the bag at altitude or inadvertent aircraft decompression.

a. Position harness/container on packing table, closing flaps up.

b. On the left side (ripcord side), separate the fastener tape located at the shoulder. This will expose the sealed canopy module.

c. Locate one of the initiator cuts. The initiator cuts can be distinguished by a scissor cut in the foil bag.

WARNING

The following step does not require tools or sharp objects. Canopy damage may occur.

d. Slowly tear foil bag at the initiator cut 1 to 2-in.

e. Close the flaps by mating hook and pile fastener tape.

f. Cut a 5-in. piece of 2-in. cotton webbing.

g. Cut a 4-in. piece of 2-in. hook fastener tape.

h. Fold each end of cotton webbing under and sew to hook faster tape with E thread.

i. With an indelible marker write, “VENTED” in 1/2-in. letters, and add the date canopy module was vented (Figure 2).

Figure 2. "Vented" Tag

j. Place velcro patch on the rear of container assembly and mate with the pile fastener tape provided.

k. In the remarks section of the Parachute Record (OPNAV 4790/101), note that the canopy module has been vented.

l. QA inspector shall stamp the entry.

10. 896-DAY RIPCORD PIN PULL FORCE CHECK.

a. Route a length of Type III pull-up cord around ripcord pin, and secure to ripcord cable with 3 to 4 half-hitches. This will prevent the ripcord pin from being fully removed (Figure 3).

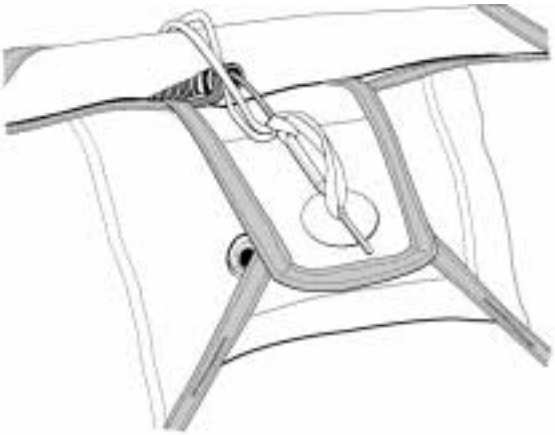

Figure 3. Pull-Up Cord Routing

b. Set spring tester to zero.

c. Ensure ripcord grip is fully seated in ripcord grip retainer. Attach spring scale to ripcord grip using nylon cord. Using a straight steady pull, remove grip from retainer. Force required shall be 15 ± 5 lbs.

d. If pull force is not within limits, use pliers to adjust ripcord grip retainer. Ensure jaws of pliers are covered with protective material to prevent gouging. After adjustment, repeat ripcord grip pull test.

e. Reset scale to zero. Apply a straight steady pull on ripcord grip until initial movement of ripcord pin is observed. Maximum allowable force is 27 lbs. (QA)

f. Remove pull-up cord. (QA)

g. Stow ripcord grip in ripcord grip retainer.

h. Reposition ripcord pin so it is at least three quarters seated in the closing loop.

i. Insert center tuck tab on flap #8 into center keeper on flap #7.

j. Engage tuck tabs on flap #8 under flap #7.

k. Insert flap #8 into slot on flap #6.

l. Annotate the ripcord pin pull force on Parachute Record (OPNAV 4790/101).

m. Report findings to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

11. FABRICATION AND ROUTING OF CLOSING LOOPS.

12. FABRICATION OF DROGUE ATTACHMENT LOOP.

Materials Required

Specification or Part Number	Nomenclature
9512-300-UNT Suggested Source: CSR Inc 3235 State Road Sellersville, PA 18960 Phone (215) 453-0600	Cord, Spectra 300 lb, Untreated

NOTE

All dimensions are ± 1/8-in.

a. Cut a length of 300 lb Spectra 11-in. long.

b. Fold in half.

c. From loop end mark 5/8-in. on the lower most piece of cord.

d. Insert bodkin in the lower most end of Spectra.

e. Carefully work the bodkin in the center of Spectra and exit at the 5/8-in. mark.

f. Draw the other end of Spectra back through center of cord. Forming a 5/8 ± 1/8-in. loop (Figure 4).

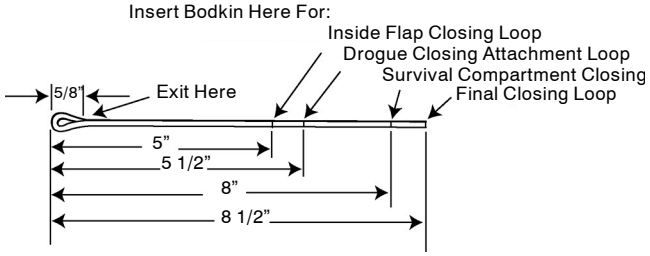

Figure 4. Fabrication of Closing Loops

g. Fingertrap shall extend the whole length of cord.

13. ROUTING OF DROGUE ATTACHMENT LOOP.

a. Route closing loop per illustration (Figure 5).

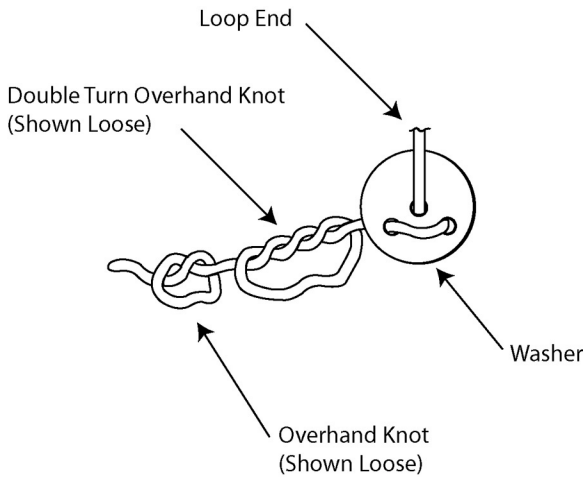

Figure 5. Routing and Tying of Closing Loops

b. Measure and leave approximately 3/4 ± 1/8-in. from the washer to the end of the loop.

c. On the back side, form the double overhand knot (Figure 5).

d. Verify measurement.

e. Form an overhand knot behind the double overhand knot (Figure 5).

f. Measure and make any adjustments necessary.

g. Set knots by pretensioning using 240 ± 20 in-lbs. between washer and loop.

14. FABRICATION OF INSIDE FLAP CLOSING LOOP.

a. Cut a length of 300 lb Spectra 10-in. long.

b. Fold in half.

c. From loop end mark 5/8-in. on the lower most piece of cord.

d. Insert bodkin in the lower most end of Spectra.

e. Carefully work the bodkin in the center of Spectra and exit at the 5/8-in. mark.

f. Draw the other end of Spectra back through center of cord. Forming a 5/8 ± 1/8-in. loop (Figure 4).

g. Fingertrap shall extend the whole length of cord.

15. ROUTING OF INSIDE FLAP CLOSING LOOP.

a. Route closing loop per illustration (Figure 5).

b. Measure and leave approximately 1/2 ± 1/8-in. from the washer to the end of the loop.

c. On the back side, form the double overhand knot (Figure 5).

d. Verify measurement.

e. Form an overhand knot behind the double overhand knot (Figure 5).

f. Measure and make any adjustments necessary.

g. Set knots by pretensioning using 240 ± 20 in-lbs. between washer and loop.

16. FABRICATION OF FINAL PARACHUTE CONTAINER CLOSING LOOP.

a. Cut a length of 300 lb Spectra 17-in. long.

b. Fold in half.

c. From loop end mark 5/8-in. on the lower most piece of cord.

d. Insert bodkin in the lower most end of Spectra.

e. Carefully work the bodkin in the center of Spectra and exit at the 5/8-in. mark.

f. Draw the other end of Spectra back through center of cord. Forming a 5/8 ± 1/8-in. loop (Figure 4).

g. Fingertrap shall extend the whole length of cord.

17. ROUTING OF FINAL PARACHUTE CONTAINER CLOSING LOOP.

a. Route closing loop per illustration (Figure 5).

b. Measure and leave approximately 4 1/2 ± 1/8-in. from the washer to the end of the loop.

c. On the back side, form the double overhand knot (Figure 5).

d. Verify measurement.

e. Form an overhand knot behind the double overhand knot (Figure 5).

f. Measure and make any adjustments necessary.

g. Set knots by pretensioning using 240 ± 20 in-lbs. between washer and loop.

18. FABRICATION OF SUPPORT EQUIPMENT CONTAINER CLOSING LOOP.

a. Cut a length of 300 lb Spectra 16-in. long.

b. Fold in half.

c. From loop end mark 5/8-in. on the lower most piece of cord.

d. Insert bodkin in the lower most end of Spectra.

e. Carefully work the bodkin in the center of Spectra and exit at the 5/8-in. mark.

f. Draw the other end of Spectra back through center of cord. Forming a 5/8 ± 1/8-in. loop (Figure 4).

g. Fingertrap shall extend the whole length of cord.

19. ROUTING OF SUPPORT EQUIPMENT CONTAINER CLOSING LOOP.

a. Route closing loop per illustration (Figure 5).

b. Measure and leave approximately 3 1/2 ± 1/8-in. from the washer to the end of the loop.

c. On the back side, form the double overhand knot (Figure 5).

d. Verify measurement.

e. Form an overhand knot behind the double overhand knot (Figure 5).

f. Measure and make any adjustments necessary.

g. Set knots by pretensioning using 240 ± 20 in-lbs. between washer and loop.

20. FINAL CHECKOUT.

a. Account for all packing tools.

b. Inspect packed A/P22P-20 Crew Backpack Assembly for general condition.

c. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA)

d. QA inspector shall examine completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

e. QA inspector shall sign Parachute Record (OPNAV 4790/101).

f. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

INTERMEDIATE AND DEPOT MAINTENANCE

PACKING PROCEDURES

A/P22P-20 CREW BACKPACK ASSEMBLY

PART NO. 3516AS2000-1

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Aviation-Crew Systems Manual, Seat Survival Kits (Oxygen Hoses and Non-SKU Series Set Kits) . . . NAVAIR 13-1-6.3-1
Cartridge Actuated Devices (CADS) and Propellant Actuated Devices (PADS) (IETM) . . . NAVAIR 11-100-1.1
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Record of Applicable Technical Directives

None

1. GENERAL.

a. This Work Package (WP) provides packing instructions for the A/P22P-20 Crew Backpack Assembly.

b. Packing instructions are provided with the assumption that they will be carried out under ideal conditions in a parachute loft WP 003 00. When a parachute assembly must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

c. In no case shall packing of a parachute assembly be interrupted after the packing operation has been started. If the packing operation is interrupted due to unforeseen circumstances, the parachute assembly shall be completely repacked per instructions contained in the WP.

d. Quality Assurance (QA) points are included in the packing procedures. When a procedural step is followed by (QA), a quality assurance requirement exists. Witnessing of the QA step may be delayed by QA, if their satisfactory completion is verified in a later step.

e. When performing scheduled maintenance, a component that will not make the next scheduled repack cycle shall be replaced.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
811-00394	Cocking Fixture
711-07153	Altitude Chamber
411-00254	Cable, Test Arming
411-00137	Cable, Test Power
311-40203	Cushion Bumper
511-00531	Housing, Test Power Cable
DPP-50	Tester, Spring Resiliency
Refer to WP 005 00	Roll Bar
1979AS950-1	Closing Plate
OEX100	Wrench Combination 5/16-in.
TMRX10	Crowfoot, Socket Wrench 5/16-in.
TQS6	Driver, Torque, in.-lbs.
—	(2) Cypres Closing Pins
—	Needle, Sewing Curved
—	Scissors
—	Ruler, 12-in.
—	Pull-up Cord
Refer to WP 005 00	Shot Bag (6)
—	Apex Holder
PIA-C-5040	Cord, Nylon, Type I or IA
—	Bodkin
—	T-Handle

Materials Required

Specification or Part Number	Nomenclature
A-A-52080-B-2	Tape, Lacing & Tying Finish B, Size 2, Type I, Natural
V-T-295	Thread, Nylon, Type I or II, Class A, Size A
V-T-295	Thread, Nylon Type I or II Class A, Size E
V-T-295	Thread, Nylon Type I or II Class A, Size FF
F-900 Torque Seal (Color Optional)	Sealing Compound
3516AS2020-9	Set, Closing Loop

3. LAYOUT/DISASSEMBLE PARACHUTE ASSEMBLY.

CAUTION

When performing disassembling procedures watches and rings must be removed to prevent puncturing or tearing of the sealed canopy assembly bag.

a. Position harness/container on packing table.

b. Open top cover flap.

c. Place one hand over ripcord pin, apply firm pressure. Using other hand pull on ripcord cable to remove ripcord pin from closing loop. Maintain control of pilot parachute as it exits through container flaps and fully extends.

NOTE

Replacement of the inside closing loop, drogue attachment loop, and final closing loop must be accomplished each time the parachute compartment has been opened and the pins have been removed.

d. Open parachute container flaps, and both shoulder flaps.

e. Remove ripcord handle assembly from ripcord clip.

CAUTION

Pulling on drogue bridle may cause inadvertent firing of the Automatic Actuation Device.

f. Remove arming cable tie.

g. Loosen Lark's head knot on pilot parachute. Route the bottom of pilot parachute through the large loop of the pilot parachute bridle cord. Remove pilot parachute.

CAUTION

When separating the drogue and drogue bridle from the sealed canopy bridle cords care must be taken to prevent tearing the vacuum seal initiators.

h. Loosen Lark's head knot on drogue deployment bag. Remove pilot parachute bridle cord. Remove curved pin from drogue locking loop.

i. Undo hook and pile faster on drogue attachment assembly flap.

j. Remove manual override ripcord cable from pocket and drogue loop. Remove tacking from swivel protective sleeve. Slide swivel protective sleeve upwards.

k. Cut secure thread on power cable. Remove power cable from drogue loop. Separate soft release loop, allowing drogue assembly swivel to become free.

NOTE

The droque double locking loop may be re-used upon satisfactory inspection.

CAUTION

When separating the packed drogue assembly from the sealed canopy care must be taken to prevent tearing the vacuum seal initiators.

l. Loosen Lark's head knot on sealed canopy bridle cords. Route packed drogue deployment bag through large loop on drogue bridle. Remove packed drogue deployment bag.

m. Pack Drogue per WP 028 05.

CAUTION

When separating the sealed canopy bridle cords from the sealed canopy assembly care must be taken to prevent tearing the vacuum seal initiators.

n. Loosen the Lark's head knot on sealed canopy bridle cord and remove.

o. Repeat step n for the remaining three sealed canopy bridle cords.

4. SURVIVAL COMPARTMENT OPENING/DISASSEMBLY.

a. Position harness/container on packing table with bottom edge of survival compartment facing packer.

b. Open top cover flap on survival compartment.

c. Place one hand over ripcord pin, with firm pressure. Place other hand pull on survival ripcord cable to remove ripcord pin from closing loop.

d. Remove survival kit release assembly (ripcord) from survival kit release ripcord housing assembly.

e. Open survival compartment flaps.

f. Disconnect yellow lanyard hook.

g. Remove Survival Equipment Kit/Liferaft Module and forward to appropriate work section for survival items inspection/maintenance and rigging, per NAVAIR 13-1-6.3-1.

h. Cut and remove Type I nylon cord securing emergency oxygen system (2 places) at green apple stowage-flute and lacing at O^2 bottle flap. Remove emergency oxygen system (CRU-109/P22P-20), and forward to appropriate work section for inspection/maintenance and rigging, per NAVAIR 13-1-6.4-1.

i. Remove and discard anti-slip pad from emergency oxygen system holder.

j. Remove and discard survival compartment closing loop.

5. INSPECTION OF SEALED CANOPY ASSEMBLY AND SEALED CANOPY BRIDLE CORDS.

a. Inspect replacement sealed canopy assembly vacuum bag for softness which would indicate loss of canopy vacuum seal. Do not remove red tape securing initiator cuts located next to 4 grommets until directed.

CAUTION

If initiator cuts are missing do not use sealed canopy assembly. Care must be taken when verifying the initiator cuts.

NOTE

If red tape pieces (s) are missing on initiator cuts, still use sealed canopy assembly but verify initiator cuts have been made in heat seal seam.

b. Carefully verify initiator cuts are present, (3) on top edge, (1) on bottom, "V" cut by looking on opposite side of red tape. Verify initiator cuts are present in the heat seal seam. (QA)

c. Inspect both steering handles for contamination, deterioration, cuts, fraying, and loose or broken stitching.

d. Inspect sealed canopy bridle cords for cuts, fraying, and loose or broken stitching.

6. REMOVAL OF STEERING HANDLE AND SOFT LINK RISER.

a. Cut and remove FF tackings (4 places per riser) that secures anti-rotation straps to the soft link assemblies (risers).

b. Remove anti-rotation clips from canopy release fittings.

c. Carefully lift and slide sealed canopy assembly to expose canopy ties (Figure 1).

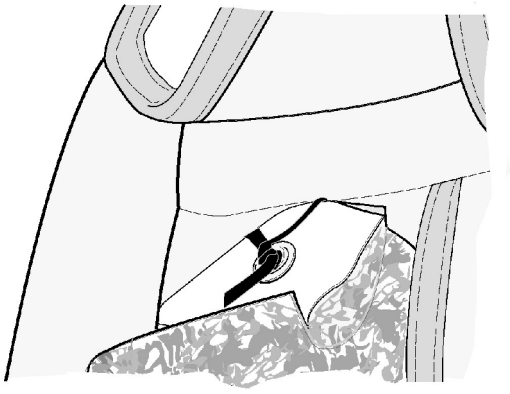

Figure 1. Canopy Ties

d. Cut tape, lacing and tying ties (2 places) located at the bottom corner loops of harness which secure the canopy assembly to the container. Remove cut ties.

e. Rotate sealed canopy assembly back and rest on survival compartment with information plate facing up.

f. Separate steering handle from pile fastener tape and remove steering line from stowage flutes on soft link riser.

g. Remove Lark's head knot from steering handle. Remove steering handle.

h. Remove steering line from steering line guide loop.

i. Remove Lark's head knot from steering line heat seal.

j. Repeat steps f thru i for opposite side.

k. Open cover securing Rapide link (Figure 2).

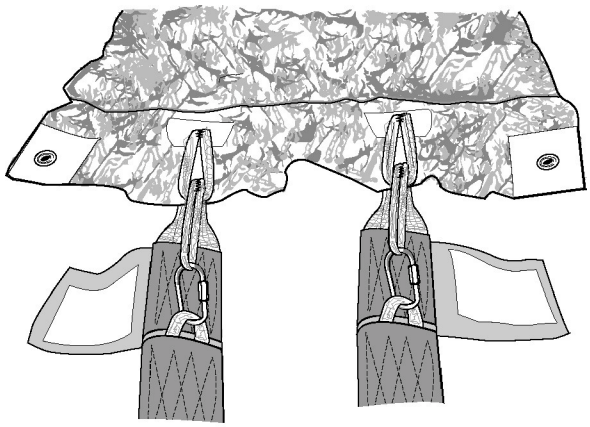

Figure 2. Rapide Links

l. Using 5/16-in. wrench, loosen the nut on Rapide link. Back off nut and remove small soft link from Rapide link. Leave Rapide link attached to Rapide link secure loop. Hand tighten Rapide links to prevent loss or damage to secure loops.

m. Repeat steps k and l for opposite side.

CAUTION

Care must be used when removing small soft link from rapide link. Rapide link nut must be backed off completely to prevent fraying or tearing of the small soft link.

n. Remove small soft link from large soft link. Slowly pull and remove large soft link from sealed canopy assembly hole.

o. Remove riser assembly from container.

p. Repeat steps n thru o for opposite side.

q. Remove sealed canopy assembly (PCU-68/P22P-20). Box it up and turn into supply for disposition.

r. Discard all old closing loops.

7. INSPECTION (SPECIAL).

a. Scheduled replacement of the PCU-68/P22P-20 Sealed Canopy Assembly is 1792 days.

8. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

NOTE

Unless otherwise noted, parachute component life shall start on the month of the date of manufacture and expire on the last day of that month.

a. All internal service life components, including cartridges, shall be replaced if service life expires prior to the next repack cycle. Repack cycles may be shortened to correspond to the first component that is expiring prior to the next inspection cycle. An external overage component (i.e. Universal Water Activated Release System) can be replaced without a parachute repack.

b. When replacing an external overage component without a parachute repack, draw a single red line through any information pertaining to that component on the Parachute Record (OPNAV 4790/101). The replacement component will be annotated on the next available line. The QA who witnessed the task shall apply the QA stamp to the right of the entry and complete the VIDS/MAF (OPNAV 4790/60).

c. A parachute assembly may be opened to permit compliance with a Technical Directive. After completion of directive, the parachute assembly repack cycle may be re-based if all parachute components have the necessary life available or may be returned with the original repack date in order to keep it aligned with the actual aircraft inspection cycle.

d. When a component reaches the service/total life limit, it shall be returned to supply for disposition.

e. If parts received from supply are lacking a date of manufacture and are new in manufacturer's packaging, they may be used for one complete repack cycle, then removed. Place "No Date of Manufacture" in the Date of manufacture's block on the Parachute Record (OPNAV 4790/101). Submission of a Quality Deficiency Report (QDR) shall follow each occurrence.

f. Check date placed in-service and date of manufacture on each parachute component for service life as follows:

Nomenclature	Total Life
Harness/Container Assembly	14 Years
Pilot Parachute Assembly	14 Years
Pilot Parachute Bridle Cord	14 Years
Sealed Canopy Bridle Cords	14 Years
Sealed Canopy Assembly	5 1/2 Years
Automatic Actuation Device	15 Years
UWARS	Refer to NAVAIR 11-100-1.1

(1) Check markings for completeness, legibility, and accuracy with information on parachute record. (QA)

(2) Compare configuration of parachute assembly to that shown on NAVAIR 13-1-6.2 Record of Applicable Technical Directives and Illustrated Parts Breakdown.

9. INSPECTION OF PILOT PARACHUTE AND PILOT PARACHUTE BRIDLE CORD.

a. Inspect fabric surfaces and seams for cuts, tears, burns, fraying, and loose or broken stitching.

b. Inspect seam area at crown for seam separation.

c. Inspect coil spring assembly for distortion, cracks, crimped ferrule secure, and corrosion.

d. Inspect loose or broken tackings at bottom of coil spring assembly.

e. Inspect pilot parachute bridle cord for cuts, fraying, loose or broken stitching.

10. INSPECTION OF CONTAINER.

a. Inspect webbing for contamination, rust at points of contact with metal parts, cuts, fading, wear, fraying, abrasions, and loose or broken stitching.

b. Inspect hardware for damage, cracks, or corrosion.

c. Inspect container fabric for seam separation, loose or broken stitching, cuts, tears, contamination, deterioration, and wear.

d. Inspect flap grommets for security of attachment, cracks, distortion and corrosion.

e. Inspect hook fastener on shoulder straps, and on parachute compartment flaps #1, #2, and #3 for loose or broken stitching.

f. Inspect canopy release assembly body for broken locking and actuating lever springs, corrosion, cracks and set screw and tamper dot are in place. Inspect the release level left and right arms for cracks.

g. Measure torque of knurled actuating lever as follows:

(1) Hold locking lever in open position and insert torque meter into either hexagonal cavity.

(2) Rotate actuating lever to point just prior to contact with body. The allowable torque is 28 to 50 in-oz. (QA)

h. Inspect elastic keepers (4 places) for deterioration.

11. INSPECTION OF SOFT LINK ASSEMBLY (RISER).

a. Inspect Rapide links for damage, corrosion, distortion and ease of operation.

b. Inspect soft link cords and Rapide link attachment loop for cuts, wear, fraying, and loose or broken stitching.

12. INSPECTION OF UNIVERSAL WATER ACTIVATED RELEASE SYSTEM (UWARS).

a. Refer to WP 029 01.

13. INSPECTION OF RIPCORD ASSEMBLY AND RIPCORD HOUSING.

a. Inspect cable for corrosion, distortion, fraying, broken strands, and security of swaged terminal ball.

b. Inspect locking pin for distortion or cracks.

c. Inspect ripcord handle for distortion, cracks, and corrosion.

d. Inspect ripcord handle clip for security of attachment to webbing, corrosion, distortion and cracks.

e. Inspect housing for corrosion, distortion, loose ferrules, breaks, and cracks.

f. Inspect ripcord housing for tacking on both ends.

14. INSPECTION OF CLOSING LOOP.

a. Inspect replacement small and large parachute closing loops for cuts, fraying, loose or broken stitching and washer is attached.

15. INSPECTION OF DROGUE LOOP.

a. Inspect drogue loop for cuts, fraying, and loose or broken stitching.

16. REMOVAL OF AUTOMATIC ACTUATION DEVICE (AAD).

NOTE

Test chamber must be turned on to permit 30 minute warm up period prior to testing AAD.

a. Cut and remove all lacing tape tackings (6 places) on AAD power and actuator cables and protective sleeves (Figure 3).

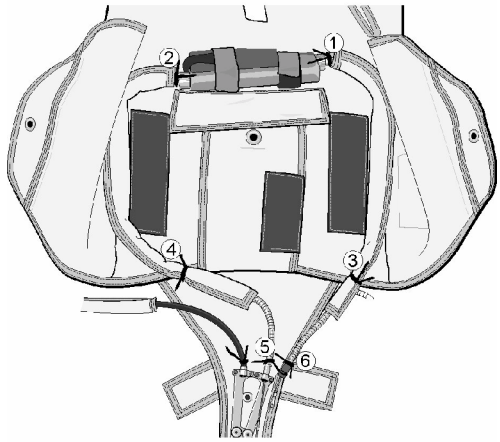

Figure 3. Lacing Tape Ties

b. Remove AAD power cable housing by removing screws on the AAD stiffener plate.

c. Separate hook and pile fastener tape which holds AAD body and cable housings.

d. Remove AAD.

17. AAD INSPECTION.

a. Inspect all threaded parts for crossed or damaged threads.

b. Inspect AAD body for damage, cracks, or corrosion.

c. Inspect both cables and cable housings for, bends, fraying, broken strands, and locking pin for bends or cracks, and security of swaged ball.

18. PREPARING AAD FOR TESTING (COCKED).

WARNING

Removal of components other than cables and cable housings may result in serious injury.

NOTE

AAD will be visually and functionally tested whenever parachute module is removed for repair or replacement.

a. Inspect AAD and all AAD components.

b. Remove the AAD power cable and housing by loosening and removing knurled cap. Install the test power cable with housing and bumper cushion installed onto test power cable into the AAD tighten knurled nut.

c. Place AAD into cocking fixture. Place power cable into cocking fixture cable. Pin with stud.

d. Apply tension to actuation cable by turning hand wheel until power cable is taunt, do not release hand pressure tension from hand wheel. Insure green dot fully appears in the indicator window.

NOTE

An audible "click" will be heard when the test arming cable is fully inserted.

e. Remove arming cable housing and arming cable by loosening and removing knurled cap, resistance will be felt when removing arming cable. Insert test arming cable. Insure test arming cable is seated properly into AAD.

f. Release tension from power cable, remove stud from fixture/power cable.

g. Remove AAD from cocking fixture.

19. PREPARING AAD FOR TESTING (FIRED).

WARNING

Removal of components other than cables and cable housings may result in serious injury.

NOTE

AAD will be visually and functionally tested whenever parachute module is removed for repair or replacement.

a. Inspect AAD and all AAD components.

b. Remove arming cable housing and arming cable by loosening and removing knurled cap.

c. Insert arming cable pin into arming cable pin adapter.

d. Apply tension to actuation cable by turning hand wheel until power cable is taunt, do not release hand pressure tension from hand wheel. Insure green dot fully appears in the indicator window.

e. Insert the test arming pin. Insure test arming pin is seated properly into AAD.

NOTE

An audible "click" will be heard when the test arming cable is fully inserted.

f. Release tension from power cable. Remove arming cable pin adapter from arming cable pin. Remove arming cable housing and arming cable by loosening and removing knurled cap.

g. Replace the power cable and housing with the test power cable and housing.

h. Install the bumper cushion between the test power cable ferrule and the test power cable terminal.

CAUTION

Bumper cushion must be used on the power cable to prevent possible damage to the release when firing without a load.

i. Remove the AAD from the cocking fixture.

20. TIME DELAY TEST SETUP.

CAUTION

Bumper cushion must be used on the power cable to prevent possible damage to the release when firing without a load.

a. Open test chamber door.

b. Insert AAD, label up, into fixture inside test chamber so that release body seats evenly within the cavity.

c. Wrap test power cable housing around mandrel and insert test power cable terminal into slot of power cable adapter.

d. Insert pin power cable retainer through holes in power cable adapter and test power cable terminal.

e. Place the test arming cable end ball terminal into slot on end of arming cylinder piston rod and secure with red rubber sleeve.

f. Close test chamber door.

21. PERFORMING TIME DELAY TEST.

a. Place time delay switch in "TEST" position. Time delay sequence begins automatically.

NOTE

The activation device must pass all three time delay tests.

b. When AAD activates, timer will lock at the reading. Acceptable readings are 2.0 ± 0.2 seconds. Record time delays on automatic opener test sheet. (QA)

c. After recording the test data, place the time delay switch to the "RESET" position. The timer will display "00.00" seconds.

d. Using cocking fixture, re-cock the AAD per Paragraph 18, steps c and d.

e. Repeat firing time delay test 2 additional times. The activation device must pass all three time delay tests. (QA)

22. PERFORMING ALTITUDE TEST.

a. Using the cocking fixture, re-cock the AAD.

b. Open test chamber door

c. Insert the release, label up, into the nest inside the test chamber such that the release body seats evenly within the nest cavity.

d. Wrap the test power cable housing around the mandrel and insert the test power cable terminal into the slot of the power cable adapter.

e. Insert the pin power cable retainer through holes in the power cable adapter and the test power cable terminal.

f. Place the test arming cable end ball terminal into the slot on the end of the arming cylinder piston rod and secure with the red rubber sleeve.

g. Close the test chamber door.

h. Slightly press down on the test chambers door.

i. Place the altitude switch in the "TEST" position.

j. The test chamber will automatically climb to 20,000 feet altitude and pull the test arming cable. It will then automatically descend.

k. Upon reaching the preset activation altitude, the AAD will activate, the altitude meter will lock at the activation altitude. The AAD must activate between 13,000 feet and 15,000 feet.

l. Record activation altitude on automatic opener test sheet. (QA)

m. Place switch in the "RESET" position.

n. Allow chamber to return to ambient pressure.

o. Repeat firing altitude test 2 additional times. The activation device must pass all three firing altitude tests. (QA)

23. REASSEMBLE AAD.

a. Place the fired test unit in the cocking fixture, and pin the test power cable terminal to the cocking fixture cable.

b. Turn the hand wheel counterclockwise to apply tension to the test power cable of the AAD. Maintain a steady pulling force until the unit reaches a complete stop. Maintain tension on the test power cable. Insert arming cable through arming cable housing. Insert arming cable pin into AAD housing until it locks into place. Finger tighten knurled cap. (QA)

NOTE

An audible "click" will be heard when the test arming cable is fully inserted.

c. Remove the test power cable, and test power housing by loosening knurled cap. Replace with AAD power cable and power cable housing, and finger tighten knurled cap. Release tension. Remove AAD from cocking fixture.

d. Remove test power cable. Replace with AAD power cable pin and cable housing. Finger tighten knurled cap. (QA)

24. INSTALLATION OF AAD.

a. Position AAD in bottom of parachute compartment and orient power cable to right and arming cable to left (Figure 4).

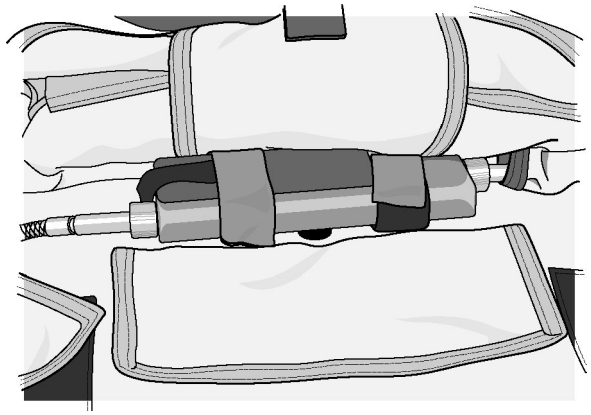

Figure 4. AAD Mounting

b. Separate fastener tape on housing channel covers and position power cable and arming cable into each housing channel and secure fastener tape around each housing.

c. Ensure AAD Aneroid and Arming indicators are visible through view ports in back of container. (QA)

d. Secure AAD body in place with fastener tape at bottom of pack tray.

e. Secure AAD cable housings in there respective channels with a series of 6 lacing tape ties in the following sequence (Figure 5).

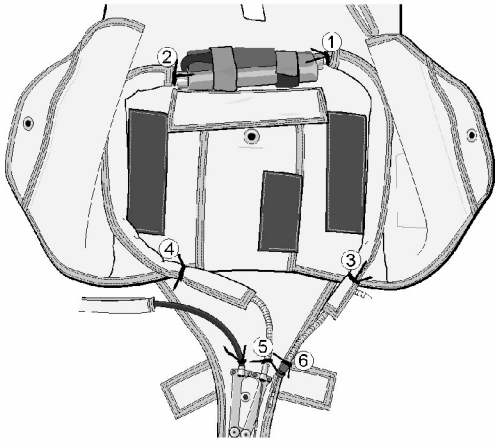

Figure 5. Lacing Tape Ties

NOTE

All lacing tape ties are to be one turn, single, surgeons knot followed by a square knot, unless directed otherwise. Placement of the tackings are shown in Figure 5.

(1) Arming cable housing lower pack tray tacking.

(2) Power cable housing lower pack tray tacking.

(3) Arming cable housing upper pack tray tacking.

(4) Power cable housing upper pack tray tacking.

(5) Power cable housing tacking under closing flap #3.

(6) Tack arming cable housing retention loop with 3 turns lacing tape, followed by a surgeons knot followed by a square knot. Trim excess from all ties to 1/2-in.

f. Inspect all lacing tape ties for proper knots and location. (QA)

g. Ensure AAD Aneroid and Arming indicators are visible through view ports in back of container.

25. INSTALLATION OF LEFT SOFT LINK RISER.

a. Attach pack retention clip to canopy release fitting.

b. Mate riser to fastener tape at shoulder pad. Riser, UWARS and canopy release will lie flat on table with no bends.

NOTE

Tie off all tackings with a surgeons knot followed with a square knot, followed by a binder knot leaving 1/2-in.

c. Tack risers to anti rotation strap in 4 places with 1 turn single FF thread waxed (Figure 6).

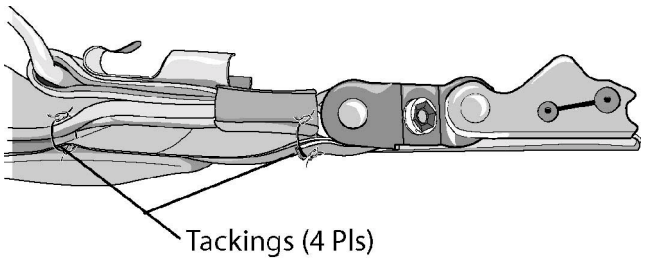

Figure 6. Anti-Rotation Strap Tackings

26. INSTALLATION OF RIPCORD.

a. Slide ripcord cable through ripcord housing located on left riser.

b. Install ripcord handle into ripcord clip.

27. INSTALLATION OF RIGHT SOFT LINK RISER.

a. Repeat steps 25.a thru 25.c on right riser.

b. Stand module on end and allow risers to hang naturally.

c. Mate risers to fastener tape in bottom of container.

d. Orient container flat on table for packing.

28. INSTALLATION OF MANUAL OVERRIDE (MOR) HANDLE.

a. Slide MOR handle cable through MOR handle cable housing.

b. Insert MOR handle into MOR handle retaining clip.

c. Safety tie, MOR handle to inertia reel webbing loop, outboard side on the right riser. Pass through webbing loop using one turn single, waxed, nylon, E thread. Tie off with a surgeon's knot, followed by a square knot.

d. Insert MOR handle into pocket provided on backside of MOR handle cover.

e. Attach MOR handle cover by mating up hook fastener tape to pile fastener tape located on the back of right riser.

29. SEALED MODULE PREPARATION.

a. Place sealed canopy assembly on table with the top folds up. Name plate down.

b. Soft link riser attachment holes shall be oriented so they are facing to the left of the packer and to the right of the helper.

CAUTION

When attaching the sealed canopy bridle cords to the sealed canopy assembly care must be taken to prevent tearing the vacuum seal initiators.

c. Route the small loop of the sealed canopy bridle cord up through the grommets of the vacuum bag. Route the large loop of the cord through the small loop, forming a Lark's head knot around the vacuum bag. Repeat this on the other 3 grommets on the vacuum bag (Figure 7).

Figure 7. Sealed Canopy Module

d. Route the steering handle attachment cord up through the heat seals which are placed below the bottom initiator heat seals (Figure 7).

e. Pass the steering handle attachment cord up through the loop forming a Lark's head knot around the heat seal.

30. CONNECTING SOFT LINKS TO RISERS.

a. Carefully lift module from table, bridle cords facing down information label facing up with riser attachment holes to packers left.

b. Place module on top of survival compartment. Helper shall maintain control of module.

c. Pass large soft link through soft link riser attachment holes. Pass small riser soft link loop through large soft link loop, route small riser soft link loop onto rapide link (Figure 8).

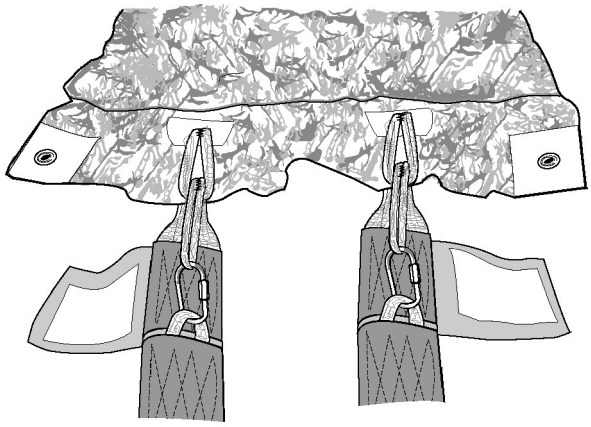

Figure 8. Attachment of Risers Module

d. Tighten barrel nuts until no threads are exposed.

e. Torque barrel nuts to 10 in-lbs. ± 2 in-lbs. (QA)

f. Apply torque seal to rapide link barrel nut. Allow to dry. Close cover over rapid links.

g. Route steering line through steering line guide loops on each riser soft link and then route through each respective steering handle. Route steering handle through steering line loop forming a Lark's head knot.

h. Secure steering handle to riser by mating fastener tape.

i. Fold excess steering line. Using bodkin and 100 lb. stow excess in riser flutes.

31. INSTALLATION OF SEALED CANOPY ASSEMBLY.

a. Mate risers to fastener tape in bottom of container.

b. Carefully place sealed canopy assembly into container compartment information label facing down.

c. Cut two 36-in. pieces of lacing tape. Route one 36-in. piece of lacing tape doubled, through each of the two parachute attachment loops located at the bottom of the parachute compartment (Figure 9).

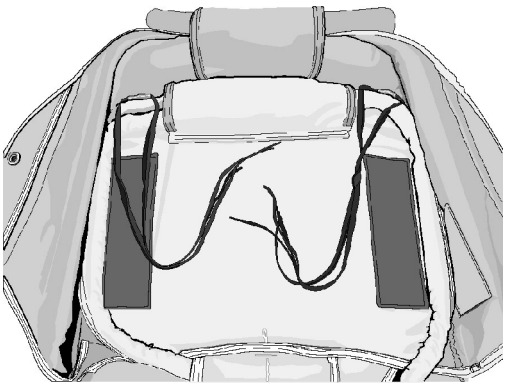

Figure 9. Routing of Lacing Tape

d. Route one end of the doubled nylon lacing tape back through tack loop and then back through grommet, forming two turns of doubled lacing tape. Tie off with a surgeon's knot, followed by a square knot. Loop should be approximately the size of a 50 cent piece (Figures 10 and 11).

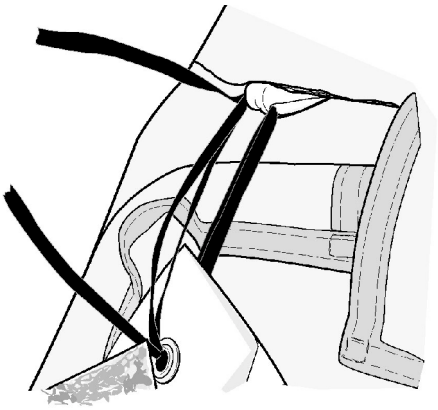

Figure 10. Sealed Canopy Tie

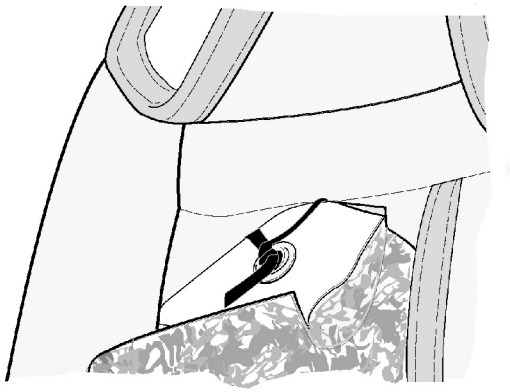

Figure 11. Complete Ties

e. Repeat steps for other side.

f. Remove initiator tapes from all sealed parachute module.

g. Carefully position canopy assembly into lower corners of parachute compartment.

32. INSTALLATION OF CLOSING LOOPS.

a. Install 4 1/2-in. closing loop thru grommet in flap number 1. Install through grommet furthest to the left from packer side.

b. Install 1/2-in. closing loop thru remaining grommet in flap number 1.

c. Install 3/4-in. loop into flap number 2. Install through grommet furthest to the right from packer side.

33. CONNECTING DROGUE ASSEMBLY AND PILOT PARACHUTE.

a. Pack Drogue Chute Assembly per WP 028 05.

b. Attach the Drogue Chute Riser to the sealed canopy bridle cords as follows:

(1) Pass the drogue riser's large loop through the four sealed canopy bridle cord loops starting with the top right and continuing clockwise.

(2) Pass the packed drogue through the drogue riser's large loop.

(3) Pull the drogue riser snug into a Lark's head knot.

(4) Route drogue riser toward lower right side of sealed module (Figure 12).

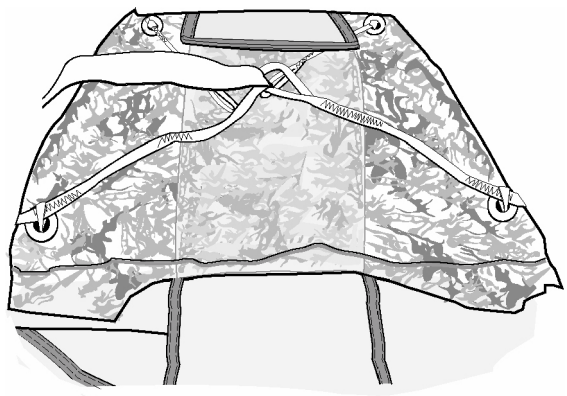

Figure 12. Routing of Drogue Bridle

c. Connect the pilot chute to the drogue bag deployment bag as follows:

(1) Pass the pilot parachute bridle cord's small loop through the attachment loop of the drogue deployment bag.

(2) Pass the cord's large loop end through its small loop and pull it snug into a Lark's head knot.

(3) Pass the pilot parachute bridle cord's large loop end through the pilot chute's attachment loop. Route pilot chute crown through large loop. Continue pulling pilot chute through loop. Pull attachment cord snug, forming Lark's head knot (Figure 13).

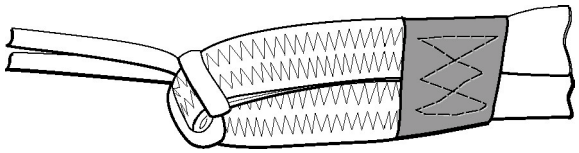

Figure 13. Pilot Parachute Bridle to Pilot Parachute Attachment

34. CLOSING PILOT PARACHUTE LAUNCH FLAPS.

a. Insert pull-up cords through each of the 1/2-in. and 3/4-in. closing loops. Insert a length of 750 lb. spectra/microline through 4 1/2-in. closing loop. Ensure MOR cable housing is routed over right top edge of module (Figure 14). (QA)

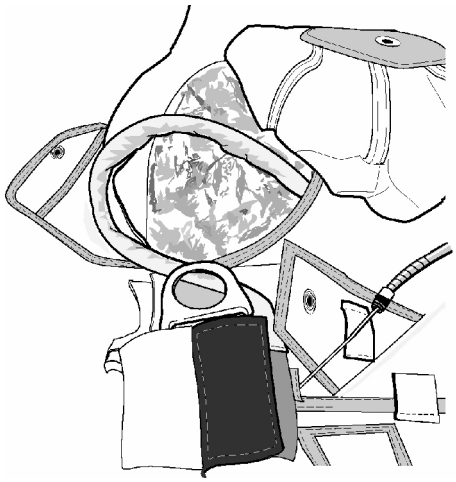

Figure 14. Routing of MOR Housing

b. Route pull-up cord of short closing loop located on flap number 1 through center grommet of closing launch flap #2.

c. Route pull-up cord of long closing loop through grommet left of center grommet of closing launch flap #2 (Figure 15).

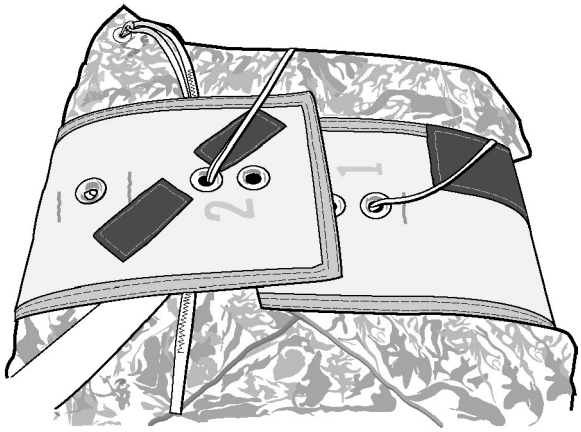

Figure 15. Closing Loop Placement

d. Pull small loop through corresponding grommet of flap #2 and secure with the curved pin located on drogue attachment bridle. Remove pull-up cord from closing loop after curved pin is installed (Figure 16). (QA)

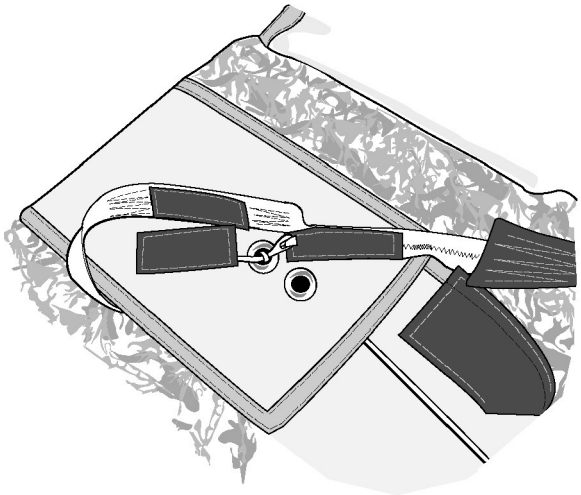

Figure 16. Routing of Drogue Bridle Curved Pin

e. Using one turn E thread, route through eye of curved pin and around closing loop. Tie off with a surgeon's knot, followed by a square knot (Figure 17).

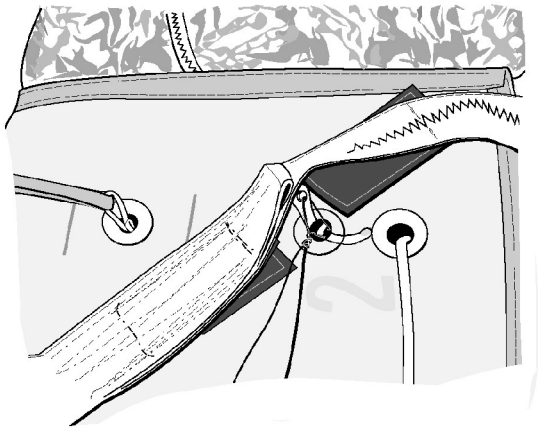

Figure 17. Safety Tie of Curved Pin

f. Attach the drogue bridle to the flap by engaging the fastener tape in three places.

g. Pull swivel protective sleeve inside out.

h. Fold bridle between swivel and protective sleeve, forming 1 1/2-in. bight, tack with 1 turn single nylon E thread. Tie off with a surgeon's knot, followed by a square knot.

i. Pull bridle to ensure there are no twists, align and mate fastener tape. Fold and move swivel back toward fastener tape at 45 degree angle and tack with single turn E thread. Tie off with a surgeon's knot, followed by a square knot. Attach bridle to tab by engaging fastener tape (Figure 18).

Figure 18. Routing of Large Loop/Engaging Tab to Fastener Tape

35. CONNECTING SWIVEL RELEASE ASSEMBLY.

a. Route drogue double locking loop up through AAD power cable grommet on flap #3. Pin one end with power cable pin.

b. Route the soft release's large loop through the swivel's large ring (Figure 18).

c. Route the release's mid-size loop through its large loop and fold it over/around the large loop (Figure 19).

Figure 19. Routing of Midsize Loop

d. Route the release's small loop through its mid-size loop and fold it over/around the mid-size loop (Figure 20).

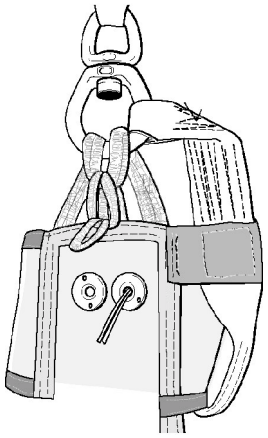

Figure 20. Routing of Small Size Loop

e. Route free end of double locking loop through the release's small loop and down through MOR grommet. Secure loop by inserting manual drogue release pin through eye of loop. Remove all packing aids from the double locking loop on drogue riser (Figure 21).

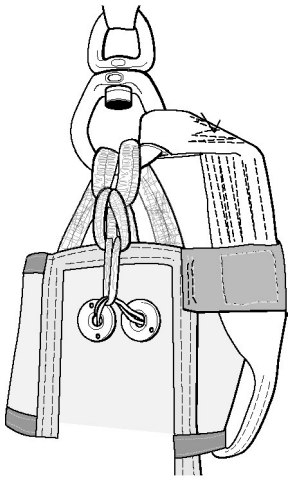

Figure 21. Routing of Double Locking Loop

f. Seat pin approximately 7/8-in. past closing loop.

g. Safety tie the terminal pin on power cable and MOR cable using one turn nylon size A, three half-hitches followed by an overhand knot (Figure 22).

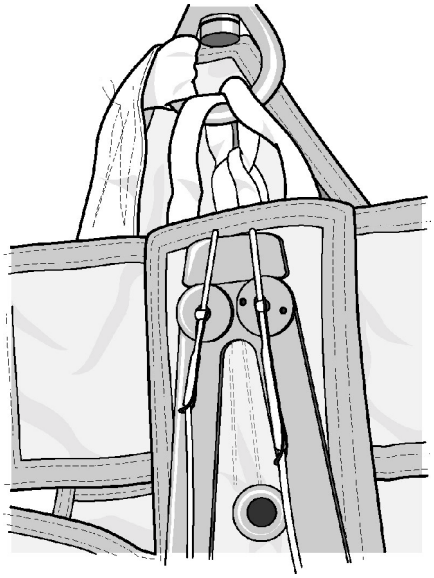

Figure 22. Safety Ties

h. Fold/close the flaps over both manual override release cable, AAD power cable pin and engage the fastener tapes.

i. Check drogue bridle for orientation of drogue bridle arming loop. Loop should be orientated toward packing table.

j. Pull swivel protective sleeve down over swivel assembly and slide over end of flap #3 (Figure 23).

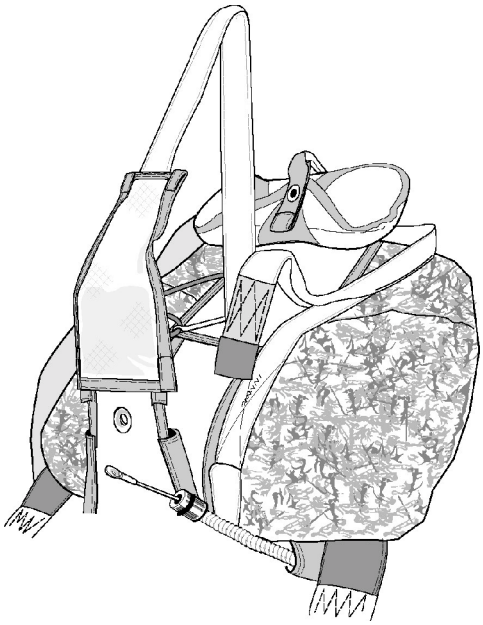

Figure 23. Swivel Protective Sleeve

k. Tack swivel protective sleeve to flap #3 on the outboard side (opposite side of pins), approximately 1/2-in. to 1-in. from grommet with one turn single size E thread. Tack through the outboard fabric layer. Tie off with a surgeon's knot, followed by a square knot (Figure 24).

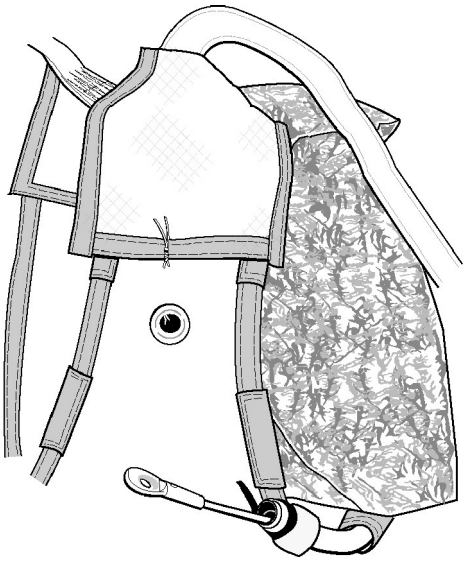

Figure 24. Sleeve Tacking

36. STOWING DROGUE PARACHUTE.

a. Neatly stow bridle between flaps #1 and #3.

NOTE

Ensure that the drogue attachment bridle is underneath the arming cable eye to prevent entrapment of the attachment bridle.

b. Route pull-up cord of main closing loop through grommet on flap #3 and secure with temporary locking pin.

c. Attach arming cable eye to drogue bridle arming loop with 2 turns single Type III gutted 550-lb nylon cord, ensuring that the drogue attachment bridle is underneath the arming cable eye. Route one end of a length of 550-lb nylon cord through arming cable loop, through eye of arming cable, back through arming cable loop, back through eye of arming cable, and finally back through arming cable loop. Tie off around drogue bridle arming loop with a surgeon's knot, followed by a square knot, followed by an overhand knot (Figure 25).

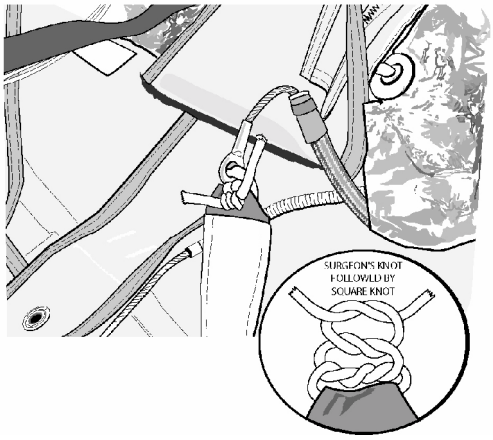

Figure 25. Arming Cable Tie

d. Position drogue release flap to the right of the curved pin.

e. Position drogue on flap #6 with stowage flutes facing up.

f. Fold excess drogue bridle under bridle tacked at AAD arming cable attachment to the left of flap #3 (Figure 26).

Figure 26. Closing Flap 3

g. S-fold the drogue riser left to right the width of the pilot chute launch flap #2 and stow it on top of the launch flap #2 at the bottom of the compartment.

h. Set drogue bag on flap #2 with line stows down.

i. Fold over pilot chute bridle (right side) to locking stow side of deployment bag. Fold top grommet of drogue bag under.

j. Thread pull-up cord through drogue deployment bag grommets and pull up closing loop and secure with curved pin on the pilot chute bridle.

k. Safety tie curved pin with one turn single E thread through eye of the curved pin and around closing loop. Tie off with a surgeon's knot, followed by a square knot, followed by an overhand knot.

l. Remove pull-up cord.

m. Ensure bottom of drogue bag is even with bottom of parachute compartment.

37. COMPRESSING PILOT PARACHUTE.

a. Insert long bodkin through grommet on pilot chute crown. Ensure that material is not trapped by bodkin (Figure 27).

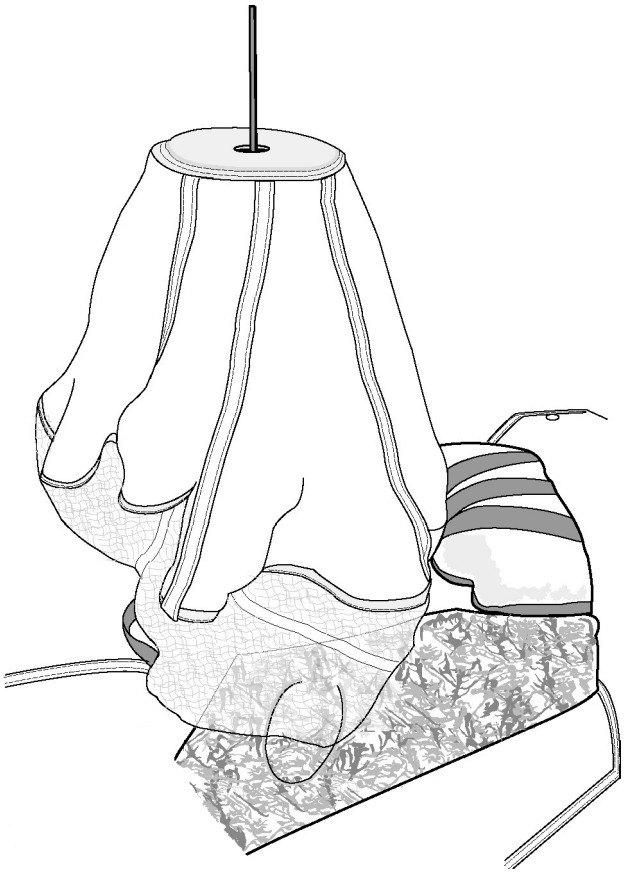

Figure 27. Compressing Pilot Parachute

b. Pass 4 1/2-in. closing loop pull-up cord up through pilot parachute.

CAUTION

Ensure bodkin is routed through center of pilot parachute spring.

c. Position pilot parachute over grommet on flap #3 with pilot chute attachment loop, exiting base of pilot chute at right side of container.

d. Compress pilot parachute and insert temporary locking pin.

e. S-fold the pilot chute bridle on the launch flaps on the right side of flaps #2 and #3.

f. Remove material from spring coil and spread out.

g. Neatly arrange material around crown.

h. Starting at the top, fold pilot chute netting and canopy around pilot chute crown. Fold canopy and netting along sides of crown to the width of the drogue deployment bag. Stow in indentation between drogue and pilot chute crown (Figure 28).

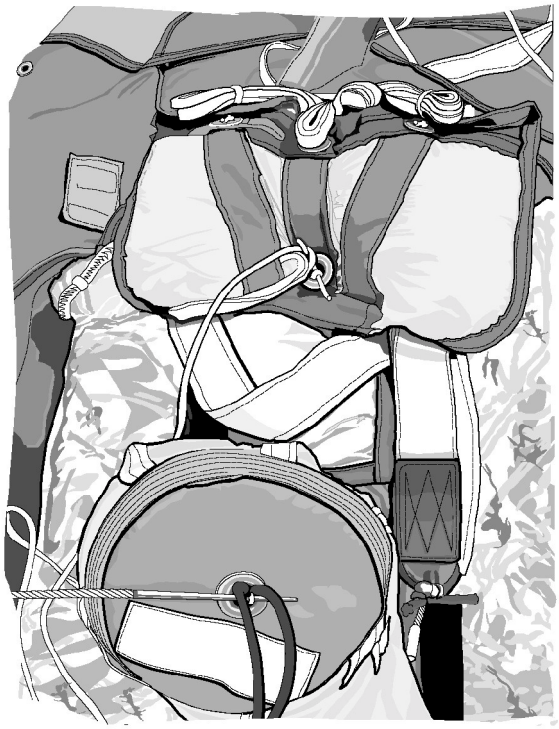

Figure 28. Pilot Parachute Placement

i. Take pilot chute bridle cord, S-fold and position it on right side of launch flaps 2 and 3, if necessary.

38. CLOSING CONTAINER ASSEMBLY.

a. Ensure MOR handle cable and housing is stowed over top edge of sealed canopy module.

b. Route pull-up cord through grommet on flap #4, and insert temporary pin.

c. Route pull-up cord through grommet on flap #5. Route excess MOR cable and housing under flap #5.

d. Wrap pull-up cord around T-handle and pull closing loop up through grommet on flaps and insert temporary locking pin.

CAUTION

Ensure pilot chute fabric is not trapped between closing flaps.

e. Route pull-up cord through grommet on flap #6.

f. Route pull-up cord through grommet on flap #6 and pull closing loop up through grommet on flap and insert temporary locking pin.

g. Route pull-up cord through grommet on flap #7. Route pull-up cord through hole in teflon washer. Pull closing loop up through grommet on flap.

h. Position closing plate centered over grommet on flap #7. Slot of plate will face top of parachute container.

i. Wrap pull-up cord around T-handle. Pull closing loop up through grommet teflon washer, and insert main ripcord pin at least three quarters seated in the closing loop.

j. Do not remove pull-up cord at this time.

k. Ensure ripcord housing runs along closing flap #3 and lays outboard at tacking loop (Figure 29).

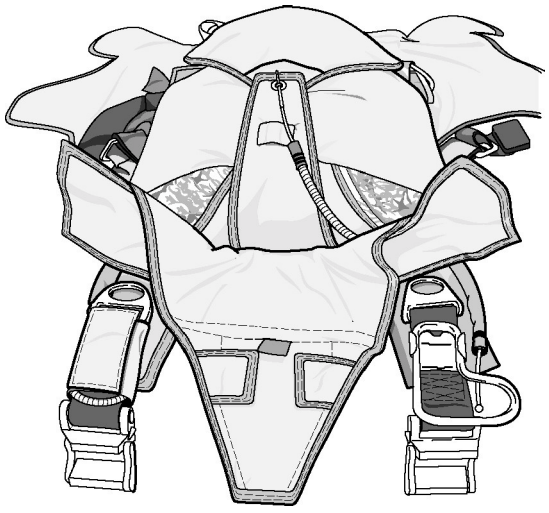

Figure 29. Closing Flaps 6 and 7

39. MAIN RIPCORD PIN PULL TEST.

a. Without removing pull-up cord, secure to ripcord cable with 3-4 half-hitches. This will reduce the chance of the ripcord pin being fully removed during the ripcord pin pull force checks (Figure 30).

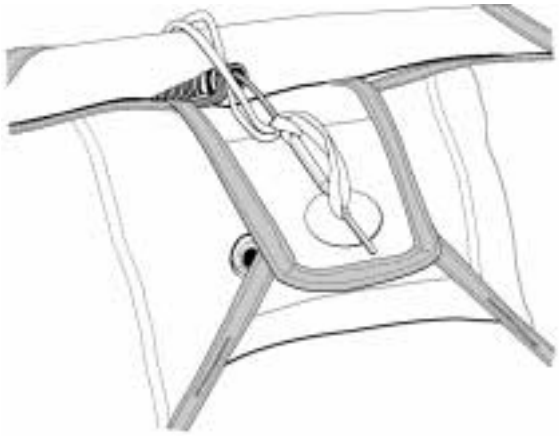

Figure 30. Routing of Pull-Up Cord

b. Set spring tester to zero.

c. Ensure ripcord grip is fully seated in ripcord grip retainer. Attach spring scale to ripcord grip using nylon cord. Using a straight steady pull, remove grip from retainer. Force required shall be 15 ± 5 lbs.

d. If pull force is not within limits, use pliers to adjust ripcord grip retainer. Ensure jaws of pliers are covered with protective material to prevent gouging. After adjustment, repeat ripcord grip pull test.

e. Reset scale to zero. Apply a straight steady pull on ripcord grip until initial movement of ripcord pin is observed. Maximum allowable force is 27 lbs. (QA)

f. Remove pull-up cord. (QA)

g. Stow ripcord grip in ripcord grip retainer.

h. Reposition ripcord pin so it is at least three quarters seated in the closing loop.

i. Insert center tuck tab on flap #8 into center keeper on flap #7.

j. Engage tuck tabs on flap #8 under flap #7.

k. Insert flap #8 into slot on flap #6.

l. Secure top flaps of flap #8 by engaging fastener tape located under back pad assembly.

40. FINAL CHECK.

a. Account for all packing tools.

b. Inspect packed A/P22P-20 Crew Backpack Assembly for general condition.

c. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA)

d. QA inspector shall examine completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

e. QA inspector shall sign Parachute Record (OPNAV 4790/101).

f. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

INTERMEDIATE AND DEPOT MAINTENANCE

FINAL CLOSING PROCEDURES A/P22P-20 CREW BACKPACK

SURVIVAL EQUIPMENT COMPARTMENT

PART NO. 3516AS2000-1

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1 thru 2	11	3 thru 5	10				

Reference Material

Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration ..... WP 003 00
Organizational, Intermediate and Depot Maintenance, Support Equipment ..... WP 005 00

Alphabetical Index

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Final Check	5
Final Closing	4
General	2
Installation of Oxygen Bottle	2
Installation of Survival Equipment Release Ripcord	2
Installation of Survival Kit/Liferaft	3
Preliminary Procedures	2
Ripcord Pin Pull Test	5

Record of Applicable Technical Directives

None

1. GENERAL.

a. This Work Package (WP) provides instructions for the final closing of the Survival Equipment Compartment of the A/P22P-20 Crew Backpack Assembly.

b. Packing instructions are provided with the assumption that they will be carried out under ideal conditions in a parachute loft the packer should refer to WP 003 00 for any additional parachute loft requirements and administration instructions. When an assembly must be packed under unfavorable conditions, provisions must be made to protect it from possible damage and excessive humidity.

c. When performing scheduled maintenance, a component that will not make the next scheduled repack cycle shall be replaced.

d. Quality Assurance (QA) points are included in the packing procedures. When a procedural step is followed by (QA), a quality assurance requirement exists. Witnessing of the QA step may be delayed by QA, if their satisfactory completion is verified in a later step.

2. PRELIMINARY PROCEDURES.

Support Equipment Required

Part Number	Nomenclature
DPP-50	Tester, Spring Resiliency
Refer to WP 005 00	Roll Bar
1979AS950-1	Closing Plate
—	(2) CYPRES Closing Pins
—	Needle, Sewing Curved
—	Scissors
—	Ruler, 12-in.
—	Pull-up Cord, Gutted, 550 lb
PIA-C-5040	Cord, Nylon, Type I or IA
—	Bodkin

Materials Required

Specification or Part Number	Nomenclature
A-A-52080-B-2	Tape, Lacing & Tying, Finish B, Size 2, Type I, Natural
V-T-295	Thread, Nylon Type I or II, Class A, Size E
3516AS2020-9	Set, Closing Loop (See Note)

NOTE

3516AS2020-9 consists of the following (4) closing loops: 4 1/2-in. final closing loop, 3 1/2-in. survival kit closing loop, 3/4-in. drogue attachment loop, and the 1/2-in. inside flap closing loop.

3. INSTALLATION OF SURVIVAL EQUIPMENT RELEASE RIPCORD.

a. Install Survival container beaded ripcord cable into cable housing and attach release handle to pile fastener tape on webbing (Figure 1).

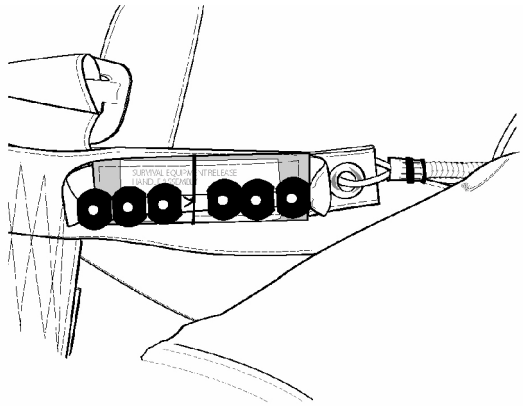

Figure 1. Tying Beaded Handle/Securing Handle to Fastener Tape

b. Tie beaded handle together by splitting beads so there are 3 on each side. Pass one turn single E thread around beaded part and base of handle and tie off a surgeon's knot, followed by a square knot, followed by an overhand knot. Trim excess (Figure 1).

4. INSTALLATION OF OXYGEN BOTTLE.

a. Ensure oxygen cylinder is charged prior to installation into the harness container assembly. (QA)

b. Install green apple through hole in right container flap #3 (Figure 2).

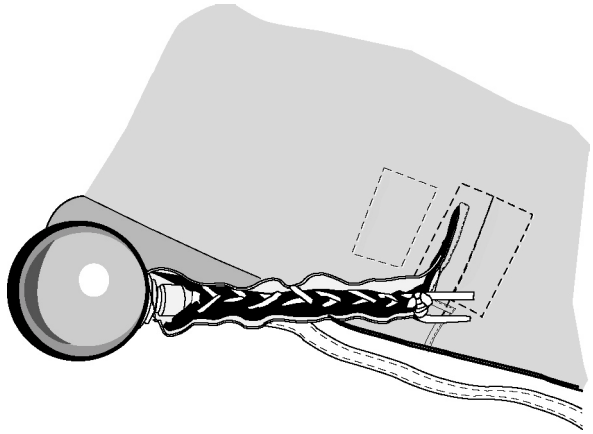

Figure 2. Green Apple Through Hole/Lacing Stowage Flute

c. Position and install 5-in. by 10-in. foam padding in oxygen compartment between oxygen cylinder and lacing flaps.

d. Position and install the oxygen cylinder in the lower compartment of the harness container assembly (Figure 3).

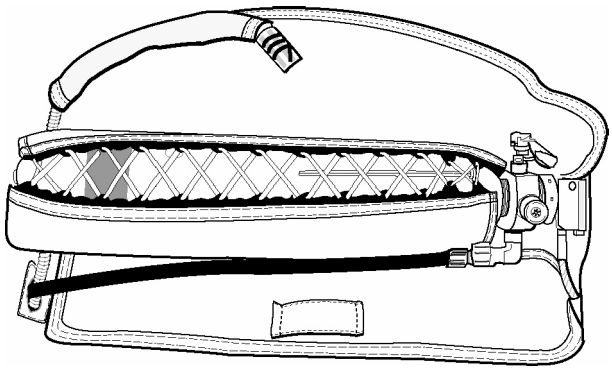

Figure 3. Lacing O2 Bottle

NOTE

The oxygen cylinder's indicator gauge must line up with the view port in the harness/container assembly to be installed correctly. Ensure elbow fitting routes to channel.

e. Ensure oxygen gage can be visually inspected through oxygen view port. (QA)

f. Close the flap over the cylinder. Using 80 inches of Type I or IA nylon cord, lace flaps together through every other eye of lacing webbing. Tie off with a surgeon's knot, followed by a square knot, followed by an overhand knot. Cut off excess cord 3 inches from overhand knot, using bodkin stow excess under lacing (Figure 3). (QA)

g. Route green apple cable housing into stowage flute. Start lacing stowage flute flaps together at the green apple end and work toward container using a 30-in. piece of Type I nylon cord. Tie off with a surgeon's knot, followed by a square knot, followed by an overhand knot. Cut off excess cord 1/2-in. from overhand knot (Figure 2).

h. Route oxygen hose along bottom of oxygen cylinder between cylinders flap and container equipment flap #1. Oxygen hose shall exit hole in left survival equipment container flap #2. Oxygen hose shall be routed over survival equipment ripcord cable housing. (QA)

i. Pass end of oxygen hose through hose stowage loop on the harness connection strap (Figure 4).

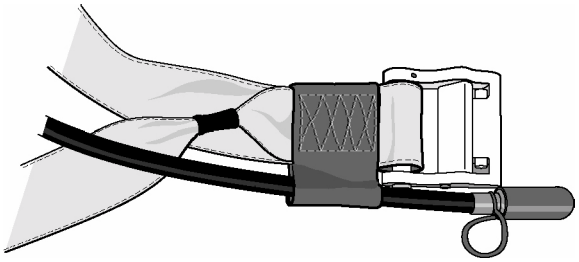

Figure 4. Stowage Hose into Loop

j. Lift cover on oxygen valve, verify toggle is fully seated and close cover. (QA)

5. INSTALLATION OF SURVIVAL KIT/LIFERAFT.

a. Discard old closing loop. Install new 3 1/2-in. closing loop in flap #1.

b. Position the harness/container assembly so that its bottom faces the packer.

c. Position the survival kit in the lower compartment of the harness/container with its locking loop facing up, and the survival kit handles toward the oxygen bottle. Ensure red retainer hook is routed over the top of the carry handles. Attach snap hook to survival kit retaining lanyard ring (Figure 5).

d. S-fold excess survival kit retaining lanyard in bottom of container at the bottle flap end.

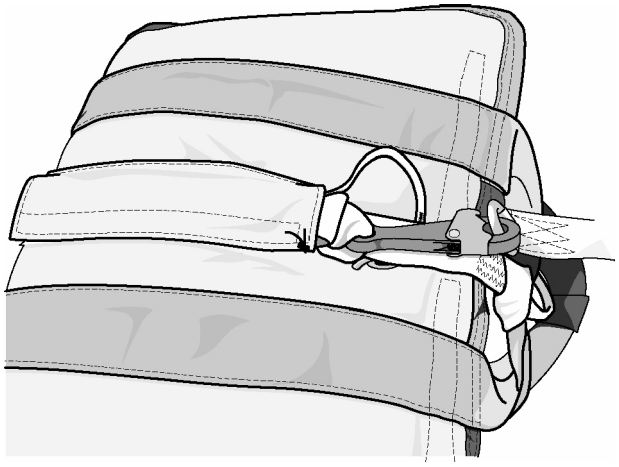

Figure 5. Attaching Snap Hook to Retaining Ring

e. Fold the survival kit's handles over the top of its carry bag.

f. Route pull-up cord through the locking loop.

g. Position retaining lanyard Lark's head to the left on the carry handle and red retainer hook to the left of the grommet. Align grommets in the kit and using a bodkin pass through both grommets, route the pull-up cord up through the grommets. Pull up and secure with a CYPRES locking pin (Figure 6). (QA)

h. Close bottom left and right flaps by routing temporary locking loop (550 cord with a 3/4-in. bowline loop tied in one end) down through bowline loop and route pull up cord through right flap grommet pull up through grommet and secure with cypress locking pin. Remove pull-up cord from bowline loop at right flap (Figure 7).

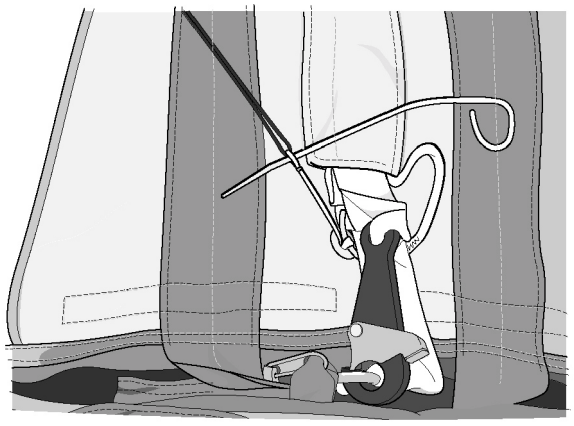

Figure 6. Routing Locking Loop

6. FINAL CLOSING.

a. Close bottom left and right flaps by routing temporary locking loop (550 lbs. with a 3/4-in. overhand loop tied in one end) through left flap grommet. Route loop through right flap grommet and secure with CYPRES locking pin (Figure 7).

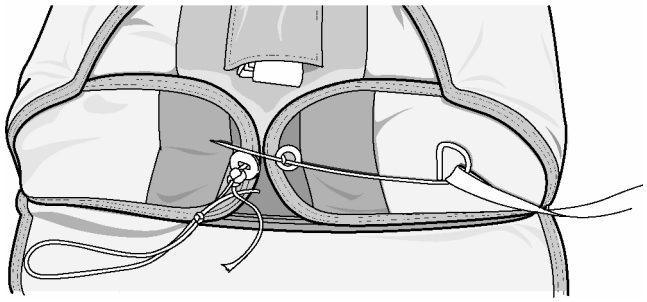

Figure 7. Securing Locking Loops on Flaps 2 and 3

b. Route pull-up cord through grommets in side flaps 2 & 3. Close flaps and secure with CYPRES locking pin.

c. Route pull-up cord through grommet in bottom flap #4.

d. Close flap and secure with CYPRES locking pin.

e. Route pull-up cord through grommet in top flap #5.

f. Close flap using closing plate and roll bar and insert ripcord pin through closing loop. Seat the ripcord pin until the tip is 1/2-in. ($\pm$1/16) beyond the outer edge of the grommet (Figure 8).

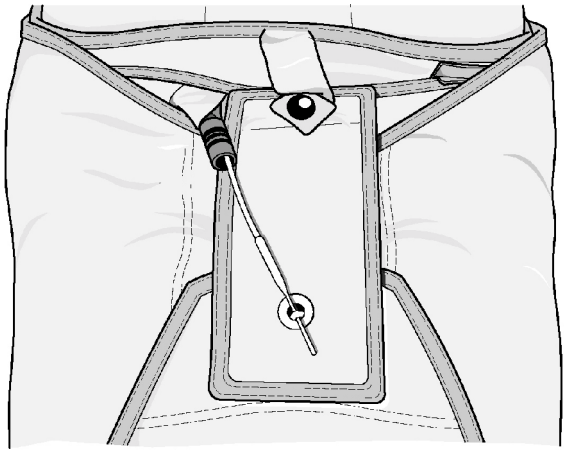

Figure 8. Ripcord Pin Through Closing Loop

g. Remove the CYPRES locking pin and temporary locking loop from the bottom side closing flaps. (QA)

h. Remove pull-up cord. (QA)

7. RIPCORD PIN PULL TEST.

a. Set spring tester to zero.

b. Place assembly flat on table. Ensure beaded handle is removed from hook fastener tape located on container strap, position so that the beaded handle lays flat and faces up.

c. Attach the force gauge to the handle so that an even load is applied on the handle.

d. Apply a straight steady pull on the ripcord handle until initial movement of the ripcord terminal pin is observed. Maximum allowable force is 27 lbs.

e. Reset the terminal pin until the tip is 1/2-in. (±1/16) beyond the outer edge of the grommet.

f. Ensure that all flaps are tucked in.

g. Close the top outer flap over the inner top flap and secure it by engaging the tuck flaps.

8. FINAL CHECK.

a. Account for all packing tools. (QA)

b. Inspect packed A/P22P-20 Crew Backpack Assembly for general condition. (QA)

c. Packer shall complete and sign Parachute Record (OPNAV 4790/101). (QA)

d. QA inspector shall examine completeness and accuracy of all entries on Parachute Record (OPNAV 4790/101).

e. QA inspector shall sign Parachute Record (OPNAV 4790/101).

f. Send a (legible) copy of new Parachute Record to: Commander, Code 461000D, NAVAIRWARCENWPNDIV, 1900 N Knox Road Stop 6206, China Lake, CA 93555-6106.

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ORGANIZATIONAL, INTERMEDIATE AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

A/P22P-20 CREW BACKPACK ASSEMBLY

PART NO. 3516AS2000-1

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

Intermediate and Depot Maintenance, Packing Procedures, PCU-69/P22P-20 Drogue Assembly . . . . . WP 028 02

Alphabetical Index

Title	Page
Introduction	1
Service/Total Life	1
Usable On Codes	1

List of Figures

Title	Page
A/P22P-20 Crew Backpack Assembly	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the A/P22P-20 Crew Backpack Assembly (Figure 1).

2. USABLE ON CODES.

a. The usable on codes in this WP refer to the aircraft applications for the A/P22P-20 Crew Backpack Assembly.

b. The following usable on codes apply to this WP:

A - E-2C

3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in WP 028 02.

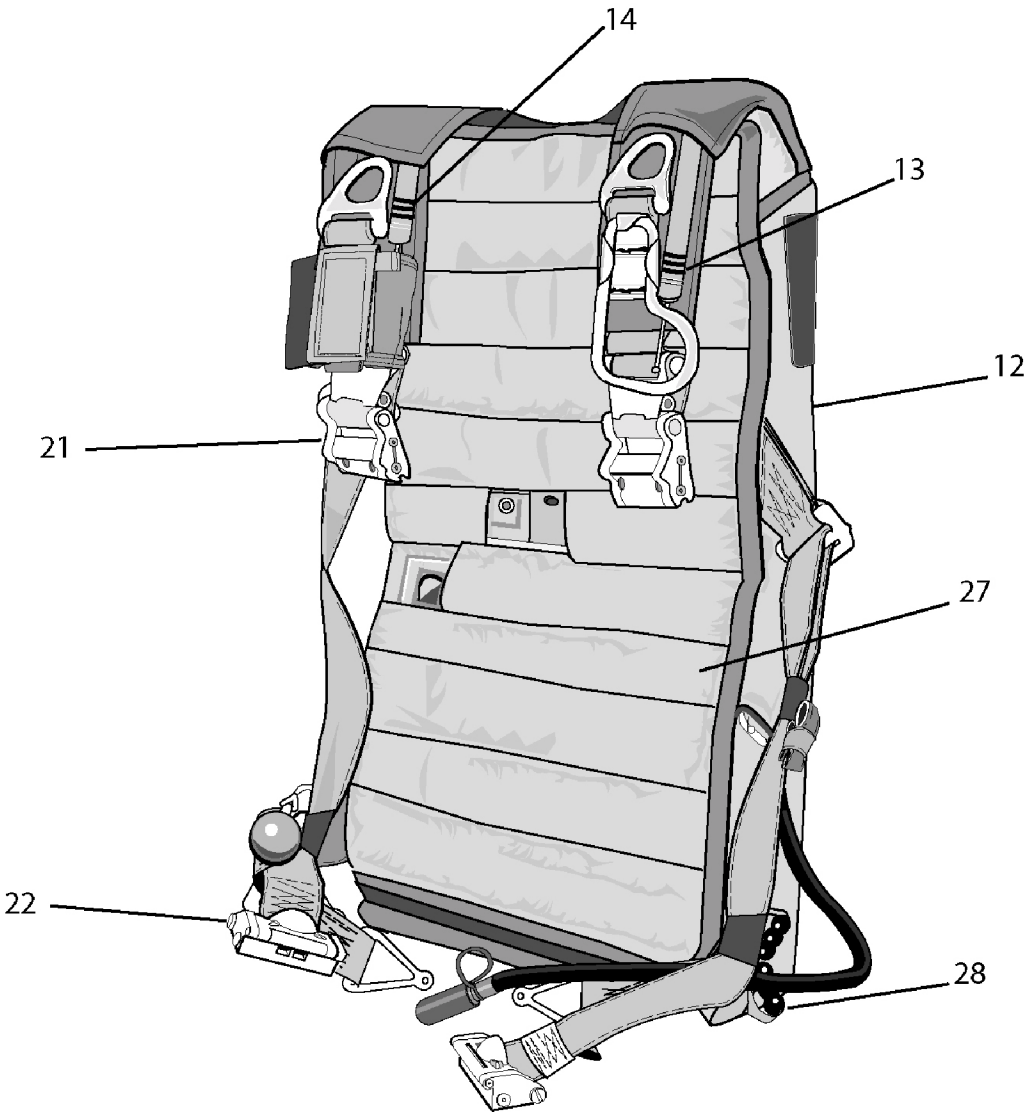


Figure 1. A/P22P-20 Crew Backpack Assembly (Sheet 1 of 9)

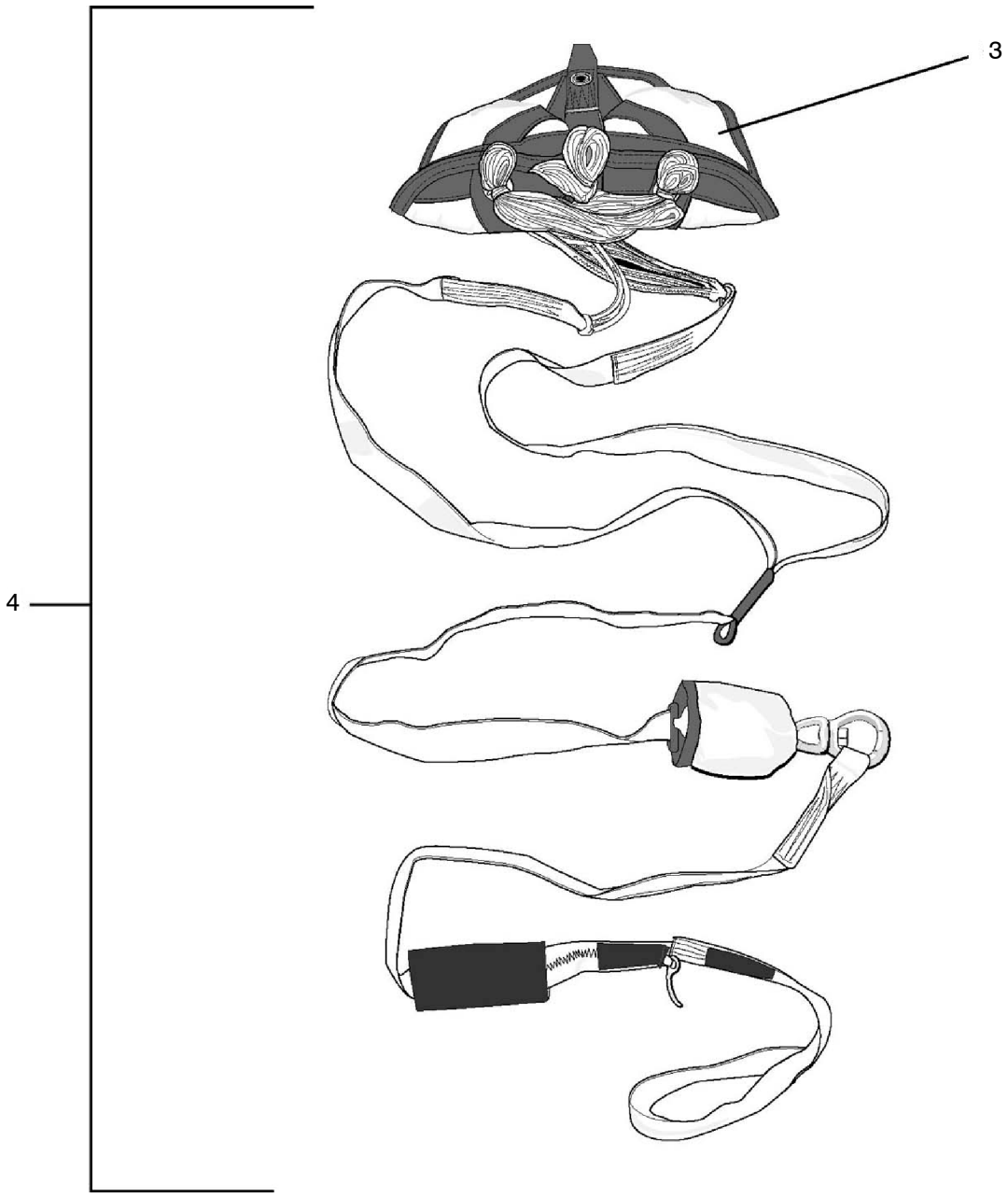


Figure 1. A/P22P-20 Crew Backpack Assembly (Sheet 2 of 9)

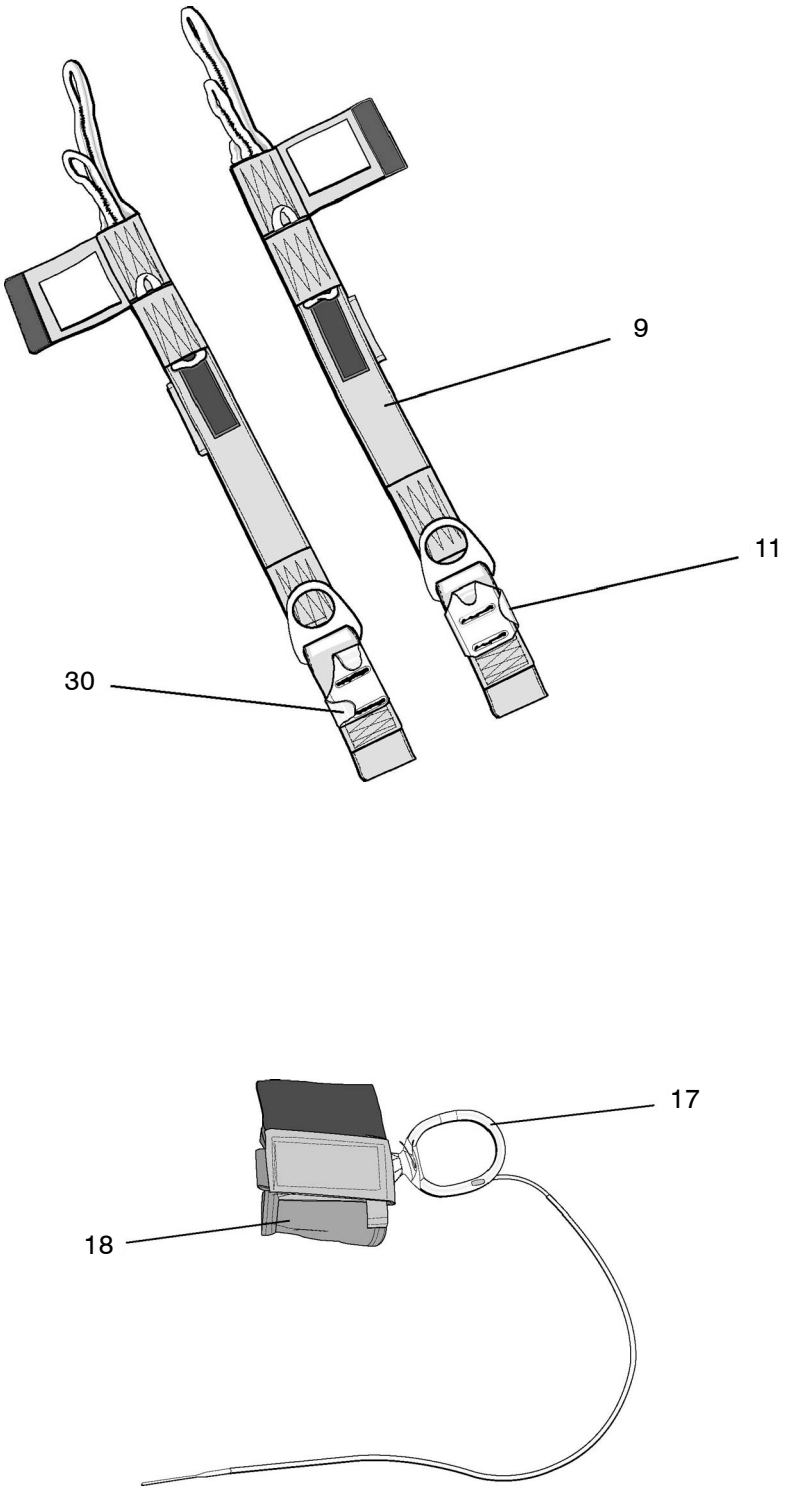


Figure 1. A/P22P-20 Crew Backpack Assembly (Sheet 3 of 9)

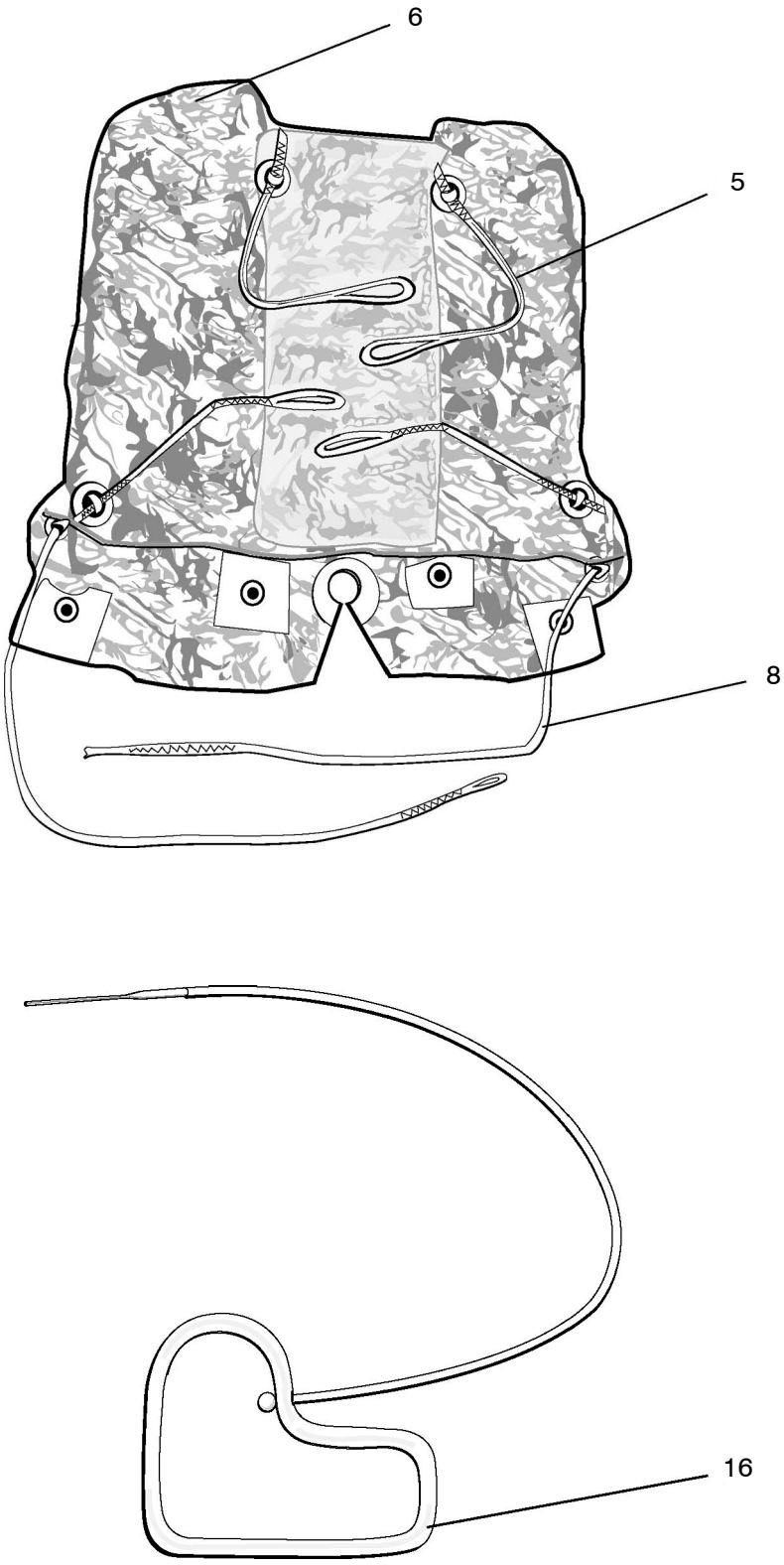


Figure 1. A/P22P-20 Crew Backpack Assembly (Sheet 4 of 9)

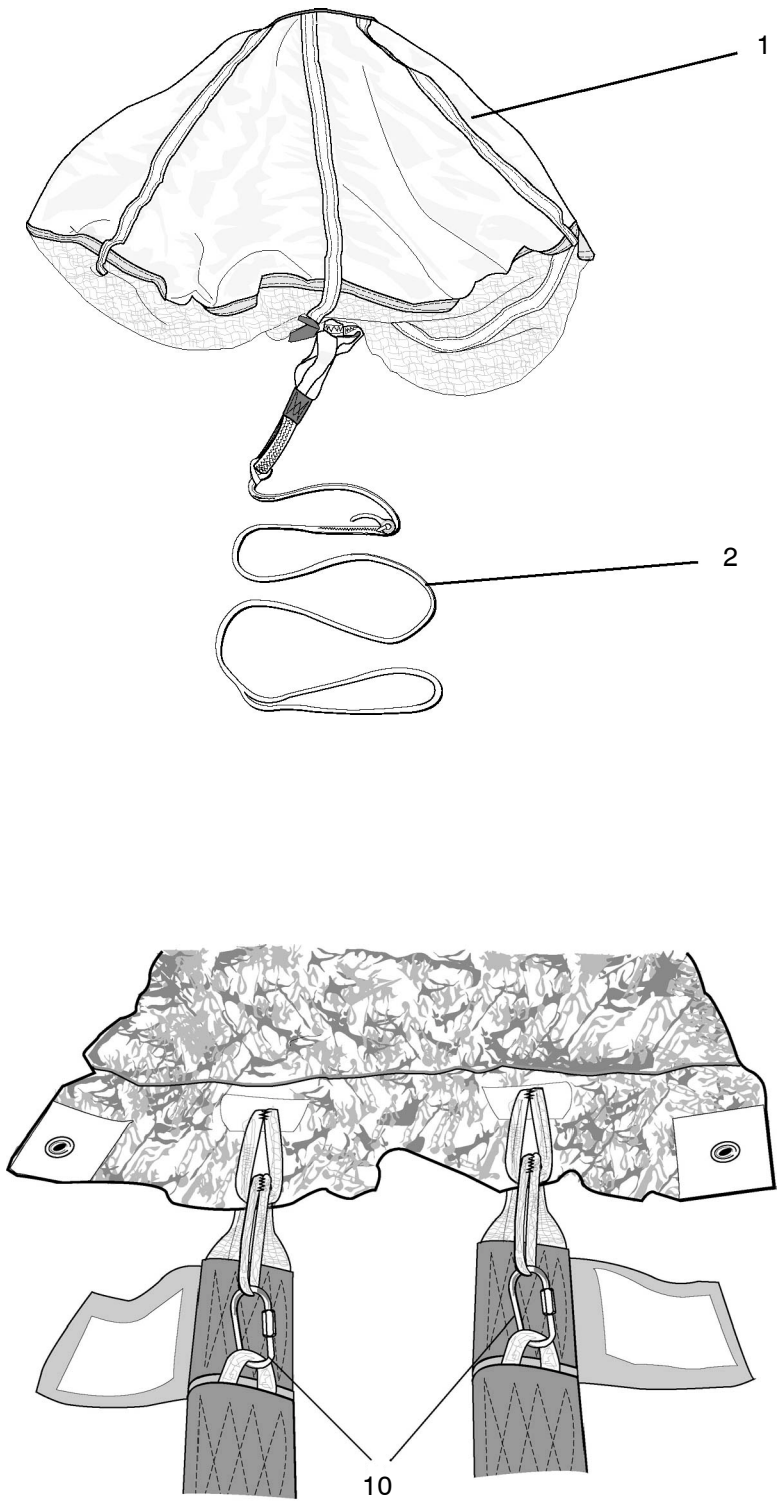


Figure 1. A/P22P-20 Crew Backpack Assembly (Sheet 5 of 9)

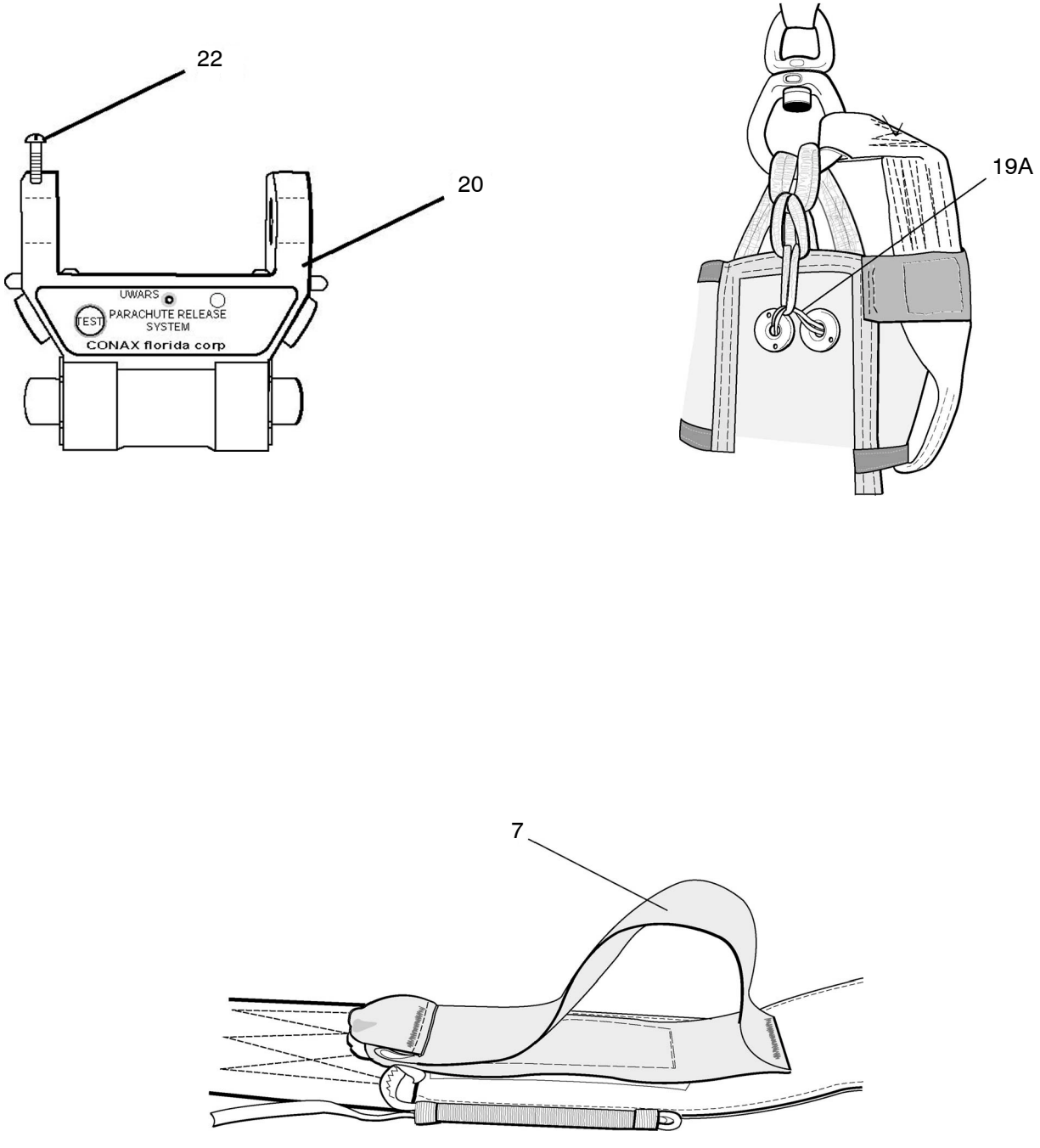
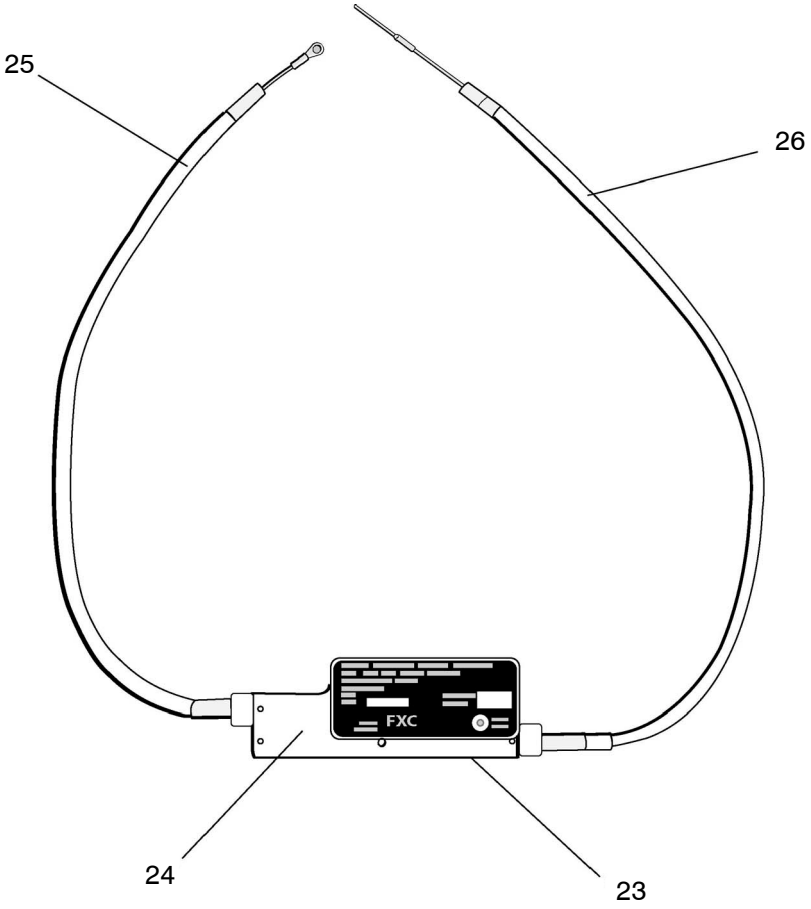


Figure 1. A/P22P-20 Crew Backpack Assembly (Sheet 6 of 9)



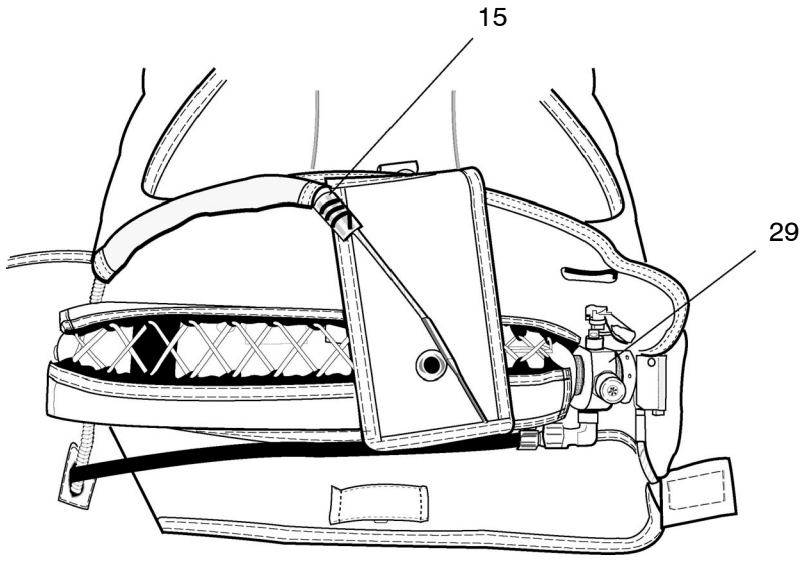


Figure 1. A/P22P-20 Crew Backpack Assembly (Sheet 7 of 9)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
	3516AS2000-11	CREW BACKPACK ASSEMBLY, A/P22P-20	REF	A	AGOGD
1	3516AS5100-1	. PILOT PARACHUTE ASSEMBLY	1		PAGZZ
2	3516AS5200-1	. PILOT PARACHUTE BRIDLE CORD	1		PAGZZ
3	3516AS6300-1	. . DROGUE DEPLOYMENT BAG	1		PAGZZ
4	3516AS6400-1	. . DROGUE ASSEMBLY	1		PAGZZ
5	3615AS0520-3	. KIT, SEALED CANOPY BRIDLE CORD ..... /SEE NOTE 1/	4		PAGZZ
6	3516AS5000-5	. SEALED CANOPY ASSEMBLY, ... PCU-68/P22P-20	1		PAGDD
7	3516AS5016-1	. STEERING HANDLE	2		PAGZZ
8	3516AS5017-3	. STEERING HANDLE ATTACHMENT CORD	2		PAGZZ
9	3516AS5700-3	. SOFT LINK ASSEMBLY (SET)	1		PAGZZ
10	3615AS6009-1	. . LINK, RAPIDE (SIZE #4)	2		PAGZZ
11	60A116C10-1	. . RIPCORD HANDLE CLIP	1		PAGZZ
12	3516AS3000-11	. HARNESS/CONTAINER ASSEMBLY	1		PAGZZ
13	3516AS6500-11	. RIPCORD HOUSING ASSEMBLY, PRIMARY ...	1		PAGZZ
14	3516AS6500-13	. RIPCORD HOUSING ASSEMBLY, ... MANUAL DROGUE RELEASE	1		PAGZZ
15	3516AS6500-5	. RIPCORD HOUSING ASSEMBLY, ... SURVIVAL KIT RELEASE	1		PAGZZ
16	3516AS8400-3	. RIPCORD ASSEMBLY, PRIMARY	1		PAGZZ
17	3516AS6100-5	. DROGUE RELEASE ASSEMBLY, MANUAL	1		PAGZZ
18	3516AS5810-3	. DROGUE RELEASE HANDLE ..... COVER ASSEMBLY	1		PAGZZ
19	3516AS2010-1	. DROGUE RELEASE LOOP	1		PAGZZ
19A	3516AS2020-9	. SET, CLOSING LOOP /SEE NOTE 2/	1		PAGZZ
20	1814-017-01	. UNIVERSAL WATER ACTIVATED ..... RELEASE SYSTEM (UWARS)	2		PAGZZ
21	990065-1	. CANOPY RELEASE ASSEMBLY	2		PAOZZ
	015-10307-5	. CANOPY RELEASE ASSEMBLY ..... (USE UNTIL EXHAUSTED)	2		PAOZZ
22	122-10935-3	. SET SCREW /SEE NOTE 3/	4		PAGZZ
23	811-00487	. AUTOMATIC ACTUATION DEVICE	1		AGGGG
24	811-00357	. . MODEL 2400 RELEASE BODY	1		PAGZZ
25	811-00458	. . ARMING CABLE ASSEMBLY	1		PAGZZ
26	811-00459	. . POWER CABLE ASSEMBLY	1		PAGZZ
27	3516AS3360-1	. BACK PAD ASSEMBLY	1		PAOZZ
	3516AS2000-33	. OXYGEN RETAINING PAD	1		PAGZZ
28	3516AS6200-1	. SURVIVAL KIT RELEASE ASSEMBLY	1		PAGZZ
29	3516AS5900-5	. EMERGENCY O2 SYSTEM (ASSEMBLY ..... WITH SUPPORT BREAKDOWN IN NAVAIR 13-1-6.4-1)	1		PAGGG

Figure 1. A/P22P-20 Crew Backpack Assembly (Sheet 8 of 9)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
30	3516AS6120-31	. MANUAL OVERRIDE RELEASE . . . . . HANDLE CLIP	1		PAGZZ
31	990060-1	. . RELEASE ASSEMBLY, LAP BELT	2		PAOZZ

NOTE 1: 3615AS0520-3 CONSISTS OF A KIT OF FOUR SEALED CANOPY BRIDLE CORDS.

NOTE 2: 3516AS2020-9 CONSISTS OF THE FOLLOWING (4) CLOSING LOOPS: 4 1/2-IN. FINAL CLOSING LOOP, 3 1/2-IN. SURVIVAL KIT CLOSING LOOP, 3/4-IN. DROGUE ATTACHMENT LOOP, AND THE 1/2-IN. INSIDE FLAP CLOSING LOOP.

NOTE 3: 122-10935-3 (2) UTILIZED FOR UWARS (2) UTILIZED ON LOWER CANOPY RELEASE ASSEMBLIES.

Figure 1. A/P22P-20 Crew Backpack Assembly (Sheet 9 of 9)

INTERMEDIATE AND DEPOT MAINTENANCE

DESCRIPTION AND PRINCIPLES OF OPERATION

PCU-63(V)1/P UNIVERSAL WATER ACTIVATED RELEASE SYSTEM (UWARS)

PART NO. 1814-017-01

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

Intermediate and Depot Maintenance, Illustrated Parts Breakdown, PCU-63(V)1/P Universal Water Activated Release System (UWARS) ..... WP 029 03

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Title	Page
Description	2
Configuration	2
General	2
Subassembly Configuration	2
Principles of Operation	2
Automatic Operation	2
Manual Operation	2

Record of Applicable Technical Directives

None

1. DESCRIPTION.

2. GENERAL.

a. The Universal Water Activated Release System (UWARS), PCU-63(V)1/P is a battery operated, seawater activated electro-explosive device that automatically separates the main canopy from the aircrew upon immersion in seawater. UWARS provides a backup automatic mode of separating the main canopy from the aircrew. The primary mode of separating the main canopy from the aircrew is by manually releasing the two canopy release fittings located at the shoulder. Automatic mode is intended for disabled aircrew or when there is insufficient time to release the two canopy release fittings. UWARS system operates within 2.0 seconds when immersed in seawater (20,000 micromhos or greater conductivity). UWARS system operates only when immersed in seawater and will not operate when immersed or exposed to fresh water, rain, humidity or salt fog. The system has a Built-In-Test (BIT) GO/NO-GO indicator. The BIT tests for battery condition and circuit continuity including the electro-explosive device. When the BIT button is pressed, it will indicate a GO condition by emitting a single flash of the green LED. Anything but a single flash is a NO-GO indication (Figure 1).

3. CONFIGURATION.

a. The UWARS has only one configuration for the Navy and is shown in (Figure 1). The UWARS dimensions are 2.34-in. wide by 2.22-in. high by .740-in. thick. The weight of the unit is 0.24 lbs. maximum. Installed UWARS system uses two identical UWARS units, one on each parachute riser. Refer to the Illustrated Parts Breakdown WP 029 03 for the exact configuration requirements.

4. SUBASSEMBLY CONFIGURATION.

a. The sub-assemblies listed below make up the Universal Water Activated Release System. Refer to the Illustrated Parts Breakdown WP 029 03 for the exact configuration requirements.

Battery

UWARS, PCU-63(V)1/P

Cover/EMI Gasket Assembly

Set Screw

5. PRINCIPLES OF OPERATION.

6. MANUAL OPERATION.

a. Upon landing the aircrew disengages the parachute assembly from the PCU-56/P parachute restraint harness by activating the canopy release assembly.

7. AUTOMATIC OPERATION.

a. Within two seconds after the aircrew enters the seawater and immersing the UWARS the following process takes place:

(1) The two sensing contacts, located on the sides of the UWARS units are connected through the seawater to close the circuit and allow the batteries to charge the firing capacitor. When the capacitor is fully charged, a switch is triggered, and the charged energy is released to fire the semiconductor bridge (SCB) initiator. The output gas of the initiator is directed through internal porting of the UWARS body to the spring loaded retractable pins attached to the 2 canopy release fittings located at the shoulder. The pins are then retracted and locked into the body, allowing the canopy release fittings to separate from UWARS unit.

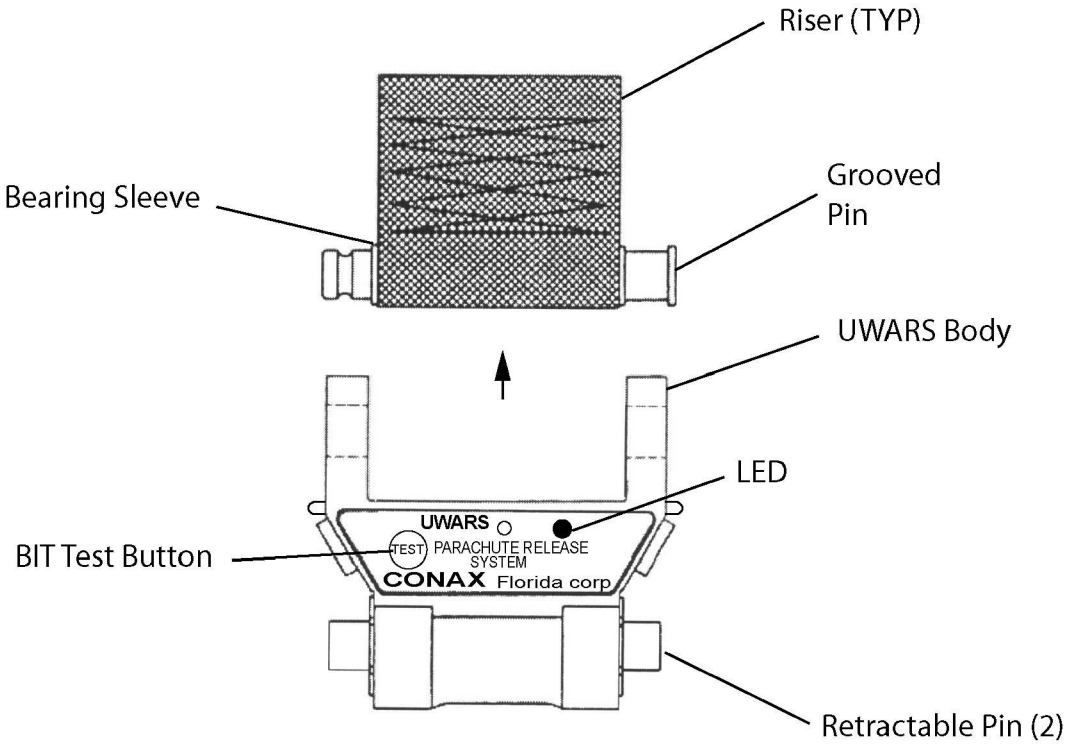

Figure 1. PCU-63(V)1/P Universal Water Activated Release System (UWARS)

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ORGANIZATIONAL MAINTENANCE

INSPECTION AND REPAIR PROCEDURES

PCU-63(V)1/P UNIVERSAL WATER ACTIVATED RELEASE SYSTEM (UWARS)

PART NO. 1814-017-01

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
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Reference Material

Intermediate and Depot Maintenance, Illustrated Parts Breakdown, PCU-63(V)1/P Universal Water Activated Release System (UWARS) . . . . . WP 029 03
Parachute Loft Requirements/Administration . . . . . WP 003 00

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Inspection of UWARS Assembly	2
Installation of UWARS	3
Removal of UWARS	2
Repair of UWARS PCU-63(V)1/P	4
Replacement of Battery	4
Inspection of Cover/EMI Gasket Assembly	5
Installation of Battery	5
Removal of Battery	4

Record of Applicable Technical Directives

None

1. GENERAL.

a. This Work Package (WP) provides instructions for the maintenance and replacement of components for the Universal Water Activated Release System (UWARS) PCU-63(V)1/P. All maintenance actions shall be documented on the Parachute Record (OPNAV 4790/101).

b. When performing the repairs detailed in this WP, follow these guidelines.

(1) Review and follow applicable instructions in this WP prior to starting repairs.

(2) Ensure all necessary support equipment and required materials are available.

(3) All work shall be carefully inspected and compared to applicable instructions for completion of work to ensure conformity.

(4) Quality Assurance (QA) points are provide for critcal operations. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Verifying completion of QA steps may be delayed by QA, if their satisfactory completion is verified in a later step. In no case shall the packer perform or helper perform quality assurance inspection.

2. INSPECTION OF UWARS ASSEMBLY.

a. Check exterior of UWARS, including water sensors for cracks, contamination and corrosion (Figure 1).

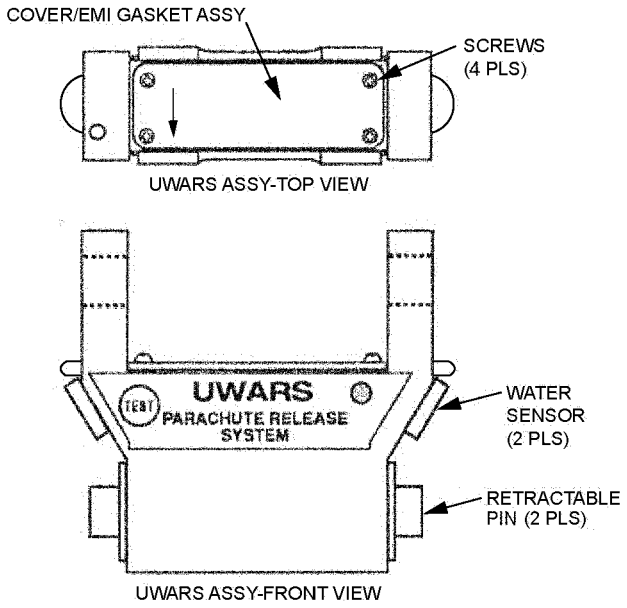

Figure 1. Inspection Locations

b. Visually inspect for broken torque seal on four screw heads securing the cover/EMI gasket assembly to the UWARS body (Figure 1).

c. Check the retractable pins for freedom of movement.

(1) Press the pins (one at a time) into the UWARS body. Pins should move freely and spring back with no binding.

3. REMOVAL OF UWARS.

Support Equipment Required

Part Number	Nomenclature
—	Wooden, Dowel
—	Screwdriver, Flat Tip

WARNING

UWARS is an explosive item classified as 1.4S. The following procedures shall not be performed in the aircraft or radiation hazardous area.

a. Using a wooden dowel, depress the retractable pins securing the canopy release assembly to the UWARS (Figure 2).

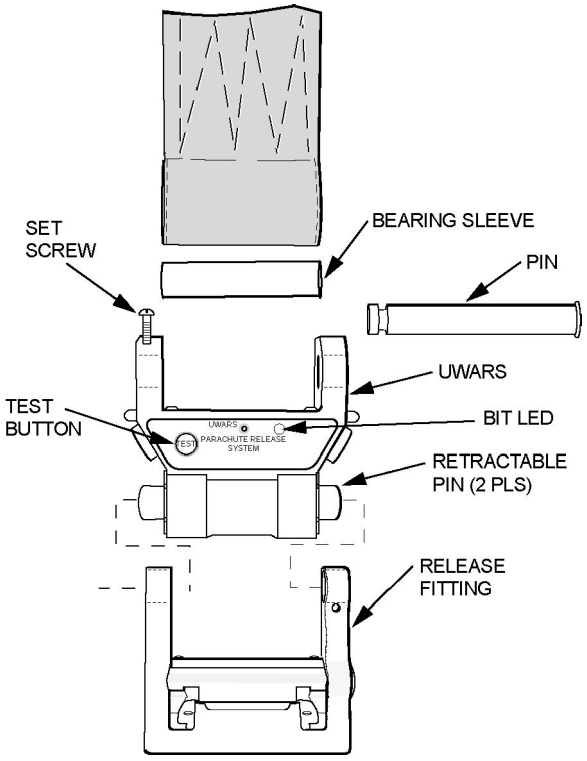

Figure 2. UWARS Removal

b. Using flat tip screwdriver loosen and remove the set screw securing the riser pin in the UWARS body. Discard set screw (Figure 2).

c. Remove the riser pin from UWARS.

d. Remove UWARS unit from the riser.

NOTE

If UWARS are being removed from service, discard batteries. Replacement UWARS come with batteries.

4. INSTALLATION OF UWARS.

Support Equipment Required

Part Number	Nomenclature
—	Screwdriver, Flat Tip

Materials Required

Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
122-10935-3	Set Screw

WARNING

UWARS is an explosive item classified as 1.4S. The following procedures shall not be performed in the aircraft or radiation hazardous area.

NOTE

Installation procedures for both the right and left hand UWARS units are the same.

a. Excessive BIT checks may degrade battery life.

(1) Press the TEST button. The BIT LED will flash a single time within 2 seconds, to indicate the unit is operating properly.

(2) If the BIT LED does not flash, ensure the batteries are installed properly. Repeat the test after 30 seconds to ensure the system is operational.

(3) If the BIT results in anything other than a single flash, after checking the installation of the batteries, the unit must be replaced (Figure 3).

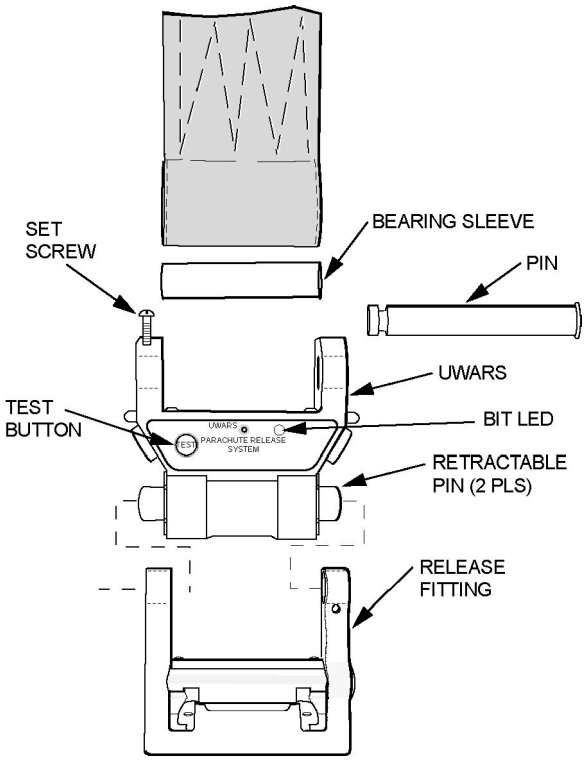

Figure 3. UWARS Installation

NOTE

Install the UWARS unit with the TEST button and BIT LED facing out.

b. Insert and align riser webbing between UWARS lobes (Figure 3).

c. Insert riser pin through lobe of UWARS body and riser sleeve ensuring the grooved end of the riser pin aligns with the setscrew hole (Figure 3).

WARNING

Do not reuse set screw once they have been fully installed. Do not screw the new set screw into UWARS body before installation.

d. Insert and tighten new set screw using flat tip screwdriver. Ensure set screw is seated in the groove on the riser pin.

e. Apply sealing compound to side of set screw head and surface. (QA)

f. Depress spring-loaded UWARS retractable pins and slide UWARS body between lobes on canopy release assembly. Retractable pins should move freely and should spring back with no binding. Retractable pins should be near flush with the outer surface of the canopy release fitting when properly connected (Figure 3).

5. REPAIR OF UWARS PCU-63(V)1/P.

a. UWARS repair consists of replacement of the batteries, cover/EMI gasket, screws and set screw, or the entire unit.

WARNING

The following removal and installation procedures shall not be performed in the aircraft or in a radiation hazardous area.

6. REPLACEMENT OF BATTERY.

7. REMOVAL OF BATTERY.

Support Equipment Required

Part Number	Nomenclature
491	Screwdriver, Phillips, #1 point
—	Screwdriver, Flat Tip

CAUTION

Avoid metallic contact with the water sensors during battery replacement. Contact with water sensors could complete the firing circuit and cause the unit to fire.

NOTE

All four batteries must be replaced at one time.

Handling, storage and disposal of lithium batteries shall be in accordance with federal, state and local regulation. Disposal procedures vary by state, therefore, contact your local installation environmental officer as required.

a. For removing UWARS, refer to Paragraph 3.

NOTE

The cover/EMI gasket shall only be used once and must be replaced at each battery replacement.

b. Using #1 Phillips screwdriver remove four screws securing the cover/EMI gasket assembly. Retain four screws. Discard cover/EMI gasket assembly.

WARNING

Do not use a metallic tool to remove the batteries. Contact with metal could complete the firing circuit and cause the unit to inadvertently fire.

c. Remove the batteries from the UWARS body by striking the opened unit against the palm of the hand or padded surface. Use a plastic or wooden tool, if required.

8. INSPECTION OF COVER/EMI GASKET ASSEMBLY.

a. Check replacement cover/EMI gasket assembly for ripped, torn or missing gasket.

NOTE

The cover/EMI gasket assembly is manufactured with a slight curvature and shall not be cause for rejection.

9. INSTALLATION OF BATTERY.

Support Equipment Required

Part Number	Nomenclature
491	Screwdriver, Phillips, #1 point
—	Screwdriver, Flat Tip
TQS6 - or - Equivalent	Torque Wrench, 0-50 in-lbs.

Materials Required

Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Insert new batteries into battery cavity using the following procedure (Figure 4).

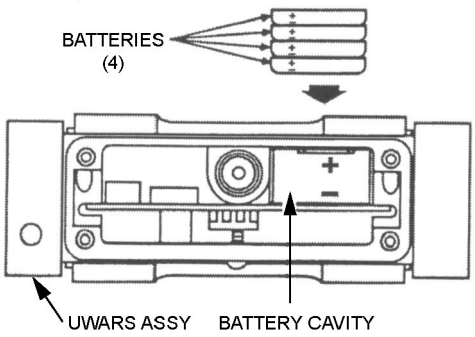

Figure 4. Battery Installation

CAUTION

Installing the batteries improperly could result in damage to the batteries. Batteries should be straight up during installation. The negative side of the battery faces the front of the UWARS body (side with TEST button).

(1) Insert two batteries in the battery cavity ensuring they are properly configured.

(2) Insert the last two batteries into battery cavity ensuring they are properly configured.

(3) Gently push the batteries securely in place.

b. After the batteries have been replaced, a BIT must be performed to ensure batteries are properly installed and the UWARS unit is operating properly. Perform BIT by using the following procedure. (QA)

NOTE

Excessive BIT checks may degrade battery life.

(1) Press the TEST button. The BIT LED will flash a single time within 2 seconds, to indicate the UWARS unit is operating properly.

(2) If the BIT LED does not flash ensure the batteries are installed properly. Repeat the BIT after 30 seconds to ensure the system is operational.

(3) If the BIT results in anything other than a single flash, after checking the installation of the batteries, the UWARS unit must be replaced.

WARNING

Ensure proper alignment when replacing the cover/EMI gasket assembly. The arrow on the cover/EMI gasket assembly should point to the front of the UWARS unit. Failure to align the cover/EMI gasket assembly properly will result in UWARS unit failure.

c. Position the replacement cover/EMI gasket assembly over UWARS cavity with arrow on cover pointing to the front of the UWARS unit (Figure 5).

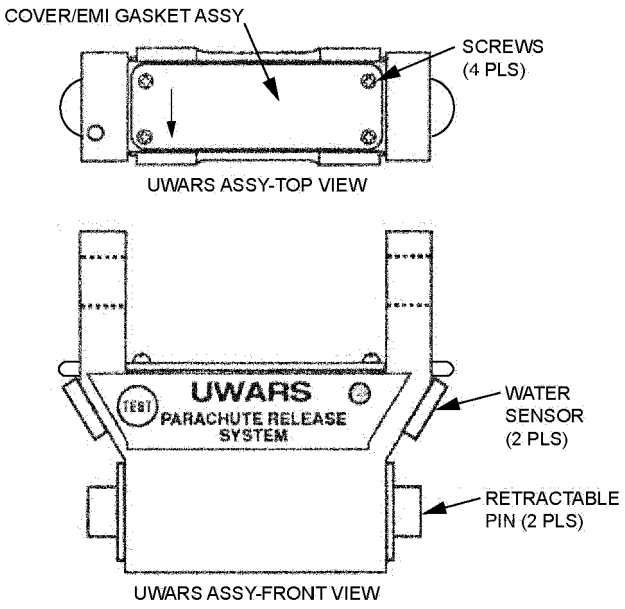

Figure 5. Cover/EMI Gasket Assembly

d. Secure cover/EMI gasket assembly in place with (retained) four screws.

e. Torque four screws to 4 ± 1 in-lbs. Using a #1 Phillips screwdriver bit. (QA)

f. Apply sealing compound to sides of four screw heads and cover surface. (QA)

g. Insert and align riser webbing between UWARS lobes (Figure 3).

h. Insert riser pin through lobe of UWARS body and riser loop ensuring the grooved end of the riser pin aligns with the set screw hole (Figure 3).

WARNING

Do not reuse set screw once they have been fully installed. Do not screw the new set screw into UWARS body before installation.

i. Insert and tighten new set screw using flat tip screwdriver. Ensure set screw is seated in the groove on the riser pin.

j. Apply sealing compound to side of set screw head and surface. (QA)

k. Depress spring-loaded UWARS retractable pins and slide UWARS body between lobes on canopy release assembly. Retractable pins should move freely and should spring back with no binding. Retractable pins should be near flush with the outer surface of the canopy release fitting when properly connected (Figure 3).

INTERMEDIATE AND DEPOT MAINTENANCE

MAINTENANCE PROCEDURES

PCU-63(V)1/P UNIVERSAL WATER ACTIVATED RELEASE SYSTEM (UWARS)

PART NO. 1814-017-01

List of Effective Work Package Pages

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Reference Material

Cartridge Activated Devices (CADS) and Propellant Actuated Devices (PADS) (IETM) . . . . . NAVAIR 11-100-1.1
Intermediate and Depot Maintenance, Illustrated Parts Breakdown, PCU-63(V)1/P Universal Water Activated Release System (UWARS) . . . . . WP 029 03
Organizational, Intermediate and Depot Maintenance, Parachute Loft Requirements/Administration . . . . . WP 003 00

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Replacement of Battery	5
Inspection of Cover/EMI Gasket Assembly	5
Installation of Battery	5
Removal of Battery	5

Record of Applicable Technical Directives

None

1. GENERAL.

a. This Work Package (WP) provides instructions for the maintenance and replacement of components for the Universal Water Activated Release System (UWARS) PCU-63(V)1/P. All maintenance actions shall be documented on the Parachute Record (OPNAV 4790/101).

b. When performing the repairs detailed in this WP follow these guidelines.

(1) Review and follow applicable instructions in this WP prior to starting repairs.

(2) Ensure all necessary support equipment and materials required are available.

(3) All work shall be carefully inspected and compared to applicable instructions for completion of work to ensure conformity.

(4) Quality Assurance (QA) points are provided for critical operations. When a procedural step is followed by "(QA)" there is a quality assurance requirement. Verifying completion of QA steps may be delayed by QA, if their satisfactory completion is verified in a later step. In no case shall the packer or helper perform quality assurance inspection.

2. INSPECTION.

a. Scheduled replacement of the Universal Water Activated Release System (UWARS) PCU-63(V)1/P is 1792 days determined from cartridge life.

3. SERVICE LIFE CHECK AND CONFIGURATION UPDATING.

a. When the unit reaches the total life limit, it shall be returned to supply for proper disposition.

b. Service/shelf life is determined by the date of manufacturer. Date of manufacture is located on the manufacturer's identification plate. See below for lot numbering system (Figure 1).

Lot Number Example: CAX 01 B 001 – 001

CAX – Manufacturer Identification

01 – Two digit numeric code identifying year of production

B – A single alpha code-signifying month of production

001 – Lot interfix number

001 – Lot sequence number

Code for Month of Manufacture

A – Jan	D – Apr	G – Jul	K – Oct
B – Feb	E – May	H – Aug	L – Nov
C – Mar	F – Jun	J – Sep	M – Dec

Based on the information above, the Date of Manufacture is: Feb 2001

Figure 1. Determining Date of Manufacture

The UWARS unit is driven by the cartridge that is potted into the UWARS unit. This cartridge is non-removal.

Nomenclature	Service Life	Total Life
UWARS PCU-63(V)1/P SS35	Refer to NAVAIR 11-100-1.1	

c. Compare configuration of UWARS PCU-63(V)1/P to that shown in NAVAIR 13-1-6.2 Illustrated Parts Breakdown (IPB).

4. INSPECTION OF UWARS ASSEMBLY.

a. Check exterior of UWARS, including water sensors for cracks, contamination and corrosion (Figure 2).

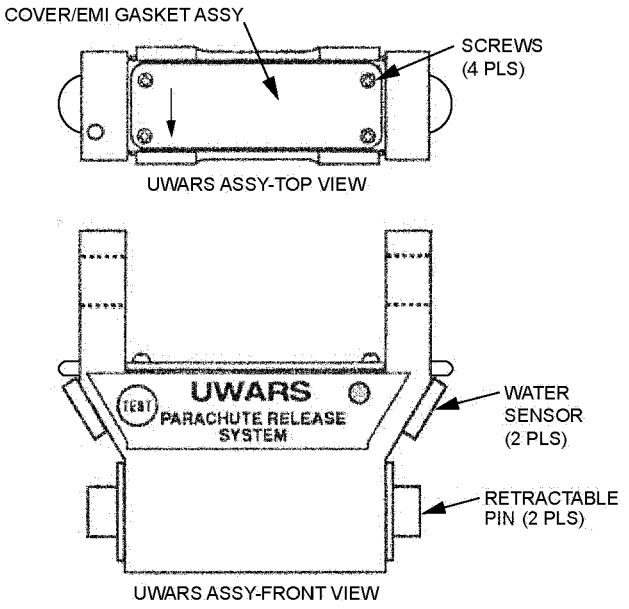

Figure 2. Inspection Locations

b. Visually inspect for broken sealing compound on four screws heads securing the cover/EMI gasket assembly to the UWARS body (Figure 2).

c. Check the retractable pins for freedom of movement.

(1) Press the pins (one at a time) into the UWARS body. Pins should move freely and spring back with no binding.

5. REMOVAL OF UWARS.

Support Equipment Required

Part Number	Nomenclature
—	Wooden, Dowel
—	Screwdriver, Flat Tip

WARNING

UWARS is an explosive item classified as 1.4S. The following procedures shall not be performed in the aircraft or radiation hazardous area.

a. Using a wooden dowel, depress the retractable pins securing the canopy release assembly to the UWARS (Figure 3).

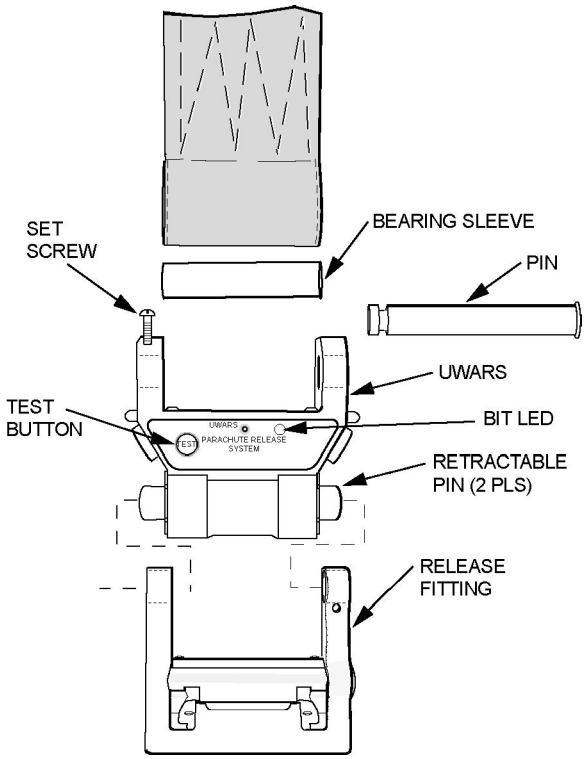

Figure 3. UWARS Removal

b. Using flat tip screwdriver loosen and remove the set screw securing the riser pin in the UWARS body. Discard set screw (Figure 3).

c. Remove the riser pin from UWARS.

d. Remove UWARS unit from the riser.

NOTE

If UWARS are being removed from service, discard batteries. Replacement UWARS include batteries.

6. INSTALLATION OF UWARS.

Support Equipment Required

Part Number	Nomenclature
—	Screwdriver, Flat Tip

Materials Required

Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound
122-10935-3	Set Screw

WARNING

UWARS is an explosive item classified as 1.4S. The following procedures shall not be performed in the aircraft or radiation hazardous area.

NOTE

Installation procedures for both the right and left hand UWARS units are the same.

a. Excessive BIT checks may degrade battery life.

(1) Press the TEST button. The BIT LED will flash a single time within 2 seconds, to indicate the unit is operating properly.

(2) If the BIT LED does not flash, ensure the batteries are installed properly. Repeat the test after 30 seconds to ensure the system is operational.

(3) If the BIT results in anything other than a single flash, after checking the installation of the batteries, the unit must be replaced (Figure 4).

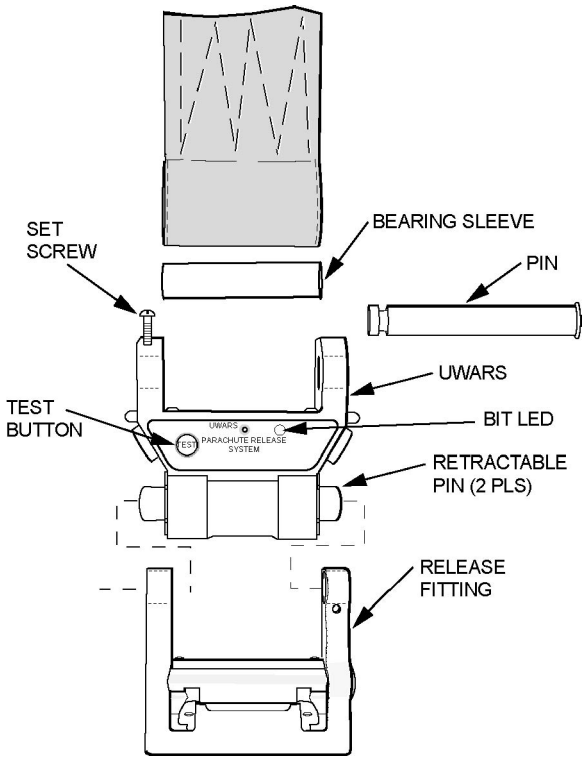

Figure 4. UWARS Installation

NOTE

Install the UWARS unit with the TEST button and BIT LED facing out.

b. Insert and align riser webbing between UWARS lobes (Figure 4).

c. Insert riser pin through lobe of UWARS body and riser sleeve ensuring the grooved end of the riser pin aligns with the set screw hole (Figure 4).

WARNING

Do not reuse set screw once they have been fully installed. Do not screw the new set screw into UWARS body before installation.

d. Insert and tighten new set screw using flat tip screwdriver. Ensure set screw is seated in the groove on the riser pin.

e. Apply sealing compound to side of set screw head and surface. (QA)

f. Depress spring-loaded UWARS retractable pins and slide UWARS body between lobes on canopy release assembly. Retractable pins should move freely and should spring back with no binding. Retractable pins should be near flush with the outer surface of the canopy release fitting when properly connected (Figure 4).

7. REPAIR OF UWARS PCU-63(V)1/P.

a. UWARS repair consists of replacement of the batteries, cover/EMI gasket, screws and set screw, or the entire unit.

WARNING

The following removal and installation procedures shall not be performed in the aircraft or in a radiation hazardous area.

8. REPLACEMENT OF BATTERY.

9. REMOVAL OF BATTERY.

Support Equipment Required

Part Number	Nomenclature
491	Screwdriver, Phillips, #1 point
—	Screwdriver, Flat Tip

CAUTION

Avoid metallic contact with the water sensors during battery replacement. Contact with water sensors could complete the firing circuit and cause the unit to fire.

NOTE

All four batteries must be replaced at one time.

Handling, storage and disposal of lithium batteries shall be in accordance with federal, state and local regulation. Disposal procedures vary by state, therefore, contact your local installation environmental officer as required.

a. For removing UWARS, refer to Paragraph 5.

b. Using #1 Phillips screwdriver remove four screws securing the cover/EMI gasket assembly. Retain four screws. Discard cover/EMI gasket assembly.

WARNING

Do not use a metallic tool to remove the batteries. Contact with metal could complete the firing circuit and cause the unit to inadvertently fire.

c. Remove the batteries from the UWARS body by striking the opened unit against the palm of the hand or padded surface. Use a plastic or wooden tool, if required.

10. INSPECTION OF COVER/EMI GASKET ASSEMBLY.

a. Check cover/EMI gasket assembly for ripped, torn or gasket missing.

NOTE

The cover/EMI gasket assembly is manufactured with a slight curvature and shall not be cause for rejection.

11. INSTALLATION OF BATTERY.

Support Equipment Required

Part Number	Nomenclature
491	Screwdriver, Phillips, #1 point
—	Screwdriver, Flat Tip
TQS6 - or - Equivalent	Torque Wrench, 0-50 in-lbs.

Materials Required

Part Number	Nomenclature
F-900 Torque Seal (Color Optional)	Sealing Compound

a. Insert new batteries into battery cavity using the following procedure (Figure 5).

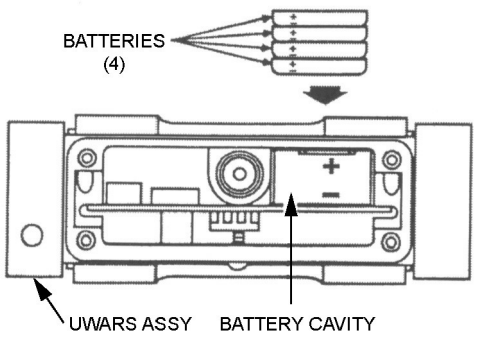

Figure 5. Battery Installation

CAUTION

Installing the batteries improperly could result in damage to the batteries. Batteries should be straight up during installation. The negative side of the battery faces the front of the UWARS body (side with TEST button).

(1) Insert two batteries in the battery cavity ensuring they are properly configured.

(2) Insert the last two batteries into battery cavity ensuring they are properly configured.

(3) Gently push the batteries securely in place.

b. After the batteries have been replaced, a BIT must be performed to ensure batteries are properly installed and the UWARS unit is operating properly. Perform BIT by using the following procedure. (QA)

NOTE

Excessive BIT checks may degrade battery life.

(1) Press the TEST button. The BIT LED will flash a single time within 2 seconds, to indicate the UWARS unit is operating properly.

(2) If the BIT LED does not flash ensure the batteries are installed properly. Repeat the BIT after 30 seconds to ensure the system is operational.

(3) If the BIT results in anything other than a single flash, after checking the installation of the batteries, the UWARS unit must be replaced.

WARNING

Ensure proper alignment when replacing the cover/EMI gasket assembly. The arrow on the cover/EMI gasket assembly should point to the front of the UWARS unit. Failure to align the cover/EMI gasket assembly properly will result in UWARS unit failure.

c. Position the replacement cover/EMI gasket assembly over UWARS cavity with arrow on cover pointing to the front of the UWARS unit (Figure 6).

d. Secure cover/EMI gasket assembly in place with (retained) four screws.

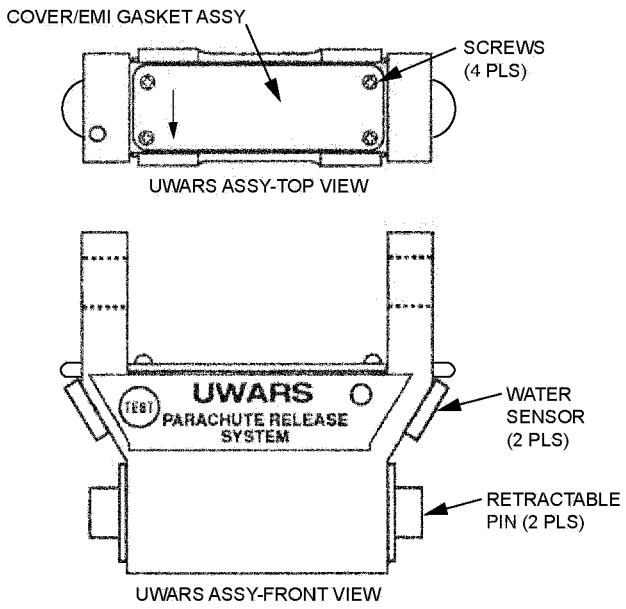

Figure 6. Cover/EMI Gasket Assembly

e. Torque four screws to 4 ± 1 in-lbs. using a #1 Phillips screwdriver bit. (QA)

f. Apply sealing compound to sides of four screw heads and cover surface. (QA)

g. Insert and align riser webbing between UWARS lobes (Figure 4).

h. Insert riser pin through lobe of UWARS body and bearing sleeve ensuring the grooved end of the riser pin aligns with the set screw hole (Figure 4).

WARNING

Do not reuse set screw once they have been fully installed. Do not screw the new set screw into UWARS body before installation.

i. Insert and tighten new set screw using flat tip screwdriver. Ensure set screw is seated in the groove on the riser pin.

j. Apply sealing compound to side of set screw head and surface. (QA)

k. Depress spring-loaded UWARS retractable pins and slide UWARS body between lobes on canopy release assembly. Retractable pins should move freely and should spring back with no binding. Retractable pins should be near flush with the outer surface of the canopy release fitting when properly connected (Figure 4).

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INTERMEDIATE AND DEPOT MAINTENANCE

ILLUSTRATED PARTS BREAKDOWN

PCU-63(V)1/P UNIVERSAL WATER ACTIVATED RELEASE SYSTEM (UWARS)

PART NO. 1814-017-01

List of Effective Work Package Pages

Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.	Page No.	Chg. No.
1	10	2 thru 3	9				

Reference Material

Intermediate and Depot Maintenance, Maintenance Procedures, PCU-63(V)1/P Universal Water Activated Release System (UWARS) ..... WP 029 02

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Usable On Codes	1

List of Figures

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PCU-63(V)1/P Universal Water Activated Release System (UWARS)	2

Record of Applicable Technical Directives

None

1. INTRODUCTION.

a. This Work Package (WP) contains information for ordering and identifying parts for the Universal Water Activated Release System (UWARS) PCU-63(V)1/P (Figure 1).

2. USABLE ON CODES.

a. The usable on codes in this WP refer to the aircraft applications for the Universal Water Activated Release System (UWARS) PCU-63(V)1/P.

b. The following usable on codes apply to this WP:

A - E-2C

3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in WP 029 02.

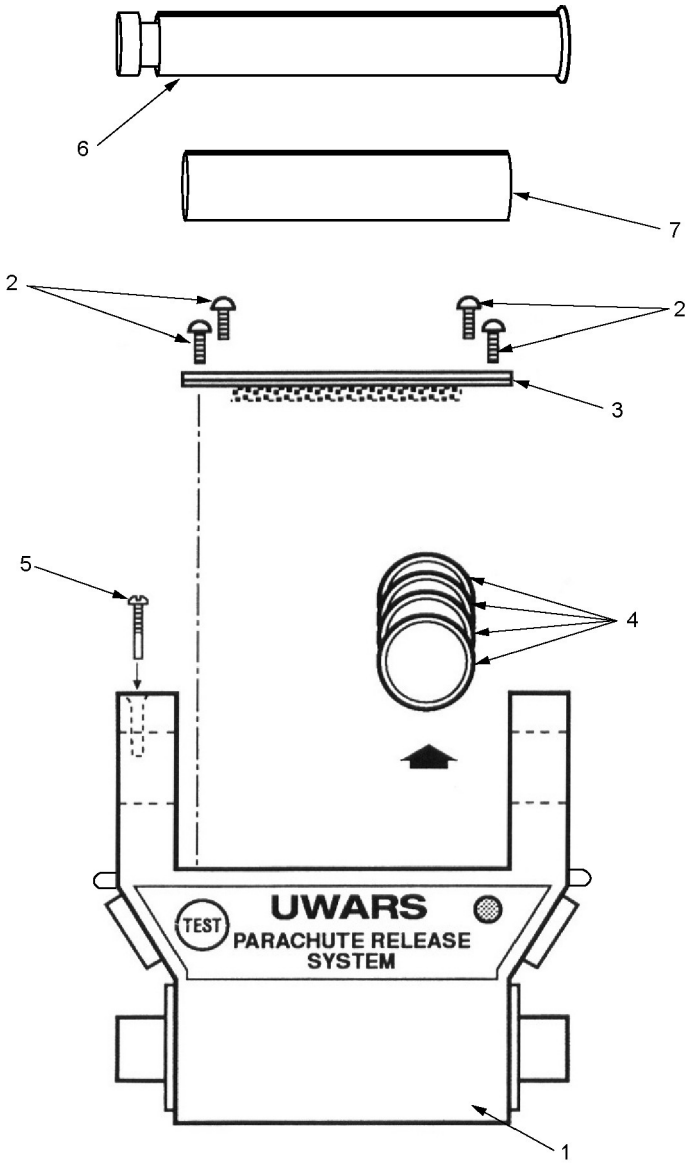

Figure 1. PCU-63(V)1/P Universal Water Activated Release System (UWARS) (Sheet 1 of 2)

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
1	1814-017-01	. PCU-63(V)1/P UWARS RELEASE	2	A	PAGZZ
2	MS51957-3	. . SCREW	4		PAGZZ
3	1140-035-01	. . COVER/EMI GASKET ASSEMBLY	1		PAGZZ
4	9554675-01	. . BATTERY	4		PAGZZ
5	122-10935-3	. SETSCREW	1		PAOZZ
6	112-10998-5	. PIN, GROOVED	1		PAOGG
7	113-11235-1	. SLEEVE, BEARING	1		PAOGG

Figure 1. PCU-63(V)1/P Universal Water Activated Release System (UWARS) (Sheet 2 of 2)

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