

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

<u>Page No.</u>	<u>Chg. No.</u>	<u>Page No.</u>	<u>Chg. No.</u>	<u>Page No.</u>	<u>Chg. No.</u>	<u>Page No.</u>	<u>Chg. No.</u>
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

Alphabetical Index

<u>Title</u>	<u>Page</u>
Description	2
Configurations	2
General	2
Subassembly Configurations	2
Principles of Operation	2
Automatic Operation	2
Manual Operation	2

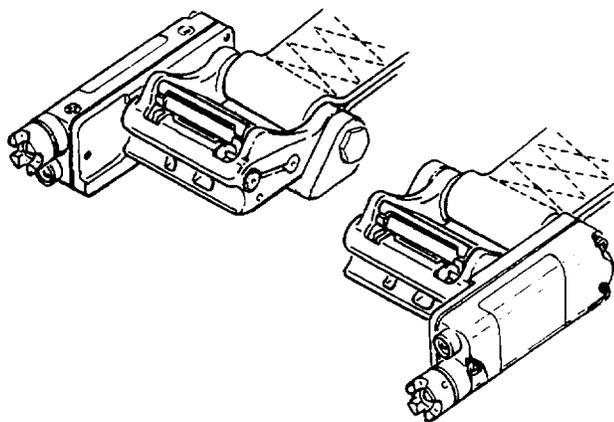
Record of Applicable Technical Directives

<u>Type/No.</u>	<u>Date</u>	<u>Title and ECP No.</u>	<u>Date Inc.</u>	<u>Rescission Date</u>
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).

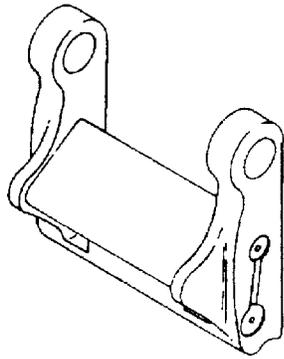
(1) An electron current path is established between the two sensors on the electronic package assembly (EPA).

(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.

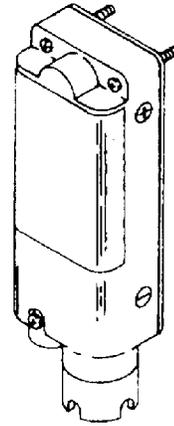
(3) The release piston is driven by the gas released from the explosive cartridge compressing the plug assembly, thereby releasing the sleeve and the riser assembly.

(4) Subparagraphs a thru c will occur simultaneously.

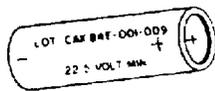
(5) Immersion in fresh water or water of lesser conductivity will not allow for an adequate charge on the capacitor to result in capacitive discharge across the bridge wire.



CANOPY RELEASE ASSEMBLY



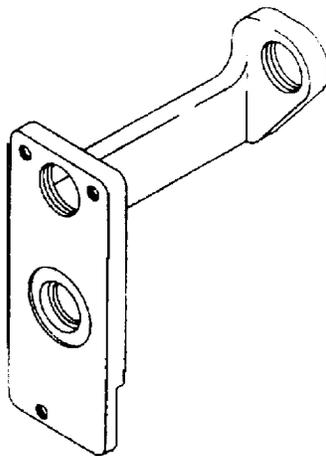
ELECTRONICS PACKAGE ASSEMBLY (EPA)



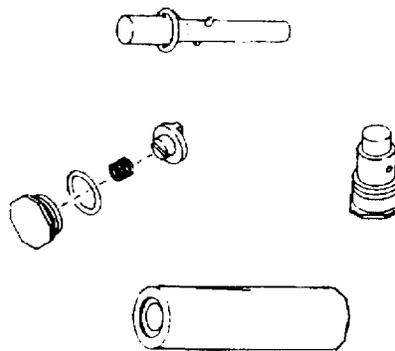
BATTERY



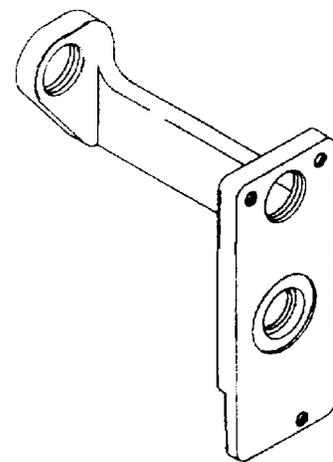
CARTRIDGE ASSEMBLY



RIGHT HAND ADAPTER PLATE



MECHANICAL PARTS



LEFT HAND ADAPTER PLATE

Figure 2. Subassemblies, PHSRU

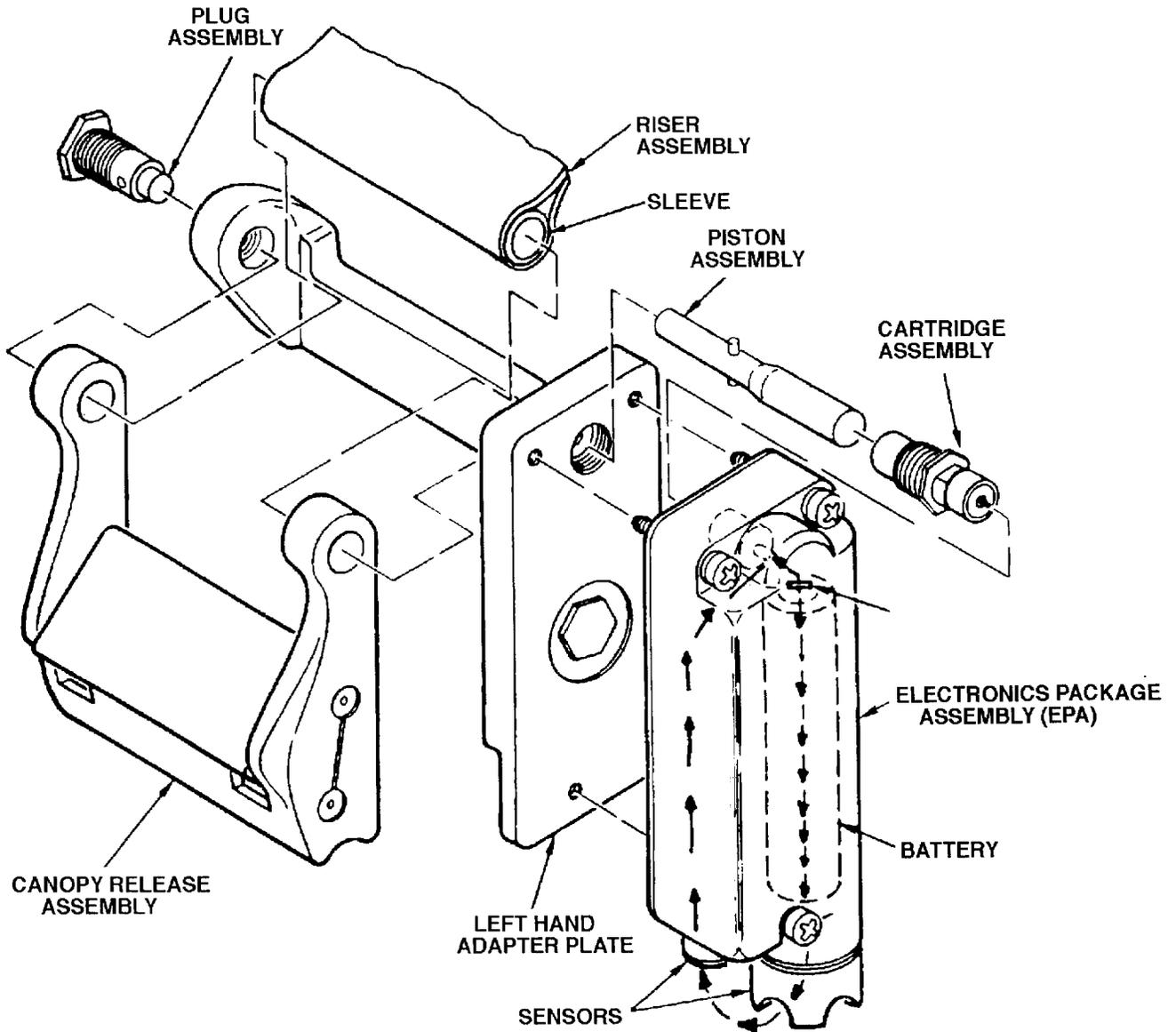


Figure 3. Automatic Operations

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

<u>Page</u> <u>No.</u>	<u>Chg.</u> <u>No.</u>	<u>Page</u> <u>No.</u>	<u>Chg.</u> <u>No.</u>	<u>Page</u> <u>No.</u>	<u>Chg.</u> <u>No.</u>	<u>Page</u> <u>No.</u>	<u>Chg.</u> <u>No.</u>
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

Alphabetical Index

<u>Title</u>	<u>Page</u>
Application of Markings	9
Application of Torque Seal	18
Battery Voltage Check	8
Canopy Release Assembly Inspection	4
Disassembly of Canopy Release Assembly	4
Vital Components Preassembly Inspection	4
Final Check	17
General	3
Installation	9
Battery Installation	16
Installation of Cartridge Assembly	13
Installation of Electronics Package Assembly (EPA)	14
Installation of Locking Disc Assembly	11
Installation of Plug Assembly	10
Installation of Release Piston Assembly	12
Installation of Sleeve	9
Torquing of Cartridge	14
Torquing of Disc	14
Torquing of Plug Assembly	14
Multimeter Probe Modification	3

Alphabetical Index (Cont.)

<u>Title</u>	<u>Page</u>
■ PHSRU X-Ray Inspection Procedures	18
Verify Records	18
Preliminary Procedures	3
Sensor Plug Assembly and Electronics Package Assembly Resistance Check	7
Battery Polarity Check	8

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)

Part Number	Nomenclature
—	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).

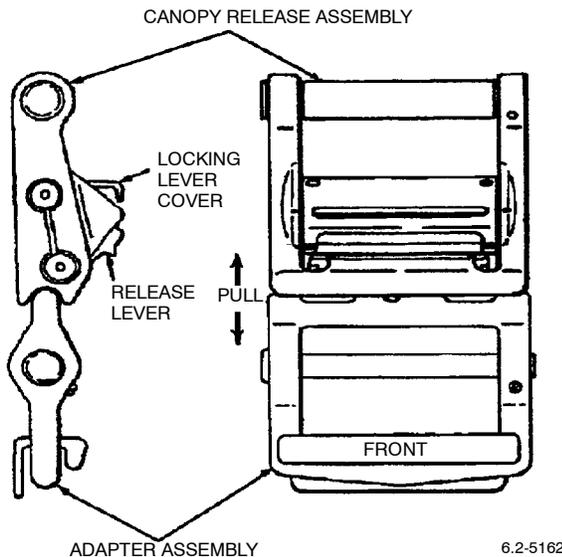


Figure 1. Canopy Release Assembly Inspection

(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).

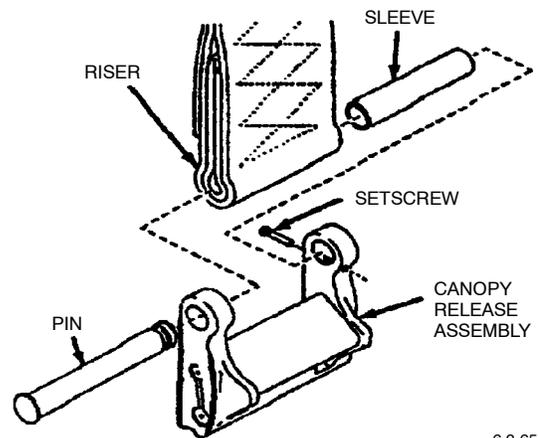


Figure 2. Disassembly of Canopy Release Assembly

6. VITAL COMPONENTS PREASSEMBLY INSPECTION.

a. Parts required for assembly (Figure 3).

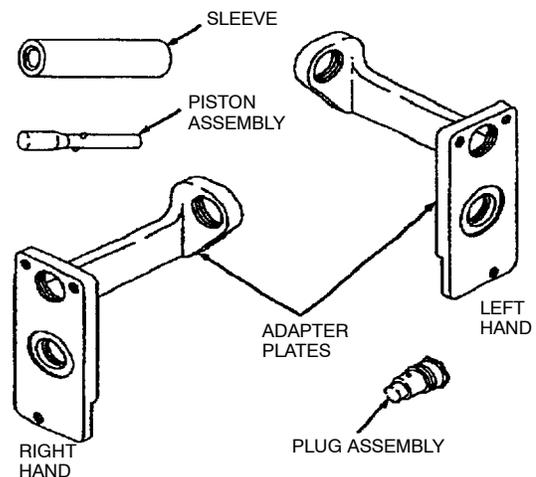


Figure 3. Parts Required

- (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).

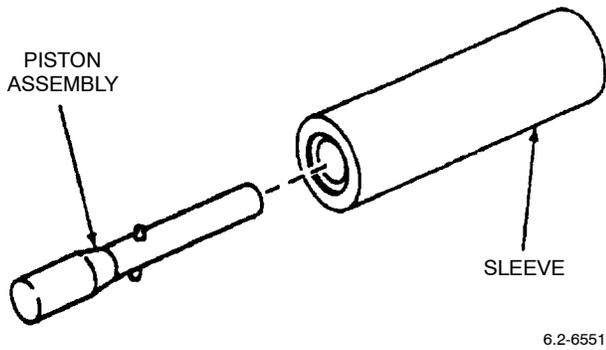


Figure 4. Trial Fit of Piston Assembly

c. Trial fit plug into opposite end of sleeve assembly. Plug must insert without force or restriction up to shoulder (Figure 5).

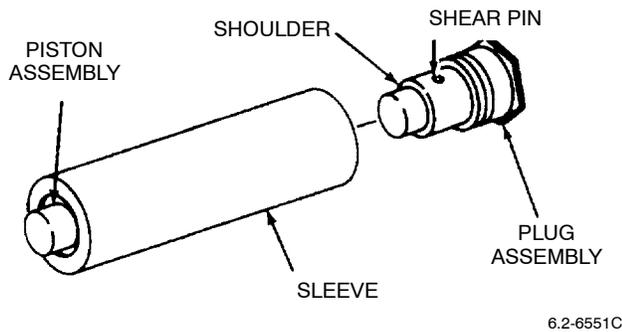


Figure 5. Trial Fit Plug

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).

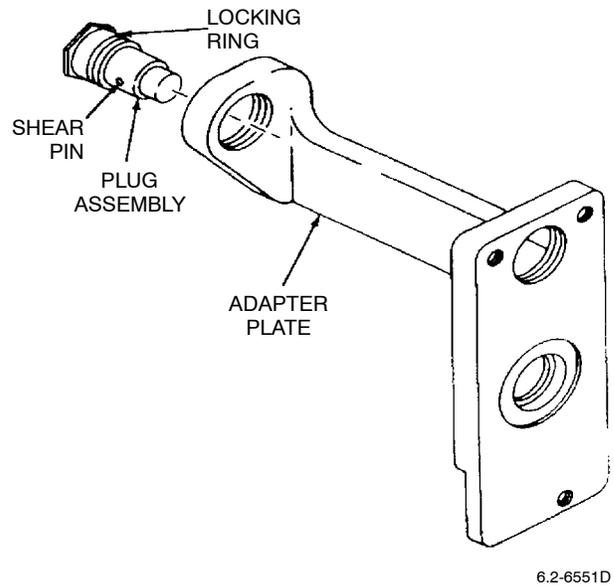


Figure 6. Trial Fit Plug Finger Tight

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)

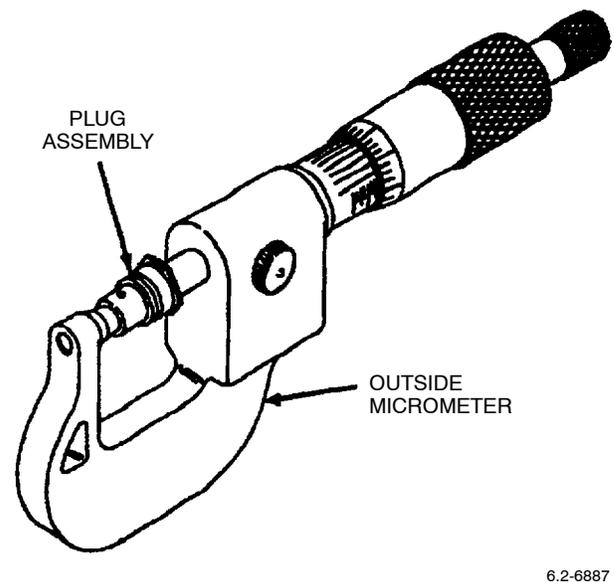
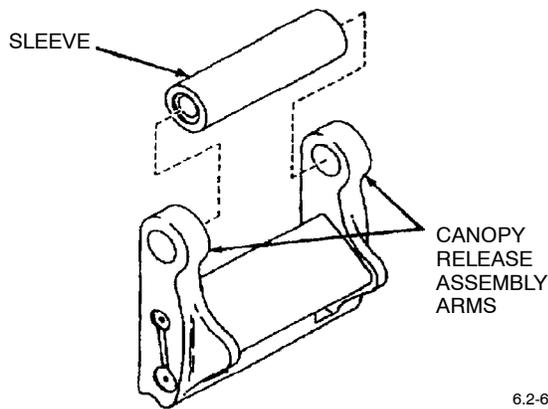


Figure 7. Measure Overall Length of Plug

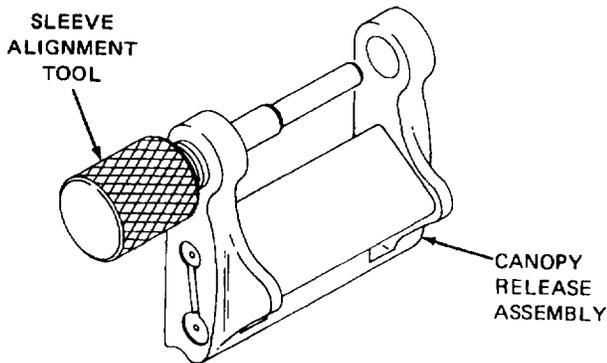
h. Trial fit sleeve between arms of canopy release. Sleeve must not show evidence of binding or restriction of movement (Figure 8).



6.2-6552A

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).



6.2-6552B

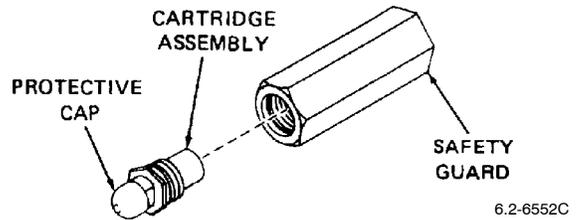
Figure 9. Trial Fit Sleeve Alignment Tool

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.

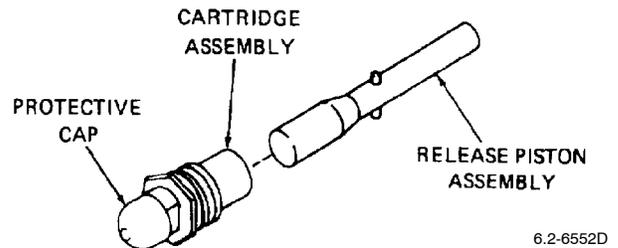
- k. Remove cartridge safety guard from cartridge (Figure 10).



6.2-6552C

Figure 10. Remove Cartridge

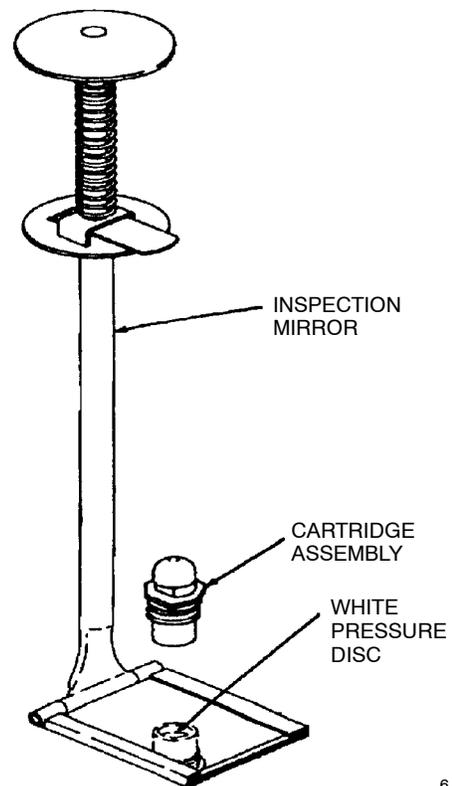
- l. Trial fit large end of release piston into cartridge. Release piston shall fit freely into cartridge (Figure 11).



6.2-6552D

Figure 11. Trial Fit Large End of Release Piston

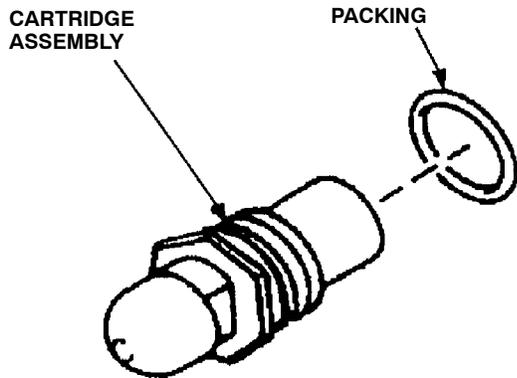
- m. Remove piston from cartridge and install cartridge in guard. Verify presence of white pressure disc in cartridge using inspection mirror (Figure 12). (QA)



6.2-6542B

Figure 12. Verify Presence of White Pressure Disc

n. Verify presence of packing on cartridge (Figure 13).



6.2-6542A

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

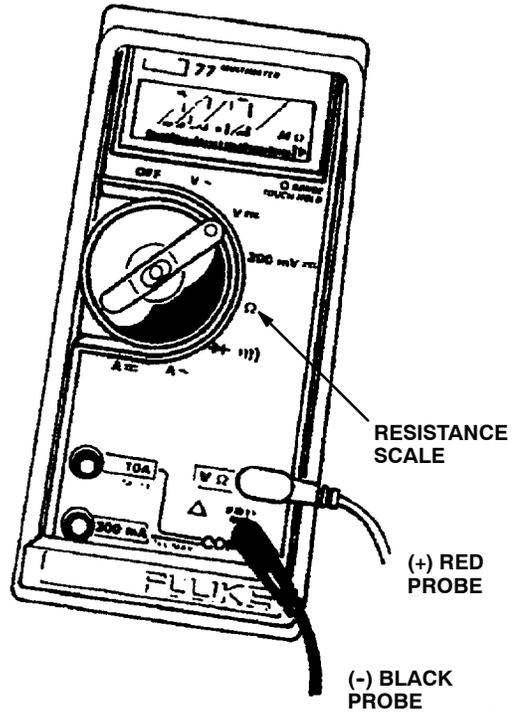
Do not use tester probes unless they have been modified. Inadvertent actuation may result.

b. Remove sensor plug assembly from EPA.

c. Select multimeter resistance scale (Figure 14).

WARNING

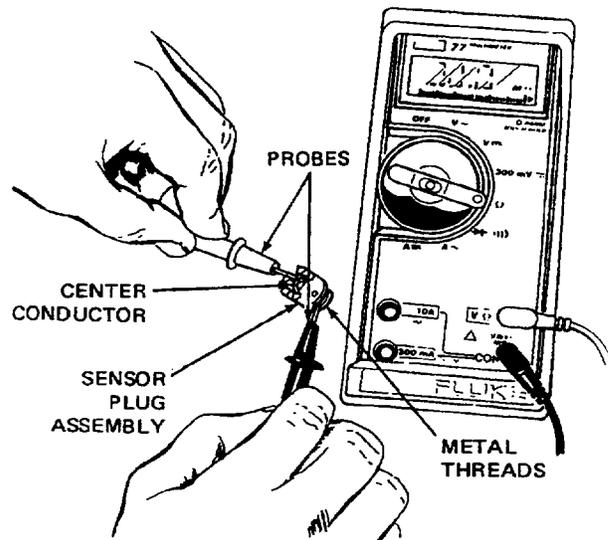
When performing the resistance check for Generation III EPA's, the FLUKE-77 meter leads must be positioned with the positive lead (red) on the fixed sensor and the negative lead (black) on the EPA housing. Failure to place leads correctly will result in a failure.



6.2-6709A

Figure 14. Select Multimeter

d. Contact probes to sensor plug assembly center conductor and sensor plug assembly metal threads (Figure 15).



6.2-6709B

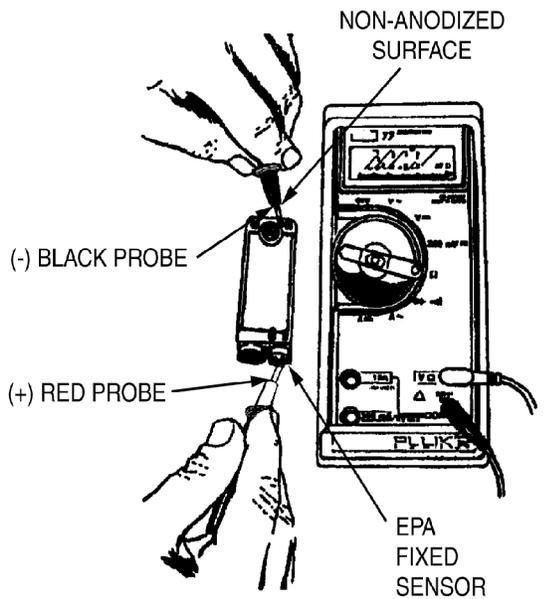
Figure 15. Contact Probes to Sensor Plug

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).



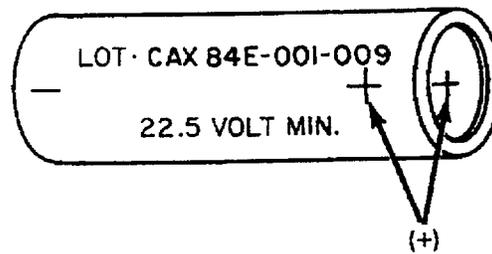
6.2-6709C

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)



6.2-6713

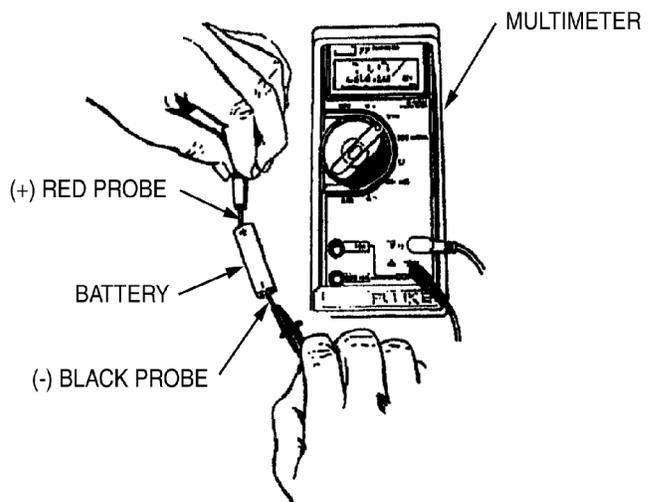
Figure 17. Battery Polarity Check

9. BATTERY VOLTAGE CHECK.



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)



6.2-6712

Figure 18. Battery Voltage Check

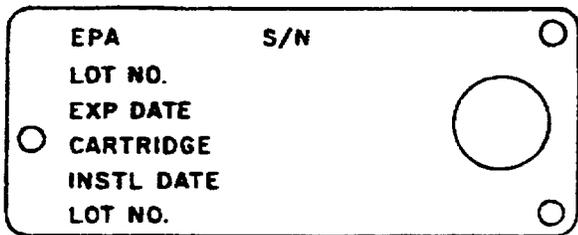
10. APPLICATION OF MARKINGS.

a. Print Installation Julian date on battery with indelible pencil.



EMI gasket used with EPA protects unit from electro-magnetic 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).



6.2-6552E

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.



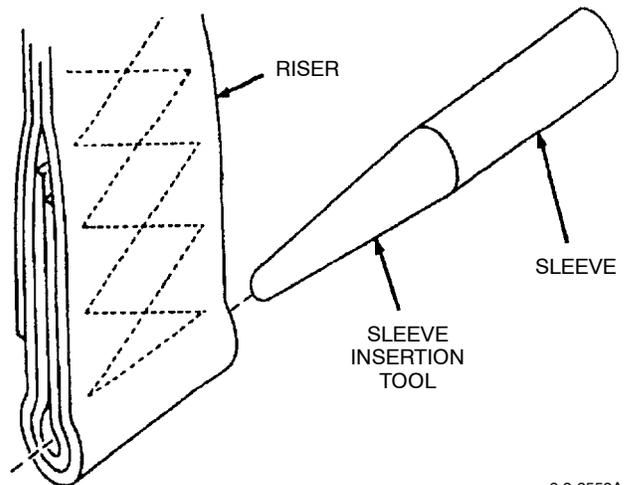
The following procedures shall not be performed in the aircraft or in a radiation hazardous area.

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.

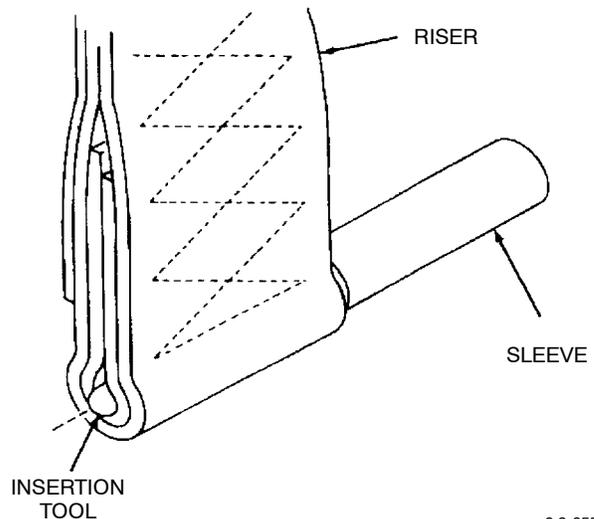
a. Place sleeve insertion tool into sleeve. Sleeve insertion tool must fit flush as shown. If not, sleeve insertion tool may be installed in wrong end of sleeve (Figure 20).



6.2-6553A

Figure 20. Place Sleeve Insertion Tool into Sleeve

b. Insert sleeve insertion tool and sleeve into riser from in-board side of riser (right riser shown) until sleeve ends are flush with riser sides (Figure 21).



6.2-6553B

Figure 21. Insert Sleeve Insertion Tool

c. Remove sleeve insertion tool from sleeve leaving sleeve in riser (Figure 22).

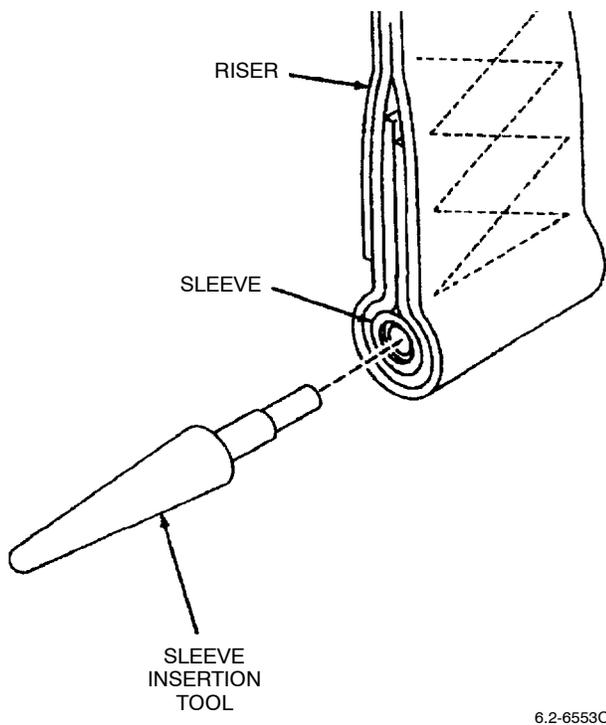


Figure 22. Remove Sleeve Insertion Tool

13. INSTALLATION OF PLUG ASSEMBLY.

a. Align canopy release with adapter plate (right hand shown) (Figure 23).

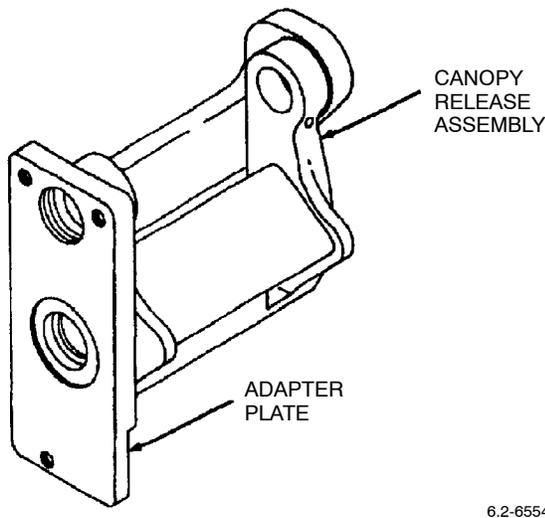


Figure 23. Align Canopy Release

b. Place riser and sleeve between arms of canopy release (Figure 24).

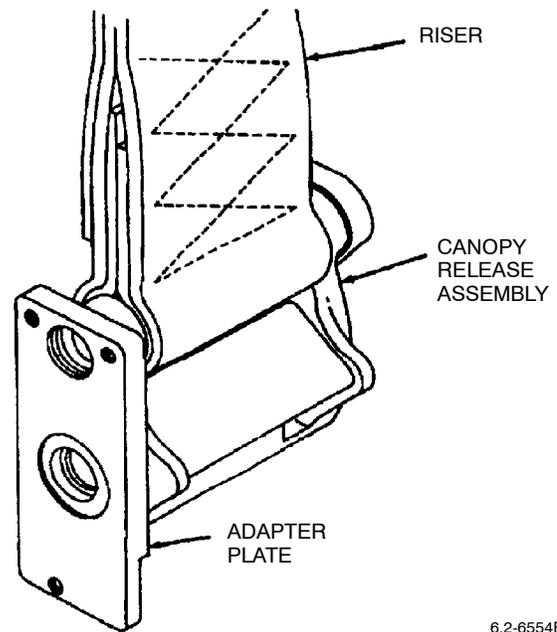


Figure 24. Placement of Riser and Sleeve

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).

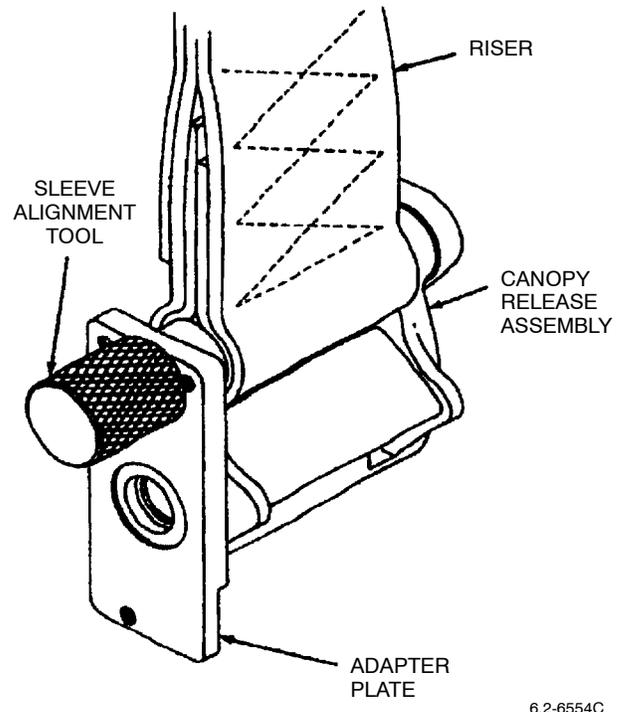
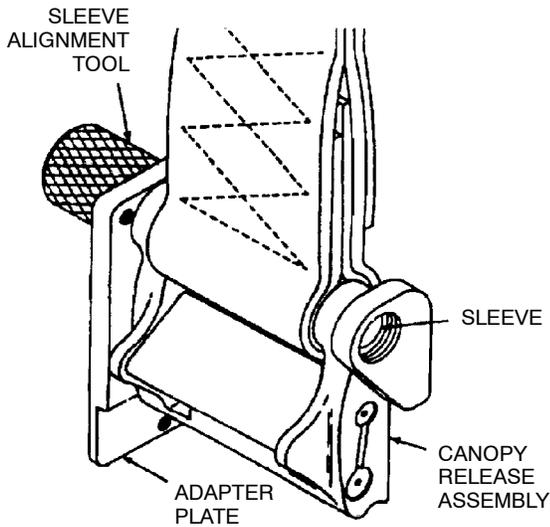


Figure 25. Install Sleeve Alignment Tool

d. Verify alignment of sleeve (Figure 26). (QA)



6.2-6554D

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)

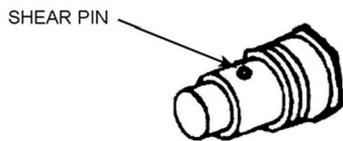
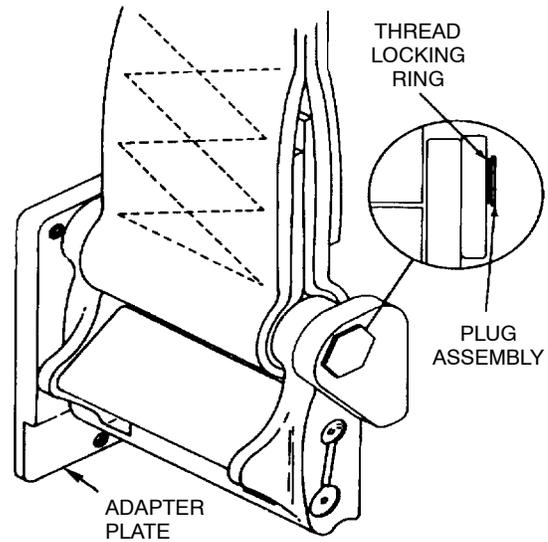


Figure 27. Plug Assembly

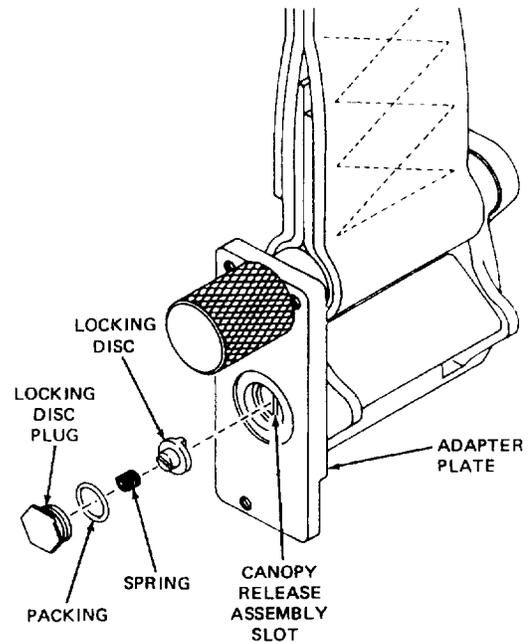


6.2-6554E

Figure 28. Install Plug

14. INSTALLATION OF LOCKING DISC ASSEMBLY.

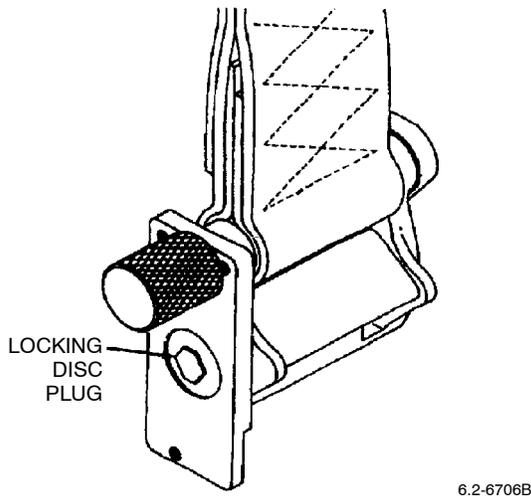
- a. Install packing on locking disc plug.
- b. Place locking disc in adapter plate and ensure blade of locking disc seats in canopy release assembly slot. Install spring in locking disc plug recess (Figure 29). (QA)



6.2-6706A

Figure 29. Placement of Locking Disc

c. Screw locking disc plug into adapter plate finger tight (Figure 30).

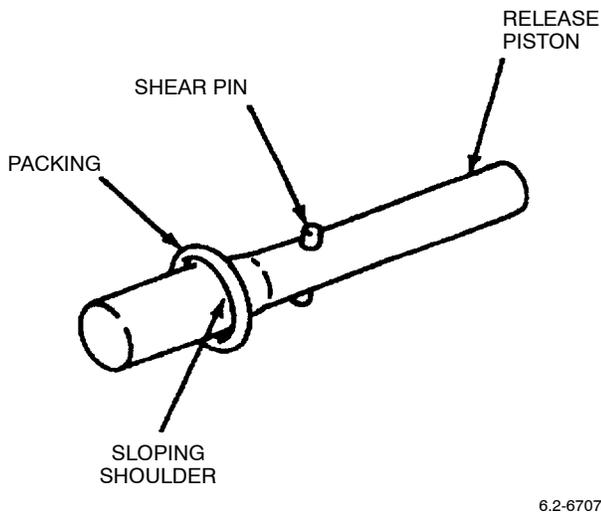


6.2-6706B

Figure 30. Locking Disc Plug Installed

15. INSTALLATION OF RELEASE PISTON ASSEMBLY.

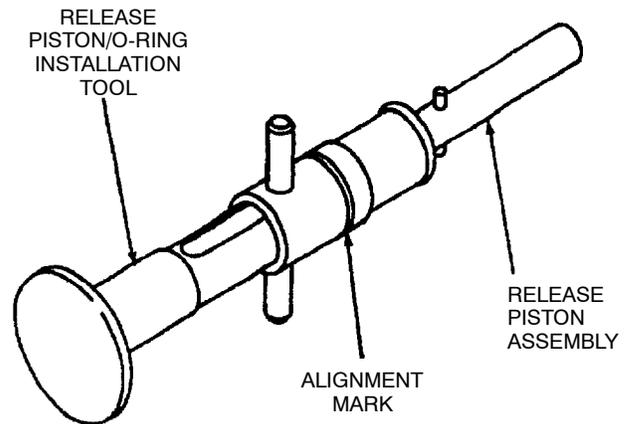
a. Lubricate packing with silicone compound and install over small end of release piston. Use care when moving packing over shear pin and position at sloping shoulder (Figure 31).



6.2-6707A

Figure 31. Lubricate Packing

b. Insert release piston into release piston O-ring installation tool (Figure 32).



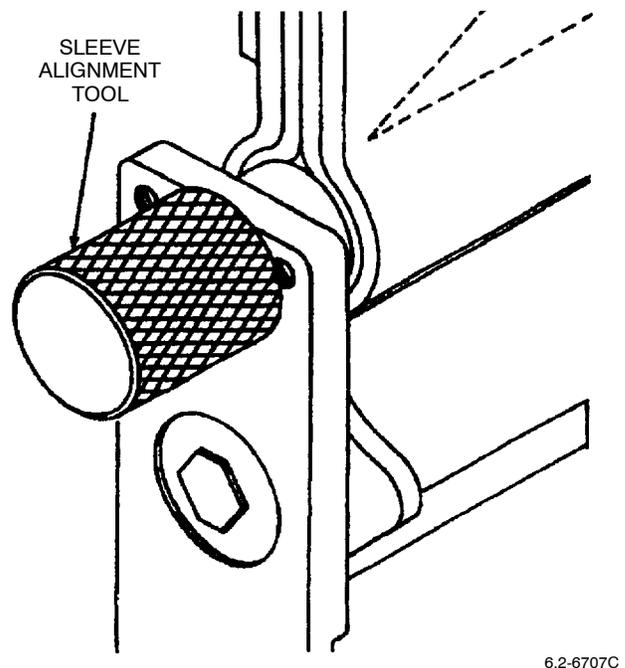
6.2-6707B

Figure 32. Insert Release Piston

NOTE

Hold riser in place so upon removal of the sleeve alignment tool the sleeve will not misalign.

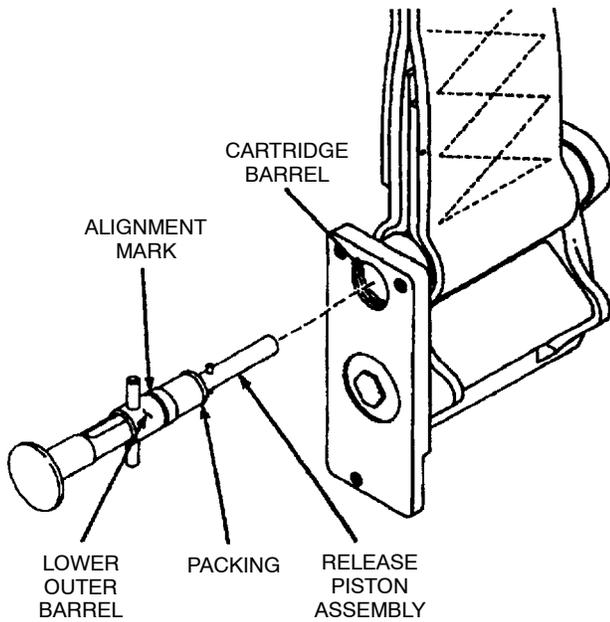
c. Remove sleeve alignment tool from canopy release assembly (Figure 33).



6.2-6707C

Figure 33. Remove Sleeve Alignment Tool

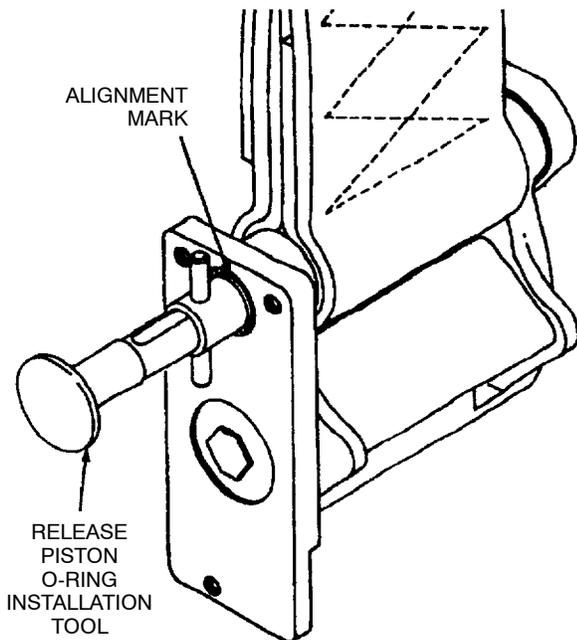
d. Hold release piston O-ring installation tool at lower outer barrel and insert release piston and packing into cartridge barrel (Figure 34).



6.2-6707D

Figure 34. Hold Release Piston O-Ring Installation Tool

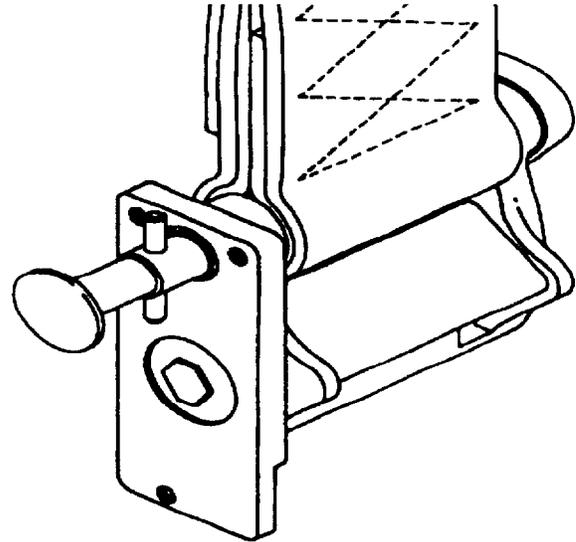
e. Use a rotating back and forth motion until release piston O-ring installation tool is inserted to full depth (even with alignment mark on tool) (Figure 35). (QA)



6.2-6707E

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).



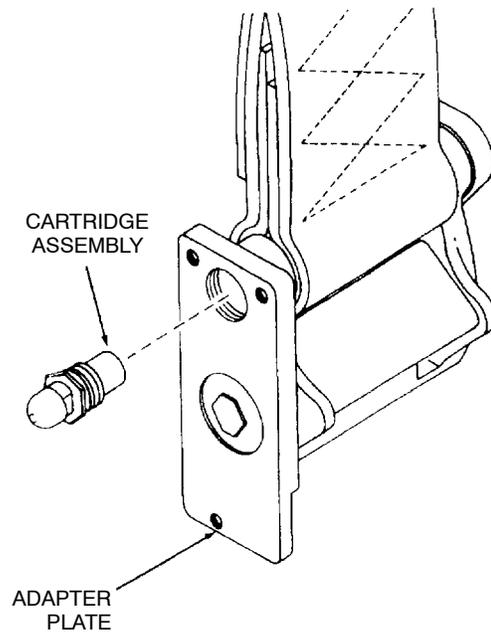
6.2-6707F

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).

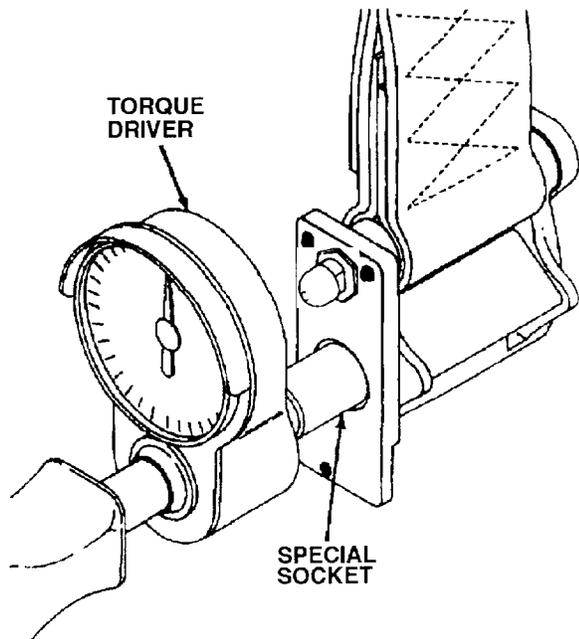


6.2-6542C

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)

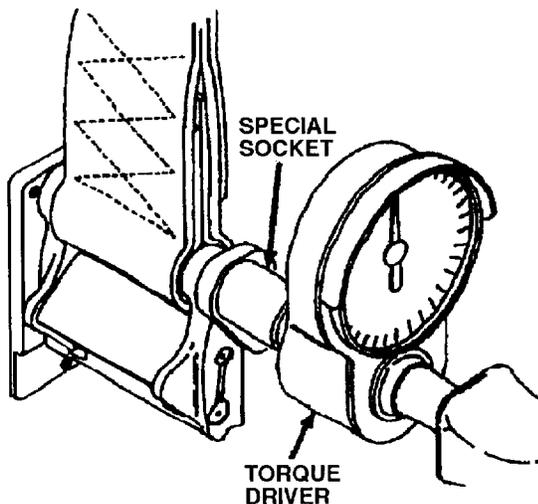


6.2-6706C

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)

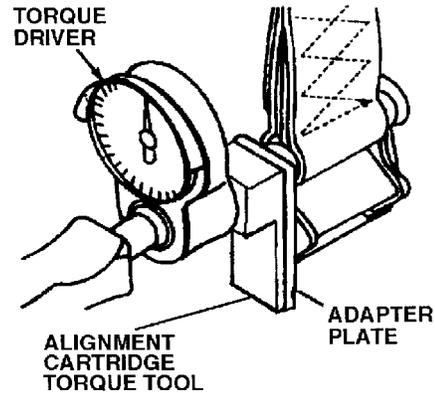


6.2-6711

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).



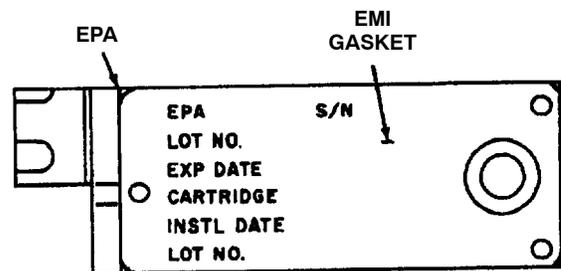
6.2-6542D

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).

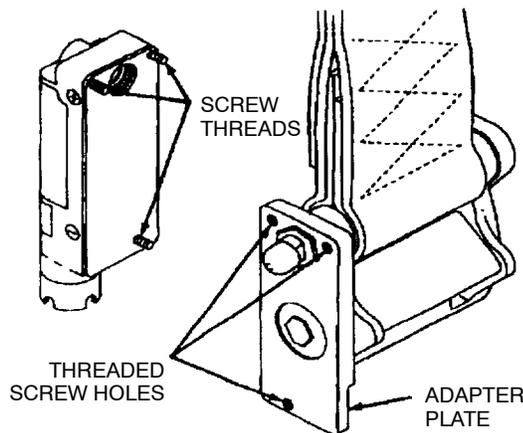
- a. Ensure battery is not installed in (EPA). (QA)
- b. Ensure that data was recorded on EMI gasket. (QA)
- c. Align EMI gasket over EPA (Figure 41).



6.2-6543A

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).

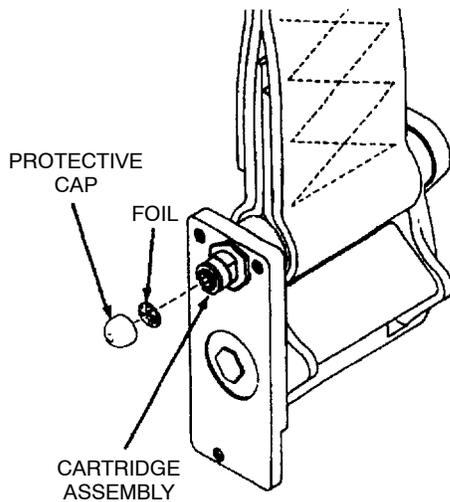


6.2-6543B

Figure 42. Apply Primer to Threads of Screws

e. Apply sealing compound to threads of screws ensuring all threads are covered.

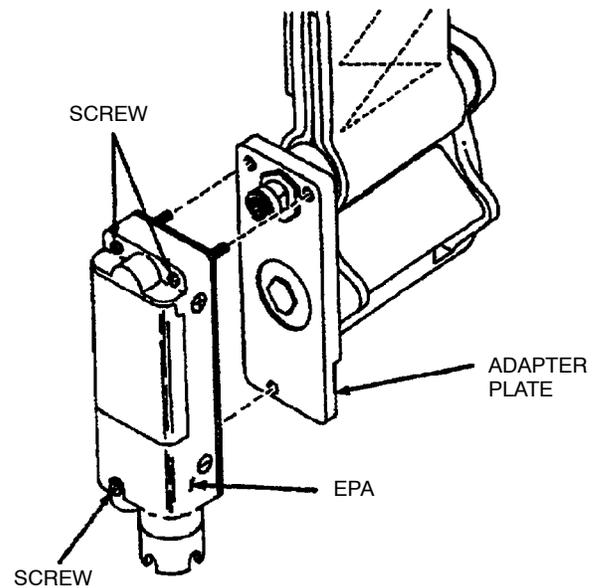
f. Remove protective cap and foil from cartridge and retain for possible future use. Visually inspect cartridge electrical plug for damage (Figure 43). (QA)



6.2-6543C

Figure 43. Remove Protective Cap and Foil

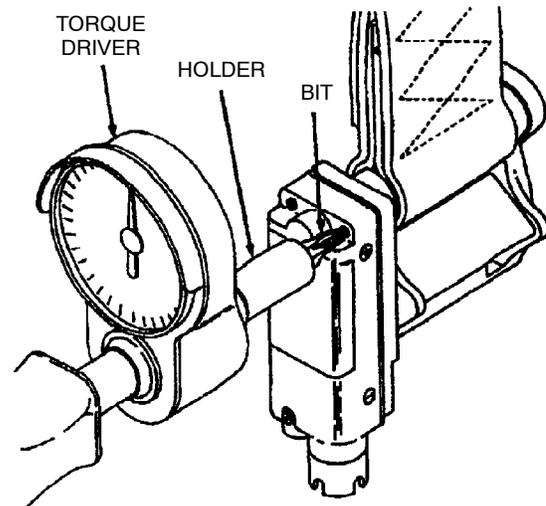
g. Install EPA on adapter plate and start screws with Phillips screwdriver. Do not tighten (Figure 44).



6.2-6453D

Figure 44. Install EPA on Adapter Plate

h. Torque screws 11 to 13 in-lbs. using bit, holder and torque driver (Figure 45). (QA)



6.2-6710A

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).

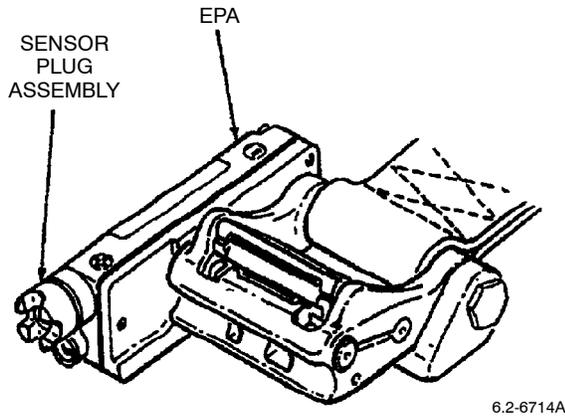


Figure 46. Remove Sensor Plug

- b. Verify presence of sensor plug spring (Figure 47). (QA)

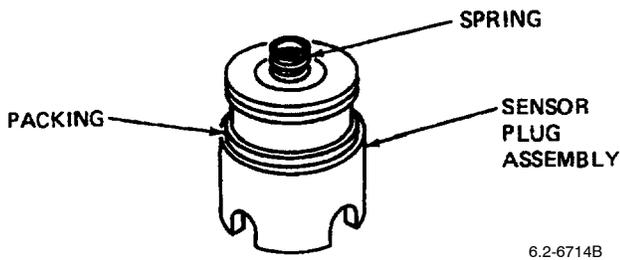


Figure 47. Presence of Sensor Plug Spring

- 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)

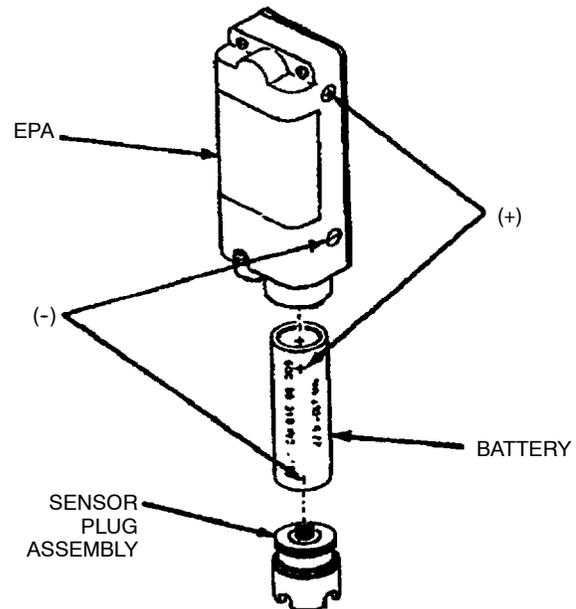


Figure 48. Install Battery

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)

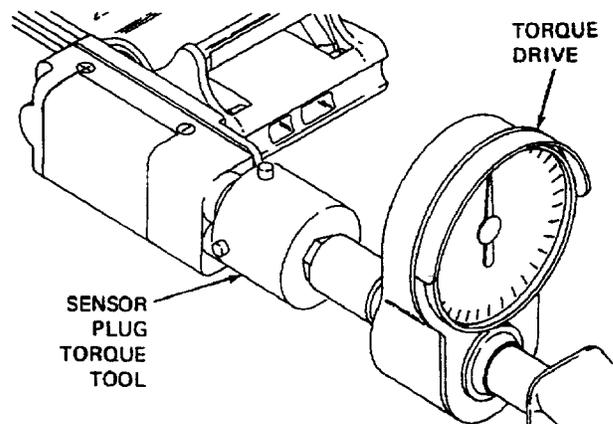


Figure 49. Torque Sensor Plug

22. FINAL CHECK.

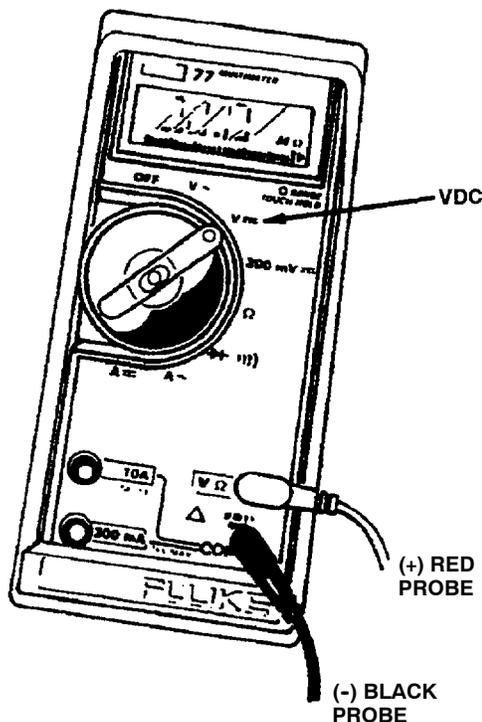
- a. Install test leads in multimeter observing proper polarity.
- b. Select VDC and scale exceeding 26 VDC.

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.



6.2-6715A

- c. Contact negative (black) probe to sensor plug assembly center conductor. Contact positive (red) probe to fixed sensor center conductor (Figure 50).

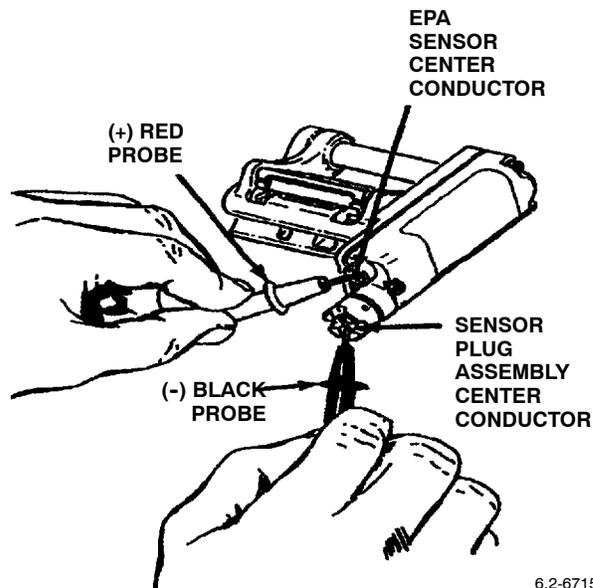
- d. Reading of +22.5 volts DC or greater indicates PHSRU is serviceable, continue to Paragraph 23. Record voltage on Parachute Record (OPNAV 4790/101).

- 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.



6.2-6715B

Figure 50. Final Check

23. APPLICATION OF TORQUE SEAL.

a. Apply torque seal to the plug, sensor plug and EPA attaching screws (Figure 51).

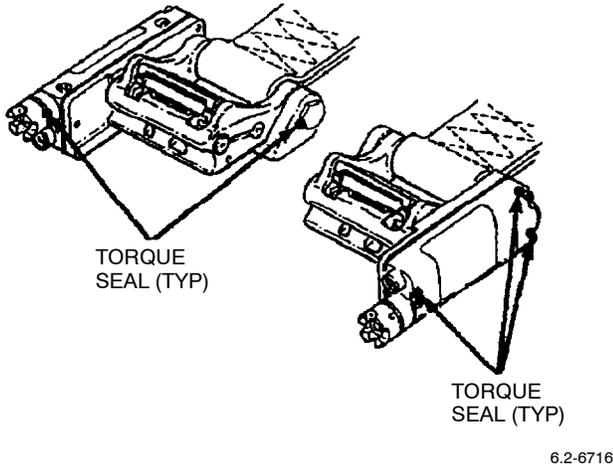


Figure 51. Application of Torque Seal

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)

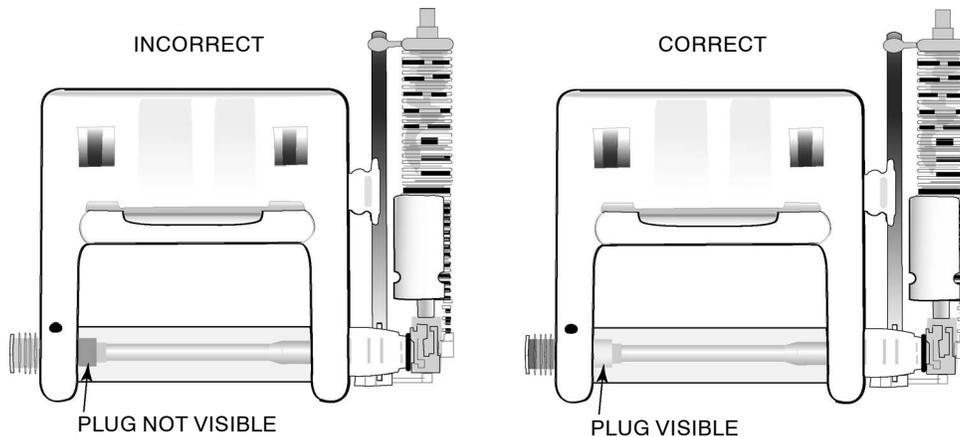


Figure 52. PHSRU X-Ray

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

List of Effective Work Package Pages

<u>Page No.</u>	<u>Chg. No.</u>						
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

Alphabetical Index

<u>Title</u>	<u>Page</u>
Application of Torque Seal	20
Assembly of PHSRU	6
Installation of Battery	18
Installation of Cartridge Assembly	13
Installation of Electronics Package Assembly (EPA)	16
Installation of Locking Disc Assembly	11
Installation of Plug Assembly	9
Installation of Release Piston Assembly	11
Installation of Sleeve	8
Preassembly Inspection of Vital Parts	6
Resistance Check of Sensor Plug Assembly and Electronics Package Assembly	14
Shear Pin Integrity Check	8
Torquing of Plug Assembly	17
Battery Polarity Check	18
Battery Voltage Check	18
Installation of Battery	18
Disassembly of PHSRU	3
Removal of Battery	3
Removal of Cartridge Assembly	4
Removal of Electronics Package Assembly (EPA)	3
Removal of Locking Disc Assembly	5
Removal of Plug Assembly	5
Removal of Release Piston Assembly	5
Removal of Sensor Plug Assembly	3
Removal of Sleeve	5

Alphabetical Index (Cont.)

<u>Title</u>	<u>Page</u>
Final Check	19
Inspection and Disassembly of Canopy Release Assembly	5
Introduction	3
PHSRU X-Ray Inspection Procedures	20
Reporting Replacement	21

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.



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 ordnance 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



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).

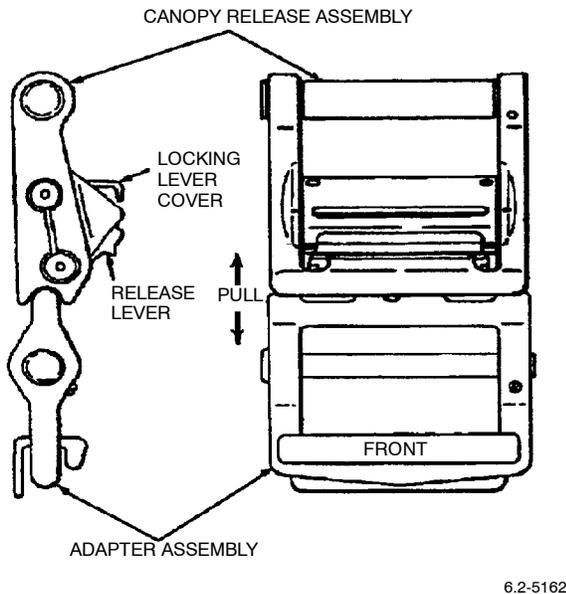


Figure 2. Canopy Release Assembly

(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).

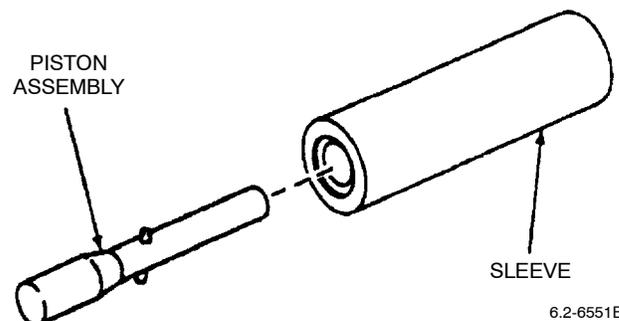


Figure 3. Trial Fit Piston

b. Trial fit plug into opposite end of sleeve. Plug must insert without force or restriction up to shoulder (Figure 4).

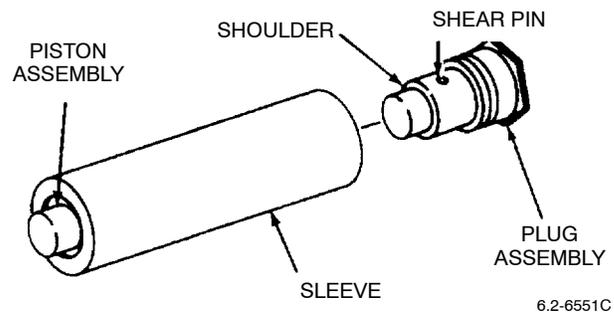


Figure 4. Trial Fit Plug

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).

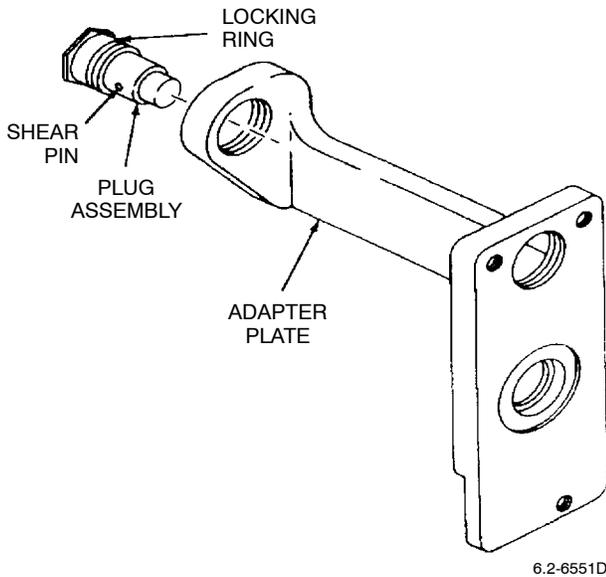


Figure 5. Trial Fit Plug

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).

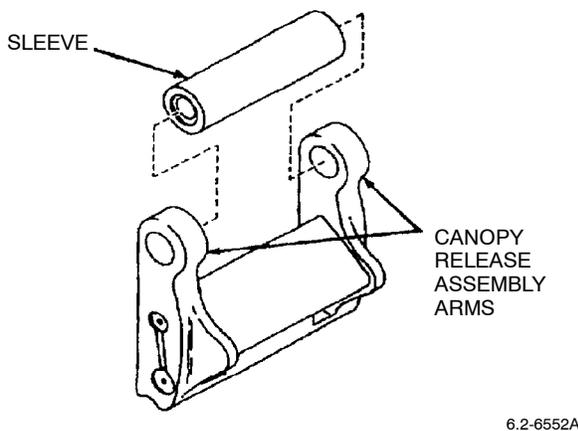


Figure 6. Trial Fit Sleeve

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).

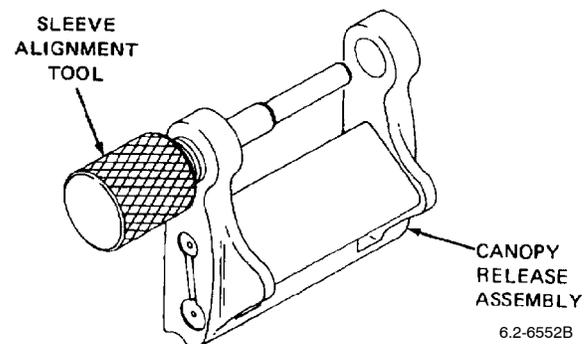


Figure 7. Trial Fit Sleeve Alignment Tool

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).

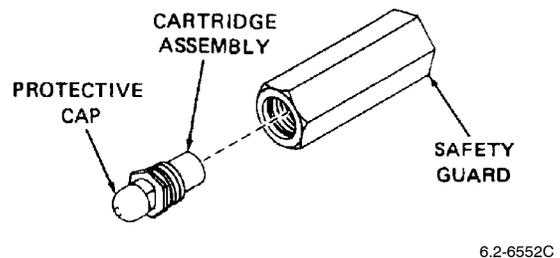


Figure 8. Remove Safety Guard

j. Trial fit large end of release piston into cartridge. Release piston shall fit freely into cartridge (Figure 9).

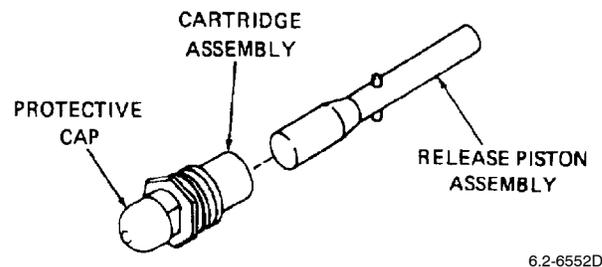


Figure 9. Trial Fit Large End of Release Piston

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.

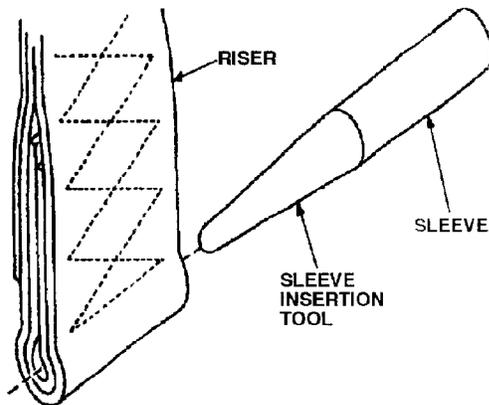
Support Equipment Required

Part Number	Nomenclature
SA852AS105-1	Tool Set, Special

a. Perform vital parts preassembly check per Paragraph 13.

b. Install sleeve as described below.

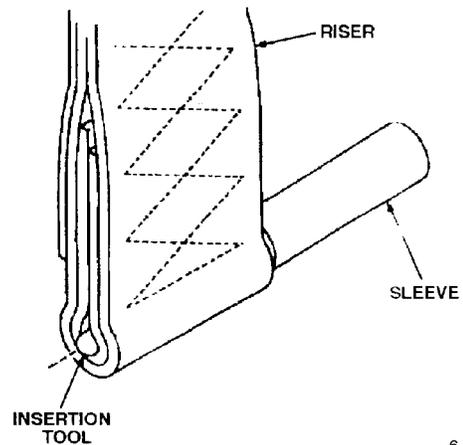
c. Place sleeve insertion tool into sleeve. Insertion tool must fit flush as shown. If not, insertion tool may be installed in wrong end of sleeve (Figure 10).



6.2-6553A

Figure 10. Place Insertion Tool Into Sleeve

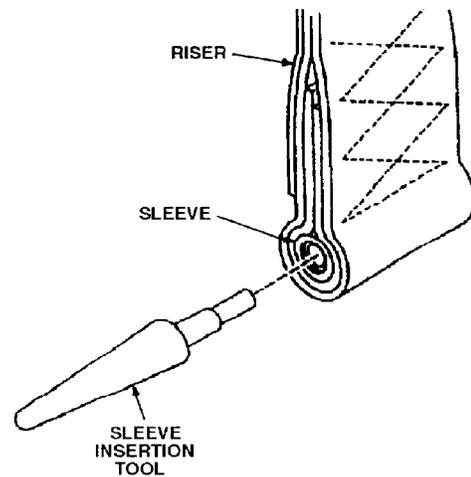
d. Insert insertion tool and sleeve into riser from inboard side of riser (right riser shown) until sleeve ends are flush with riser sides (Figure 11).



6.2-6553B

Figure 11. Insert Insertion Tool

e. Remove insertion tool from sleeve leaving sleeve in riser (Figure 12).



6.2-6553C

Figure 12. Remove Insertion Tool

15. SHEAR PIN INTEGRITY CHECK.

Support Equipment Required

Part Number	Nomenclature
—	Micrometer, 0-1-in. Outside
GCG-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)

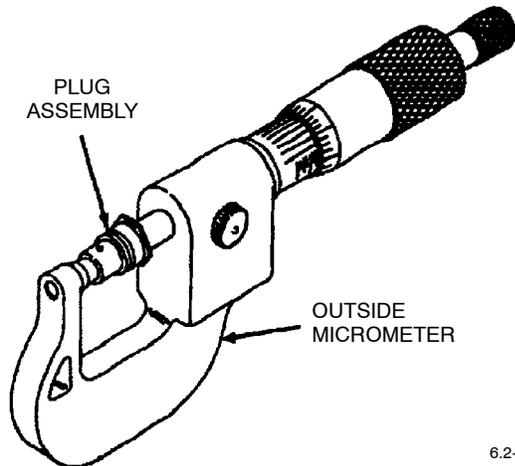


Figure 13. Measure Overall Length of Plug

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).

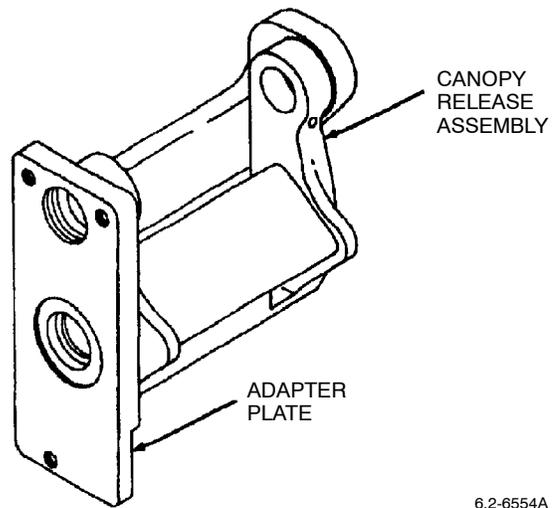


Figure 14. Align Canopy Release

- c. Place riser and sleeve between arms of canopy release (Figure 15).

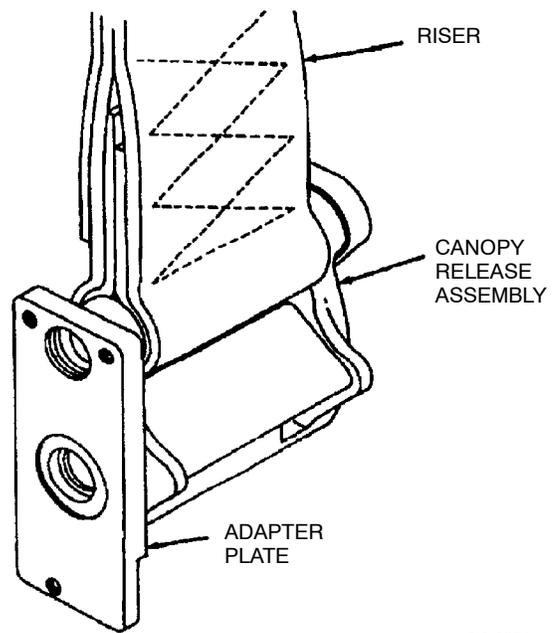


Figure 15. Placement of Riser and Sleeve

- 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).

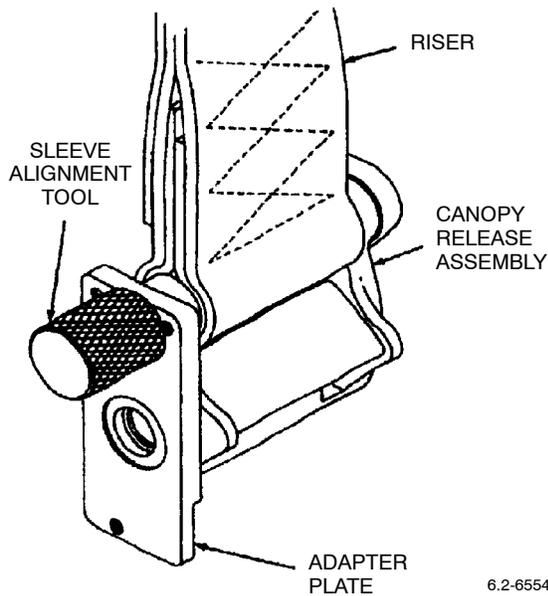


Figure 16. Install Sleeve Alignment Tool

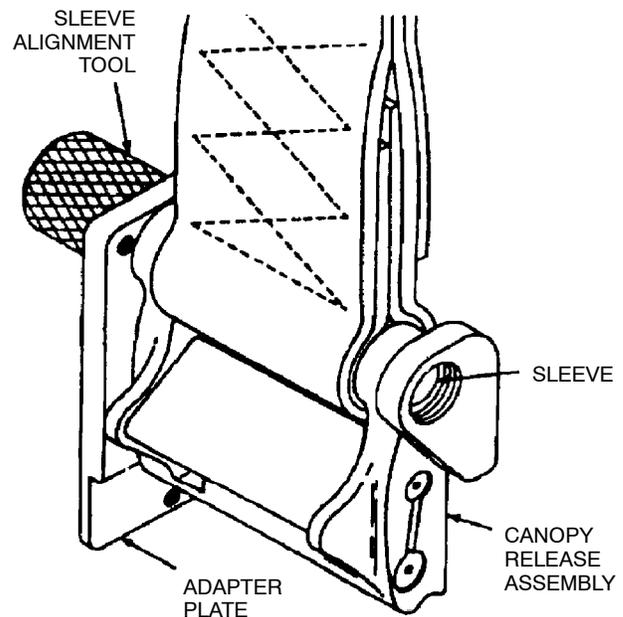


Figure 18. Opposite Inserted Sleeve Alignment Tool

e. Install thread locking ring on plug between hex head and threads (Figure 17).

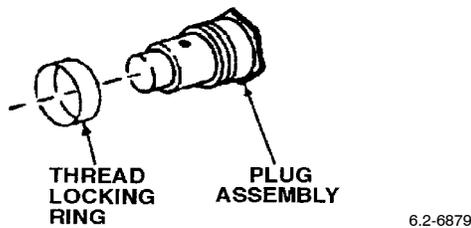


Figure 17. Install Thread Locking Ring

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).

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)

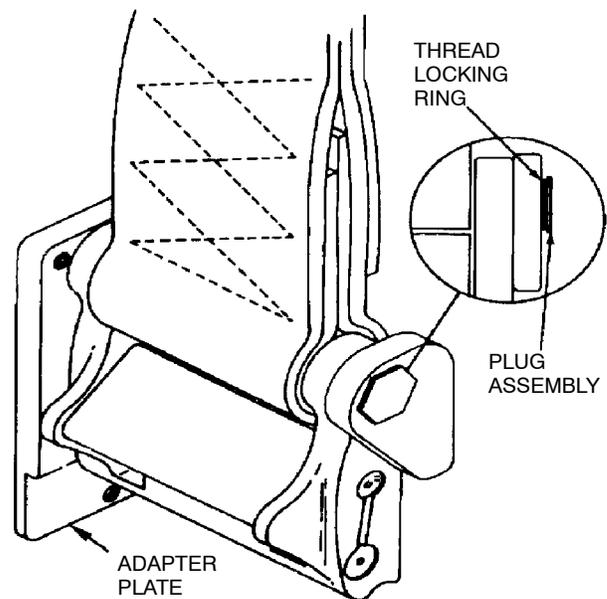


Figure 19. Install Plug

6.2-6554E

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.

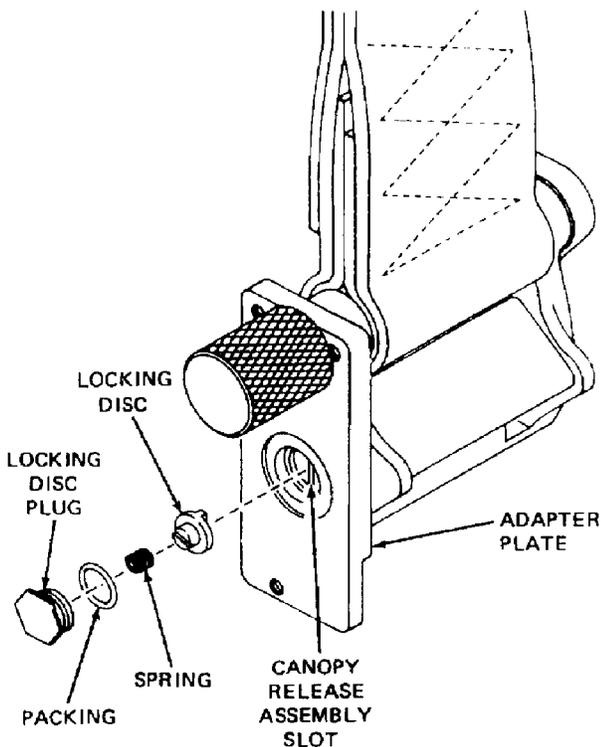
Support Equipment Required

Part Number	Nomenclature
SA852AS105-1	Tool Set, Special

a. Install locking disc as described below:

(1) Install packing on locking disc plug.

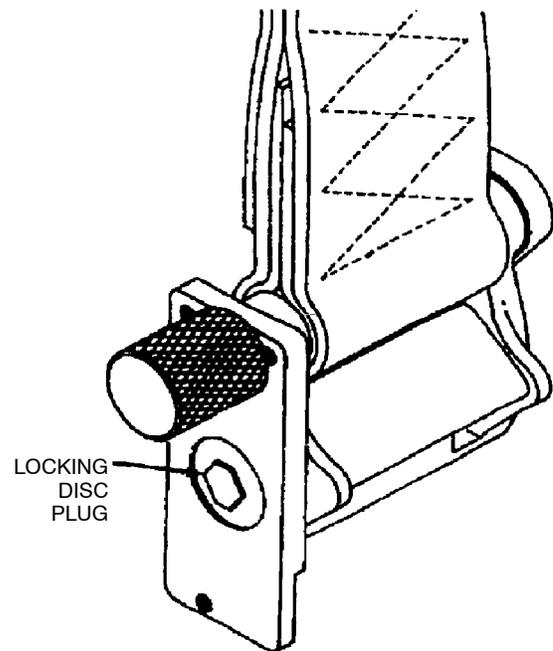
(2) Place locking disc in adapter plate and ensure blade of locking disc seats in canopy release slot. Install spring in locking disc plug recess (Figure 20). (QA)



6.2-6706A

Figure 20. Placement of Locking Disc

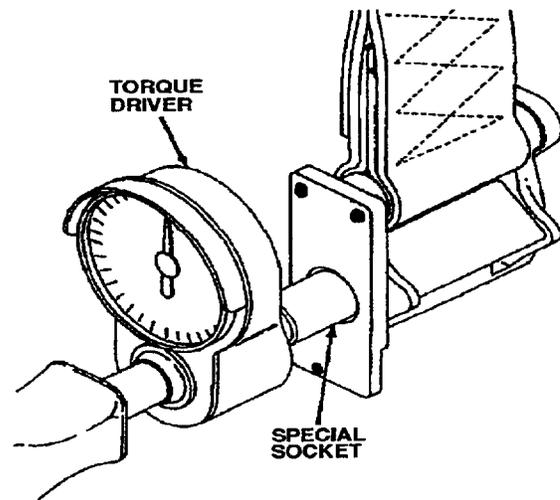
(3) Screw locking disc plug into adapter plate finger-tight (Figure 21).



6.2-6706B

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)



6.2-6706C

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).

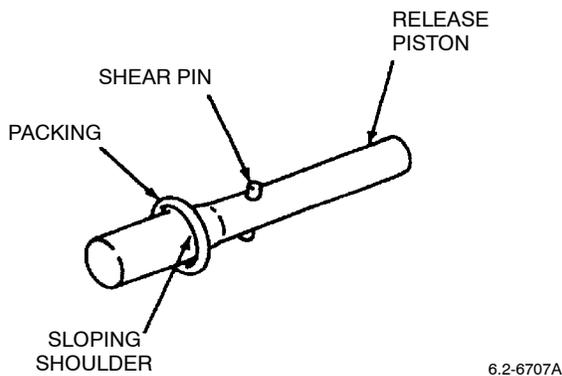


Figure 23. Lubricate Packing

(2) Insert release piston into release piston O-ring installation tool (Figure 24).

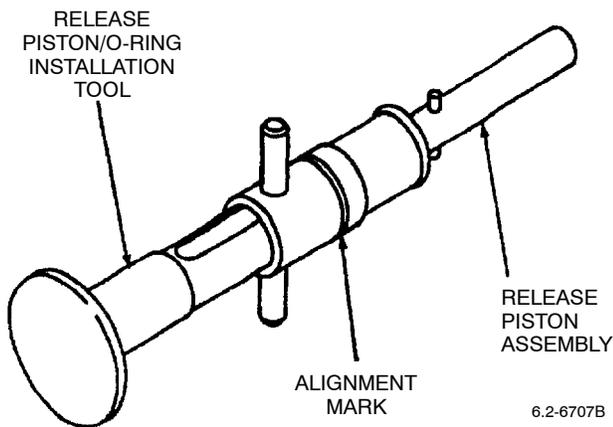


Figure 24. Insert Release Piston

(3) Remove sleeve alignment tool from canopy release (Figure 25).

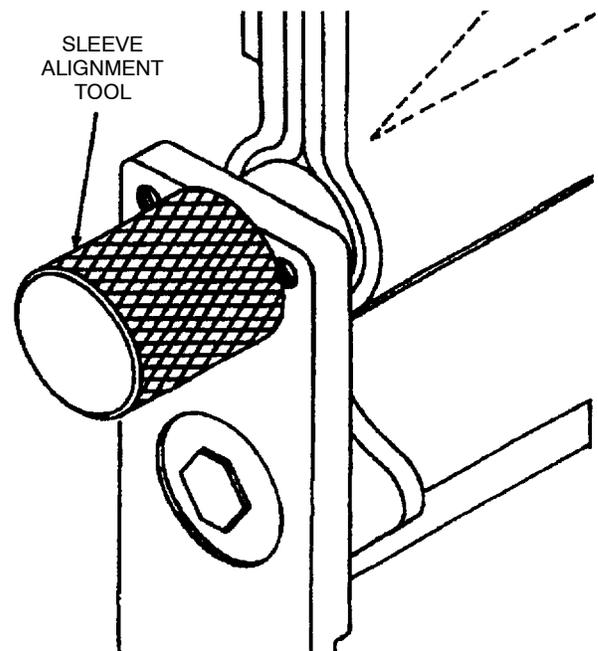


Figure 25. Remove Sleeve Alignment Tool

(4) Hold release piston O-ring installation tool at lower outer barrel and insert release piston and packing into cartridge barrel (Figure 26).

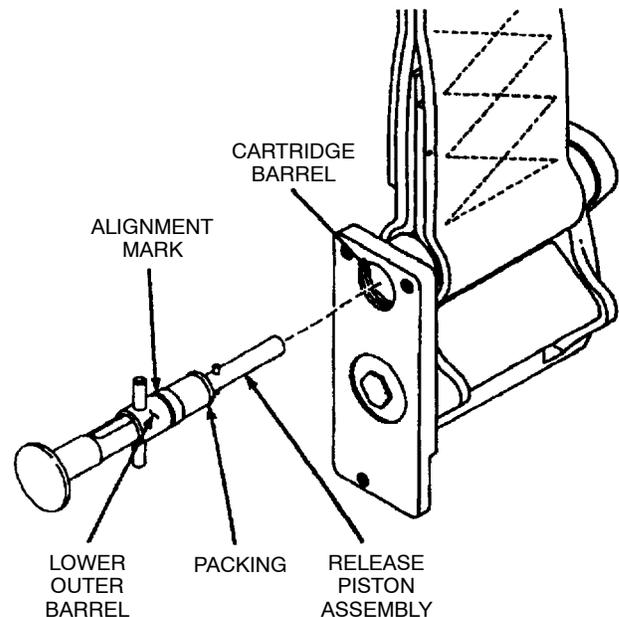


Figure 26. Hold Release Piston O-Ring Installation Tool

(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)

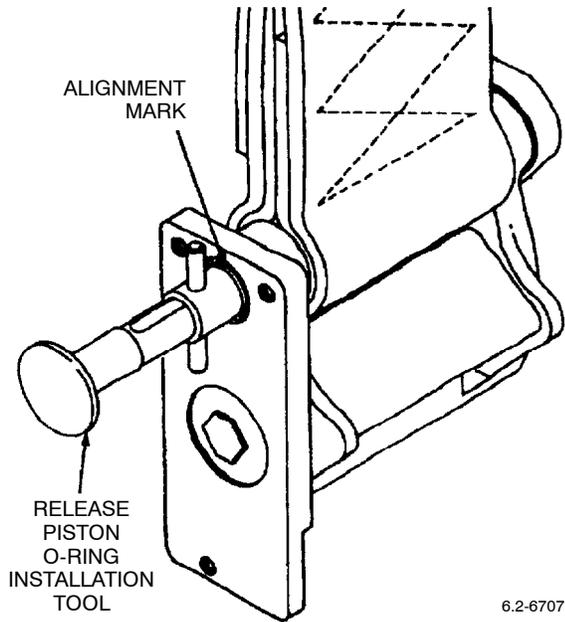


Figure 27. Rotate Back and Forth to Release O-Ring

(6) Depress release piston O-ring installation tool plunger to seat release piston and packing (Figure 28).

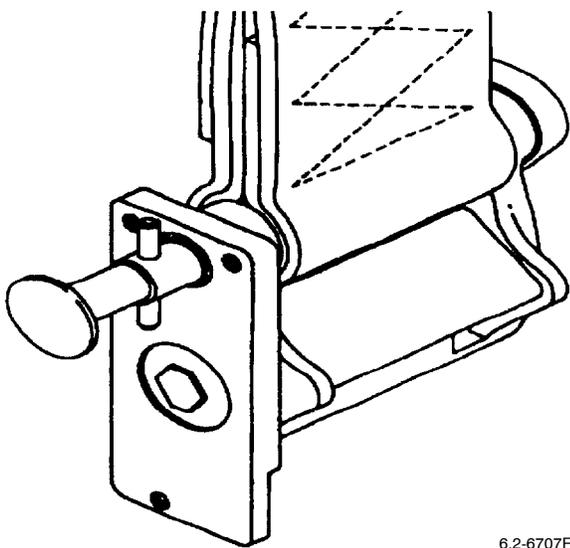


Figure 28. Depress Release Piston O-Ring Installation Tool

(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:



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).

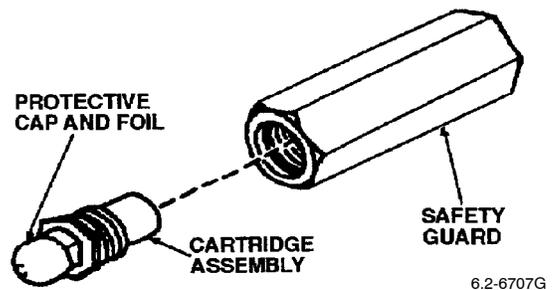


Figure 29. Remove Safety Guard

- (2) Install packing on cartridge (Figure 30).

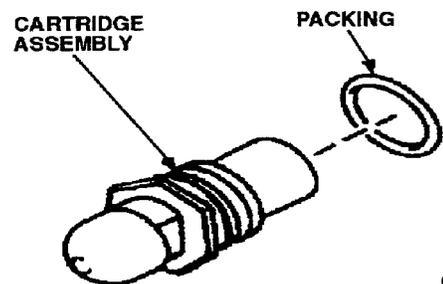


Figure 30. Verify Presence of Packing

(3) Verify presence of white pressure disc in cartridge using inspection mirror (Figure 31). (QA)

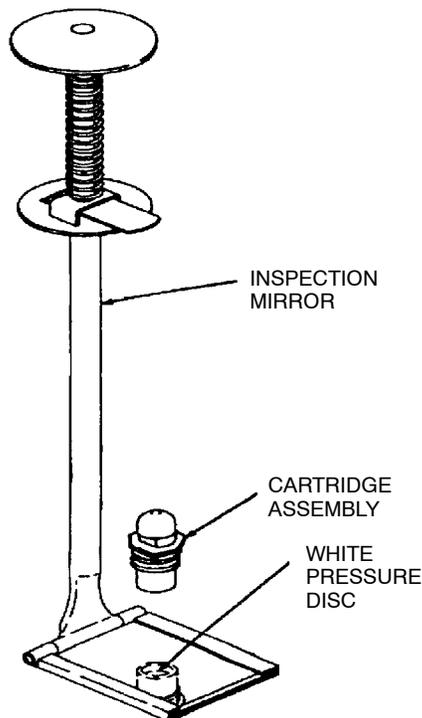


Figure 31. Verify Presence of White Pressure Disc

(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).

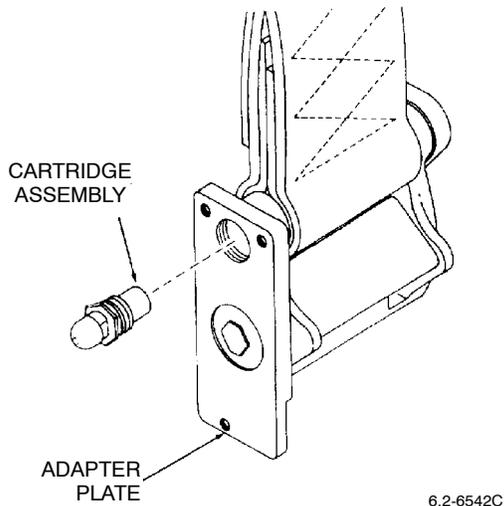


Figure 32. Install Cartridge

(7) Fit cartridge torque alignment tool to adapter plate.

(8) Torque cartridge 25 to 35 in-lbs. with torque driver (Figure 33). (QA)

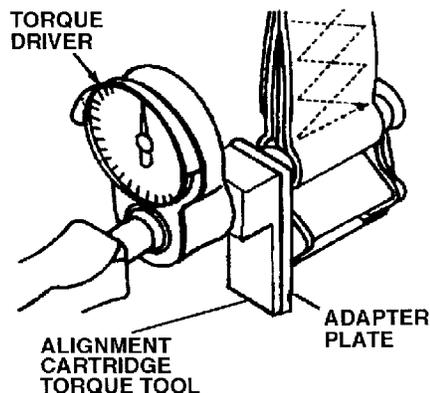


Figure 33. Torque Cartridge

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).

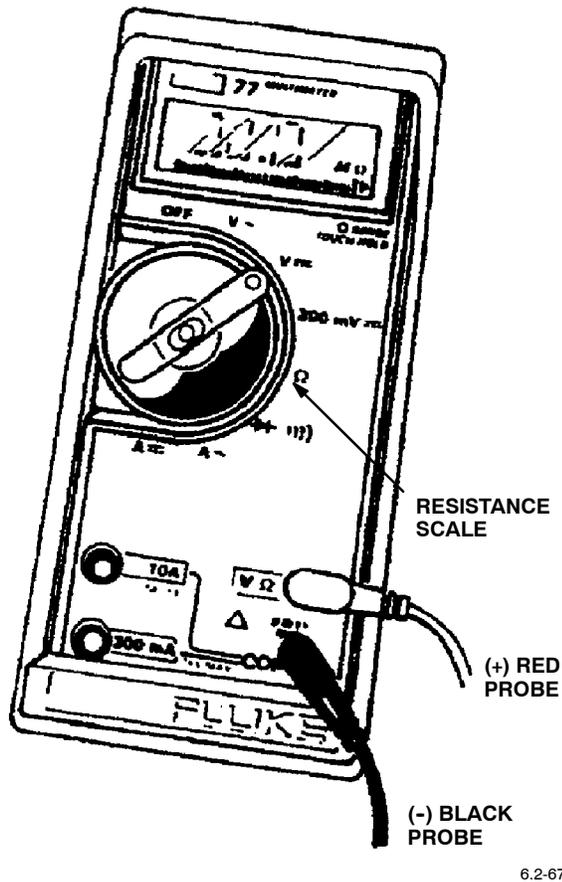


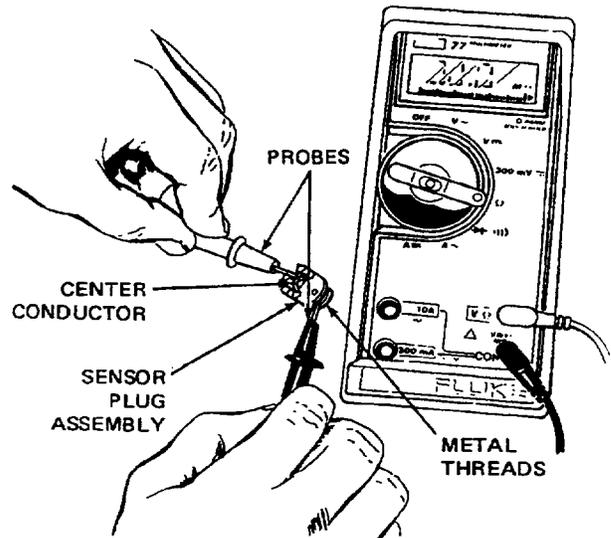
Figure 34. Select Multimeter

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).



6.2-6709B

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.

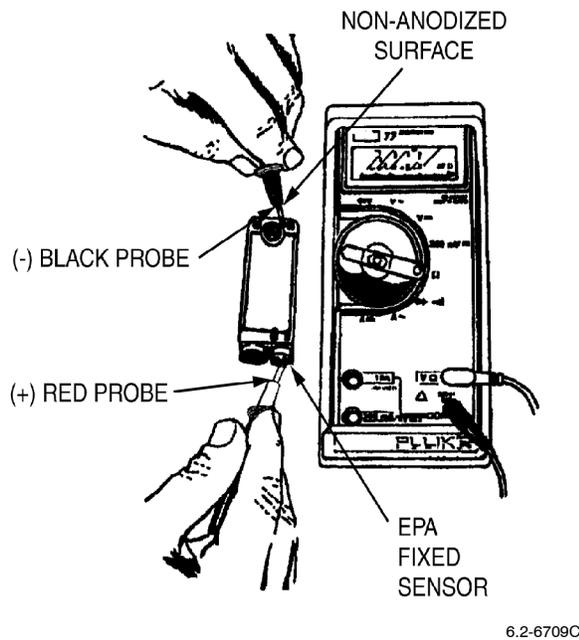


Figure 36. Perform Resistance Check

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)



EMI gasket used with EPA protects unit from electro-magnetic 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).

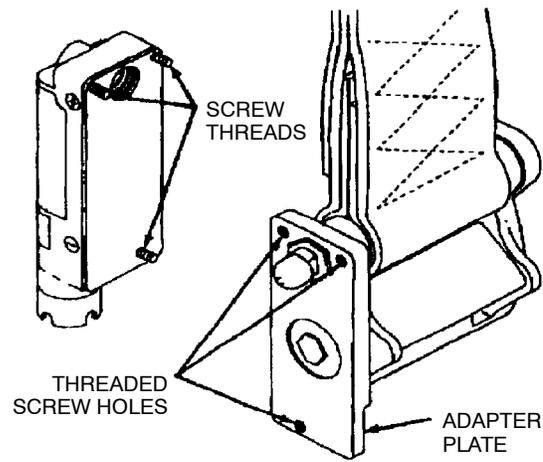


Figure 37. Apply Primer to Threads of Screws

g. Align EMI gasket over EPA (Figure 38).

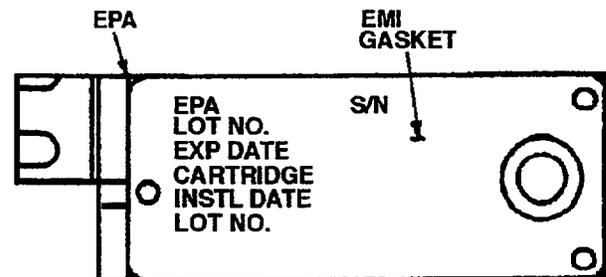
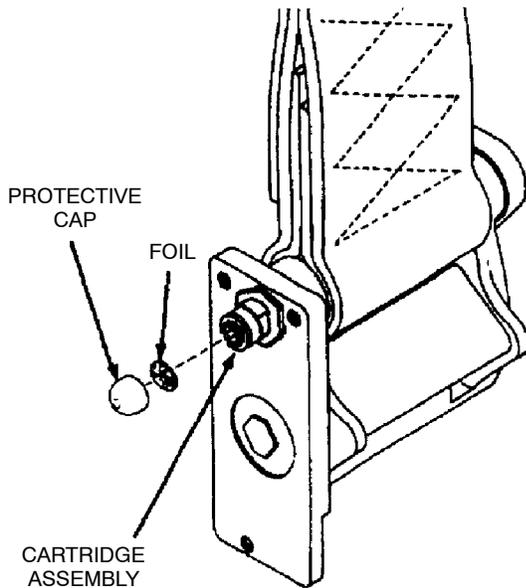


Figure 38. Align EMI Gasket

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.

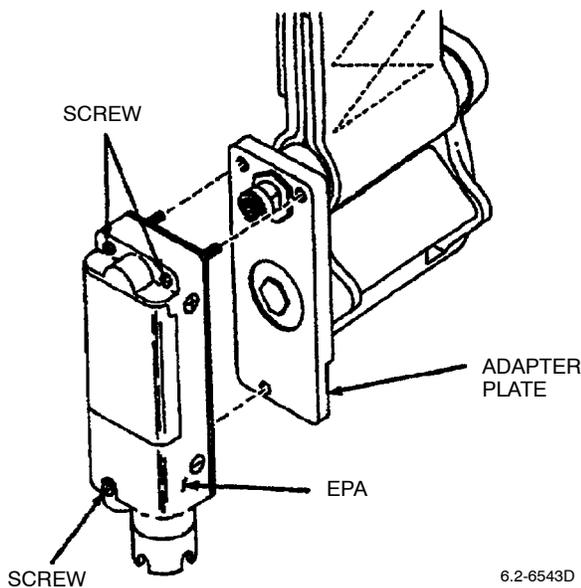
j. Remove protective cap and foil from cartridge and retain for possible future use. Visually inspect cartridge electrical plug for damage (Figure 39). (QA)



6.2-6453C

Figure 39. Remove Protective Cap and Foil

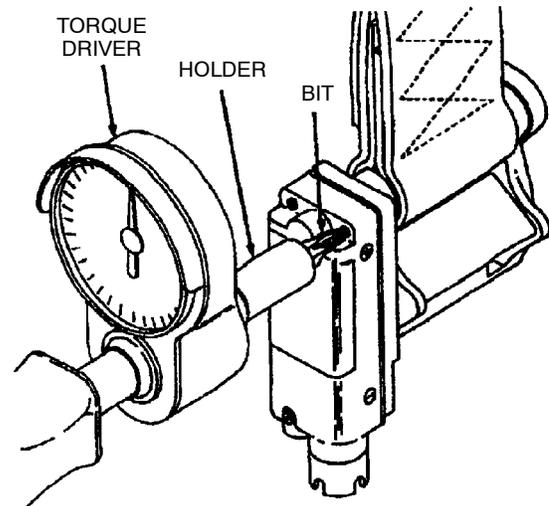
k. Install EPA on adapter plate and start screws with Phillips screwdriver. Do not tighten (Figure 40).



6.2-6543D

Figure 40. Install EPA on Adapter Plate

l. Torque screws 11 to 13 in-lbs. Using bit holder and torque driver (Figure 41). (QA)



6.2-6710A

Figure 41. Torque Screws

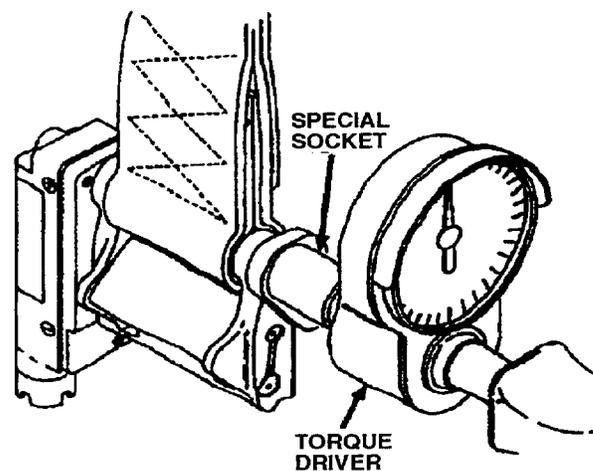
m. Clean primer and sealing compound residue from adapter plate surface with alcohol.

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)

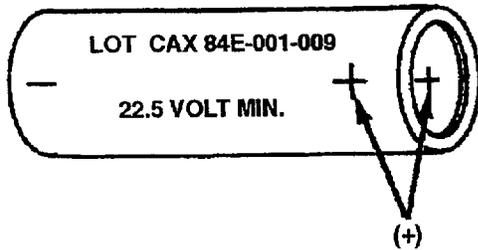


6.2-6711

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).



6.2-6713

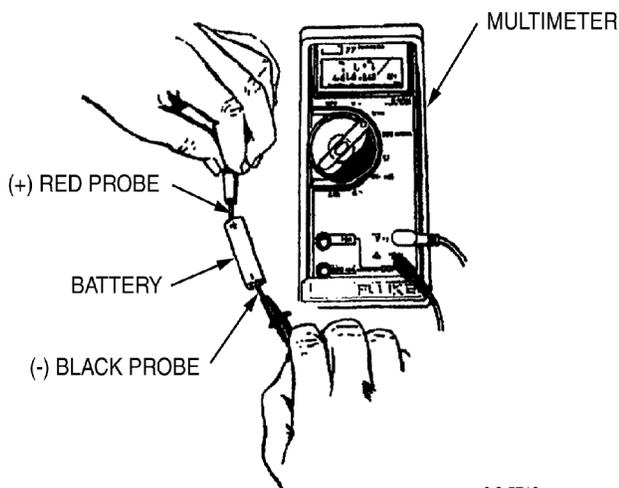
Figure 43. Battery Polarity Check

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)



6.2-5712

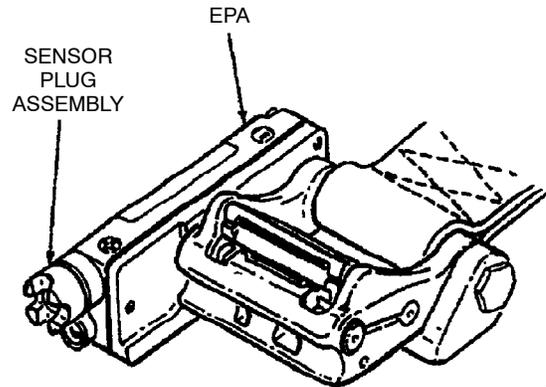
Figure 44. Battery Voltage Check

25. INSTALLATION OF BATTERY.

Support Equipment Required

Part Number	Nomenclature
SA852AS105-1	Tool Set, Special
—	Pencil Indelible

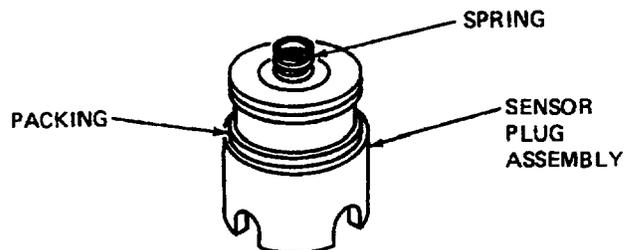
- a. Remove sensor plug from EPA (Figure 45).



6.2-6714A

Figure 45. Remove Sensor Plug

- b. Verify presence of sensor plug spring (Figure 46). (QA)



6.2-6714B

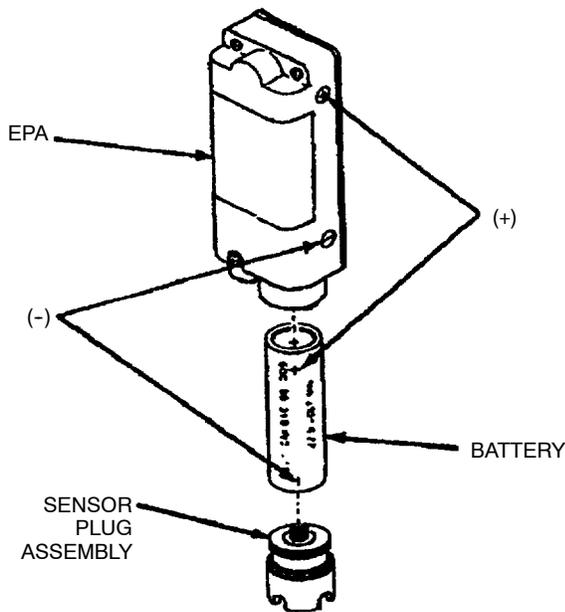
Figure 46. Presence of Sensor Plug Spring

- 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)



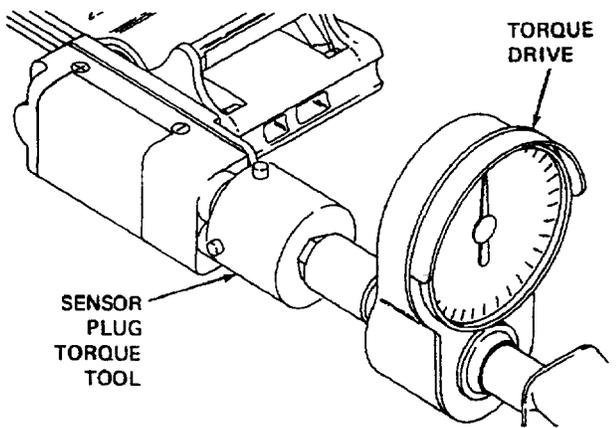
6.2-6714C

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)



6.2-6714D

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).

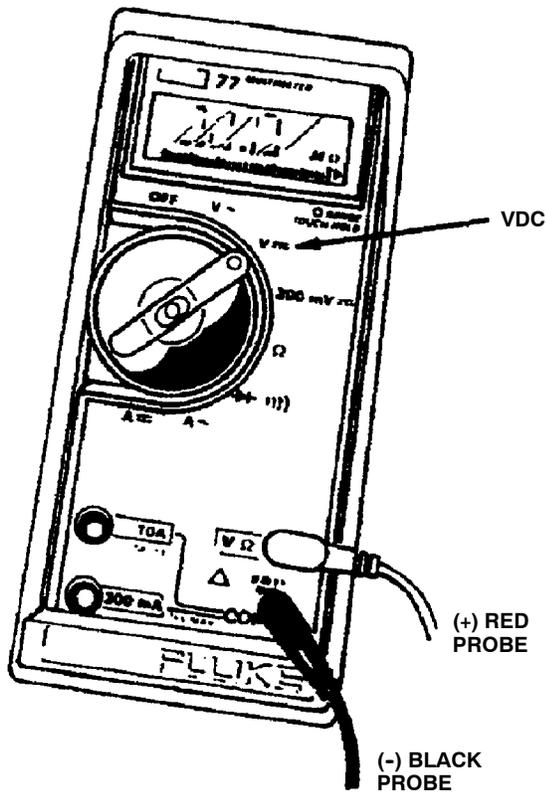
d. Reading of +22.5 volts DC or greater indicates PHSRU is serviceable. Record voltage on Parachute Record (OPNAV 4790/101).

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.



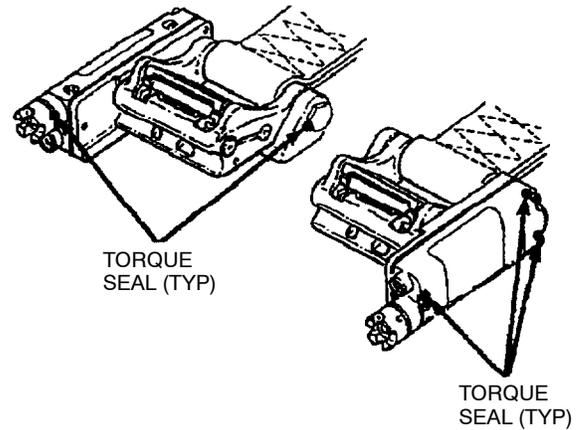
6.2-6715A

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)



6.2-6716

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.

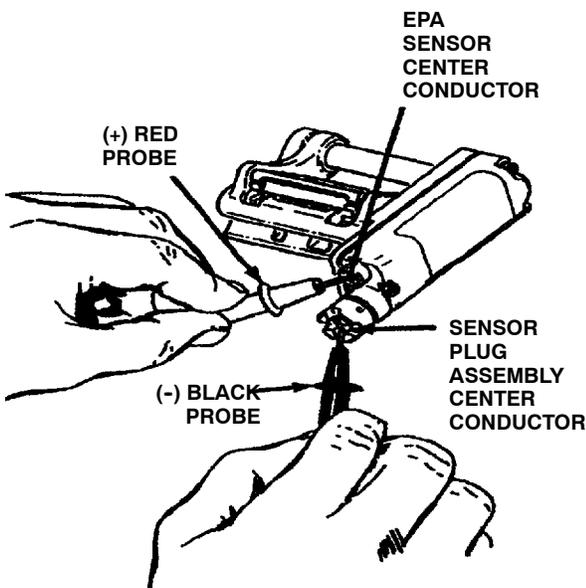
a. Forward complete packed parachute assembly to either non-destructive inspection lab or medical facility for X-ray. SJU-4/A, SJU-8/A, SJU-11/A, SJU-12/A, SJU-13/A, SJU-14/A and SJU-17 Series riser assemblies may be forwarded vice the entire parachute assembly.

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:



6.2-6715B

Figure 49. Final Check

- (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.

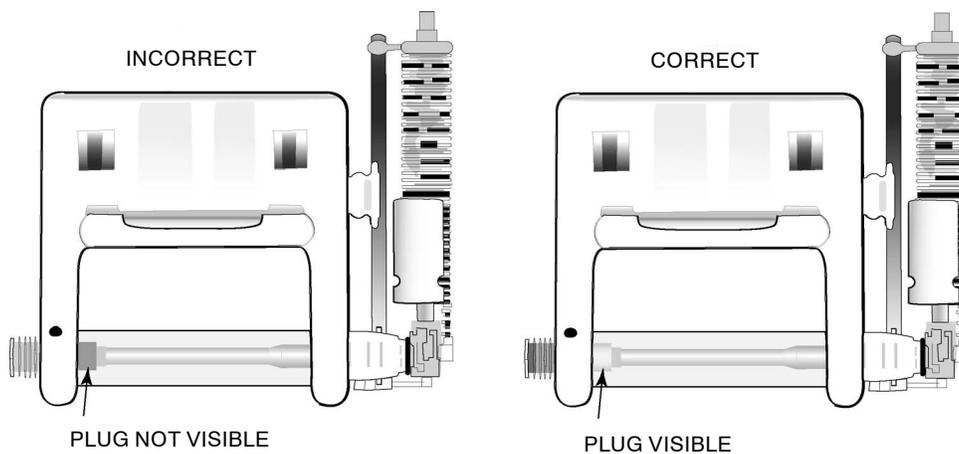


Figure 51. PHSRU X-Ray

THIS PAGE INTENTIONALLY LEFT BLANK.

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

<u>Page No.</u>	<u>Chg. No.</u>						
1 thru 3							11

Reference Material

None

Alphabetical Index

<u>Title</u>	<u>Page</u>
Introduction	1
Service/Total Life	1
Usable on Codes	1

List of Figures

<u>Title</u>	<u>Page</u>
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).

b. The following usable on codes apply to this WP:

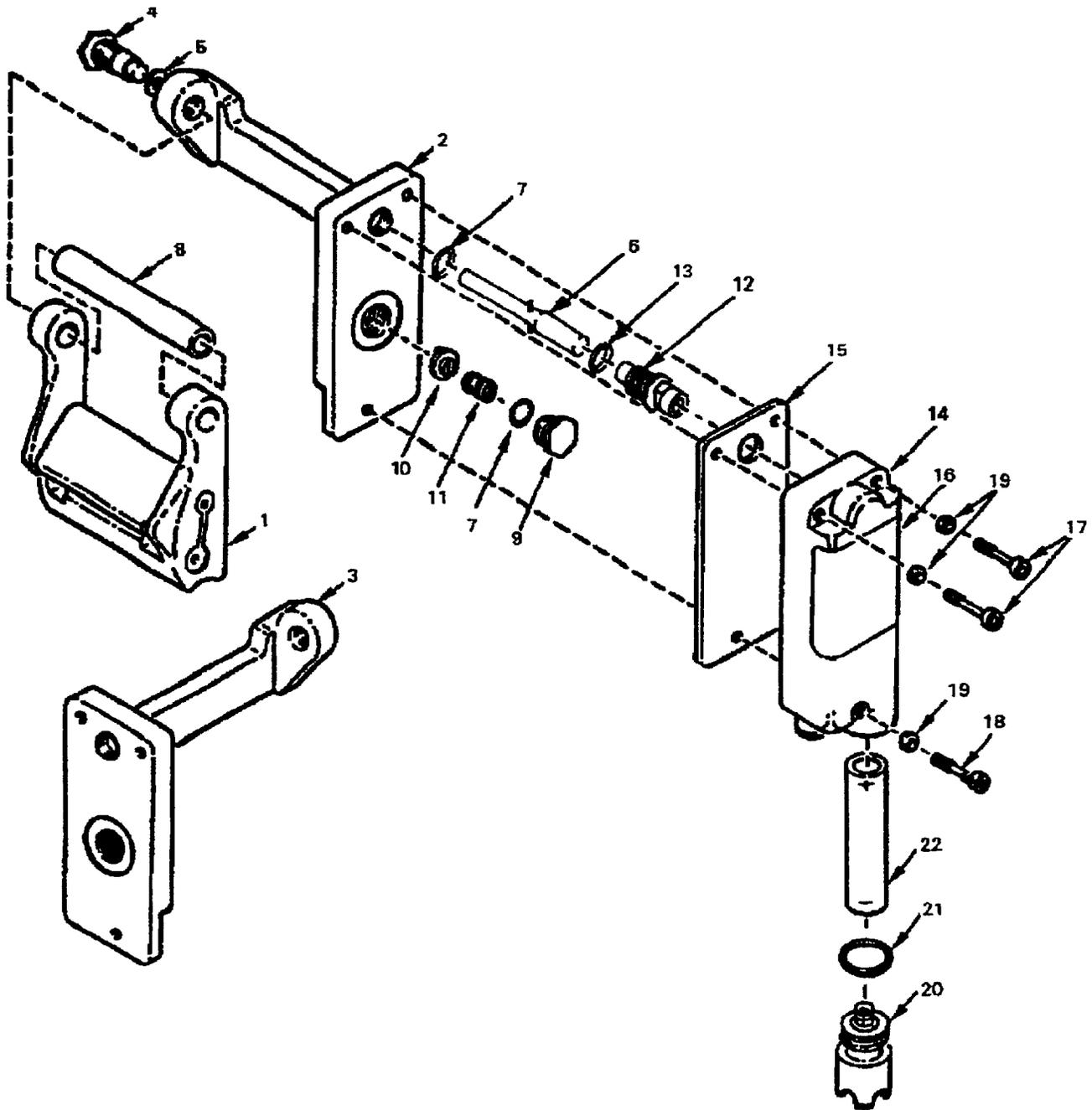
A, B - A/P28S-24, A/P28S-28, A/P28S-30, A/P28S-31, A/P28S-32, NES-8B, NES-12, NES-14, and NES-25A.

2. USABLE ON CODES.

a. The usable on codes in this WP refer to the aircraft applications for the PHSRU.

3. SERVICE/TOTAL LIFE.

a. The service/total life information is contained in individual WP's.



6.2-6549

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	1	*	PAGGG
	015-10307-5	. RELEASE ASSEMBLY, CANOPY /99449/ 1 (USE UNTIL EXHAUSTED)	1	*	PAGGG
2	1137-015-01	. PLATE, ADAPTER /LEFT HAND /62323/ 1	1	A	PAGZZ
3	1137-015-02	. PLATE, ADAPTER /RIGHT HAND /62323/ 1	1	B	PAGZZ
4	1618-016-01	. PLUG ASSEMBLY /62323/ 1	1	*	PAGZZ
	852AS103	. PLUG ASSEMBLY /62323/ 1	1	*	PAGZZ
5	1122-048-01	. . RING, THREAD LOCKING /62323/ 1	1		PAGZZ
6	1112-225-01	. PISTON ASSEMBLY, RELEASE /62323/ 1	1		PAGZZ
7	NAS1612-2	. PACKING /80205/ 2	2		PAGZZ
8	1122-046-01	. SLEEVE 1	1		PAGZZ
9	1102-203-01	. PLUG, LOCKING DISC /62323/ 1	1		PAGZZ
10	1137-016-01	. DISC, LOCKING /62323/ 1	1		PAGZZ
11	MS24585-C29	. SPRING /96909/ 1	1		PAGZZ
12	851AS275	. CARTRIDGE ASSEMBLY MW19 /30003/ 1	1		PCGZA
13	851AS282	. . PACKING /30003/ 1	1		PAGZZ
14	852AS101-3	. PACKAGE ASSEMBLY, ELECTRONICS 1	1		PCGZA
15	1129-043-01	. . GASKET /62323/ 1	1		PAGZZ
16	1216-075-01	. . NAMEPLATE, EPA IDENT. /62323/ 1	1		PAGZZ
17	1127-036-02	. . SCREW, CAPTIVE MOUNTING 2 (Short) /62323/	2		PAGZZ
18	1127-036-05	. . SCREW, CAPTIVE MOUNTING 1 (Long) /62323/	1		PAGZZ
19	CC-357-02	. . WASHER, SPLIT LOCK /62323/ 3	3		PAGZZ
20	1618-017-01	. PLUG ASSEMBLY, SENSOR /62323/ 1	1		PAGZZ
21	1129-045-01	. . PACKING /62323/ 1	1		PAGZZ
22	852AS102	. BATTERY /30003/ 1	1		PCGZA

Figure 1. MXU-746/P and MXU-747/P Parachute Harness Sensing Release Units (Sheet 2 of 2)



THIS PAGE INTENTIONALLY LEFT BLANK.

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

<u>Page</u> <u>No.</u>	<u>Chg.</u> <u>No.</u>	<u>Page</u> <u>No.</u>	<u>Chg.</u> <u>No.</u>	<u>Page</u> <u>No.</u>	<u>Chg.</u> <u>No.</u>	<u>Page</u> <u>No.</u>	<u>Chg.</u> <u>No.</u>
1 thru 3		11					

Alphabetical Index

<u>Title</u>	<u>Page</u>
Introduction	1

List of Figures

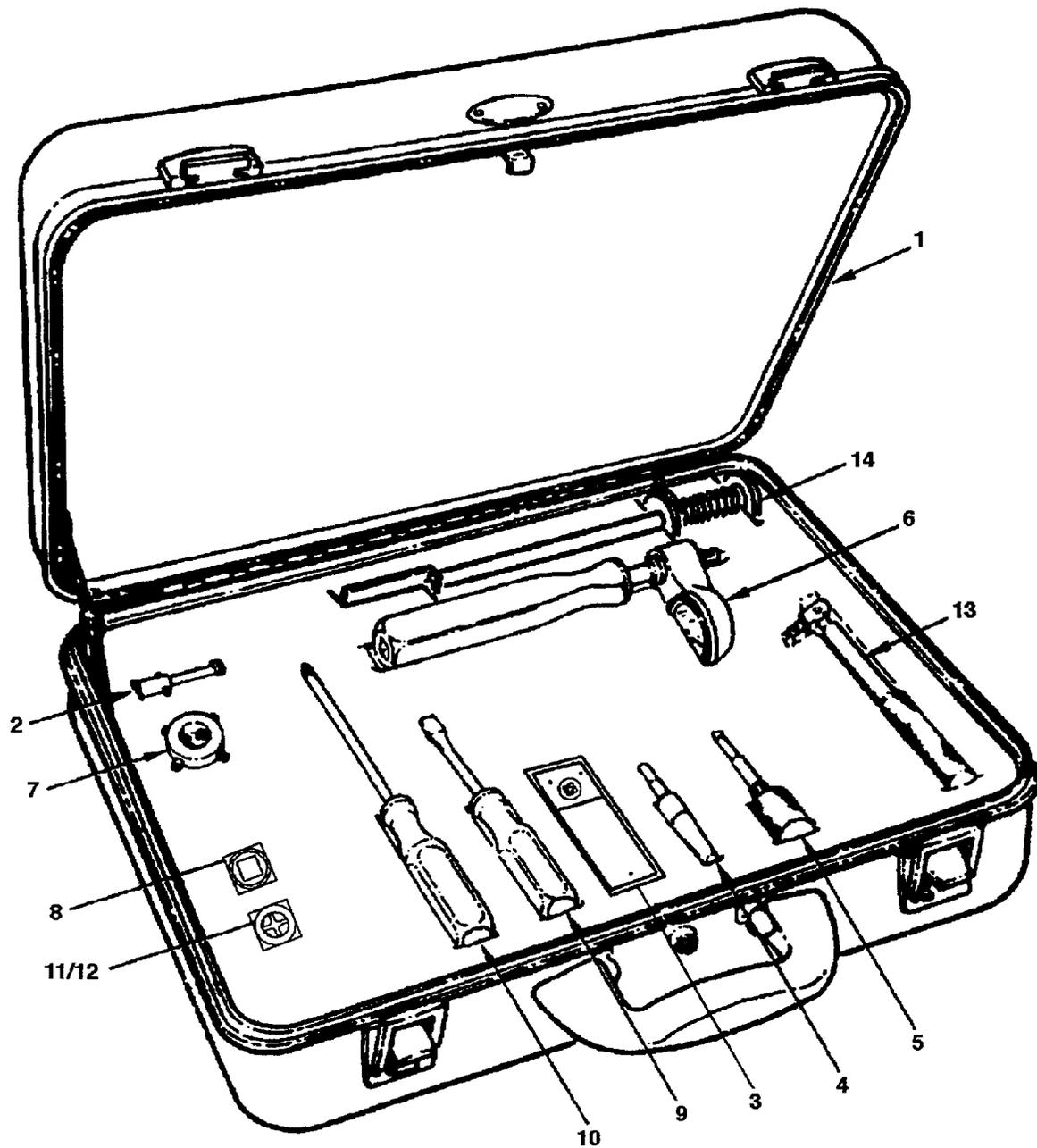
<u>Title</u>	<u>Page</u>
Special Tool Set for MXU-746/P and MXU-747/P Parachute Harness Sensing Release Units (PHSRU)	2

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	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
		1 2 3 4 5 6 7			
	SA852AS105-1	TOOL SET, SPECIAL	REF		PEGZZ
1	SA852AS106	. CASE, TOOL	1		PEGZZ
2	SA852AS107	. INSTALLATION TOOL, RELEASE	1		PEGZZ
		PISTON O-RING			
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	1		PEGZZ
		9/64 BLADE x 0.020 BLADE THICKNESS			
10	PHRB3A	. SCREWDRIVER, NO. 2 PHILLIPS,	1		PEGZZ
		7 1/2-IN. LONG /76377/			
11	GGG-B-001222	. ADAPTER, SCREWDRIVER BIT	1		PEGZZ
12	GGG-B-001222	. SCREWDRIVER, NO. 2 PHILLIPS	1		PEGZZ
		CLASS 1 1/4 IN. HEXAGONAL SHANK			
13	GGG-W-641	. SOCKET HANDLE, 1/4 IN. DRIVE x	1		PEGZZ
		6 INCH LONG /76377/			
14	GG-M-350	. MIRROR, INSPECTION, TYPE 2	1		PEGZZ
		CLASS 3, SIZE 1 /55719/			

Figure 1. Special Tool Set for MXU-746/P and MXU-747/P Parachute Harness Sensing Release Units (PHSRU) (Sheet 2 of 2)

THIS PAGE INTENTIONALLY LEFT BLANK.