

CHAPTER 10

LRU-14 SERIES (MK-12A-1) LIFERAFT ASSEMBLY

Section 10-1. Description

10-1. GENERAL.

able seat and inflatable floor sections. See Figure 10-1 through 10-5.

NOTE

New procurements of twelve-man liferafts will be designated LRU-14A/A. Reference to the designation MK-12A-1 has been deleted throughout this chapter. However, all procedures and requirements referenced in this chapter pertaining to the LRU-14 series also apply to MK-12A-1 liferafts.

10-2. The LRU-14 series is a twelve-man inflatable liferaft intended for use by aircrewmembers forced down at sea. It is stowed in a readily accessible area inside the aircraft fuselage or in an aircraft compartment designed for rafts.

10-3. CONFIGURATION.

10-4. The LRU-14 Series Liferaft Assembly consists of a twelve-man liferaft constructed of polychloroprene-coated cloth and an inflation assembly (carbon dioxide cylinder with inflation valve). Two types of carbon dioxide cylinders and two types of inflation valves are available. The liferaft has a two-compartment main tube, a smaller single-compartment upper tube with canopy (new procurement only) attached to the main tube, an inflatable seat, a noninflatable floor attached to the main tube and seat, two inflatable floor sections tied to the noninflatable floor, and a sea anchor. A lifeline, supply pocket and heaving lines with pockets are attached to the main tube. An accessory container is secured to a lifeline patch loop, and a righting line is attached to the lifeline. Survival equipment is stowed in the accessory container and supply pocket. Boarding and righting handles are provided on the main tube and floors. Topping-off valves are located on the upper tube, each main tube section, inflat-

NOTE

To complete the packaged assembly with accessories and survival items, all required components not supplied with the liferaft assembly must be individually requisitioned.

The following subassemblies have been added to newly procured LRU-14A/A liferafts: canopy with related components, and heaving line with pocket. The following subassemblies have been deleted from newly procured LRU-14A/A liferafts: hammock patches, radar mast holder subassembly, starboard supply pocket and one accessory container. New liferafts shall not be reworked to add subassemblies and older liferafts shall not be reworked to add or remove subassemblies since their presence is not detrimental to function of liferaft.

10-5. APPLICATION.

10-6. Multi-place liferafts are authorized for all rotary and fixed wing transport aircraft. Selection shall be based on mission, available storage space, and total number of crew and passengers carried. Additional consideration shall be made for the liferaft inspection cycle. C-130 series (except the C-130J) wing storage is limited to the LRU-15/A in the wing installation configuration. The C-130J wing storage is limited to the LRU-33/A and the Air Cruisers 46-man P/N 63880-103/104. The V-22 is limited to the LRU-34/A and liferafts listed in the current V-22 flight clearance.

Table 10-1. Deleted

10-7. FUNCTION.

10-8. The LRU-14 series liferaft assembly is inflated by pulling the inflation assembly actuating handle, located under the carrying case end flap. The infla-

tion assembly inflates the main tube only. After boarding, the upper tube, seat, and floor sections should be inflated through the topping-off valves with the hand pump provided in the accessory container.

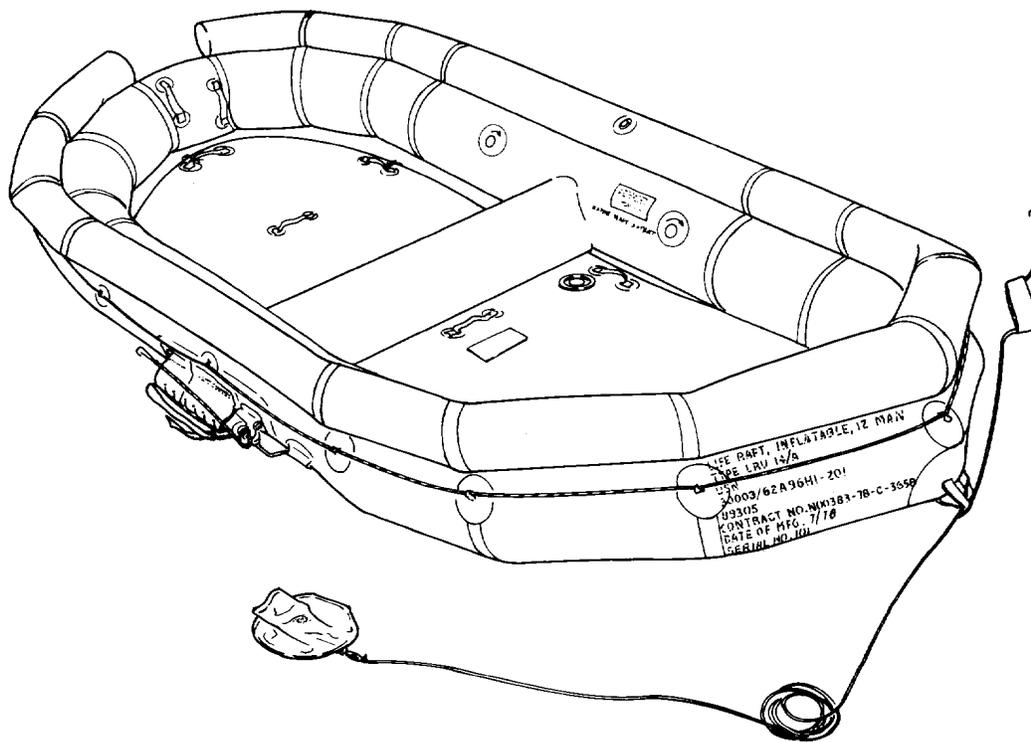


Figure 10-1. LRU-14 Liferaft Assembly

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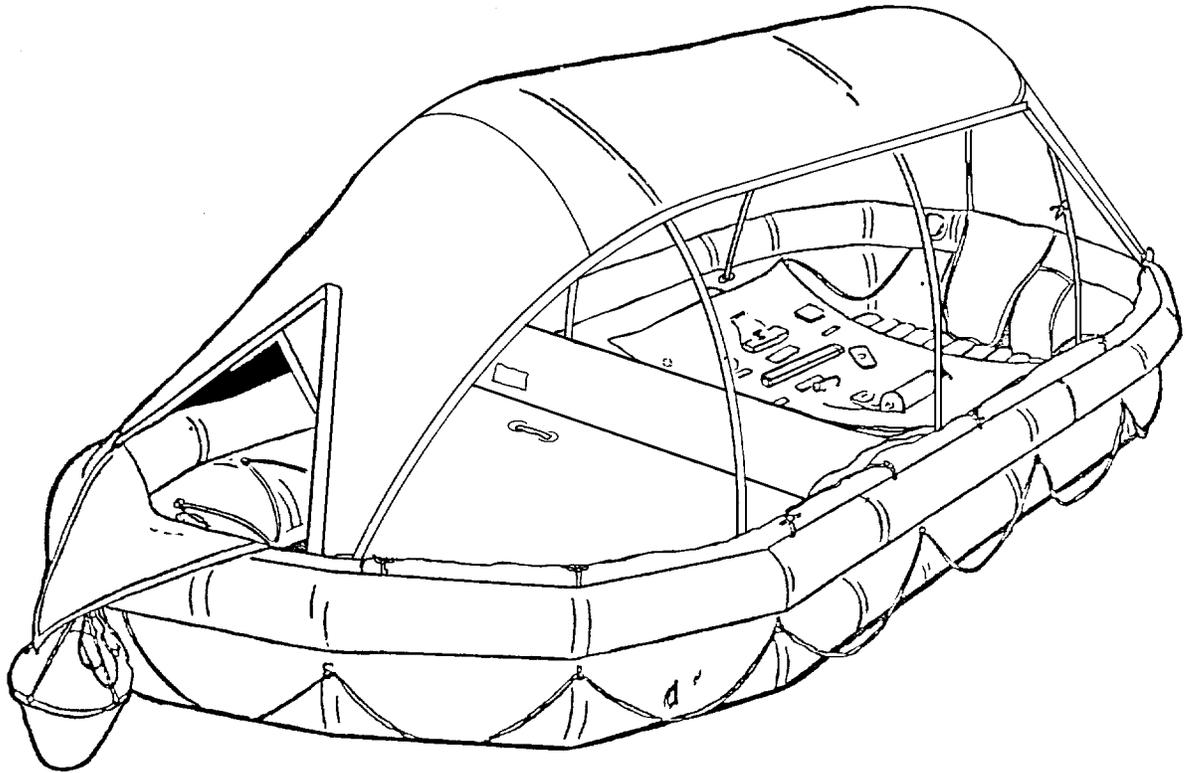


Figure 10-2. LRU-14A/A Liferaft Assembly (Canopy Erected)

10100002

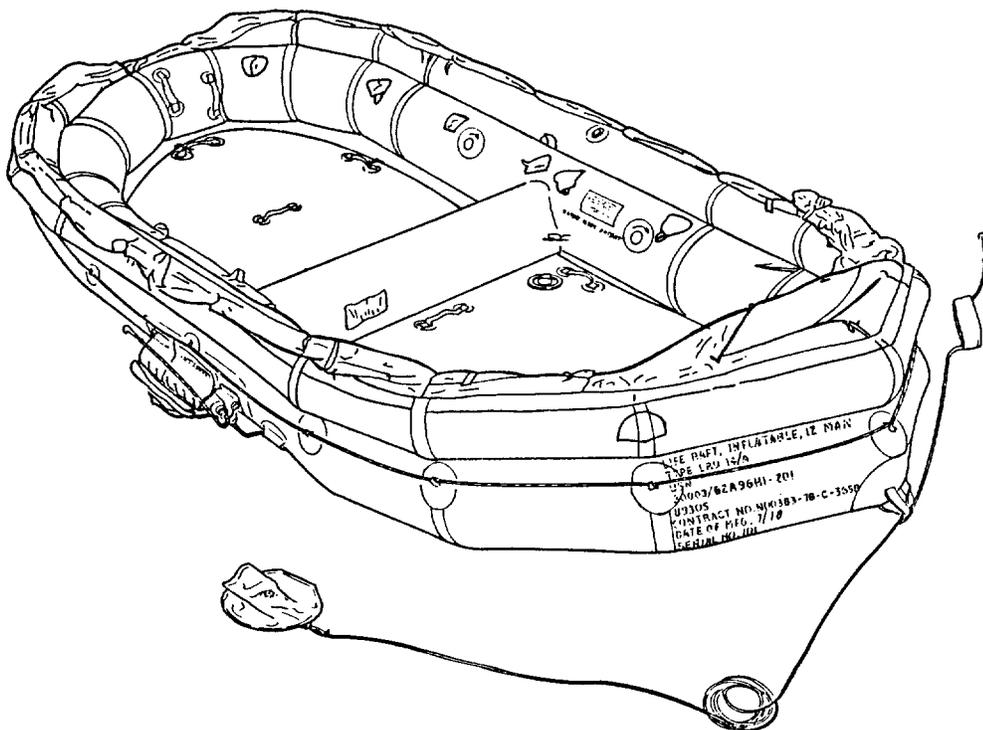
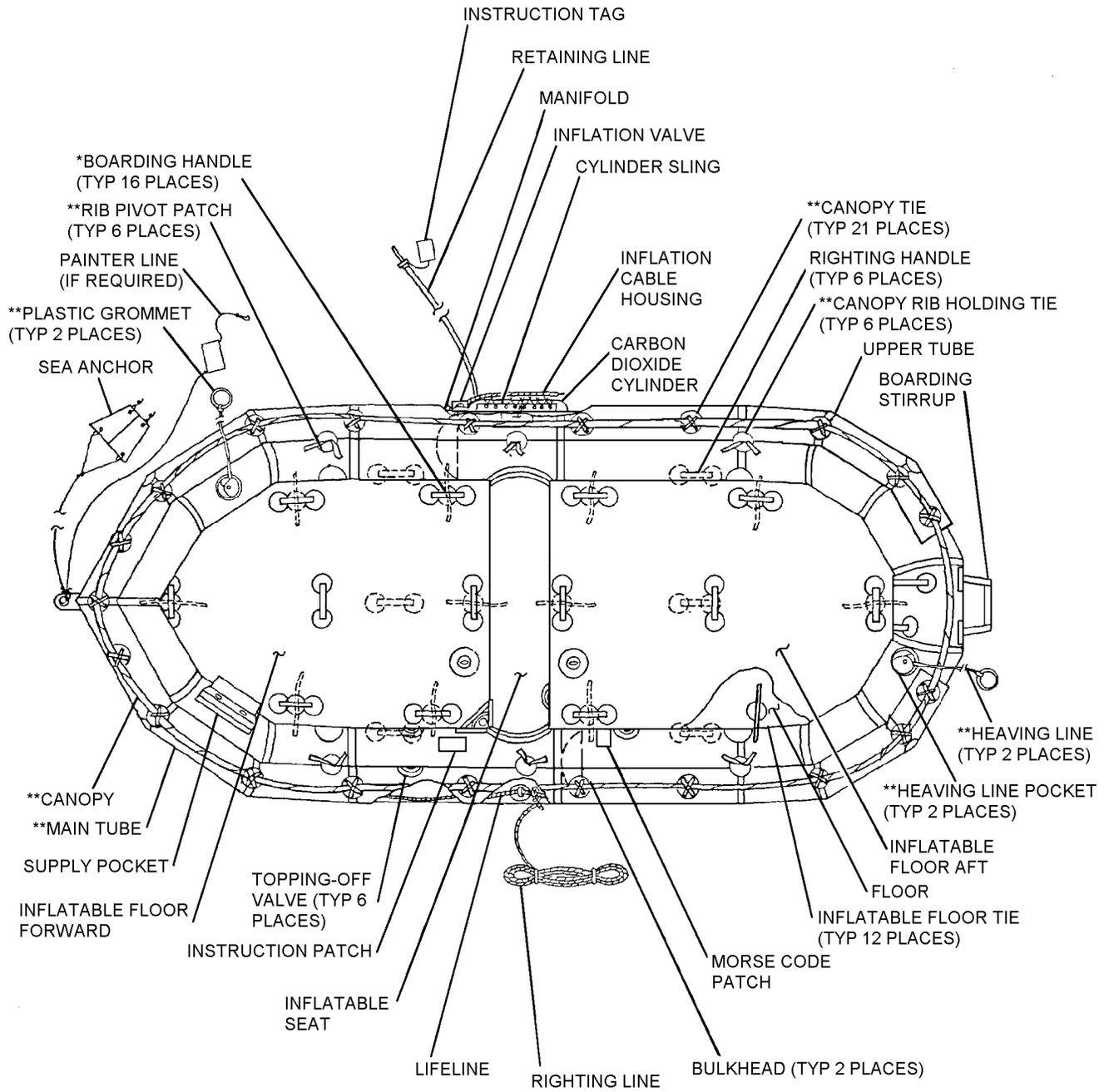


Figure 10-3. LRU-14A/A Liferaft Assembly (Canopy Stowed)

10100003



*SECURING HANDLE (TYP 12 PLACES) LOCATED ON UNDERSIDE OF INFLATABLE FLOOR.

**LRU-14A/A CONFIGURATION

Figure 10-4. LRU-14 Series Liferaft Assembly, Parts Nomenclature (With or Without Canopy)

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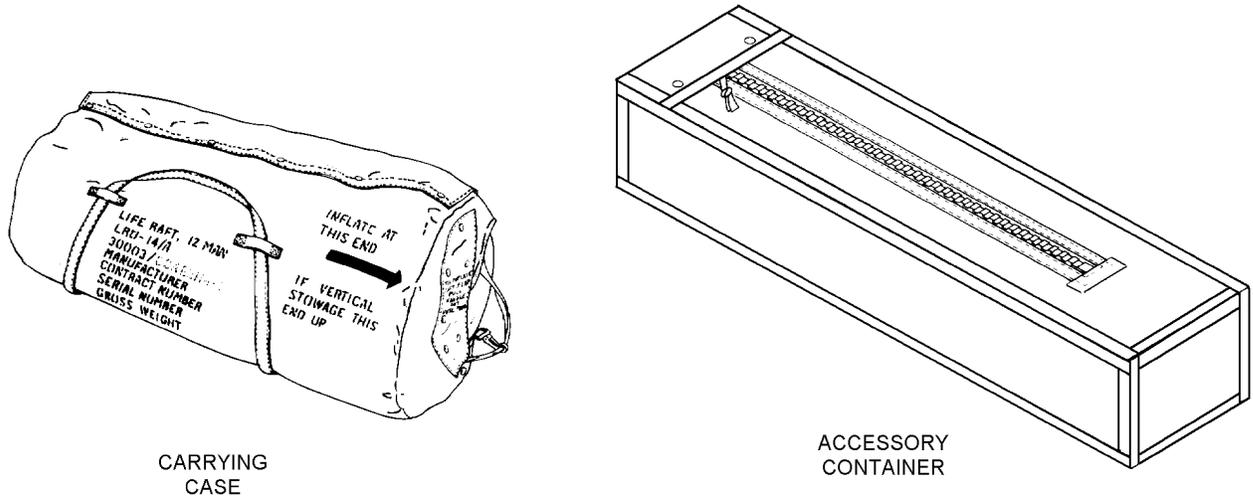


Figure 10-5. LRU-14 Liferaft Assembly Carrying Case and Accessory Container

Section 10-2. Modifications

10-9. GENERAL.

10-10. There are no authorized modifications to the LRU-14 series liferaft assembly at this time. Common repairs and fabrications to maintain serviceability are listed in [table 10-2](#).

Table 10-2. LRU-14 Common Repairs and Fabrications

Description of Repair or Fabrication	Paragraph Number
Determination of Repairability	10-50
Cementing Liferrafts	10-51
Patching Liferrafts	10-52
Recementing or Replacing Seam Tapes	10-53
Sea Anchor/Mooring Line Replacement	10-54
Addition of International Morse Code Patch	10-56

Table 10-2. LRU-14 Common Repairs and Fabrications (Cont)

Description of Repair or Fabrication	Paragraph Number
Replacement of Locking Cones	10-57
Relocation of Retaining Line Instruction Tag	10-58
Soldering of Snaphook Spring Latch	10-59
Fabrication of Painter Line Pouch	10-60
Drilling Holes in P/N A128-RT-1	10-61
Drilling Holes in P/N IV0303 Inflation Valve	10-62
Drilling Holes in P/N A128 Inflation Valve	10-63
Drilling Holes in P/N 871444 Inflation Valve	10-64
Fabrication of Cylinder Valve Antichafing Sleeve	10-65
Fabrication of 10-Foot Retaining Line	10-66
Fabrication of Righting Line	10-67
Replacement of Topping-off Valve	10-68
Replacement/Repair of Lifeline	10-69
Replacement of Liferaft Heaving Line	10-70
Repair of Carrying Case	10-70A

Section 10-3. Maintenance

10-11. GENERAL.

10-12. This section contains information on inspection, disassembly, repair/replacement, testing, and reassembly of the LRU-14 Series liferaft.

10-13. INSPECTION.

10-14. All liferaft assemblies shall be subjected to Preflight/Special and Calendar/Phase Inspections.

10-15. The Preflight Inspection shall be performed on fuselage-installed liferafts prior to first flight of the day. This inspection shall be performed by line personnel (plane captain, etc.) or delegated aircrewmember who have been designated by the line division officer, instructed and found qualified by the Aviator's Equipment Branch.

10-16. The Special Inspection shall be performed on fuselage-installed liferafts every 30 days. This inspection shall be performed at the organizational level of maintenance by personnel assigned to the Aviator's Equipment Branch. Upon completion, the date of inspection shall be recorded.

tion and inspector's signature shall be entered on the appropriate form in accordance with OPNAVINST 4790.2 Series.

10-17. All liferafts shall be subjected to the Calendar/Phase Inspection prior to placing in service or, if an aircraft inventory item, at the time of the aircraft Acceptance Inspection. Thereafter, the Calendar/Phase Inspection interval shall coincide with the aircraft inspection cycle in which they are installed. See applicable Planned Maintenance System (PMS) publications for specific intervals. In no case shall the interval exceed 231 days. Unless operational requirements demand otherwise, the liferaft Calendar/Phase Inspection shall be performed by intermediate level of maintenance or above.

NOTE

A functional test and pull cable proof load test shall be performed prior to placing in service or during aircraft Acceptance Inspection, and each fourth inspection cycle thereafter. A leakage test shall be performed at each inspection cycle. If inspection indicates damage beyond capability of maintenance, complete applicable forms in accordance with OPNAVINST 4790.2 Series and forward entire assembly to supply. Refer to [paragraph 10-50](#) for determination of repairability.

10-18. QUALITY ASSURANCE. The procedures detailed present a logical sequence for proper inspection. Quality assurance steps are provided for critical operations. When a step is underlined, the Aircrew Survival Equipmentman shall perform the operation, then have performance verified by a Quality Assurance Representative (CDI, CDQAR, or QAR) prior to proceeding to the next operation. Work center supervisors are primarily responsible for quality assurance and in accordance with OPNAVINST 4790.2 Series may nominate experienced personnel in their work center to be screened and examined by the Quality Assurance Officer prior to their designation by the Commanding Officer as a Collateral Duty Inspector. In no case shall an Aircrew Survival Equipmentman perform his own quality assurance inspection. Procedures for quality assurance are listed following major operations.

10-19. PREFLIGHT/SPECIAL INSPECTION (FUELAGE-INSTALLED LIFERAFTS). To perform a Preflight/Special Inspection, visually inspect for the following:



Do not open liferaft access doors or any sealed or safety-wired/safety tied portion of liferaft for this inspection.

1. Fabric for cuts, tears, deterioration and abrasion.
2. Seams for proper adhesion or stitching.
3. Straps and handles for security and wear.
4. Any other parts for wear, damage and security.
5. All hardware for security of attachment, corrosion, damage, wear, and if applicable, ease of operation.
6. Liferaft retaining line for proper stowage.
7. Liferaft painter line for presence and attachment.
8. Heaving line for proper stowage (if applicable).
9. Ensure that liferaft is properly stowed. Check for bulges caused by trapped air in liferaft.
10. Ripcord pins and cable for bends, fraying, or other damage; ripcord pins for security of attachment to cable.
11. Swaged ball on handle and swaging sleeve on cable for security.

WARNING

Use only authorized safety tie. No tape, wire, or cord shall be employed to secure ripcord pins.

12. Ripcord pins fully inserted into cones, first, middle and last and ripcord pins safety-tied to cones, with one turn size E nylon thread (V-T-295), single.

13. Snap fasteners on end flaps and ripcord protector flap securely fastened.

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14. If discrepancies are found or suspected, Maintenance Control shall be notified.

10-20. ACCEPTANCE/CALENDAR/PHASE INSPECTION. The Acceptance/Calendar/Phase Inspection consists of the following major tasks (to be performed in the order listed):

1. Container/Case Inspection
2. Functional Test (If Required)
3. Pull Cable Proof Load Test (If Required)
4. Deflation
5. Visual
6. Liferaft Configuration
7. General Inspection
8. Markings Inspection
9. Survival Items and Accessories Inspection
10. Inflation Assembly Inspection
11. Inspection of Inflation Assembly (Charged)
12. Inspection of Inflation Assembly (Discharged)
13. Cylinder Markings
14. Leakage
15. Records Updating
16. Repacking

10-21. PACKED CONTAINER/CASE INSPECTION. To inspect packed containers/cases, examine the following:

1. Fabric for cuts, tears, deterioration, and abrasion.
2. Seams for proper adhesion of stitching.
3. Straps and handles for security and wear.
4. Any other parts for wear, damage, and security.
5. All hardware for security of attachment, corrosion, damage, wear and, if applicable, ease of operation.

10-8 Change 2

6. Container and/or case for stains, dirt, and general condition.

10-22. FUNCTIONAL TEST. To functionally test a liferaft, proceed as follows:



Ensure that there is adequate area free of foreign objects for liferaft inflation.

1. Open liferaft case and unfold liferaft. The functional test shall be performed with the carbon dioxide bottle that was attached during the raft's last inspection. If actuation of the attached bottle will cause it to be non-RFI due to hydrostatic test requirements, and no replacement bottles are available, contact fleet support team for instructions.

2. Actuate inflation assembly.

3. Measure time of inflation; liferaft shall inflate to design shape without evidence of restriction in less than 1 minute.

4. Examine liferaft for obvious damage such as cuts, tears, ruptured seams, and damaged manifold.

5. (LRU-14A/A with canopy) Untie canopy from upper inflation tube. Examine canopy for damage such as tears, cuts, ruptured seams, defects in material, patches for proper adhesion and general cleanliness. Inspect canopy slide fasteners for proper location of pulls on inside of canopy and ease of operation.

6. (LRU-14A/A with canopy) Erect canopy to functionally check all canopy components as follows:

a. Extend the 3 canopy ribs to full length (stowed in accessory corner).

NOTE

Ensure canopy rib markings "THIS SIDE TOWARD CANOPY" are facing outward away from liferaft when accomplishing step 6.b.

b. Secure one end of rib in rib pivot patch and pass nylon cord (MIL-C-5040, Type I) through pivot patch eyelet hole, rib eyelet hole, and opposite pivot patch eyelet hole. Tie in place.

c. Tie rib to side of inflation tube with canopy rib holding tie.

d. Bend canopy rib in an arch across liferaft. Ensure markings are on upper surface of rib. Secure free end of canopy rib in canopy pivot patch as in [step b](#) above, and secure canopy rib holding tie on side of inflation tube.

e. Place remaining 2 ribs in position as in [steps b, c, and d](#) above.

f. Extend canopy center, side and end sections, secure in position with canopy rib ties on inside of canopy sections. Secure with slide fasteners.

g. Restow canopy by reversing above procedure and secure rolled canopy to upper inflation tube with canopy ties.

h. Stow canopy ribs in accessory container.

7. Determine cause if liferaft does not properly inflate. Remove CO₂ bottle and inflation assembly and inspect inlet valve for cleanliness and embedded foreign matter.

8. If correction is made, repeat [steps 2 through 4](#).

9. Deflate liferaft in accordance with [paragraph 10-24](#). Ensure that all carbon dioxide has been removed.

10-23. PULL CABLE PROOF LOAD TEST. To perform the proof load test, proceed as follows:

NOTE

Perform the Proof Load Test only after the functional test and prior to placing an inflation assembly in service.

1. Remove inflation valve cover plate.

2. Remove pull cable from valve and apply a 50-pound pull force between cable ball and snaphook.

3. Examine pull cable for broken strands of wire, deformed snaphook, security of snaphook spring latch attachment, and loose or cracked swage fittings. If any damage is found, the pull cable shall be discarded and replaced with a new cable. The new cable shall also be tested in accordance with [step 2](#). If snaphook spring latch is loose, it may be repaired in accordance with instructions contained in modification section

for the liferaft, or replaced at the discretion of the inspection activity.

4. If pull cable passes this test, reinstall in accordance with [paragraph 10-46](#).

10-24. DEFLATION. To deflate liferaft, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Pump, Vacuum Unit	61E44688 (CAGE 80049)
As Required	Hose, Rubber, 3/8 or 1/2 inch Inside Diameter	—

1. Attach one end of rubber hose to vacuum pump.

2. Open Topping-Off valve and hold vacuum pump hose over opening in valve. When compartment is collapsed, screw valve closed.

10-25. VISUAL INSPECTION. Prior to visually inspecting a liferaft assembly, the liferaft (and inflatable floors) shall be inflated with air to 1.0 psig.



Remove CO₂ cylinder prior to inflating liferaft with air.

1. Remove CO₂ cylinder from CO₂ cylinder sling.



Ensure that diffuser plug is installed in CO₂ cylinder.

NOTE

If a suitable air source is not available, water pumped nitrogen (BB-N-411) may be substituted.

2. Inflate liferaft with air to 1.0 psig.

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10-26. LIFERAFT CONFIGURATION. The liferaft shall be updated by comparing it to the applicable configuration illustrations in figures 10-1 through 10-5.

10-27. GENERAL INSPECTION. The general inspection is performed as follows:

NOTE

If color, location, or stitching patterns of repaired, replaced, or previously incorporated noncritical items or features (eg, liferaft pockets, handle, ballast bag, sea anchor, etc.) do not exactly conform to instructions, do not remove or rework item or feature if flotation stability or capability and security of attachment are not compromised.

1. Liferaft fabric for cuts, tears, punctures, deterioration and abrasion.
2. Seam tapes for proper adhesion.
3. Seam tapes joining tubes to floors, other tubes or canopy for adhesion and wear.
4. Liferaft floor and canopy for cuts, tears, punctures, and abrasions.
5. All patches for proper adhesion.
6. Pockets for tears, abrasions, and security of attachment.
7. Handles for wear, deterioration, and security of attachment.
8. Sea anchor for wear, tears, and security of attachment.
9. Damaged or deteriorated topping-off valve, if applicable, and security of retaining screw.
10. All hardware for security of attachment, corrosion, damage, wear, and, if applicable, ease of operation.
11. Liferaft for stains, dirt, and general cleanliness.
12. Any other parts for wear and damage.

10-28. MARKINGS INSPECTION. Compare markings on liferaft and case and/or container to markings shown in tables 10-3 through 10-6 as applicable. Restore faded markings. Install/replace inspection record patch as needed; refer to paragraph 10-55. Install/re-

place International Morse Code patch as needed; refer to paragraph 10-56. Correctly mark items which do not agree with the applicable table. To change markings, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Ink, Marking, Laundry, Black	SPE-92 NIIN 00-161-4229
	-or-	
	Ink, Drawing, Waterproof, Yellow	A-A-59291 NIIN 00-634-6583

1. Paint over incorrect marking using waterproof ink (yellow or black as applicable).

2. Add correct marking as close as possible to specified location using waterproof ink.

10-29. SURVIVAL ITEMS AND ACCESSORIES INSPECTION. To inspect survival items and accessories, proceed as follows:

NOTE

Refer to NAVAIR 13-1-6.5 for information on inspection/replacement and modification of survival items.

With the exception of batteries, items reaching over-age while packed in survival kits and rafts shall remain in service until the next inspection cycle of the completed assembly.

1. Inventory all accessories and survival items by checking items against table 10-7. Replace missing or unsatisfactory items.

NOTE

Ensure URT-33 battery service life does not expire prior to the next scheduled calendar inspection. Refer to NAVAIR 16-30URT33-1 for battery service life. Batteries which exceed service life requirements must be discarded regardless of their condition.

2. Inspect all items for damage, spent contents, and expired service life. Replace as necessary.

Table 10-3. LRU-14 Series Liferaft Markings

Marking	Location	Letter Height
LIFERAFT, INFLATABLE 12-MAN TYPE LRU-14 Series USN 30003/62A96H1- [applicable dash number] MANUFACTURER'S IDENTIFICATION CONTRACT NO. [applicable number] DATE OF MANUFACTURE [month and year] SERIAL NO. [applicable number]	Tube, starboard side of bow, outboard	1 inch
KEEP EVERYTHING TIED TO RAFT TO AVOID LOSS IN CASE OF CAPSIZING	Starboard side aft, port side forward	1/2 inch
INSTRUCTIONS PUT OUT SEA ANCHOR. INFLATE TOP TUBE BY HAND PUMP THROUGH VALVE, PORT SIDE, AMIDSHIPS AT TOP INFLATE FLOOR THROUGH TWO VALVES LOCATED ON FLOOR SECTIONS PORT SIDE AMIDSHIPS. INFLATE SEAT THROUGH VALVE LOCATED ON STERN OF SEAT PORT SIDE.	Main tube, inboard and amidships on starboard side	First line 1 inch; all other lines 1/2 inch
SUPPLIES KNIFE WHISTLE NYLON CORD COMPASS FLARE GUN STROBE LIGHT STEADY BURNING LIGHT	Supply pocket on port side	First line 1 inch; all other lines 1/4 inch
FORWARD THIS SIDE UP	Inflatable floor, forward section midway between bow and amidships on starboard side	1/2 inch
AFT THIS SIDE UP	Inflatable floor, AFT section midway between bow and amidships on starboard side	1/2 inch

Table 10-3. LRU-14 Series Liferaft Markings (Cont)

Marking	Location	Letter Height
INFLATION VALVE OPERATION TO INCREASE TUBE PRESSURE 1. SCREW HAND PUMP INTO VALVE CAP 2. ROTATE VALVE CAP 1 1/2 TURNS TO RIGHT 3. PUMP TO INFLATE TO DESIRED PRESSURE 4. ROTATE VALVE CAP 1 1/2 TURNS TO LEFT AND REMOVE PUMP TO DECREASE PRESSURE 1. ROTATE VALVE 1 1/2 TURNS TO THE RIGHT AND BLEED	Under or along side of the topping-off valves on the port liferaft tube inboard and seat tube	3/8 inch 1/4 inch 3/16 inch 1/4 inch 3/16 inch
INTERNATIONAL MORSE CODE [see figure 10-12]	Inboard, port side, aft of seat	1/4 inch
BEFORE INFLATION CLIP SNAPHOOK TO LIFE VEST	On tag attached to webbing retaining line	3/8 inch
TUBE SECTION NUMBERS	Each tube section	1/2 inch
SEA ANCHOR MIL-A-3339B Type I Size 2 MANUFACTURER CONTRACT NO. [applicable number] DATE OF MANUFACTURE [month and year]	Inside sea anchor	1/4 inch
HEAVING LINE	Stenciled on tube, inboard below assembly	1/2 inch
THIS SIDE TOWARDS CANOPY	Both end sections of each Canopy Rib Assembly.*	5/8 inch
Note: Replacement markings shall be stamped or stenciled using waterproof black ink. * CANOPY RIB ASSEMBLY (3), stowed in Accessory Container		

Table 10-4. LRU-14/A Case and Container Markings

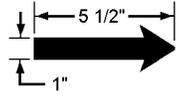
Case/Container	Marking	Location	Letter Height
Carrying Case	LIFERAFT, 12 MAN LRU-14/A 30003/62A96H4-1 MANUFACTURERS IDENTIFICATION CONTRACT NO. [applicable number] SERIAL NO. [applicable number] GROSS WEIGHT [stencil applicable numbers]	Side panel	1 inch
	INFLATE AT THIS END 	Both sides of case at pull handle end	1 inch 
	IF VERTICAL STOWAGE THIS END UP	Both sides of case below arrow	1 inch
	INFLATE OTHER END	End panel opposite pull handle end	1 inch
	TO INFLATE, LIFT FLAP, PULL HANDLE OUT UNTIL FREE	Pull handle flap	1/2 inch
Accessory Container	Each accessory container shall be marked with the name of the equipment stored in the container. Refer to table 10-7 .	Panel opposite side containing slide fastener	1/2 inch
Note: Replacement markings shall be stamped or stenciled using waterproof black ink.			

Table 10-5. MK 12A-1 Liferaft Markings

Marking	Location	Letter Height
MARK 12A-1 LIFERAFT BUREAU OF NAVAL WEAPONS, USN SPECIFICATION MIL-I-1849B (WEP) MANUFACTURER'S [applicable name] CONTRACT NO. [applicable number] DATE OF MANUFACTURE [month and year] SERIAL NO. [applicable number]	Main tube, port side of bow, outboard	1 inch
KEEP EVERYTHING TIED TO RAFT TO AVOID LOSS IN CASE OF CAPSIZING	Main tube, inboard	1/2 inch
INSTRUCTIONS PUT OUT SEA ANCHOR. INFLATE TOP TUBE BY HAND PUMP THROUGH VALVE, PORT SIDE, AMIDSHIPS AT TOP INFLATE FLOOR THROUGH TWO VALVES LOCATED ON FLOOR SECTIONS PORT SIDE AMIDSHIPS. INFLATE SEAT THROUGH VALVE LOCATED ON STERN OF SEAT PORT SIDE.	Main tube, inboard and amidships on starboard side	First line 1 inch; all other lines 1/2 inch
SUPPLIES FLARE GUN SIGNAL LIGHT SIGNAL MIRROR RADIO CODE CARD WHISTLE COMPASS KNIFE LINE	Supply pocket on port side	First line 1 inch; all other lines 1/4 inch
FORWARD THIS SIDE UP	Inflatable floor, forward section midway between bow and amidships on starboard side	1/2 inch
AFT THIS SIDE UP	Inflatable floor, aft section midway between bow and amidships on starboard side	1/2 inch

Table 10-5. MK 12A-1 Liferaft Markings (Cont)

Marking	Location	Letter Height
SEA ANCHOR MIL-A-3339B Type I Size 2 MANUFACTURER CONTRACT NO. [applicable name]	Inside sea anchor	1/4 inch
<u>TO INFLATE COMPARTMENTS MANUALLY</u> ATTACH HAND PUMP TO VALVE CAP, UNSCREW CAP 1 1/2 TURNS TO THE RIGHT, AND THEN PUMP TO INFLATE RAFT, WHEN DESIRED PRESSURE IS ATTAINED, TIGHTEN VALVE CAP AND REMOVE PUMP. <u>TO DECREASE PRESSURE</u> OPEN VALVE 1 1/2 TURNS TO THE RIGHT AND BLEED.	On white rubber patch located on main tube adjacent to topping- off valves	1/4 inch
TO OPEN 	Outer cover patch of each topping-off valve	1/2 inch
INTERNATIONAL MORSE CODE [see figure 10-12]	On a orange patch located on inflatable floor forward of inflatable seat	1/4 inch
BEFORE INFLATION CLIP SNAPHOOK TO LIFE VEST	On a tag attached to webbing retaining line	1/2 inch
HEAVING LINE	Stenciled on tube, inboard below assembly	1/2 inch
Note: Replacement markings shall be stamped or stenciled using waterproof black ink.		

Table 10-6. MK 12A-1 Case and Container Markings

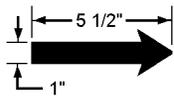
Case/Container	Marking	Location	Letter Height
Carrying Case	MK 12A-1 LIFERAFT BUREAU OF NAVAL WEAPONS, USN SPECIFICATION MIL-L-18494B MANUFACTURER CONTRACT NO. [applicable number] SERIAL NO. [applicable number] GROSS WEIGHT [stencil applicable number]	Side panel	1 inch
	INFLATE AT THIS END 	Both sides of carrying case at pull handle end	1 inch 
	IF VERTICAL STOWAGE THIS END UP	Both sides of case below arrow	1 inch
	INFLATE OTHER END	End panel opposite pull handle end	1 inch
	TO INFLATE, LIFT FLAP, PULL HANDLE OUT UNTIL FREE	Pull handle flap	1/2 inch
Accessory Container	Each accessory container shall be marked with the name of the equip- ment stored in the container. Refer to table 10-7 .	Panel opposite side containing slide fastener	1/2 inch
Note: Replacement markings shall be stamped or stenciled using waterproof black ink.			

Table 10-7. LRU-14 Series Survival Items

Description	Quantity Required	Reference Number	NIIN	SM&R Code
<u>Packed In Accessory Container</u>				
Desalter Kit, Sea Water, MK2, Type II (Note 11)	6	MIL-D-5531E	00-372-0592	PAOZZ
Sea Dye Marker	5	MIL-S-17980	00-270-9986	PAOZZ
Distress Signal, MK-124 MOD 0 or Signal Kit, MK-189 MOD 0 (Note 9)	8	—	01-030-8330	—
	1	—	L564-1370-01-418-2657	—
Water Storage Bag (Size A)	4	MIL-B-8571	00-485-3034	PAOZZ
Water, Drinking, Bagged, Emergency (Note 13)		—	01-124-4543	PAOZZ
	w/ MROD	12		
	w/o MROD	30		
First Aid Kit, Size A	1	SC-C-6545-IL Vol. #2	00-922-1200	—
Desalinator, Manual Reverse Osmosis (Notes 7 and 13)	1	—	01-313-6086	—
Sunburn Preventative Preparation	2	MIL-S-37800	01-121-2336	PAOZZ
Food Packet, Liferaft	12	MIL-F-15381	01-028-9406	PAOZZ
Bailing Sponge	4	L-S-626	00-240-2555	PAOZZ
Hand Pump	1	MIL-P-8258	00-097-4580	PAOZZ
Combat Casualty Blanket Type I	2	MIL-B-36964	00-935-6665	PA--Z
Hand Generated Flashlight A-9 (Note 2)	1	MIL-F-8209	00-283-9806	PAOZZ
Canopy Rib Assembly (Note 10)	3	601AS105-1	01-322-9303	PAOZZ
3 - Sectional Oars (Note 10)	2	MS26429-2	00-485-3010	PAOZZ
<u>Packed In Supply Pocket</u>				
Flare Gun, MK-79 MOD 0 (Note 9)	1	—	00-866-9788	PAOZZ
Signal Light (Strobe) SDU-5/E or Signal Light (Strobe) SDU-39/N	1	MIL-L-38217	00-067-5209	PAOZZ
			01-411-8535	
Light, ChemiLuminescent (Note 12)	2	95277-80	01-334-4274	PAOZZ
Signal Mirror, Type I (Note 3) or Signal Mirror, Type II	1	MIL-M-18371	00-105-1252	PAOZZ
		MIL-M-18371	01-455-6695	PAOZZ
			01-455-6671	PAOZZ
Survival Radio (Notes 4 and 5) and/or Radio Beacon AN/URT-33A (Notes 4 and 8)	As Required As Required	— MIL-B-38401	— 00-160-2136	— PAOGG

Table 10-7. LRU-14 Series Survival Items (Cont)

Description	Quantity Required	Reference Number	NIIN	SM&R Code
Code Card (Not E6)	1	—	—	—
Whistle, Type II	1	MIL-W-1053	00-254-8803	PAOZZ
Compass, Pocket, Type MC-1 (Note 1) or Compass, Wrist	1 1	MIL-C-17850 WCC-100	00-515-5637 00-809-5252	PAOZZ PAOZZ
Pocket Knife	1	MIL-K-818C	00-162-2205	PAOZZ
Cord, Nylon, Utility, 50 feet	1	MIL-C-5040	00-240-2154	PAOZZ

- Notes:
1. Use MIL-C-17850 until stock is depleted, then use WCC-100.
 2. Required for Arctic missions; optional otherwise.
 3. The Type II mirror (large) shall be utilized in lieu of the Type I mirror (small) until stock of the Type II mirror is depleted.
 4. Survival radio or radio beacon requirements shall be in accordance with OPNAVINST 3710.7 Series. Following radios apply: Voice-Beacon: AN/PRC-90, AN/PRC-90-2, and AN/PRC-149. Beacon only: AN/URT-33, AN/PRT-5, and AN/PRC-140. The AN/PRC-149 will become the preferred radio when available.
 5. If PRT-5 transmitters are carried, they shall be packed in the accessory container.
 6. Refer to NAVAIR 13-1-6.5.
 7. MROD shall be used if RFI assets are available (See Note 13).
 8. Ensure battery service life does not expire prior to next scheduled special inspection. Refer to the applicable manual for the installed radio for battery service life.
 9. MK-189 MOD 0 Signal Kit contains 6 MK-124 Day/Night flares and 2 MK-79 MOD 0 flare guns. If MK-189 MOD 0 is used, MK-79 MOD 0 will not be put in supply pocket.
 10. Required in LRU-14A/A only.
 11. Authorized for use in Arctic/Antarctic environments.
 12. Chemical Lights will replace SDU-30. If chemical lights are not available, SDU-30 may be used until next repack.
 13. MROD should not be used where water temperatures are below 36°F.

3. Operate all items which are not expended in use. Replace as necessary.

10-30. INFLATION ASSEMBLY INSPECTION. Inspect the inflation assembly as follows:

10-31. Inspection of Inflation Assembly (Charged). To inspect a charged inflation assembly, proceed as follows:



Gas under pressure. Do not attempt to remove valve from cylinder.

1. Inspect cylinder markings. Re-mark as required in accordance with paragraph 10-33.

2. Examine inflation assembly for evidence of corrosion, wear, loose screws, and dents. If damage or extensive wear is found, replace valve, cylinder, housing, or pull cable. If pull cable is replaced perform pull cable proof load test in accordance with paragraph 10-23.

NOTE

To obtain the correct gross weight of the CO₂ cylinder, subtract weight of the diffuser plug from total weight indicated on scale.

3. Weight inflation assembly. If weight indicated on scale is not the same as the gross weight printed on the cylinder (P/N MS26545B2C205A or P/N

MS26545B4C205A) with tolerance specified, or if no gross weight is printed on the cylinder, discharge the cylinder and recharge it to 4.74 to 4.86 lbs in accordance with [paragraph 10-45](#).



Inspect safety wire to ensure that wire size and type are as specified in [paragraph 10-46](#).

4. If necessary, safety-wire the assembly in accordance with [paragraph 10-46](#).

10-32. Inspection Of Inflation Assembly (Discharged). To inspect a discharged inflation assembly, proceed as follows:

1. Inspect cylinder markings. Re-mark as required in accordance with [paragraph 10-33](#).

2. Check date of last hydrostatic test. If greater than 5 years see [paragraph 10-42](#) for disposition.

3. Examine inflation assembly for evidence of corrosion, wear, loose screws, and dents. If damaged or extensive wear is found, replace valve, cylinder, housing, or pull cable. If pull cable is replaced, perform pull cable proof load test in accordance with [paragraph 10-23](#).

4. Recharge assembly in accordance with [paragraph 10-45](#).

10-33. Cylinder Markings. Markings on all CO₂ inflation cylinders shall be in black letters 1/4 inch high. Information shall include gross weight, tare weight, and weight of CO₂. In addition, multiplace life-raft cylinders shall be marked with the following information in 1 inch red letters: WARNING - COMPRESSED GAS - DO NOT DROP. Paint and stencil cylinder as required. Weight of CO₂ is 4.74 to 4.86 lbs. Ensure that all markings are included as necessary.

10-34. LEAK TEST. To perform a leak test, proceed as follows:



Liferaft should not be disturbed during leakage test.

10-35. Test Fixtures. As assembled, test fixtures are not stocked in the Supply System; fixtures must be fabricated to meet the requirements of the schematic shown in [figure 10-6](#). A suggested test fixture consisting of a three, way valve, pressure gage, and suitable adapters for the compartments being tested is shown in [Chapter 3](#).

10-36. Test Procedure. To test liferafts for leakage using test fixture in [Chapter 3](#), proceed as follows:



Ensure that area surrounding liferaft is clear of foreign objects.

If three-way valve is not used, measuring device valve must be closed when air-feed valves are open.

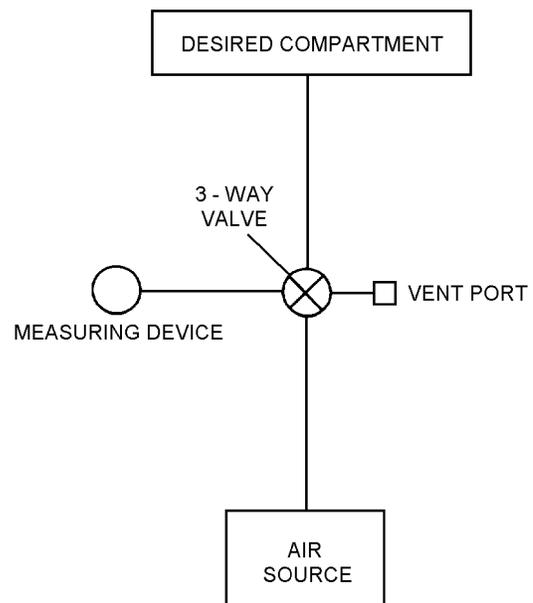


Figure 10-6. Test Fixture Schematic

10100006

NAVAIR 13-1-6.1-1

NOTE

If a suitable air source is not available, water-pumped nitrogen (BB-N-411) may be substituted.

Refer to [table 10-8](#) for information regarding inflation pressure and listing of compartments which may be tested simultaneously.

1. Open topping-off valve then thread adapter into topping-off valve threads. Open air supply valve and inflate liferaft. Alternately position valve at measuring device, vent and air supply until proper pressure is attained. Refer to [table 10-8](#).

2. The air supply shall be securely shut off and after a minimum of 15 minutes, the pressure shall be readjusted, if necessary, to the leakage test pressure. Refer to [table 10-8](#).

3. Disconnect air supply and check for leaks. Ensure that all valves are closed.

4. Record temperature and barometric pressure and allow raft to remain undisturbed for a minimum of 4 hours. Record time.

NOTE

If the raft has been stacked during the 4-hour inspection period remove from stacking and place in a horizontal position on the floor or table in the inspection area and take test pressure reading. In no event shall the pressure in the raft be determined with another raft stacked upon it.

5. At the end of a minimum of 4 hours after the readjustment period in [step 4](#) record test pressure.

NOTE

Steps 6 through 13 shall be performed only after leakage test readings have been recorded.

6. Record temperature and barometric pressure and correct test pressure for any changes in temperature and barometric pressure. Refer to [tables 10-9](#) and [10-10](#).

EXAMPLE

UNCORRECTED TEST READING 1.70 PSI

	TEMP.	BARO.
START	75° F	29.90 IN. Hg
END	70° F	29.70 IN. Hg
DIFFERENCE	- 5° F	-0.20
CORRECTION	+0.155	-0.098

TEMP. CORRECTION	+ 0.155
+ BARO. CORRECTION	- 0.098
CORRECTION	+ 0.057

UNCORRECTED READING	1.700 PSI
+ CORRECTION	+ 0.057
CORRECTED READING	1.757 PSI

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Step 6 - Para 10-36

7. If pressure of compartment is below pressure limits in [table 10-8](#), inflate to leakage test pressure and check for leaks, using a soap solution. Mark leaks, rinse with fresh water, and dry with a lint free cloth. Determine reparability in accordance with [paragraph 10-50](#).

Table 10-8. Flotation Compartment Pressures

LRU-14/A Compartment	Leakage Test Pressure (psig)	Minimum Pressure (psig)
Bow Section	2.0	1.60
*Stern Section	2.0	1.60
*Upper Tube	1.0	0.60
*Inflatable Floor Sections	1.0	0.60
*Inflatable Seat	1.0	0.60

*Compartments may be tested simultaneously.

Table 10-9. Temperature Conversion Chart

Temperature Difference (Degree F.)	Correction (psi)
1	0.031
2	0.062
3	0.093
4	0.124
5	0.155
6	0.186
7	0.217
8	0.248
9	0.289
10	0.310

Rise in temperature: subtract from gage reading.
Fall in temperature: add to gage reading.

8. Apply a small amount of soap solution to manifold, and inspect for leaks. Inspect for damage, excessive wear and corrosion.

9. Apply a small amount of soap solution around topping-off valve and check for leaks.

10. Deflate liferaft in accordance with paragraph 10-23.

11. Attach retaining line to neck of cylinder with a lark's head knot (see [paragraph 10-71](#)).

12. Install cylinder valve anti-chafing sleeve.

13. Reinstall properly charged inflation assembly.

14. Tighten coupling nut to raft inlet manifold to a torque value of 140 to 150 in-lb.

15. Lace cylinder sling closed and snap cover over lacing where applicable.

10-37. RECORDS UPDATING. Make necessary entries on appropriate form in accordance with OPNAV-INST 4790.2 Series.

Table 10-10. Barometric Pressure Conversion Chart

Press. Diff. (inHG)	Corr. (psi)								
0.01	0.005	0.16	0.078	0.31	0.152	0.46	0.225	0.61	0.299
0.02	0.010	0.17	0.083	0.32	0.157	0.47	0.230	0.62	0.304
0.03	0.015	0.18	0.088	0.33	0.162	0.48	0.235	0.63	0.309
0.04	0.020	0.19	0.093	0.34	0.167	0.49	0.240	0.64	0.314
0.05	0.025	0.20	0.098	0.35	0.172	0.50	0.245	0.65	0.319
0.06	0.030	0.21	0.103	0.36	0.176	0.51	0.250	0.66	0.323
0.07	0.035	0.22	0.108	0.37	0.181	0.52	0.254	0.67	0.328
0.08	0.040	0.23	0.113	0.38	0.186	0.53	0.260	0.68	0.333
0.09	0.045	0.24	0.118	0.39	0.191	0.54	0.265	0.69	0.338
0.10	0.049	0.25	0.123	0.40	0.196	0.55	0.270	0.70	0.343
0.11	0.054	0.26	0.127	0.41	0.201	0.56	0.275	0.71	0.348
0.12	0.060	0.27	0.132	0.42	0.206	0.57	0.279	0.72	0.353
0.13	0.064	0.28	0.137	0.43	0.211	0.58	0.284	0.73	0.358
0.14	0.069	0.29	0.142	0.44	0.216	0.59	0.289	0.74	0.363
0.15	0.073	0.30	0.147	0.45	0.221	0.60	0.294	0.75	0.368

Rise in pressure: add to gage reading.
Fall in pressure: subtract from gage reading.

10-38. CLEANING AND SERVICING.

10-39. Cleaning and servicing consists of cleaning the liferaft and containers and/or cases, checking hydrostatic test date on multiplace liferaft CO₂ cylinders, replacing the safety disc and washer on inflation valves, recharging CO₂ cylinders and safety-wiring inflation valves.

10-40. CLEANING OF LIFERAFTS. To clean liferafts, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Detergent, General Purpose	MIL-D-16791 NIIN 00-282-9699
As Required	Cloth, Lint-Free, Type II	MIL-C-85043 NIIN 00-044-9281
As Required	Talc, Technical	MIL-T-50036A NIIN 01-080-9589



Solvents are not to be used in the cleaning of liferafts.

1. Prepare solution of detergent (MIL-D-16791) consisting of 1/4 to 1/2 ounce of detergent per gallon of water.

2. Apply cleaning solution to soiled area with a spray or sponge.

3. Allow solution to remain on the surface for several minutes, then agitate with a soft brush or rag.

4. Rinse surface thoroughly with water; wipe with a cloth or sponge. Repeat this application until surface is free from all solution.

5. Dry liferaft with a lint-free cloth and apply a light coating of talc.

10-41. CLEANING OF CONTAINERS AND/OR CASES. Clean in accordance with [paragraph 10-40](#).

10-42. HYDROSTATIC TEST. Inspect CO₂ cylinders used on multiplace liferafts to determine if the previous hydrostatic test was within the last five years. However, a fully charged cylinder (charged to the cylinder gross weight) is considered serviceable, regardless of the last hydrostatic test date, until discharged. If over five year

due date for testing, and cylinder has been discharged, proceed with hydrostatic test:



Bottles should be turned in for testing as close to due date as possible. Extending hydrostatic testing by leaving bottle charged may result in corrosion build up on inside of cylinder, which may cause a malfunction during actuation.

Wire-wrapped cylinders must have wire-wrapping removed prior to hydrostatic testing; cylinders passing the hydrostatic test must be rewound prior to placing back in service.

Wire-wrapped cylinders must have letter W at end of part number. Cylinders received without the W at end of part number do not require wire-wrapping.

Materials Required

Quantity	Description	Reference Number
1	Washer, Sealing	A128-13 (CAGE 34009) NIIN 00-159-2599
	-or-	
1	Parts Kit, Valve	ASV710 (CAGE 34009) NIIN 00-999-7662

NOTE

Ensure that all CO₂ cylinders received from Supply, except those used on one-man liferafts, have siphon tubes installed.

1. Disconnect the cylinder and valve assembly from the raft. Remove and retain valve for the replacement cylinder.

2. Mark appropriate form "Hydrostatic Test Required" in accordance with OPNAVINST 4790.2 Series and return old cylinder to Supply.

NOTE

Ensure that all CO₂ cylinders received from Supply, except those used on one-man liferafts, have siphon tubes installed.

3. Obtain a replacement cylinder. Before installing valve on cylinder, gently tap inverted cylinder with a small piece of wood. If any rust or other contamination

falls from cylinder, do not use that cylinder; draw another cylinder and repeat contamination check.

4. Check for installation of siphon tube.
5. Replace stem in inflation assembly valve if necessary.
6. Install a new sealing washer.
7. Thread inflation valve onto cylinder and tighten to a torque value of 165 to 175 ft-lb.
8. Charge cylinder and reconnect valve and cylinder to liferaft as appropriate.

10-43. REPLACEMENT OF INFLATION VALVE POPPET ASSEMBLY. If leakage of CO₂ is from valve discharge port, inspect the valve poppet (P/N ASV-601, NSN 4220-00-507-6667) for worn seat as follows:

WARNING

Before performing any work on inflation valves, ensure that CO₂ inflation assemblies are completely discharged. Do not remove valve from a charged CO₂ assembly.

Materials Required

Quantity	Description	Reference Number
1	Washer, Sealing	A128-13 (CAGE 34009) NIIN 00-159-2599
	-or-	
1	Parts Kit, Valve	ASV 710 (CAGE 34009) NIIN 00-999-7662
1	Valve Poppet Assembly	P/N ASV-601, NIIN 00-507-6667

1. Remove cylinder from liferaft.
2. Remove valve from cylinder.
3. Disassemble valve (Figure 10-7) and inspect poppet for worn seat. Replace poppet assembly if necessary.
4. Install a new sealing washer.

5. Thread inflation valve onto cylinder and tighten to a torque value of 165 to 175 ft-lb.

10-44. REPLACEMENT OF SAFETY DISC AND WASHER ON INFLATION VALVES. (See figure 10-8.) To replace safety disc and washer on inflation valve assemblies (A-128/871444) proceed as follows:

WARNING

Before performing any work on inflation valves, ensure that CO₂ inflation assemblies are completely discharged. Do not remove valve or valve safety disc plug from a charged CO₂ assembly.

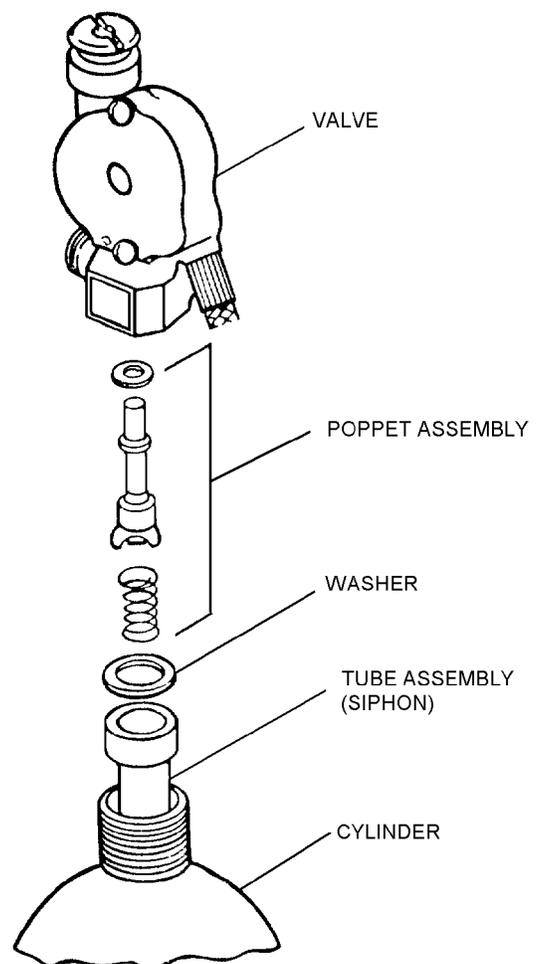


Figure 10-7. Valve Poppet Disassembly

10100007

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Support Equipment Required

Quantity	Description	Reference Number
1	Wrench, Torque	—
1	Socket, 5/16 inch	—
1	Hex Stock, 5/16 x 2 inch Length	—

Materials Required

Quantity	Description	Reference Number
1	Repair Kit (Insert, Washer, Disc)	903684 (CAGE 33525) NIIN 00-703-7811

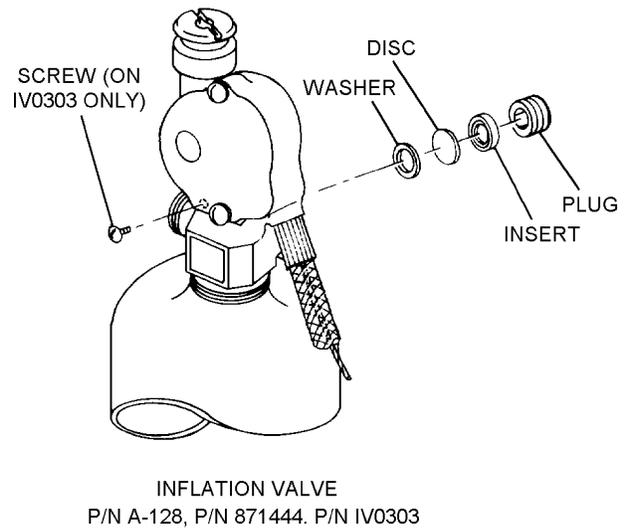


Figure 10-8. Disassembly of Inflation Valve Safety Disc Assembly

10100008

1. Remove cylinder from liferaft.
2. Remove safety disc plug; insert safety disc and washer.
3. Place new washer into inflation valve safety disc orifice.
4. Place new safety disc into inflation valve safety disc orifice.
5. Replace insert and safety disc plug.

NOTE

While tightening the safety disc plug, align insert with plug.

6. Tighten safety plug on A-128/871444 to 29 ft-lb of torque.

10-45. RECHARGING. To recharge the inflation assembly, proceed as follows (see [figure 10-9](#)):

WARNING

When discharging partially charged or overcharged CO₂ cylinders, hold firmly in place with a suitable holding device (vice). Protect CO₂ cylinder from vice jaws with cloth or a suitable substitute. Position cylinders so escaping gas is not directed toward any personnel.

NOTE

Inspect CO₂ cylinders for multiplace life-rafts before recharging. Refer to [paragraph 10-32](#).

Charged inflation assemblies used as spare replacements shall be inspected in accordance with [paragraph 10-31](#) prior to raft installation.

To perform the following filling procedures it is necessary to ensure that CO₂ cylinder is completely discharged.

1. Remove inflation valve cover and rotate cam with screwdriver to open position.
2. Weigh and record tare weight (empty weight cylinder, valve and cable assembly) of inflation assembly. Correct tare weight marking on cylinder if necessary.

NOTE

Supply cylinders not equipped with siphon tube must be inverted during transfer operation. Inverting cylinder allows the liquid to flow from the valve. Supply cylinders with

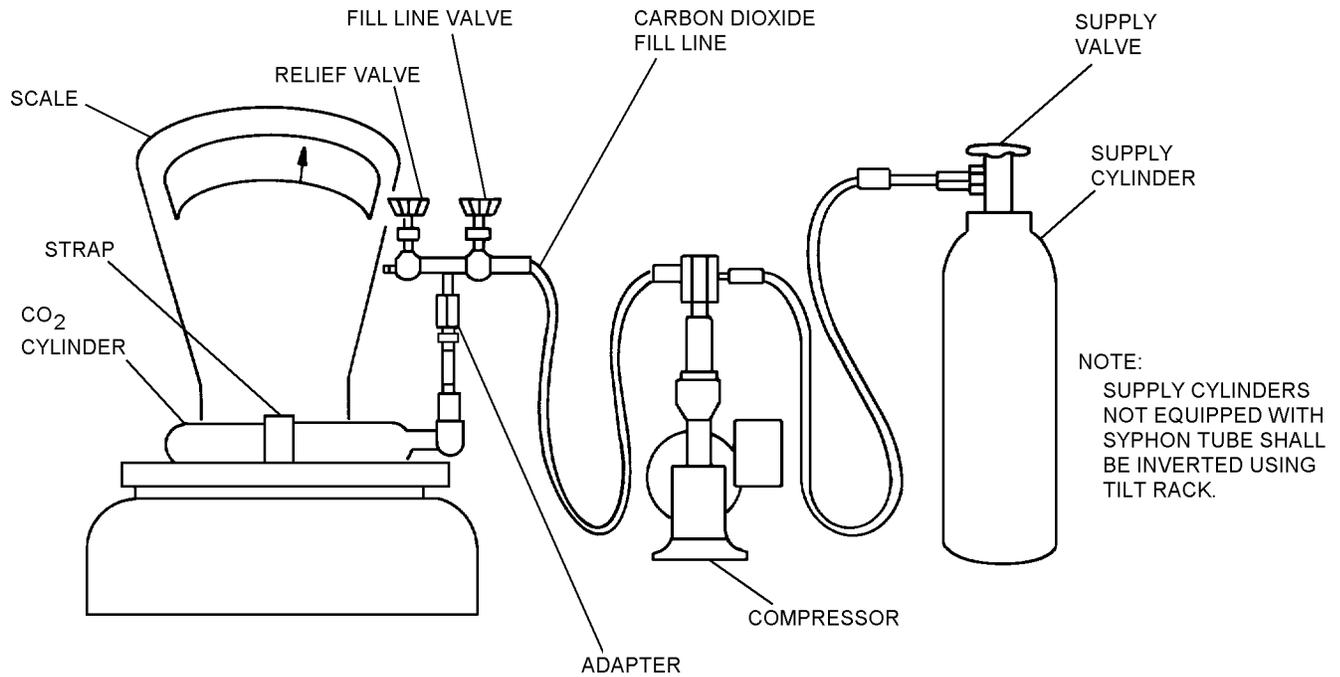


Figure 10-9. Recharging Schematic

10100009

siphon tube (straight pipe) extending from the valve to the bottom of the cylinder can be emptied in the vertical position.

3. Install proper charging adapter on inflation assembly.

4. Secure inflation assembly to weighing pan.

5. Open supply cylinder valve, fill line valve and relief valve to purge fill line. Close fill line valve and relief valve.

NOTE

Ensure fill line is free from contact with any object along entire distance from compressor to charging adapter. If fill line does not hang free, accurate weight readings cannot be obtained.

6. Connect fill line to inflation assembly and zero scale.

NOTE

Proper charge weight is 4.74 to 4.86 lbs.

7. Ensure inflation assembly valve is open.

8. Open fill line valve.

9. Allow carbon dioxide to cascade from supply cylinder into inflation assembly. If gross weight (tare weight plus 4.74 to 4.86 lbs) cannot be reached, start compressor and complete charging. Stop compressor upon reaching proper gross weight.

10. Close fill line valve.

11. Close inflation assembly valve. Open relief valve on fill line valve if applicable.

NAVAIR 13-1-6.1-1

12. Disconnect fill line from inflation assembly. Remove charging adapter.

13. Measure gross weight of charged inflation assembly.

14. If gross weight of inflation assembly is greater than required, carefully bleed off excess from inflation assembly. If gross weight is less than required, reinstall charging adapter and repeat [steps 5 through 14](#).

15. Reinstall diffuser plug, if applicable.

NOTE

When other cylinders are to be recharged immediately, leave supply cylinder valve open.

16. Close supply and bleed system pressure.

NOTE

Remove cover plate on multiplace liferaft valve assemblies.

17. Immerse inflation assembly in water tank.

CAUTION

If inflation valve leaks from discharge port, inspect inflation valve poppet assembly in accordance with [paragraph 10-43](#).

18. Check for leaks; then remove assembly from tank and dry with an air blast. Wipe assembly with a lint-free cloth.

NOTE

After storage period, inflation assembly should be checked for proper weight.

19. If required, re-mark tare weight, gross weight, charge weight on cylinder.

20. Safety-wire the assembly in accordance with paragraph 10-46.

10-46. SAFETY-WIRING. To safety-wire the inflation assembly, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Torque Meter	—
1	Special Socket	—
1	Dial Push/Pull Gage	DPPH50 (CAGE 11710) NIIN 00-473-0108 or equivalent

WARNING

To ensure that proper safety wire is used on liferaft inflation assemblies, a tensile strength test shall be performed on a sample of wire from each spool intended for this use prior to using.

Materials Required

Quantity	Description	Reference Number
As Required	Wire, Aluminum, 0.032 inch Diameter, Temper 0	QQ-A-225/1 NIIN 00-595-8200
2	Screw, Brass	MS35273-2 NIIN 00-720-8657
2	Washer, Lock	MS35333-10 NIIN 00-011-5551
As Required	Seal, Lead	NIIN 00-598-3427
1	Pin, Steel	—

1. Secure one end of a 12-inch sample of aluminum wire (0.032-inch diameter) to a stationary support.

2. Attach opposite end to pull scale; then apply a pull force.

NOTE

Tensile strength of sample shall be 8 to 15 pounds.

3. Remove valve cover plate and ensure correct routing of pull cable. See [figure 10-10](#).

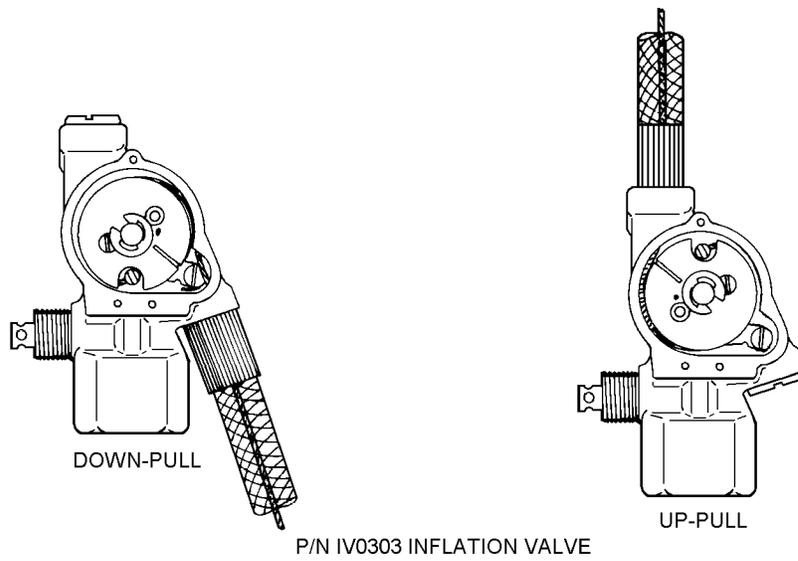
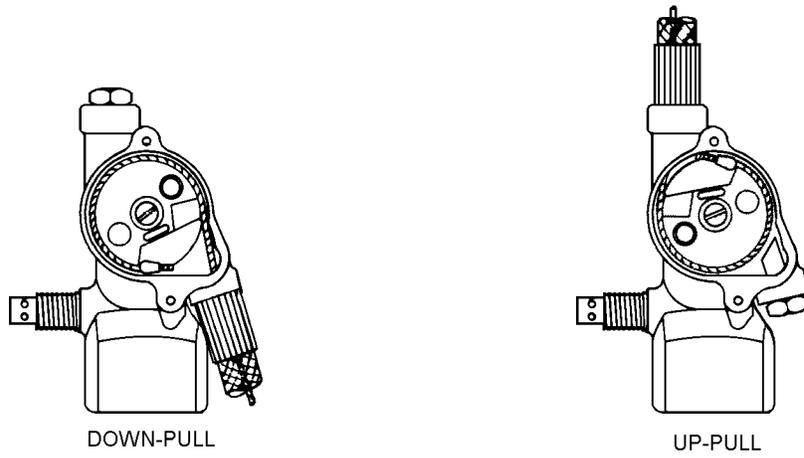
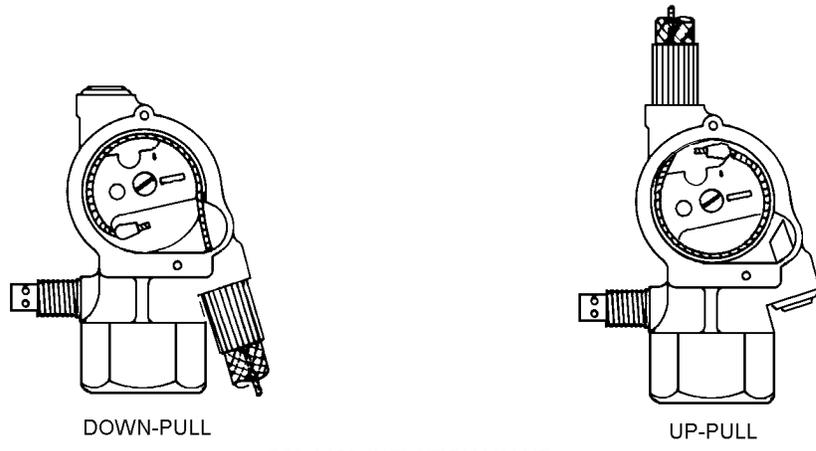


Figure 10-10. Routing of Multiplace Liferaft Pull Cable

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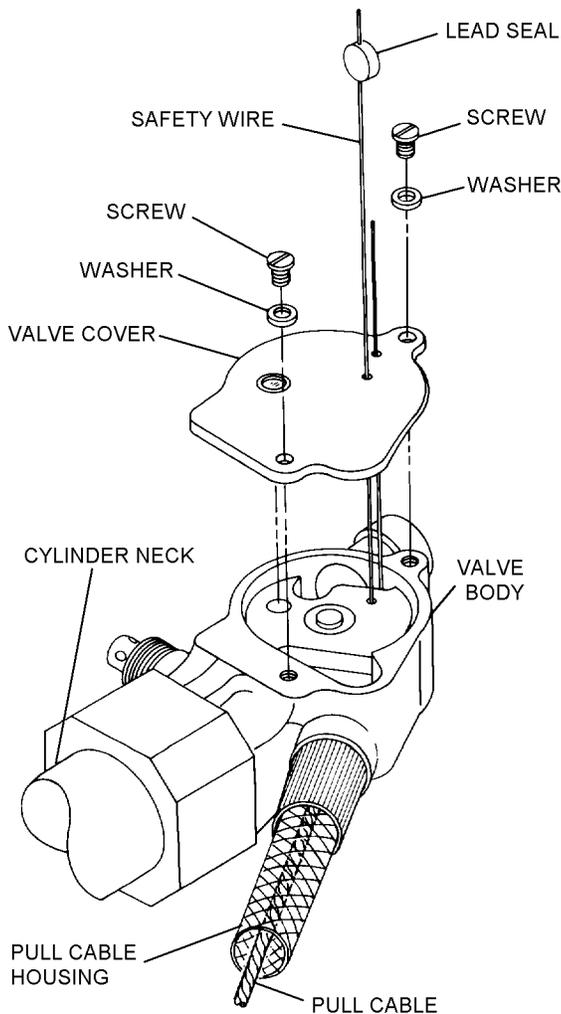
NOTE

Ensure that pull cable used for multiplace liferafts has been proof load tested in accordance with [paragraph 10-23](#).

4. Route safety wire as shown. Use 0.032-inch diameter aluminum wire.

6. Examine inflation valve to ensure the presence of screw and lockwasher.

7. Tighten discharge port to a torque valve of 60 ± 5 in-lb.

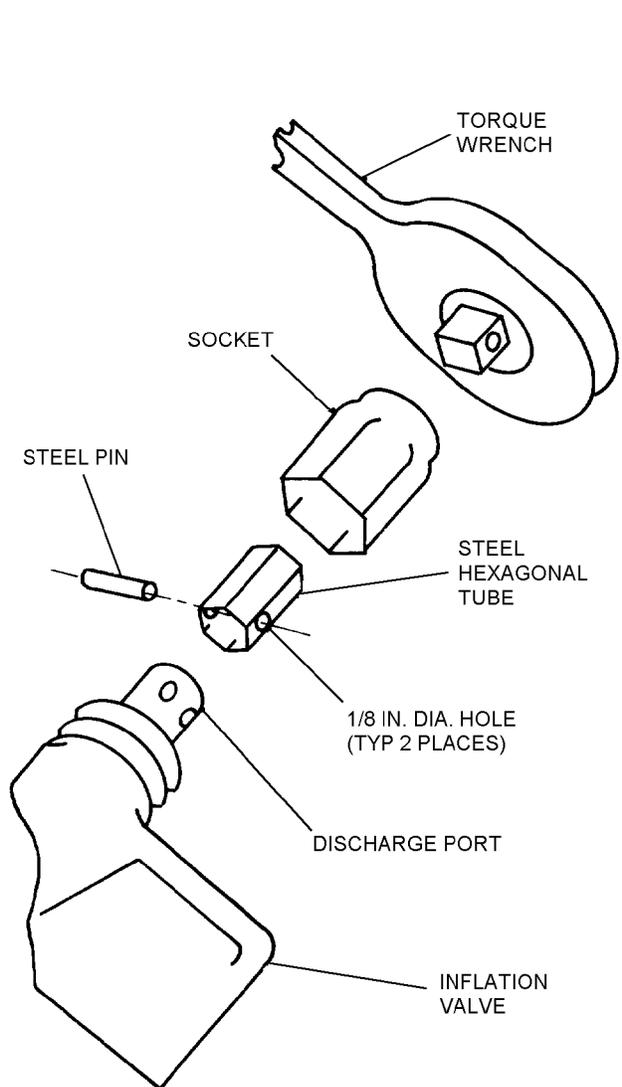


TYPICAL INSTALLATION OF SAFETY WIRE

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Step 4 - Para 10-46

5. Replace valve cover. Twist ends of safety wire to achieve maximum tautness and crimp lead seal. Ensure that pull cable is properly installed. Green dot should be visible in valve cover window.



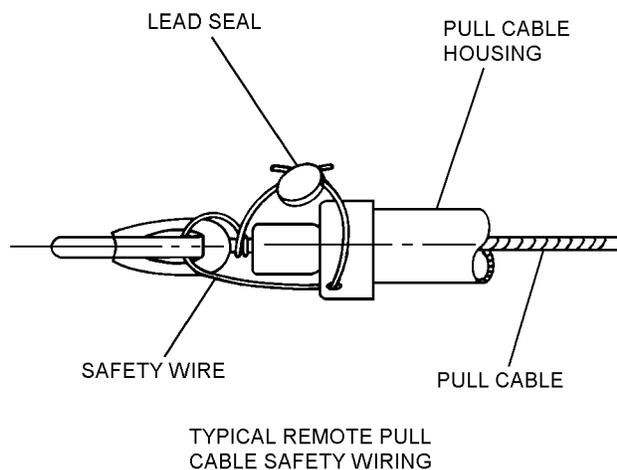
Step 7 - Para 10-46

J0046007

NOTE

Multiplace liferafts used in aircraft wing compartments shall be safety-wired according to applicable aircraft maintenance instructions.

8. Safety-wire pull cable to pull cable housing as shown. Use 0.032-inch diameter aluminum wire on all liferafts.



J0046008

Step 8 - Para 10-46

9. If inflation assembly is to be stored, attach a red tag with the following instructions printed in ink: **WARNING: WEIGH INFLATION ASSEMBLY BEFORE INSTALLING ON LIFERAFT. DO NOT INSTALL IMPROPERLY CHARGED CYLINDER OR IMPROPERLY SAFETY-WIRED INFLATION VALVE.**

10-47. REPAIR/REPLACEMENT.

10-48. This section contains instructions for the repair or replacement of various components or subassemblies of the LRU-14/A liferaft to ensure that appropriate items of equipment remain in Ready For Issue (RFI) status. Reference numbers for minor parts which are defective, corroded or worn and require replacement are included in the applicable paragraph of this section. Otherwise, refer to [Section 10-4](#). All repairs shall be documented by making necessary entries on ap-

propriate form in accordance with OPNAVINST 4790.2 Series.

10-49. Replacement of easily removed assembly components such as CO₂ inflation valves are authorized in addition to repair and replacement procedures documented in this section. The liferaft shall be subjected to a functional and leakage test each time CO₂ inflation valves are removed and replaced for any reason, and each time inflation valve gaskets are replaced.

10-50. DETERMINATION OF REPAIRABILITY.

Liferafts shall be considered beyond repair for any of the following reasons:

1. Porous fabric areas on tubes.
2. Split or open tube seams.
3. Leakage test failure resulting from other than cut, tear, or puncture.
4. Damaged, malfunctioning, excessively worn, or corroded inlet valve, manifold assembly or oral inflation tube, as applicable.
5. Damaged, malfunctioning, or excessively corroded topping-off valve that cannot be corrected by replacement of topping-off valve opening insert and washer.
6. Leaky bulkheads.
7. Extensively damaged floor.
8. Oral inflation or inlet valve stem separating from the liferaft fabric.
9. Deterioration of the rubberized fabric caused by oil, grease, or any other foreign substance.
10. Deterioration of the rubberized fabric caused by a heavy mildewed condition.
11. Opening of air retaining seams for internal repair.
12. Rips, tears, or punctures in the pneumatic compartments which exceed 2 inches.
13. In the judgement of a competent inspector, requiring excessive repair.

NAVAIR 13-1-6.1-1

10-51. CEMENTING LIFERAFTS. All cementing of liferafts shall be performed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Roller, Wooden	GGG-R-00620

Materials Required

Quantity	Description	Reference Number
1	Disposable Brush	NIIN 00-514-2417
As Required	Toluene	TT-T-548 NIIN 00-281-2002
	-or-	
	Methyl Ethyl Ketone, (MEK)	TT-M-261 NIIN 00-281-2762
As Required	Adhesive, Class 3, Polychloroprene	MIL-A-5540 NIIN 00-142-9913
As Required	Talc, Technical	MIL-T-50036A NIIN 01-080-9589

WARNING

Do not use toluene or MEK near open flames, heat or electrical sparks. Avoid prolonged contact with skin or breathing of fumes. Use only in well-ventilated area.

CAUTION

Use only Polychloroprene adhesives and Polychloroprene-coated cloth and patches on Polychloroprene-coated LRU-14 Liferaft assemblies.

NOTE

Toluene shall be the primary solvent used in the fabrication or repair of this assembly. MEK may be used if toluene is not available. Always use solvents sparingly and wipe up excess solvents; do not allow to dry by evaporation.

Toluene or MEK must be applied vigorously to liferaft material over three years old in order to reactivate the material prior to cementing. Pigment from the material coloring staining a cloth rubbed over the treated surface will indicate the material has been reactivated. Adhesive shall be applied immediately after the surface has dried.

1. Clean both surfaces to be cemented with four applications of toluene or MEK. Apply toluene or MEK with back-and-forth strokes on the first and third applications, and one-way strokes on the second and fourth applications. Allow areas to dry between applications.

2. Prepare cement and accelerator mixture. Prepare only enough mixture for 8 hours, as this is the effective active period for the mixture. Dispose of any remaining mixture at this time.

3. Using a disposable brush, apply adhesive to completely cover surfaces to be cemented. Use long one-directional strokes and complete each surface before adhesive becomes tacky as the brush may pull tacky adhesive from the surface. Allow to dry for ten minutes.

4. Apply a second coat of adhesive as in [step 3](#). Use brush strokes perpendicular to the original direction.

5. When second coat of adhesive has become tacky, place pieces together. If cemented area is a cut or tear, butt edges of damage before applying patch. Roll out bubbles with a wooden roller.

6. Allow adhesive to cure a minimum of 48 hours.

7. Dust area with talc.

10-52. PATCHING LIFERAFTS. To patch inflatable survival equipment, select color to approximately match item to be patched, and proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Cloth, Laminated, Var. D, Blue	MIL-C-23070 NIIN 00-132-5009
	-or-	
	Cloth, Laminated, Var. C, Orange	MIL-C-23070 NIIN 00-081-5829
	-or-	

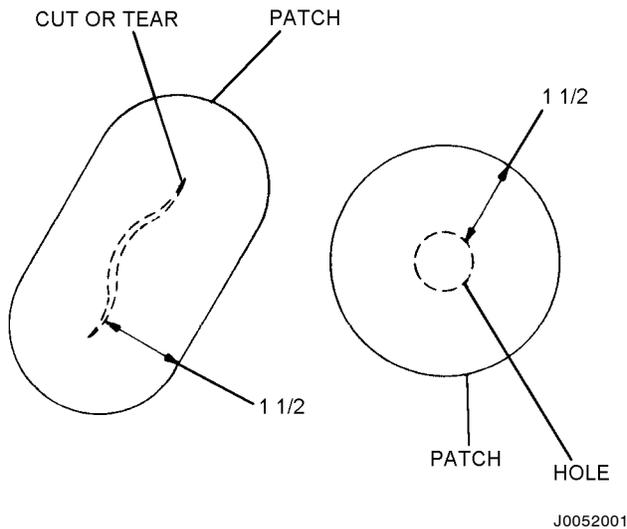
Materials Required (Cont)

Quantity	Description	Reference Number
As Required	Cloth, Laminated, Var. C, Yellow	MIL-C-23070 NIIN 00-926-6489



Use only Polychloroprene adhesives and Polychloroprene-coated cloth and patches on Polychloroprene-coated LRU-14 Liferaft assemblies.

1. Cut a rounded patch 1 1/2 inches larger than the damage on all sides.



Step 1 - Para 10-52

2. Scallop edges of patch if it is larger than 5 inches in diameter.
3. If damaged area in floor is larger than 1 inch, patches shall be applied to both sides.
4. Center patch over damage and trace on outline of patch on fabric.

5. Cement patch to damaged area in accordance with paragraph 10-51.

6. Dust area with talc.
7. Perform a leakage test.

10-53. RECEMENTING OR REPLACING SEAM TAPES. This repair shall be performed only if a flotation tube does not leak, that is, if only the outer seam tape is loose, or if the seam does not seal a flotation tube. To recement or replace a seam tape, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Toluene	TT-T-548 NIIN 00-281-2002
-or-		
	Methyl Ethyl Ketone (MEK)	TT-M-261 NIIN 00-281-2762
As Required	Talc, Technical	MIL-T-50036A NIIN 01-080-9589

NOTE

Seam separation in floors and seats may be repaired provided safety and flotation capabilities are not compromised. Exercise sound judgement in determining whether such repairs are within local capabilities. All cementing shall be performed in accordance with paragraph 10-51.

1. If tape is present and undamaged, recement tape to liferaft.
2. If tape is missing, measure and fit a replacement tape to area and cement in place. Overlap other seams a minimum of 1 inch.



Do not use toluene or MEK near open flame, heat, or electrical sparks. Avoid prolonged contact with skin or breathing of fumes. Use only in well-ventilated area.

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Avoid excessive application of toluene or MEK on seams. Remove any spilled or excessive toluene or MEK immediately.

NOTE

Toluene shall be the primary solvent used in the fabrication or repair of this assembly. MEK may be used if toluene is not available. Always use solvents sparingly and wipe up excess solvents; do not allow to dry by evaporation.

3. If tape is damaged, peel damaged tape from liferaft. Apply toluene or MEK only as needed to loosen tape. Trim damaged tape and replace with new tape. Overlap other seam tape a minimum of 1 inch.

4. Perform leakage test.

10-54. SEA ANCHOR/MOORING LINE REPLACEMENT. To replace worn or damaged sea anchor or mooring line, proceed as follows:

Materials Required		
Quantity	Description	Reference Number
1	Sea Anchor, Type I, Size 2	MIL-A-3339
As Required	Cord, Nylon Type III	MIL-C-5040 NIIN 00-240-2146

1. (Complete Assembly Replacement) Secure free end of mooring line to sea anchor mooring patch on liferaft with bowline knot followed by an overhand knot.

10-32 Change 11

2. (Mooring Line Replacement Only) Sear both ends of a 26-foot length of MIL-C-5040 Type III nylon cord. Secure one end to sea anchor bridle, and other end to sea anchor mooring patch on liferaft with bowline knot followed by an overhand knot.

10-55. INSPECTION RECORD PATCH.

NOTE

The 28th In-Service Management Panel meeting for Aviation Life Support Systems rescinded the requirement for the packer to sign the Inspection Record Patch on life-rafts. The requirement for all other record documentation remains unchanged. The reason for this change is that most Inspection Record Patches are unreadable, and the packer's and inspector's names, including the type of inspection (leak/functional), are documented on Aviation Crew Systems Records.

10-56. ADDITION OF INTERNATIONAL MORSE CODE PATCH. To fabricate and install an International Morse Code patch, proceed as follows:

Materials Required		
Quantity	Description	Reference Number
8 x 5 inches	Cloth, Nylon, Var. C, Rubber-Coated, Orange	MIL-C-23070 NIIN 00-926-6489
As Required	Ink, Black Waterproof	SPE-92 NIIN 00-161-4229

1. Letter markings (see figure 10-12) on uncapped side of patch using black waterproof ink.

Figure 10-11. Deleted

NOTE

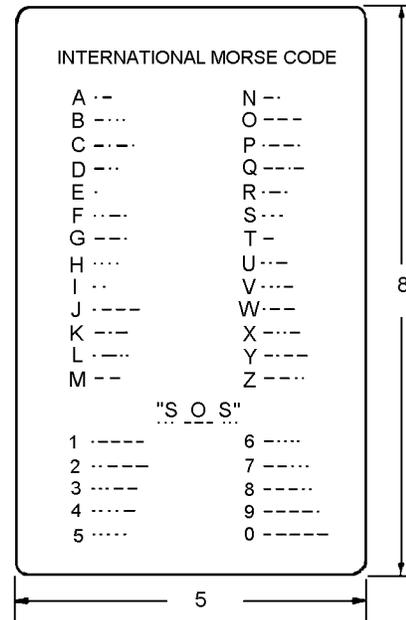
If replacing a worn or abraded International Morse Code patch, a new International Morse Code patch shall be cemented directly on top of old patch.

2. Mark a 8 x 5-inch area at location stated in tables 10-3 and 10-5, and shown in figure 10-4.

NOTE

Cement applications shall performed in accordance with paragraph 10-51.

3. Cement International Morse Code patch to marked area on liferaft so that top is up and patch is readable from inside raft.



10100012

Figure 10-12. International Morse Code Patch

NAVAIR 13-1-6.1-1

10-57. REPLACEMENT OF LOCKING CONES (LIFERAFT CASES). To replace damaged locking cones on liferaft cases, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nylon 3-Cord	V-T-295
As Required	Cone, Locking	NIIN 00-095-0075-LX

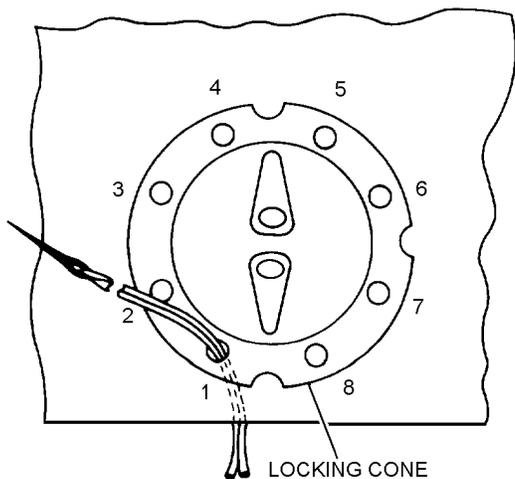
1. Cut and remove tacking holding damaged cone to life raft case. Remove damaged cone.

NOTE

If fabric supporting locking cone is damaged, fabricate and install a reinforcing patch on inside of case.

2. Position new locking cone in exact location of damaged or missing cone. Ensure locking pin hole in apex of cone is properly aligned.

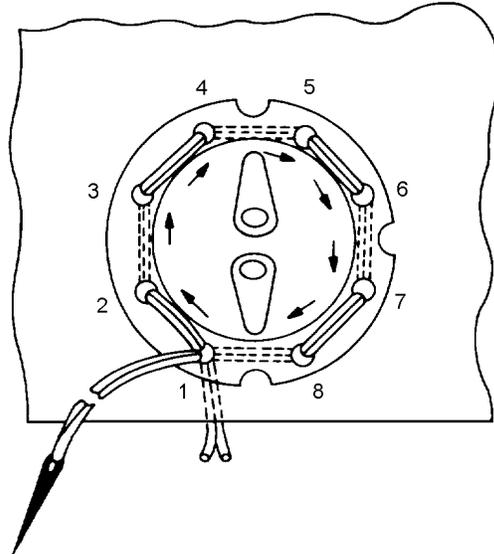
3. Push needle, threaded with waxed nylon 3-cord (V-T-295) doubled, up through panel and through hole 1 in locking cone. Pull needle and thread through hole until approximately three inches of thread remains on underside of panel.



Step 3 - Para 10-57

J0057003

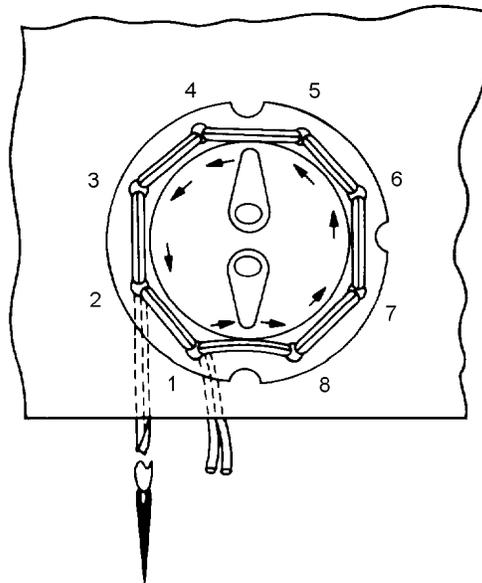
4. Working clockwise, pass needle down through hole 2, up through hole 3. Continue until all holes are threaded, and needle passes up through hole 1. Take up all slack in thread.



Step 4 - Para 10-57

J0057004

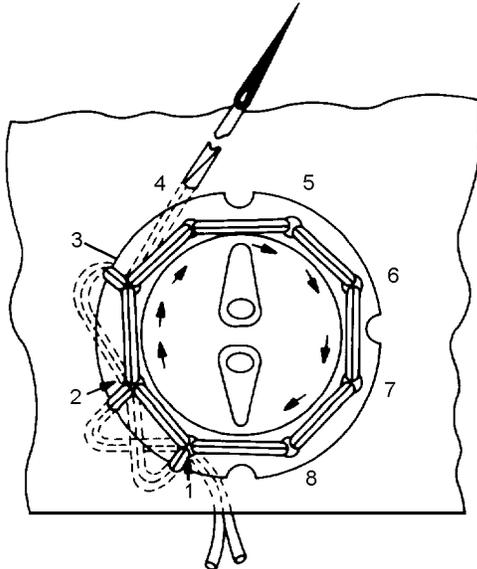
5. Working counterclockwise, pass needle down through hole 8, up through hole 7. Continue until needle passes down through hole 2. Take up all slack in thread.



Step 5 - Para 10-57

J0057005

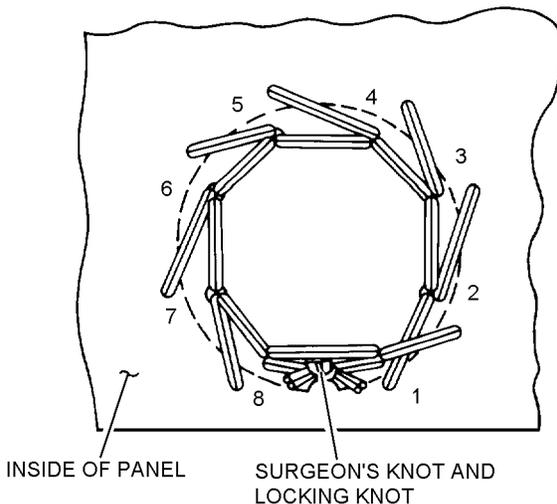
6. Pass needle up through panel at outside edge of cone directly adjacent to hole 1. Working clockwise, pass needle down through hole 1 and up through panel adjacent to hole 2, then down through hole 2. Continue stitching in this manner until needle passes down through hole 8. Take up all slack in thread.



Step 6 - Para 10-57

J0057006

7. Tie ends of thread on inside of panel with surgeon's knot followed by a square knot. Trim thread ends 1/4 inch from knot.



Step 7 - Para 10-57

J0057007

10-58. RELOCATION OF RETAINING LINE INSTRUCTION TAG. To relocate retaining line instruction tag, proceed as follows:

Materials Required

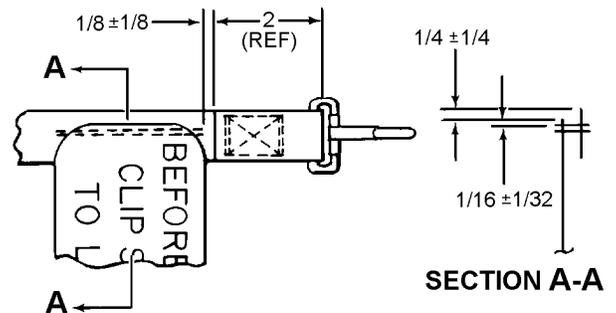
Quantity	Description	Reference Number
As Required	Thread, Nylon Type II, Size E	V-T-295 NIIN 00-204-3884

1. Remove the instruction tag from the snaphook.

NOTE

All stitching shall be done with size E thread, 6 to 10 stitches per inch.

2. Position instruction tag on retaining line and attach using two rows of stitches.



Step 2 - Para 10-58

J0058002

10-59. SOLDERING OF SNAPHOOK SPRING LATCH ON REMOTE ACTUATOR ASSEMBLY. To solder the snaphook spring latch used on remote actuator assemblies, proceed as follows:

Materials Required

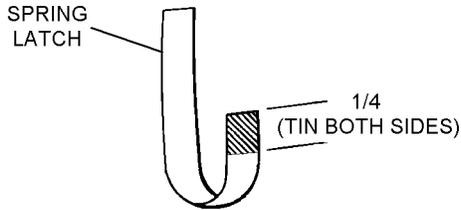
Quantity	Description	Reference Number
As Required	Solder, Type AR	QQ-S-571

1. Remove pull cable from remote actuator assembly.

2. Remove spring latch from snaphook.

NAVAIR 13-1-6.1-1

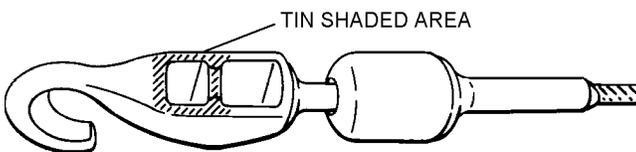
3. Using soft solder, tin both sides of spring latch 1/4 inch from end of hook.



Step 3 - Para 10-59

J0059003

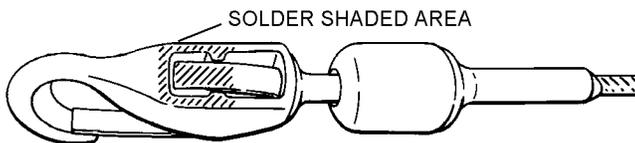
4. Using soft solder, tin snaphook.



Step 4 - Para 10-59

J0059004

5. Reinsert spring latch into snaphook and soft solder, securing spring latch in place.



Step 5 - Para 10-59

J0059005

6. Subject entire pull cable to a 50-lb pull test.

10-60. FABRICATION OF PAINTER LINE POUCH. Painter lines shall be installed on all multi-place liferafts. To fabricate the painter line pouch, proceed as follows:

Materials Required		
Quantity	Description	Reference Number
5 x 20 inches	Leatherette, Class 2 or Herculite No. 80, Grey	CCC-A-700
53 inches	Tape, Pile, 3/4 inch	MIL-F-21840
41 inches	Tape, Hook, 3/4 inch	MIL-F-21840
As Required	Thread, Nylon, Type II, Size E	V-T-295 NIIN 00-204-3884
1	Snaphook, Wire Body, Fixed Loop Eye, Flat Spring Closure, With Retainer	MIL-S-43770/ 1-CWBC1
60 feet	Cord, Nylon, Type I	MIL-C-5040 NIIN 00-240-2154

NOTE

All stitching shall be done with size E nylon thread (V-T-295, Type II), using 8 to 10 stitches per inch.

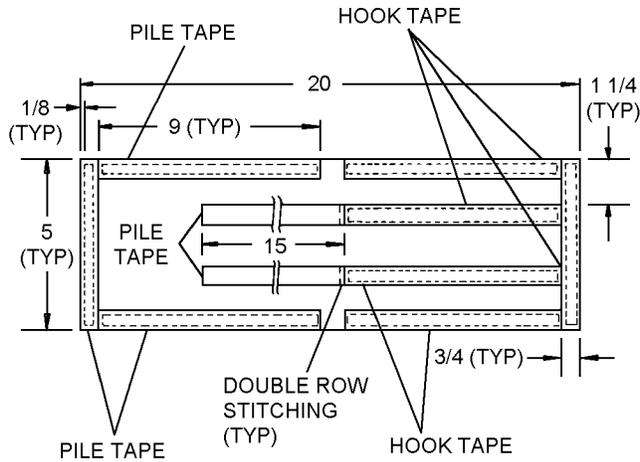
1. Cut and stitch hook and pile tape along edge of material. See [figure 10-13](#).

2. Stitch two 9-inch lengths of hook tape 1 1/4 inch from sides. See [figure 10-13](#).

NOTE

Stitch pile tape on one end only.

3. Position face up a 15-inch length of pile tape at inner end of each inside strip of hook tape. Secure inner end of each pile tape to material with double row of stitching. See [figure 10-13](#).



10100013

Figure 10-13. Painter Line Pouch

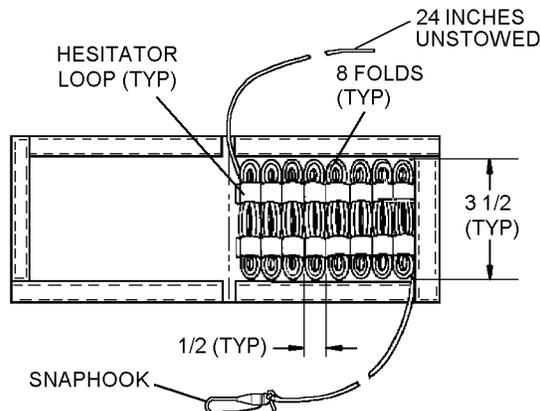
4. Form 1/2-inch wide hesitator loops, 1/8 inch apart. Press hook and pile tape together between loops. See [figure 10-14](#).

5. Stow painter line, making 3 1/2-inch bights, placing 8 folds in each hesitator loop. See [figure 10-14](#).

6. Leave 24 inches of line unstowed at each end for securing painter line to liferaft and aircraft. See [figure 10-14](#).

7. Fold material in half, forming pouch, and leave unstowed ends outside pouch. Press hook and pile tape together.

8. Attach snaphook to end of unstowed painter line extending from open end of pouch with a bowline knot.



10100014

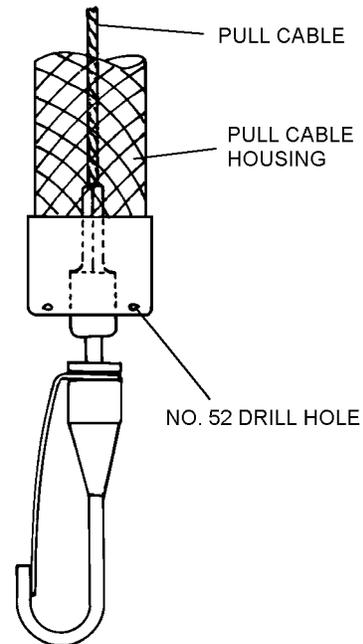
Figure 10-14. Stowed Painter Line

10-61. DRILLING HOLES IN P/N A128-RT-1. To drill holes in P/N A128-RT-1, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Drill, No. 52	—

1. Using a no. 52 drill, drill two holes in pull cable housing.



J0061001

Step 1 - Para 10-61

2. Safety-wire pull cable housing in accordance with [paragraph 10-46](#).

10-62. DRILLING HOLES IN P/N IV0303 (VEE Mfg.) INFLATION VALVE. To drill holes in P/N IV0303 (VEE Mfg.) inflation valve, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Drill, No. 52	—

1. Disconnect inflation valve from manifold.

NAVAIR 13-1-6.1-1

2. Remove cover plate and plastic dust shield from valve.

3. Using a no. 52 drill, drill two holes in cover plate and plastic dust shield. See [figure 10-15](#).

4. Remove cam screw from sheave assembly.



Care must be taken not to rotate cam.

5. Remove sheave assembly.

6. Carefully remove tru-arc ring from stem on valve body.

7. Remove valve sheave from valve body.

8. Using a no. 52 drill, drill a hole at a 60° angle in valve sheave. See [figure 10-15](#).

NOTE

Section line B-B through the center of the screwdriver slot and the center of the screw hole. A starter hole will be necessary to seat the drill, prior to drilling the angled hole.



Valve cover plate is not interchangeable between manufacturers.

9. Install valve sheave, tru-arc ring, release cable, cam screw, plastic dust shield, and cover plate. See [paragraph 10-46](#) for proper safety-wiring.

10. Connect inflation valve to manifold.

10-63. DRILLING HOLES IN P/N A128 INFLATION VALVE. To drill holes in P/N A128 inflation valve, proceed as follows:

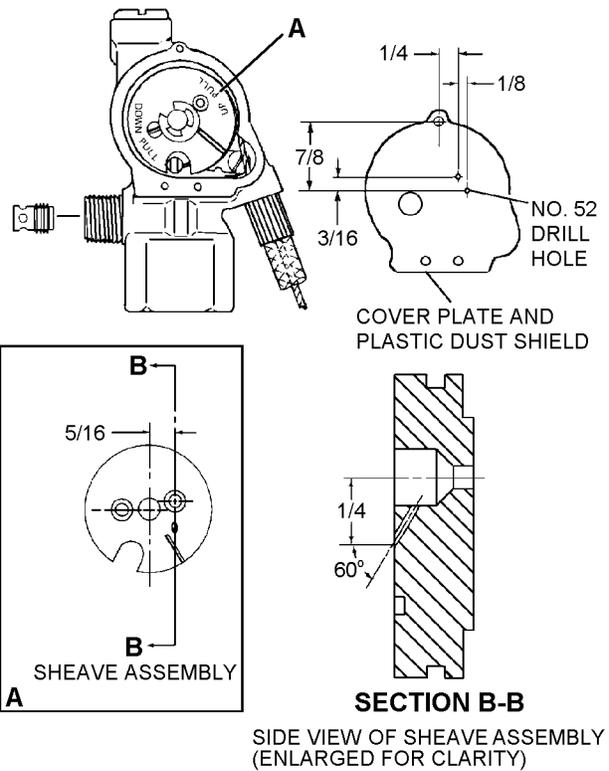


Figure 10-15. Drilling IV0303 Inflation Valve

10100015

Support Equipment Required

Quantity	Description	Reference Number
1	Drill, No. 52	—

1. Disconnect inflation valve from manifold.

2. Remove cover plate from valve.

3. Using a no. 52 drill, drill two holes in cover plate. See [figure 10-16](#).

4. Remove release cable from around valve.

WARNING

Do not rotate cam or depress poppet stem.

5. Remove valve sheave from valve.
6. Using a no. 52 drill, drill a hole at a 23° angle in the valve sheave. See [figure 10-16](#).
7. Install valve sheave, cable, and cover plate. See [paragraph 10-46](#) for proper safety-wiring.
8. Connect the inflation valve to manifold.

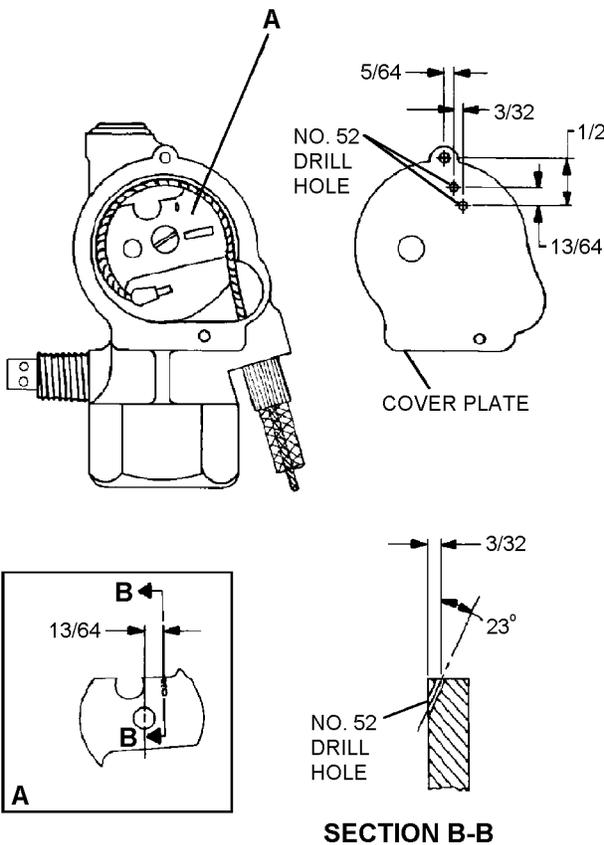


Figure 10-16. Drilling A128 Inflation Valve

10100016

10-64. DRILLING HOLES IN P/N 871444 INFLATION VALVE. To drill holes in part number 871444 inflation valve, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Drill, No. 52	—

1. Disconnect inflation valve from manifold.
2. Remove cover plate from valve.

NOTE

Position of holes depends on type of pull used (up-pull or down-pull).

3. Using a no. 52 drill, drill two holes in cover plate. See [figure 10-17](#).
4. Remove release cable from around valve sheave.

WARNING

Do not rotate cam or depress poppet stem.

5. Remove valve sheave from valve.
6. Using a no. 52 drill, drill a hole at a 18° angle in valve sheave. See [figure 10-17](#).
7. Install valve sheave, cable and cover plate. See [paragraph 10-46](#) for proper safety-wiring.
8. Connect inflation valve to manifold.

10-65. FABRICATION OF CYLINDER VALVE ANTI-CHAFING SLEEVE. To fabricate a cylinder valve antichafing sleeve, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Punch, Cutting, Type I, Class B, Style 1, Size 13	GGG-P-833A NIIN 00-180-0927

Materials Required

Quantity	Description	Reference Number
16 1/2 x 8 1/2 inches	Cloth, Laminated Var. D, Blue	MIL-C-23070 NIIN 00-132-5009
	-or-	
	Cloth, Laminated Var. C, Orange	MIL-C-23070 NIIN 00-081-5829
	-or-	
	Cloth, Laminated Var. C, Yellow	MIL-C-23070 NIIN 00-926-6489
As Required	Thread, Nylon, Type II, Size E	V-T-295 NIIN 00-204-3884

NOTE

All stitching shall be done with size E thread, 6 to 10 stitches per inch.

1. Make two folds in the nylon rubber-coated cloth, each fold being 5 1/2 inches as shown.

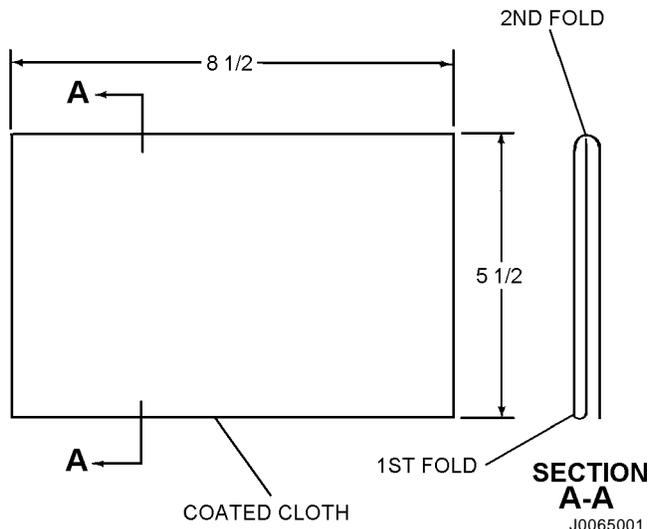
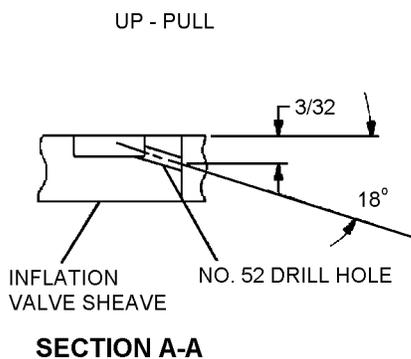
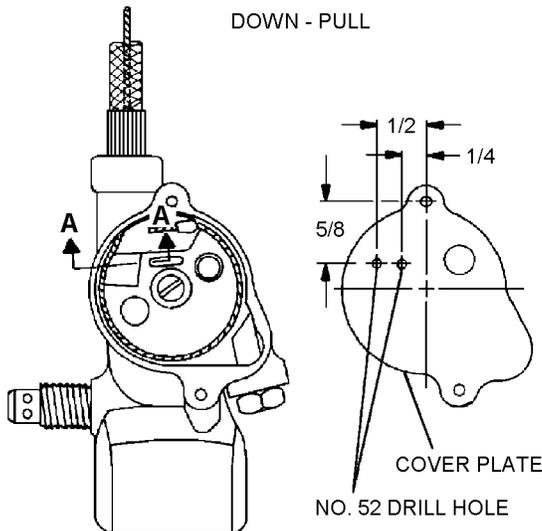
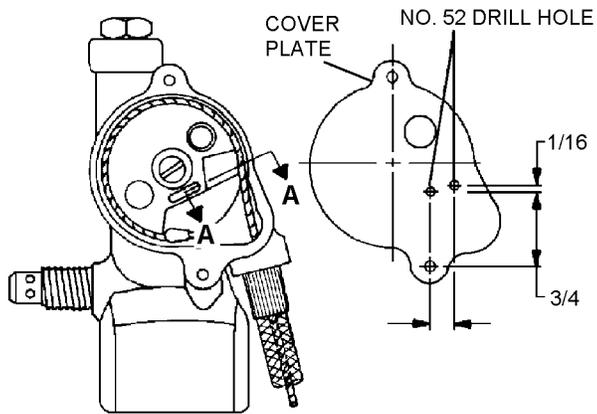


Figure 10-17. Drilling 871444 Inflation Valve

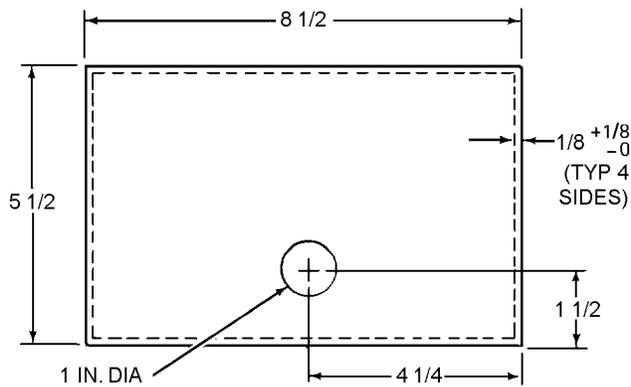
10100017

Step 1 - Para 10-65

J0065001

2. Sew a 1/8-inch inboard border row of stitching around the perimeter of the assembly.

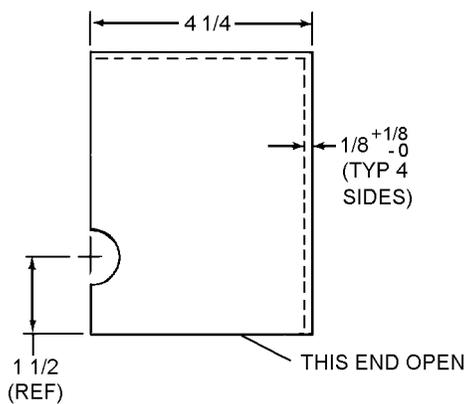
3. Position assembly on cutting board and punch a 1-inch diameter hole through all three layers of material.



Step 3 - Para 10-65

J0065003

4. Fold assembly in half and sew a 1/8-inch row of stitching inboard from edge on end and side.



Step 4 - Para 10-65

J0065004

10-66. FABRICATION OF 10-FOOT RETAINING LINE. To fabricate a 10-foot retaining line, proceed as follows (see figure 10-18):

Materials Required

Quantity	Description	Reference Number
10 feet 4 1/2 inches	Webbing, Nylon, Type II, 1 inch	MIL-W-4088
As Required	Thread, Nylon, Type II, Size E	V-T-295 NIIN 00-204-3884
1	Snaphook	M43770/1-CWBC3

1. Using dimensions shown, pass one end of nylon webbing through snaphook and boxstitch.

2. Using dimensions shown, fold opposite end over and boxstitch, forming a loop.

10-67. FABRICATION OF RIGHTING LINE. To fabricate the righting line, proceed as follows:

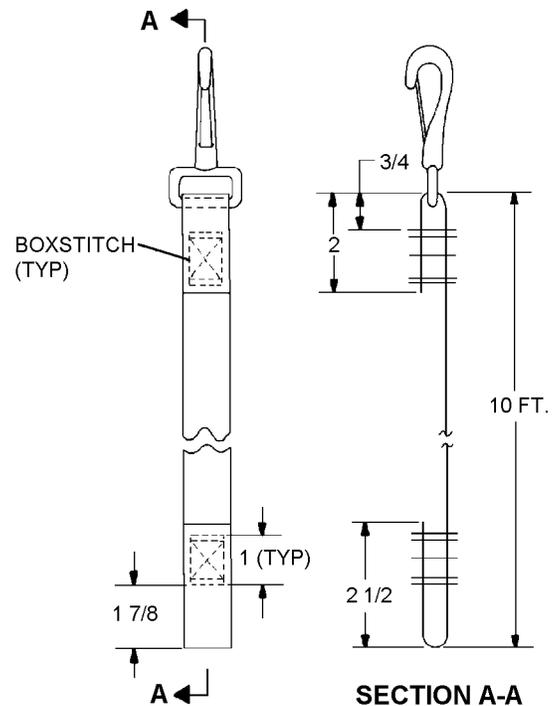


Figure 10-18. 10-Foot Retaining Line

10100018

NAVAIR 13-1-6.1-1

Materials Required

Quantity	Description	Reference Number
12 feet	Rope, Nylon, Type I, 3/4 inch Circumference, Natural Color	MIL-R-17343 NIIN 00-618-0261

1. Securely tie righting line to liferaft lifeline with a bowline knot on port side opposite manifold (midway between the two lifeline patches). See [figure 10-4](#).

2. Tie two overhand knots, the first knot 1 foot from the free end and the second knot 1 foot from the first. The finished length of the knotted righting line shall be 10 feet 6 inches \pm 6 inches. To avoid fraying, sear all cut edges. Do not form sharp edges.

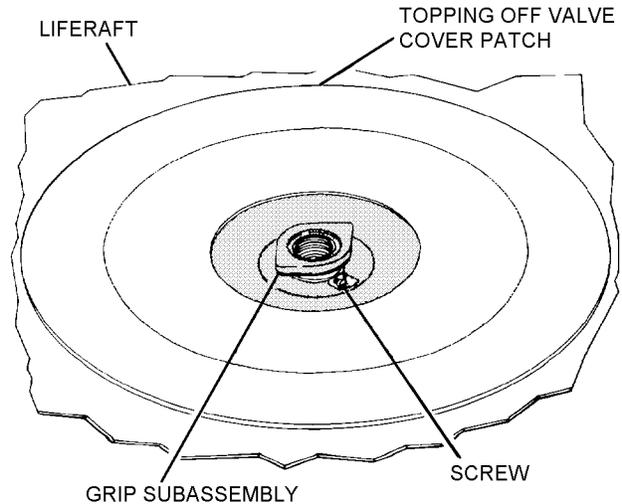
10-68. REPLACEMENT OF TOPPING-OFF VALVE. To replace a damaged or corroded topping-off valve, proceed as follows:

Materials Required

Quantity	Description	Reference Number
1	Grip Subassembly (See Note)	MS22054-3
1	Washer (See Note)	MS22054-7
1	Screw (See Note)	MS22054-9
As Required	Applicator, Wood, Cotton-tipped	GGA-616D
As Required	Toluene	TT-T-548 NIIN 00-281-2002
	-or-	
	Methyl Ethyl Ketone (MEK)	TT-M-261 NIIN 00-281-2762
As Required	Adhesive, Class 3, Polychloroprene	MIL-A-5540 NIIN 00-142-9913

Note: This component is part of parts kit, P/N 1106AS110-1 (CAGE 30003) NIIN 01-128-5331.

1. Ensure that grip subassembly is in closed position.

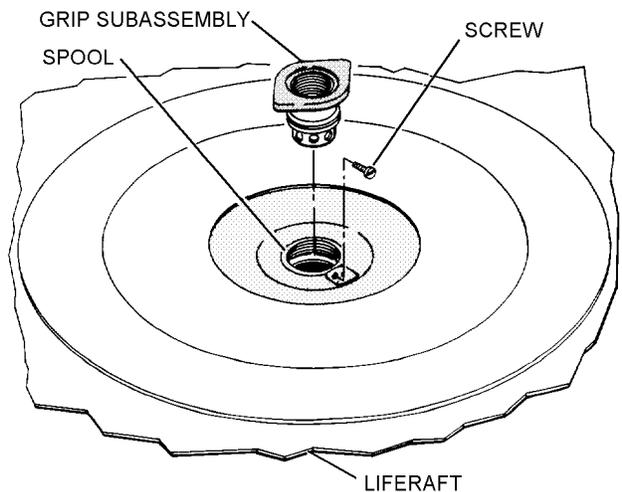


J0068001

Step 1 - Para 10-68

2. Turn grip subassembly clockwise approximately 1 1/2 turns.

3. Remove screw from side of spool.



J0068003

Step 3 - Para 10-68

4. Unscrew and remove grip subassembly from spool.

WARNING

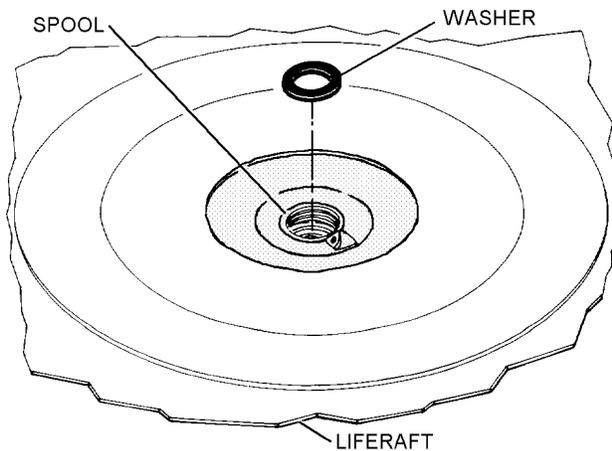
Do not use toluene or MEK near open flame, heat or electrical sparks. Avoid prolonged contact with skin or breathing of fumes. Use only in well-ventilated area.

CAUTION

To avoid damaging valve threads, care should be taken when inserting instrument to remove washer.

Use only enough toluene to loosen washer. Ensure that no toluene or MEK passes through bottom of valve opening. Wipe excess from liferaft as rapidly as possible.

5. Remove washer located in bottom of spool. If necessary, use toluene or MEK to assist in removal.



J0068005

Step 5 - Para 10-68

NOTE

Toluene shall be the primary solvent used in the fabrication or repair of this assembly. MEK may be used if toluene is not available. Always use solvents sparingly and wipe up excess solvents; do not allow to dry by evaporation.

Ensure that no toluene, MEK, or congealed masses of adhesive enter the opening at the bottom of the spool.

6. Insert an applicator or similar instrument dipped in toluene or MEK into spool and swab washer seating area to remove old adhesive.

7. Apply adhesive, using an applicator or similar instrument, to washer seating area on inside bottom of spool.

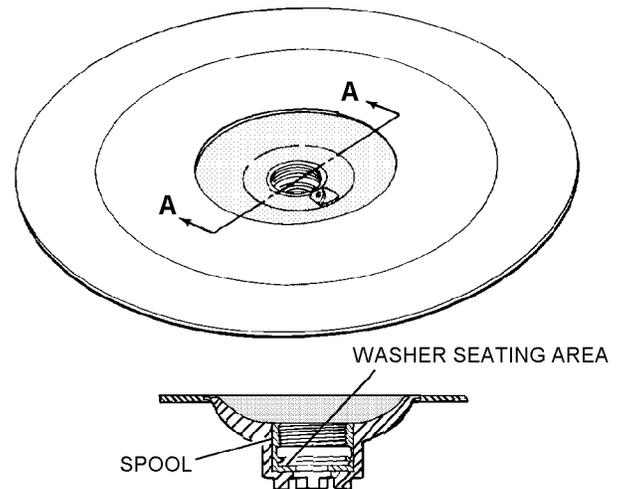
CAUTION

Do not use sharp instrument to insert washer into seating area.

NOTE

Ensure that the washer is properly seated onto bottom of spool and that the threads and opening are free of adhesive.

8. Insert washer into washer seating area.



J0068008

Step 8 - Para 10-68

9. Screw grip subassembly counterclockwise into spool until it closes.

10. Turn grip subassembly clockwise approximately 1 1/2 turns.

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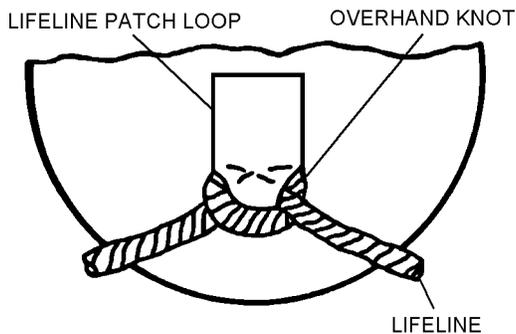
11. Tighten screw into side of spool till snug.
12. Ensure proper operation of topping-off valve.
13. Perform leakage test.

10-69. REPLACEMENT/REPAIR OF LIFELINE.

To replace or repair the lifeline proceed as follows:

Materials Required		
Quantity	Description	Reference Number
As Required	Rope, Nylon, 3/4 inch circumference, Natural Color	MIL-R-17343 NIIN 00-618-0261
As Required	Thread, Nylon Type II, Size E	V-T-295 NIIN 00-204-3884

1. Inflate raft to test pressure.
2. Carefully remove damaged lifeline from all lifeline patch loops (overhand knot) and from righting line (bowline knot).
3. Thread nylon cord through all lifeline patch loops, tying an overhand knot around each loop. Leave 2 inches ± 1 inches slack in lifeline between each lifeline patch loop.

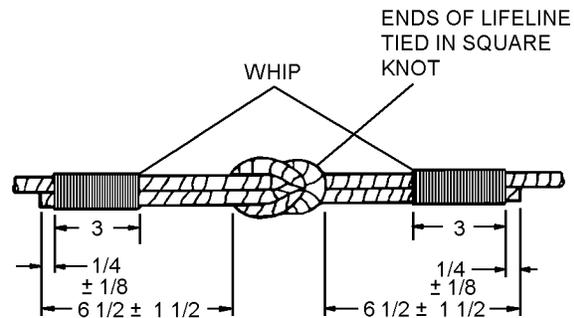


Step 3 - Para 10-69

J0069003

4. Secure ends of lifeline with a square knot midway between lifeline patch loops leaving 6 1/2 inches $\pm 1 1/2$ inches on each end of lifeline outside of knot.

5. Wrap (whip) the last 3 inches of 6 1/2 inch loose ends with Type II size E nylon thread to secured lifeline. A length of 1/4 inch $\pm 1/8$ inch of bitter end will extend beyond the whip.



Steps 4 and 5 - Para 10-69

J0069005

6. Secure righting line to lifeline with bowline knot (Refer to [paragraph 10-67](#)).

10-70. REPLACEMENT OF LIFERAFT HEAVING LINE.

To replace liferaft heaving line proceed as follows:

Materials Required		
Quantity	Description	Reference Number
75 feet	Cord, Nylon, Coreless Type I, 400 lb Test	MIL-C-7515

1. If required, untie bowline knot and remove defective heaving line from attachment loop in heaving line pocket on main tube of liferaft.

2. Using bowline knot secure one end of replacement line to attachment loop in heaving line pocket.

3. Secure heaving line grommet to opposite end of heaving line using bowline knot.

4. Fake heaving line on flat surface using into 13-inch bights. Gather the line and place rubberband around each end one to two inches from end of bights.

5. Place heaving line in heaving line pocket under grommet. Close pocket and secure snaps.

10-70A. REPAIR OF LIFERAFT CARRYING CASE. To repair the liferaft carrying case, proceed as follows:

Materials Required		
Quantity	Description	Reference Number
As Required	Thread, Nylon, Size E, Type I or II	V-T-295
As Required	Cloth, Laminated Var. C, Orange	MIL-C-23070 NIIN 00-081-5829

1. Tears of less than 1 inch shall be darned or repaired with a zigzag stitch.

2. Tears of 1 to 6 inches shall be covered with a patch.

3. Broken stitching shall be repaired by over stitching 2 inches past the ends of the broken stitches and shall be back-stitched 1 inch.

4. Tears of over 6 inches shall not be repaired.

10-71. PACKING LRU-14 SERIES LIFERAFT.

10-72. The LRU-14 series liferaft assemblies may be packed in droppable configurations (hand-launched) for downpull or for installation in aircraft liferaft compartments. The LRU-14 series shall be packed by qualified personnel at the lowest level of maintenance possible. For cleaning and servicing instructions, refer to [paragraph 10-38](#).

10-73. PACKING PROCEDURE FOR LRU-14 SERIES LIFERAFT ASSEMBLY (DROPPABLE). To pack an LRU-14 series liferaft assembly (droppable), proceed as follows:

1. Ensure that liferaft, carrying case, and accessory container have been inspected in accordance with [paragraph 10-13](#).

2. Ensure that survival items and liferaft accessories have been inspected for expiration and damage. Refer to [table 10-7](#) for items used.

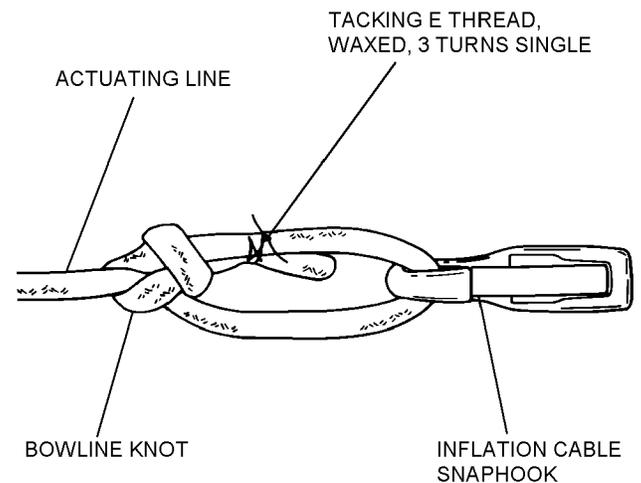
NOTE

NAVAIR 13-1-6.5 contains information on inspection/replacement and modification to the survival items.

3. Wrap breakable survival items with either rubber-coated cloth or cushioning wrap (NIIN 00-142-9008) and secure with rubber bands. Stow survival items in accessory container and supply pocket. Tie hand pump, installed radio(s), and Manual Reverse Osmosis Desalinator (MROD) to accessory container grommet with a 48-inch length of Type III nylon cord. Ensure that a bowline knot is applied.

4. Ensure that inflation valve is routed for down-pull. See [figure 10-10](#).

5. Attach a 42-inch actuating line, nylon cord, Type III (MIL-C-5040) to inflation assembly snaphook with a bowline knot. Tack with three turns of waxed size E nylon thread, single. Tie off tacking with a surgeon's knot followed by a square knot.



J0073005

Step 5 - Para 10-73

WARNING

Wrap only the snaphook. Tape which extends to the pull cable housing will impede actuation of the liferaft inflation assembly.

6. Wrap pull cable snaphook with a layer of wide paper tape to prevent snaphook from hanging up on case after connection.

NAVAIR 13-1-6.1-1

7. Attach retaining line to neck of CO₂ cylinder with a lark's head knot.

8. Ensure that cylinder valve antichafing sleeve is installed.

9. Fake retaining line, righting line, and sea anchor mooring line, and secure with rubber bands.

10. If heaving lines are installed, stow heaving lines in heaving line pockets as follows:

a. Secure the loose end of the heaving line to the loop in the bottom of the heaving line pocket with a bowline knot.

b. Remove all twists and tangles from heaving line and grommet.

c. Fake the heaving line in 11 to 13-inch bights on a flat surface, starting 12 to 15 inches from the loop in the bottom of the heaving line pocket.

d. Continue faking until 15 to 21 inches of line remains, measured from last bight of line to grommet.

e. Gather the heaving line and place a doubled 2-inch rubber band over the heaving line 1 to 2 inches from each end of the bights.

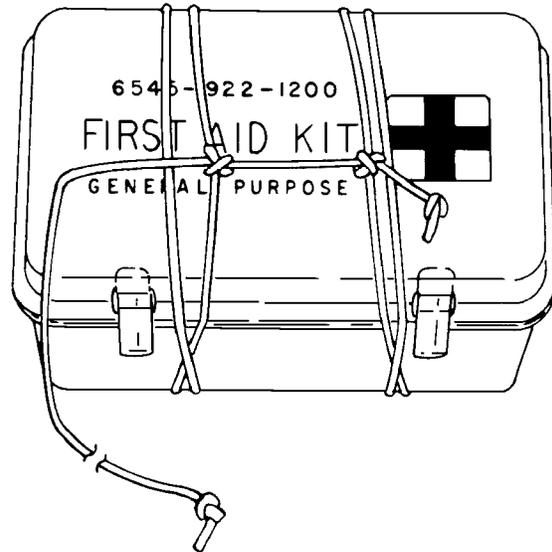
f. Place the heaving line under the grommet in the heaving line pocket and close the pocket.

NOTE

Ensure all items listed in [table 10-7](#) are stowed in accessory container including canopy ribs, bailing buckets and oars, if applicable.

11. Ensure that all topping-off valves are closed and liferaft is completely deflated.

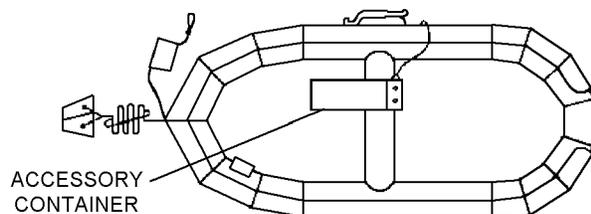
12. Secure latches on first aid kit with several layers of pressure-sensitive tape (NIIN 00-266- 5016). Using an 8-foot length of Type III nylon cord, tie an overhand knot in both ends. Wrap one end of cord two turns twice around the first aid kit on the inside of the kit latches and tie with a surgeon's knot. Route opposite end of cord to accessory container grommet and secure with a bowline knot. Stow first aid kit in accessory container.



J0073012

Step 12 - Para 10-73

13. Stow accessory container in liferaft using a 10-foot length of type III nylon cord, tie to nearest lifeline loop located next to CO₂ cylinder with a bowline knot.



J0073013

Step 13 - Para 10-73

14. Secure supply pocket to mating snap fasteners on raft bulkhead. Ensure slider pull tab on supply pocket is tied to nearest lifeline loop with a 60-inch length of Type III nylon cord using bowline knots on both ends.

NOTE

Painter lines shall be installed on all multi-place liferafts. The painter line shall be a 60-foot length of Nylon cord, Type I (MIL-C-5040, NIIN 00-240-2154). The painter line retains a deployed liferaft to the aircraft during emergency egress and is designed to break under a 100-pound pull if the aircraft sinks.

15. Stow painter line in painter line pouch by forming eight 3 1/2-inch bights in line; and inserting each bight in eight hesitator loops provided. Leave 30 inches of unstowed painter line at each end of pouch. See [figure 10-19](#). Close pouch; then secure with hook and pile tape provided.

16. Attach snaphook to end of unstowed painter

line extending from open end of pouch with a bowline knot. See [figure 10-19](#).

17. Attach end of painter line without snaphook to sea anchor mooring patch loop with a bowline knot.

18. Dust entire liferaft lightly with talc (MIL-T-50036A).

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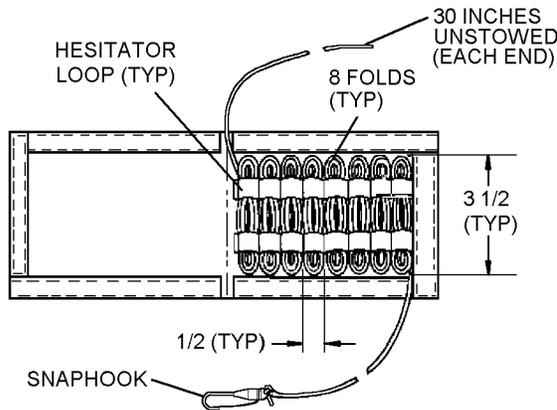


Figure 10-19. Stowed Painter Line

10100019

WARNING

To prevent malfunction during inflation, ensure that no lifeline, painter line, sea anchor mooring line, righting line, or retaining line entangles or loops liferaft hardware during folding and packing procedures.

NOTE

Ensure canopy is rolled and secured to upper tube before folding liferaft.

19. Fold liferaft in accordance with figure 10-20. Ensure that sea anchor is placed on top of folded liferaft and actuating cord extends from folded liferaft.

20. Insert rolled liferaft into carrying case so that pull cable housing and attached actuating line are positioned toward carrying case ripcord handle end flap.

21. Stow painter line pouch behind carrying case end flap opposite from ripcord handle end of container; then attach painter line snaphook to end flap carrying handle.

NOTE

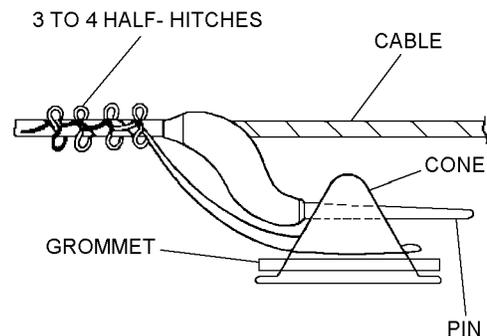
Painter line snaphook shall be attached temporarily to the end flap carrying handle opposite from ripcord end of container. This will provide for easy access to the painter line snaphook for attachment to aircraft.

22. Secure carrying case snap fasteners.

23. Tie free end of actuating line to ripcord cable loop with a bowline knot. Tack with three turns of waxed size E nylon thread, single. Tie off tacking with a surgeon's knot followed by a square knot. See figure 10-20.

24. Attach retaining line snaphook to end flap carrying handle on ripcord handle end of container. Snap container end closed. See figure 10-20.

25. Install ripcord and safety-tie first, middle, and last ripcord pin by passing a 12-inch length of size E nylon thread (V-T-295), single, under ripcord pin. Secure thread to ripcord cable with three or four half-hitches.



J0073025

Step 25 - Para 10-73

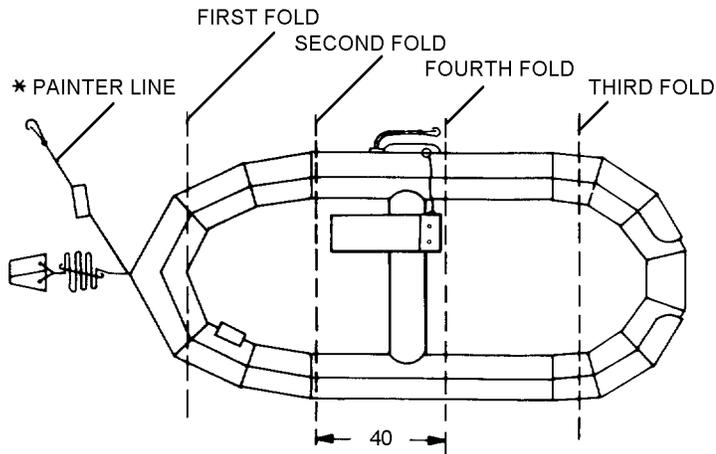
CAUTION

To prevent pull cable housing breakage, do not stow or store liferaft pack on ripcord handle end of pack.

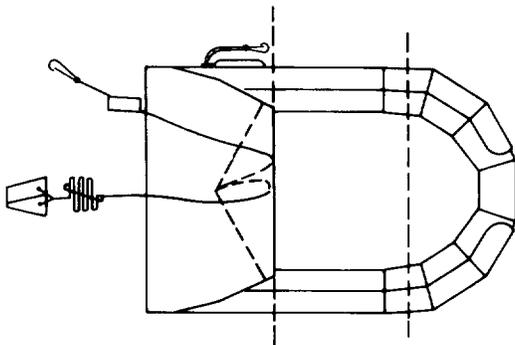
26. Snap ripcord protector flap closed, position ripcord handle under carrying case end flap and snap end flap closed. See step 6, figure 10-20.

27. Make necessary entries on appropriate form in accordance with OPNAVINST 4790.2 Series.

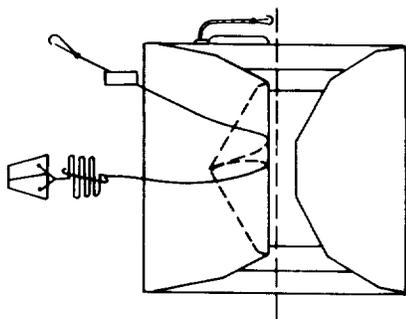
10-74. PACKING PROCEDURE FOR LRU-14 SERIES LIFERAFT ASSEMBLY (EXTERNAL LIFERAFT COMPARTMENT). To pack an LRU-14 series liferaft assembly for external liferaft compartment installation, proceed as follows:



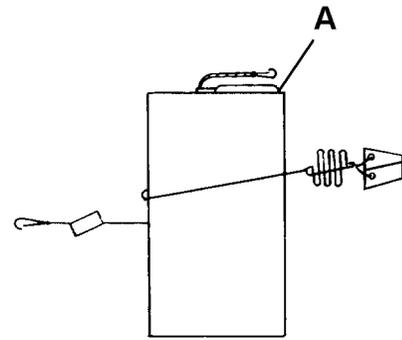
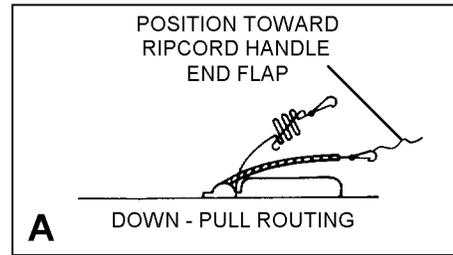
1. RAFT DEFLATED



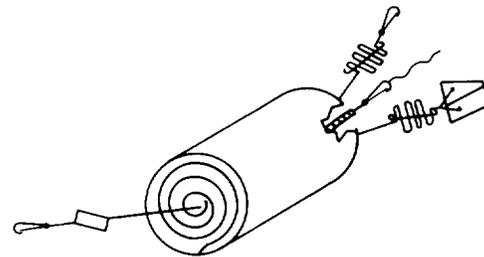
2. FIRST AND SECOND FOLD



3. THIRD FOLD



4. FOURTH FOLD

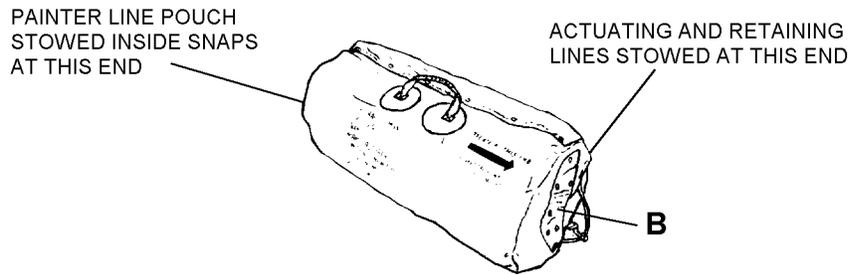


5. RAFT ROLLED
(DOWN - PULL)

* IF APPLICABLE

Figure 10-20. LRU-14 Series Folding Procedure - (Droppable) (Sheet 1 of 2)

1010A020



6. RAFT PACKED IN CARRYING CASE

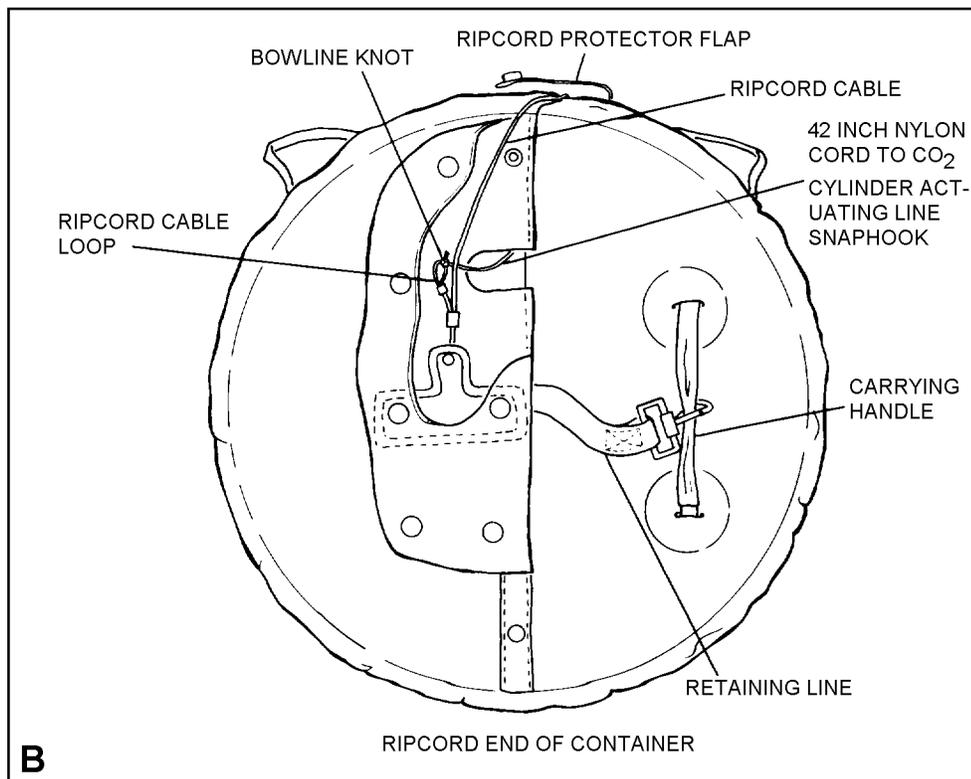


Figure 10-20. LRU-14 Series Folding Procedure - (Droppable) (Sheet 2 of 2)

1010B020

NAVAIR 13-1-6.1-1

1. Ensure that liferaft, carrying case (if applicable), and accessory container have been inspected in accordance with [paragraph 10-13](#).

2. Ensure that survival items and liferaft accessories have been inspected for expiration and damage. Refer to [table 10-7](#) for items used.

NOTE

NAVAIR 13-1-6.5 contains information on inspection/replacement and modification to the survival items.

Cushioning wrap (air bubble type) (NIIN 00-142-9008) is a suitable substitute for the rubber-coated cloth used to wrap breakable survival items.

3. Wrap breakable survival items with rubber-coated cloth and secure with rubber bands. Stow survival items in accessory container and supply pocket. Ensure that hand pump and PRT-5 transmitter are tied to accessory container grommet with a 48-inch length of Type III nylon cord. Ensure that a bowline knot is applied.

4. Fake righting line and sea anchor mooring line, and secure with rubber bands.

5. If heaving lines are installed stow heaving lines in heaving line pockets as follows:

a. Secure the loose end of the heaving line to the loop in the bottom of the heaving line pocket with a bowline knot.

b. Remove all twists and tangles from heaving line and grommet.

c. Fake the heaving line in 11 to 13-inch bights on a flat surface, starting 12 to 15 inches from the loop in the bottom of the heaving line pocket.

d. Continue faking until 15 to 21 inches of line remains, measured from last bight of line to grommet.

e. Gather the heaving line and place a doubled 2-inch rubber band over the heaving line 1 to 2 inches from each end of the bights.

f. Place the heaving line under the grommet in the heaving line and close the pocket.

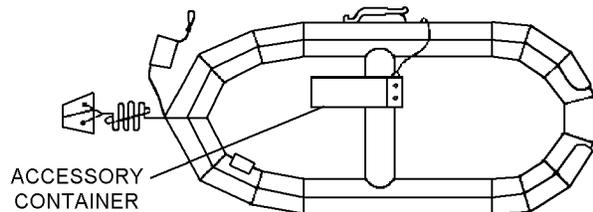
6. Ensure that all topping-off valves are closed and liferaft is completely deflated.

7. Secure latches on first aid kit with several layers of pressure-sensitive tape (NIIN 00-266-5016). Using an 8-foot length of Type III nylon cord, tie an overhand knot in both ends. Wrap one end of cord two turns twice around the first aid kit on the inside of the kit latches and tie with a surgeon's knot. Route opposite end of cord to accessory container grommet and secure with a bowline knot. Stow first aid kit in accessory container.

NOTE

Ensure all items listed in [table 10-7](#) are stowed in accessory container including canopy ribs, bailing buckets and oars, if applicable.

8. Tie accessory container to nearest lifeline loop located next to CO₂ cylinder with a bowline knot. Use a 10-foot length of Type III nylon cord.



J0074008

Step 8 - Para 10-74

9. Secure supply pocket to mating snap fasteners on raft bulkhead. Ensure slider pull tab on supply pocket is tied to nearest lifeline loop with a 60-inch length of Type III nylon cord using bowline knots on both ends.

NOTE

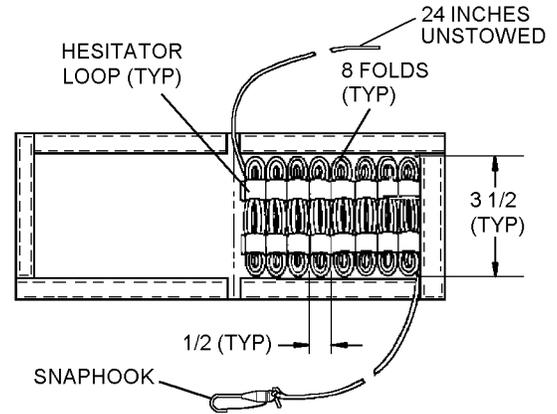
All rafts stowed in external raft compartments shall be secured to the aircraft with a painter line. The painter line shall be a 60-foot length of Nylon cord, Type I (MIL-I-5040, NIIN 00-240-2154). The painter line retains a deployed raft to the aircraft during emergency egress and is designed to break under a 100-pound pull if the aircraft sinks.

10. Stow painter line in painter line pouch by forming eight 3 1/2-inch bights in line and inserting each bight in eight hesitator loops provided. Leave 24 inches of unstowed painter line at each end of pouch. See figure 10-21. Close pouch; then secure with hook and pile tape provided.

11. Attach snaphook to end of unstowed painter line extending from open end of pouch with a bowline knot.

12. Attach end of painter line without snaphook to the sea anchor mooring patch with a bowline knot.

13. Dust entire raft assembly lightly with talc powder (MIL-T-50036A).



10100021

Figure 10-21. Stowed Painter Line

NOTE

Ensure canopy is rolled and secured to upper tube before folding liferaft.



To prevent malfunction during inflation, ensure that no lifeline, sea anchor mooring line, righting line, painter line, or retaining line entangles or loops liferaft hardware during folding and packing procedures.

14. Liferaft shall be folded in accordance with the applicable aircraft maintenance manual.

15. Make necessary entries on appropriate form in accordance with OPNAVINST 4790.2 Series.

Section 10-4. Illustrated Parts Breakdown (IPB)

10-75. GENERAL.

10-76. This section lists and illustrates the assemblies and detail parts of the LRU-14 Inflatable Twelve-Man Liferaft.

10-77. The Illustrated Parts Breakdown should be used during maintenance when requisitioning and identifying parts.

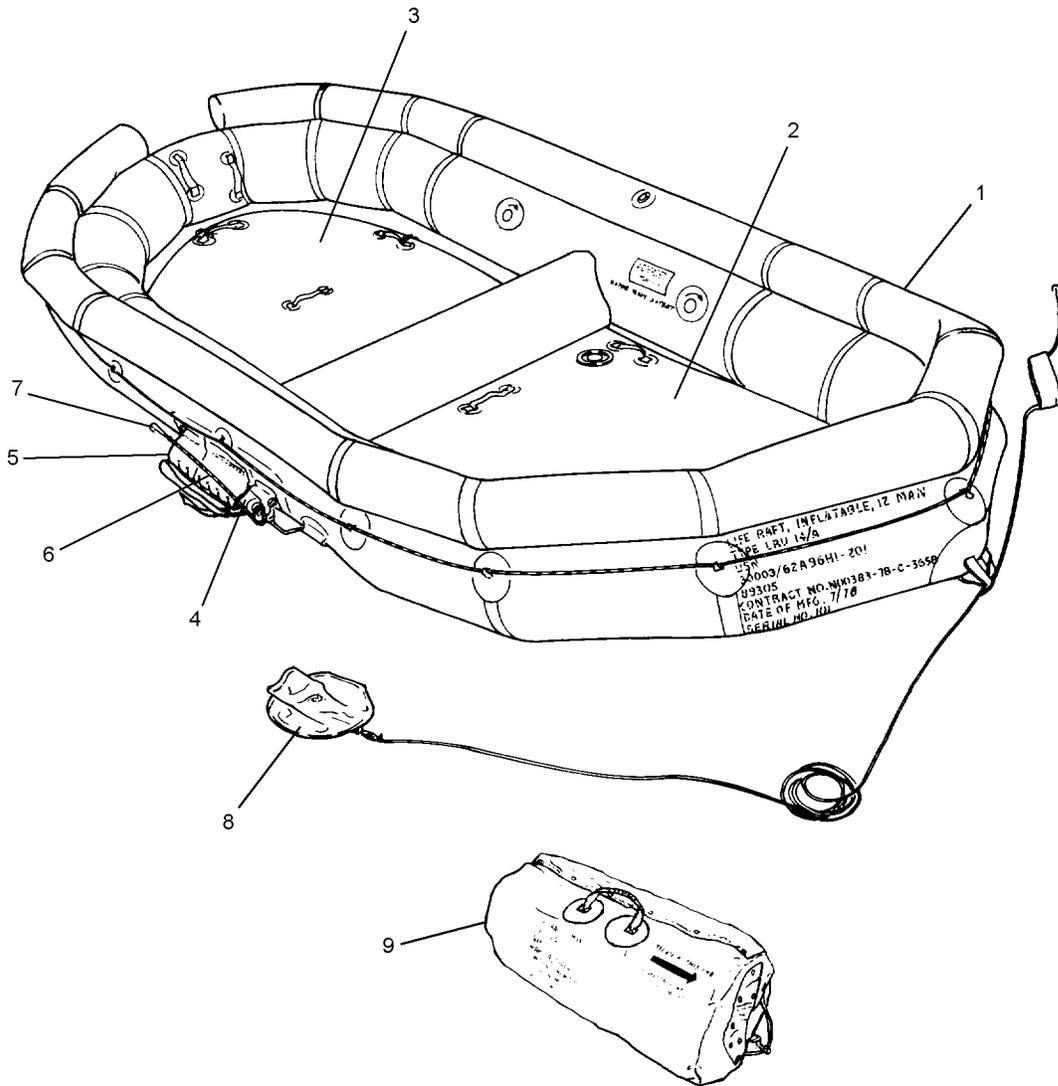


Figure 10-22. LRU-14 Series Liferaft Illustrated Parts Breakdown

10100022

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable On Code
10-22		LRU-14/A LIFERAFT ASSEMBLY (Note 6)	REF	
-1	62A96H1-201	. LIFERAFT, Twelve-Man Inflatable (Note 1) (LRU-14/A)	1	
	601AS101-1	. LIFERAFT, Twelve-Man Inflatable (Note 2) (LRU-14A/A)	1	
-2	62A96E3-1	. . INFLATABLE FLOOR ASSEMBLY, Bow	1	
-3	62A96E3-2	. . INFLATABLE FLOOR ASSEMBLY, Stern	1	
-4	63A120H1-71	. . INFLATION VALVE ASSEMBLY (Note 3) (Note 4)	1	
-5	MS26545B2C205A	. . . CO ₂ CYLINDER (Note 2) (Note 4)	1	
	MS26545B4C205A	. . . CO ₂ CYLINDER (Note 2) (Note 4)	1	
-6	1106AS102-1	. . . HOUSING ASSEMBLY	1	
-7	1106AS103-1	. . . CABLE ASSEMBLY	1	
-8	MIL-A-3339	. . SEA ANCHOR, Type 1, Size 2 (Note 5)	1	
-9	62A96H4-1	. CASE, Liferaft (NIIN 00-834-7854)	1	
<p>Notes:</p> <ol style="list-style-type: none"> 1. Inflatable liferaft P/N 62A96H1-201 comes from supply with an inflation assembly P/N 63A120H1-71. The accessory container P/N 62A96D8-1001 and carrying case P/N 62A96H4-1 must be requisitioned separately. 2. Inflatable liferaft P/N 601AS101-1 comes from supply without inflation assembly P/N 63A120H1-71 and carrying case P/N 62A96H4-1. These items must be requisitioned separately. 3. Item is no longer procured or stocked. Item may be obtained through salvage. 4. The inflation valve and CO₂ cylinder may be requisitioned as a complete assembly P/N 63A120H1-15, NIIN 00-324-1701 (CAGE 30003). 5. Due to low demand, sea anchors may not be stocked. They may be open purchased from the Patten Co, 1803 Madrid Ave, Lake Worth, FL (561) 588-8500. 6. The LRU-14 series is being replaced by the new 12 person MPLR LRU-31/A, P/N 64500-101 on an attrition basis. See Chapter 12 for MPLR information. The LRU-14 is no longer available in supply. 				

NUMERICAL INDEX

Part Number	Figure and Index Number	SM&R Code
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MS26545B2C205A	10-22-5	
MS26545B4C205A	10-22-5	
1106AS102-1	10-22-6	PAOZZ
1106AS103-1	10-22-7	PAOZZ
601AS101-1	10-22-1	PAGGG
MIL-A-3339	10-22-8	PAOZZ

Part Number	Figure and Index Number	SM&R Code
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62A96E3-1	10-22-2	PAOGG
62A96E3-2	10-22-3	PAOGG
62A96H1-201	10-22-1	PAGGG
62A96H4-1	10-22-9	
63A120H1-71	10-22-4	XBOZZ