TECHNICAL MANUAL

OPERATOR' S
AND
AVIATION UNIT
MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND
SPECIAL TOOLS LIST)

FOR

LIFE RAFT, ONE-MAN, VEE BOTTOM
(LRU-18/U)

NSN 4220-01-272-8004

LIN: L57949

HEADQUARTERS, DEPARTMENT OF THE ARMY

30 JUNE 1993

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WARNING AND FIRST AID DATA

For first aid information refer to FM 21-11, First Aid for Soldiers.

Personnel performing instructions involving operations, procedures, and practices which are included or implied in this technical manual shall observe the following warnings.

WARNING

An operating procedure, practice, etc., which if not correctly followed, could result in personal injury or loss of life.

CAUTION

An operating procedure. practice, etc., which if not strictly observed. could result in damage to or destruction of equipment.

NOTE

An operating procedure, condition, etc., which is essential to highlight.

GENERAL

FLIGHT OPERATIONS WHILE WEARING THE SRU-37/P

Prior to flight operations in any helicopter, aviators/crewmembers must ensure that the LRU-18/U life raft and container assembly does not cause interference with flight controls or weapons system operation or restrict the performance of in-flight duties. If interference occurs during a full control sweep. a different wearing position must be utilized.

Inadvertent inflation can push the pilots forward resulting in a loss of aircraft control in the AH-1, AH-64, or any other aircraft with similarly restricted cockpits. If inadvertent inflation should occur, a knife or other sharp, pointed item shall be used IO puncture the raft.

Do not initiate LRU-18/U activation procedures until rotor blades have stopped and individual is clear of the aircraft, since personal injury may result.

RESTRICTION OF MOVEMENT

Certain size individual\. in certain aircraft. may experience reach restrictions during aircraft starting when wearing the LRU-18/U with the Survival Armor Recovery Vest, Insert, and Packets (SARVIP).

WEAPONS SYSTEM ACTIVATION

The AH-64 Weapons Action Switch can accidentally be activated, deactivated, or switched when certain sized individuals apply full aft cycle.

COMPRESSED AIR

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes or face. Eye protection shall be worn.

PAINTS, DOPES, THINNERS, AND SOLVENTS

These materials are generally highly flammable and may be irritants. Work in a well-ventilated area away from open flames.

Avoid inhaling fumes and prolonged substance contact with skin. Wash thoroughly after using.

Solvent, P-D-680, Type II may affect skin. eyes and respiratory tract. Use in a well ventilated area. Avoid prolonged breathing of vapors. Avoid eye and repeated skin contact Keep away from sparks and flames.

EPOXY RESINS, CEMENTS, AND ADHESIVES

These materials may contain toxic or irritating substances. They may also be flammable. Work in a well-ventilated area away from open flames. Avoid substance contact with skin.

TECHNICAL MANUAL

NO. 1-4220-250-12&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 30 June 1993

OPERATOR' S AND AVIATION UNIT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST) FOR

LIFE RAFT, ONE-MAN, VEE BOTTOM (LRU-18/U) NSN 4220-01-272-8004 LIN: L57949

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find mistakes, or know a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Commander, US Army Aviation and Troop Command, ATTN: AMSAT-IMP, 4300 Goodfellow Blvd., St. Louis, MO 83120-1798. You may also submit your recommended changes by E-mail directly to <mpmt%avma28@st-louis-emh7.army.mil>. A reply will be furnished directly to you. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028.

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CHAPTER 1

INTRODUCTION

SECTION I. GENERAL INFORMATION

1.1 SCOPE.

1.1.1 Type of Manual. Operator' s and Aviation Unit Maintenance (AVUM) Manual including Repair Parts and Special Tools List (RPSTL).

1.1.2 Model Number and Equipment Name. LRU-18/U Life Raft and Container Assembly, Inflatable, One-Man, Vee Bottom. with container.

1.1.3 Purpose of Equipment. The SRU-37/P is one-man life raft and container assembly intended for use by aircrew members and passengers who are forced down over water. It can also be used when aircrew members are forced down over land, either as a shelter or for fording rivers and streams. See Figure 1-1.

1.1.4 Equipment Maintenance Responsibility. Only Aviation Life Support Equipment (ALSE) personnel shall be authorized to perform maintenance procedures on the LRU-18/P. ALSE personnel are those individuals who have been school trained and have been awarded the additional skill identifier (ASI) of H2 for officers or Q2 for enlisted personnel.

1.2 MAINTENANCE FORMS, RECORDS, AND REPORTS.

Department of the Army forms and procedures used for equipment maintenance shall be those prescribed by DA PAM 738-751, The Army Maintenance Management System-Aviation (TAMMS-A).

1.3 DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE.

For information concerning destruction of Army materiel to prevent enemy use, refer to TM 750-244-1-2, Destruction of Life Support Equipment to Prevent Enemy Use.

1.4 REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR).

If your LRU-18/U needs improvement, let us know. You, the user, are the only one who can tell us what you don' t like about your equipment. Let us know why you don' t like the design or performance. Put it on Standard Form (SF) 368 (Quality Deficiency Report). Mail it to us at the following address: Commander, U.S. Army Aviation and Troop Command, ATTN: AMSAT-I-MDO, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. We will send you a reply.

1.5 PREPARATION FOR STORAGE OR SHIPMENT.

Instructions for storage or shipment are contained in TM 743-200-1, Storage and Materiel Handling, and TM 1-1500-204-23-1, General Aircraft Maintenance Manual.

1.6 CALIBRATION.

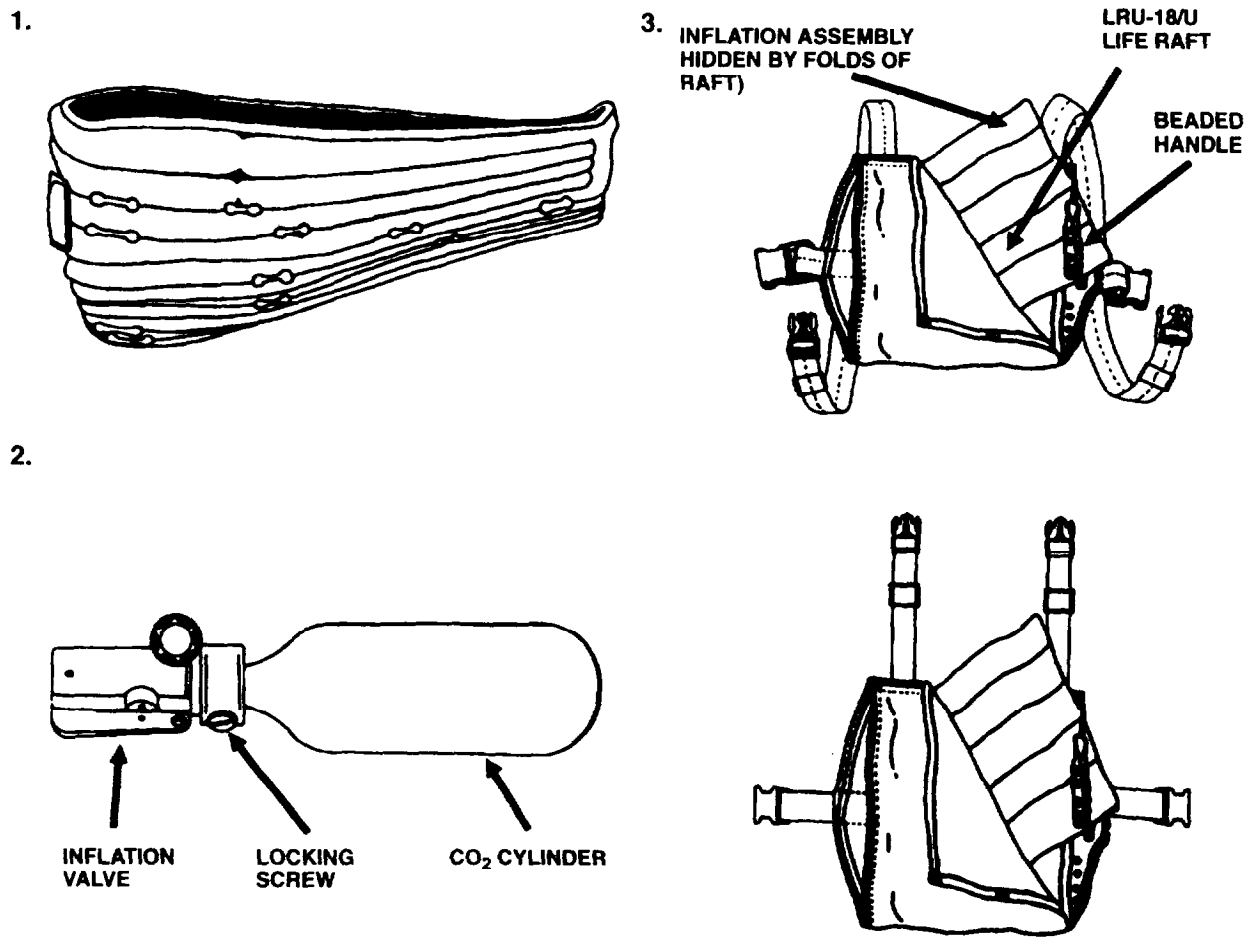
Within the scope of this manual there are no life raft and container assembly components, accessories, or instruments that require calibration. Special tools and test equipment shall be calibrated as specified in TB 43-180, Calibration Requirements for the Maintenance of Materiel.

SECTION II. EQUIPMENT DESCRIPTION AND DATA

1.7 EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

The LRU-18/U is a veebottom one-man life raft, with an inflation assembly (CO_2 cylinder and inflation valve) and a separate container. The container assembly is constructed from lightweight nylon fabric and is designed for wear by helicopter aircrew members and passengers. The life raft is fabricated from heat-sealable, polyurethane-coated nylon cloth. It has two separate cells, each composed of a series of inflation tubes. The upper second, third, and fourth tubes are inflated with carbon dioxide. The remaining tubes are inflated orally.

1.8 LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (See Figure 1-1).



1. LRU-18/U Life Raft Assy:	Provides for flotation on water or shelter on land.
2. Inflation Assy:	Used to automatically inflate second, third and fourth inflation tubes. Consists of a 2 oz. CO_2 cylinder and valve assy.
3. Beaded Handle:	Used to activate the inflation assembly.
4. Container Assy:	Contains Life Raft Assembly. Designed for wear by the aircrew member.

Figure 1-1. Major Components.

1.9 EQUIPMENT DATA.

1.9.1 Weights and Dimensions. The following data is for a packed container assembly.

Height	13 inches
Length	13 inches
Width	2 inches
Weight	4.7 pounds

SECTION III. PRINCIPLES OF OPERATION

1.10 FUNCTIONAL DESCRIPTION.

1.10.1 Operational Characteristics. Upon entering the water during a ditching emergency, the life raft assembly is inflated manually by pulling the beaded inflation handle which actuates the CO_2 inflation assembly. The inflation assembly will inflate the upper second, third, and fourth inflation tubes within approximately 30 seconds. The inflation of the raft automatically forces the snap fasteners and hook and pile closures of the container to open, permitting the raft to attain its designed shape. The life raft is secured to the survivor by a tether line which is attached to the container assembly. If the CO_2 inflation assembly fails to operate, a secondary inflation valve is provided for oral inflation of the second, third, and fourth inflation tubes. After boarding, additional buoyancy may be added by orally inflating the remaining tubes through the primary oral inflation valve. Complete inflation of all cells can be accomplished within five minutes. See Figure 1-2.

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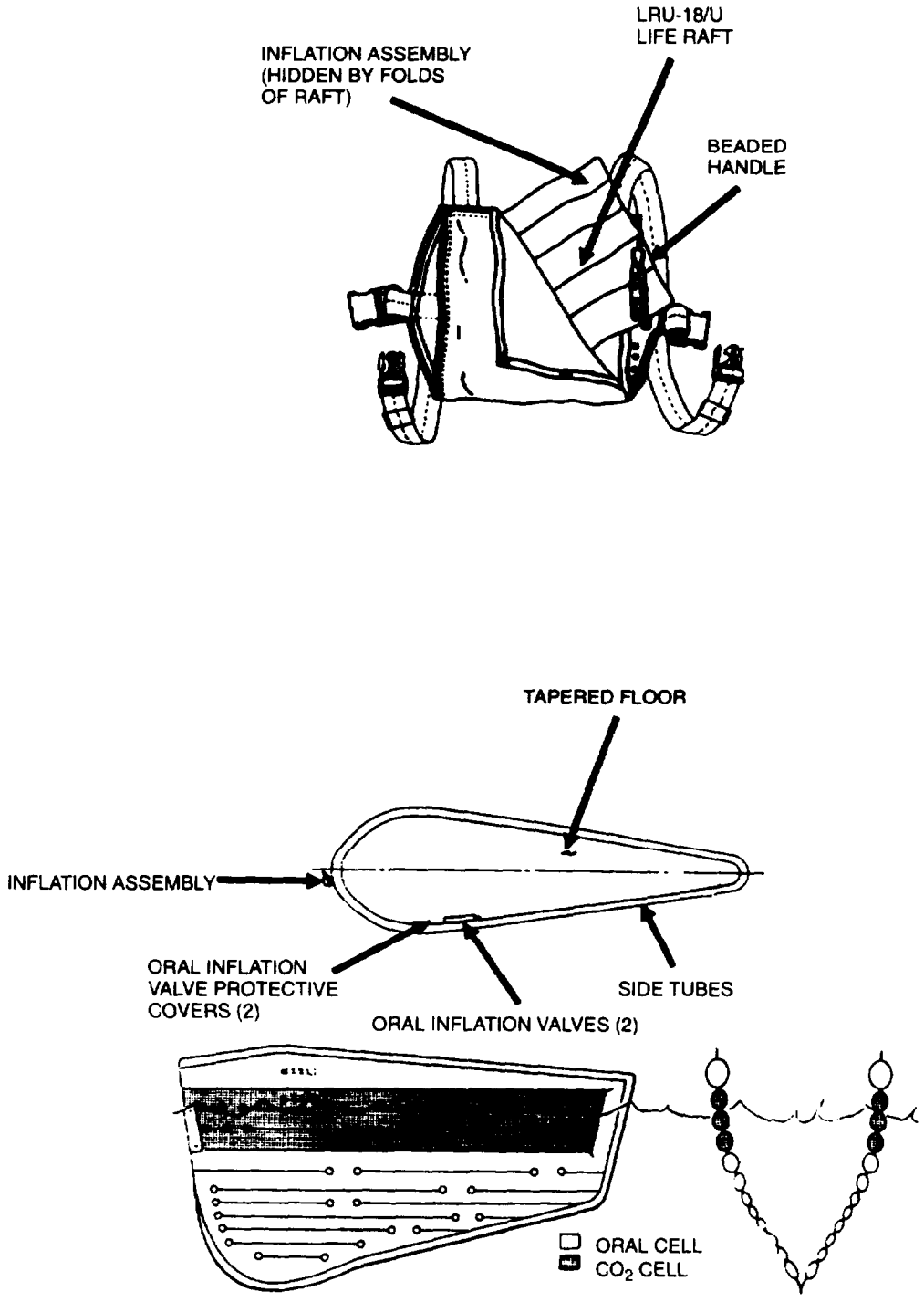


Figure 1-2. Inflated Life Raft and Container.

CHAPTER 2

OPERATING INSTRUCTIONS

SECTION I. DESCRIPTION AND USE OF OPERATOR' S CONTROLS AND INDICATORS

There are no specific indicators or controls for the use and wear of the life raft and container assembly.

SECTION II. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2.0 GENERAL.

To ensure proper operation of the LRU-18/U, certain required Preventive Maintenance Checks and Services (PMCS) are presented in Table 2-1. The PMCS are based upon the principles of Reliability Centered Maintenance (RCM) logic. Checks and services are arranged in logical sequence requiring minimal time and motion to perform.

a. Before Operation. Observe the CAUTIONS and WARNINGS. Before (B) PMCS shall be performed Prior to each flight.

b. After Operation. Perform after (A) PMCS upon completion of each flight.

C. If the equipment does not perform as required, notify the Aviation Life Support Equipment (ALSE) shop. Report any malfunctions or failures on DD Form 1577-2 Unserviceable (Repairable) Tag or refer to DA PAM 738-751.

2.1 PMCS COLUMNAR ENTRIES.

a. Table 2-1, Operator Preventive Maintenance Checks and Services for SRU-37/P, lists the inspections and services required to keep the equipment in good operating condition.

b. The Item No. Column gives the order in which the PMCS will be performed (in numerical order).

c. The Interval Column describes when to do a certain check or service.

d. The Item To Be Checked or Serviced Column lists the items to be checked.

e. The Procedure Column explains how to do the required checks and services.

f. The Not Fully Mission Capable If Column states the criteria by which the equipment cannot be used until corrective maintenance has been performed.

Table 2-1. Operator Preventive Maintenance Checks and Services For LRU-18/U and Container.

Item No.	Interval	Item To Be Checked Or Serviced	Procedure	Not Fully Mission Capable If:
1	B, A	Container Assembly.	**WARNING** Ensure that the beaded inflation handle is readily accessible. The beaded inflation handle shall be secured with four snap fasteners to the container and safety tied. a. Inspect exposed metal parts for corrosion and damage. b. Inspect container fabric and straps for security of stitching, cuts, tears, abrasions, and other damage. c. Inspect the safety tie on the beaded inflation handle. The beaded inflation handle safety tie may be replaced without removing the life raft from service. d. Inspect for nylon thread safety tie on inflation valve actuation handle. e. Inspect hook and pile tape for secure attachment and closure. f. Inspect container straps plastic buckles for damage. g. Don and adjust container straps to ensure proper fit.	If any discrepancy is noted, the SRU-37/P shall be removed from service and repaired in accordance with procedures in Chapter 4.

SECTION III. OPERATION UNDER USUAL CONDITIONS

2.2 ASSEMBLY AND PREPARATION FOR USE.

The operator is not required to unpack, assemble, or install any LRU-18/U components. These requirements are accomplished by the ALSE shop.

2.3 INITIAL ADJUSTMENTS AND CHECKS.

WARNING

FLIGHT OPERATIONS WHILE WEARING LRU-18/U AND CONTAINER

Prior to flight operations in any helicopter, aviators/crewmembers must ensure that the LRU-18/U life raft and container assembly does not cause interference with flight controls, weapons systems operation, or performance of inflight duties. If interference occurs during a full control sweep, a different wearing position must be utilized.

WARNING

Inadvertent inflation can push the pilots forward resulting in loss of aircraft control in the AH-1 and AH-64 or similarly restricted cockpits. If inadvertent inflation should occur, a knife or other sharp, pointed item shall be used to puncture the raft.

RESTRICTION OF MOVEMENT

Certain size individuals, in certain helicopters, may experience reach restrictions during aircraft starting when wearing the LRU-18/U and container with the SARVIP.

WEAPONS SYSTEM ACTIVATION

The AH-64 Weapons Action Switch can accidentally be activated, deactivated, or switched when certain size individuals apply full aft cyclic.

2.3.1 Donning and Fitting the SRU-37/P. The container assembly is designed to be worn on the user' s chest, upper back, or lower back. If the SARVIP is to be worn, it shall be donned first. The LRU-18/U and container shall then be donned over the SARVIP.

2.3.1.1 Chest Mounting Option.

WARNING

FLIGHT CONTROL RESTRICTION

When the LRU-18/U with cross strap container is worn on the chest, certain size individuals in certain helicopters may experience aft cyclic control restriction.

a. Position the LRU-18/U with cross strap container across the chest and place both shoulder straps over the shoulders and back. The right shoulder strap with male buckle shall be passed under the left armpit and securely inserted into the female buckle of the left cross strap. The left shoulder strap with male buckle shall be passed under the right armpit and securely inserted into the female buckle of the right cross strap. Ensure that both buckle assemblies are securely fastened. This is essential for prevention of inadvertent release while performing aircrew duties or during emergencies.

b. Adjust the straps, taking up the slack until snug against the body. Be sure to allow for unobstructed access to the beaded inflation handle.

2.3.1.2 High Back Mounting Option.

WARNING

When the LRU-18/U with cross strap container is worn in the high back position, the straps must be loosened to allow the aviator/crewmembers to reach the beaded activation handle.

a. Place the LRU-18/U with cross strap container across the top of the back (between shoulder blades). Place the shoulder straps over the chest and attach buckles in the same manner as step a. above - right to left and left to right. Ensure that the buckle assemblies are securely fastened.

b. Adjust the straps, taking up the slack until snug against the body.

2.3.1.3 Low Back Mounting Option.

WARNING

FLIGHT CONTROL RESTRICTION

When worn on the lower back, the LRU-18/U with container will position the aviator forward in the seat, causing certain size individuals in certain aircraft to experience aft cyclic control restriction.

When worn on the lower back, the LRU-18/U with container will position the aviator forward in the seat, causing exposure of some individuals forward of the armor plate.

a. Place the SRU-37/P on the lower back, and connect buckles by crossing straps over chest - right to left and left to right. Adjust straps to position the LRU-18/U with container for desired wearing position on lower back.

b. Ensure that the beaded inflation handle is accessible.

2.4 OPERATING PROCEDURES.

WARNING

Do not initiate LRU-18/U activation procedures until rotor blades have stopped and individuals are clear of the aircraft, since personal injury may result.

Inadvertent inflation can push the pilots forward resulting in a loss of aircraft control in the AH-1, AH-64, or any other aircraft with similarly restricted cockpits. If inadvertent inflation should occur, a knife or other sharp, pointed item shall be used to puncture the raft.

CAUTION

COLD WEATHER OPERATIONS

When operating in cold temperatures, the raft automatic inflation time will be increased

2.4.1 Crewmember/Passenger LRU-18/U Life Raft Deployment Instructions.

NOTE

Do not discard the flight helmet after departing the aircraft. The helmet can be used to bail water from the life raft. The container assembly is designed to allow inflation of the raft while it is being worn by the user.

a. After rotor blades have stopped, enter the water and when clear of the aircraft, firmly grasp the beaded inflation handle and sharply pull it downward and out from the body. This will actuate the CO_2 bottle. When the CO_2 bottle is actuated, raft inflation will automatically push open the velcro and snap fasteners of the container assembly. The raft will fall free into the water and continue its inflation. The raft will take approximately 30 seconds to deploy. The raft is secured to the user by the tether line which is attached to the container assembly.

b. Once deployed, the inflated LRU-18/U's $C0_2$ cells will give the raft sufficient firmness and shape to allow boarding. In order to board the raft, the aircrew member should first position himself in front of the raft. Then he should reach back and grasp both sides of the raft, pushing downward and sliding the raft under himself. Aircrew members can also roll into raft by grasping one side of the raft, pushing down on the side and rolling body into raft. The boarding procedure will take approximately 15 seconds.

c. When boarding has been completed, the survivor should evaluate the situation-how much time before rescue-and decide when and if oral inflation and helmet bailing should be accomplished. Oral inflation takes approximately 2.5 minutes; helmet bailing also takes about 2.5 minutes. If it is determined that both actions should be completed, these actions can be accomplished in any order.

d. The LRU-18/U, when subjected to helicopter rotor wash, will become airborne if unmanned. When rescue is about to take place, the survivor should remove the container assembly and throw it overboard in order for it to sink and act as an anchor. Open the oral inflation valves, to reduce freeboard and push down on one side of the raft to take on water. This will prevent the raft from being caught in the rotor wash. This also prevents the rotor wash from blowing the aircrew members away from the helicopter.

SECTION IV. OPERATION UNDER UNUSUAL CONDITIONS

2.5 UNUSUAL ENVIRONMENT/WEATHER.

When on land, the one-man life raft can be used as a temporary shelter, as a sleeping platform, and for crossing streams and rivers.

CHAPTER 3

OPERATOR MAINTENANCE

Operator maintenance is limited to the inspection procedures listed in the PMCS (Table 2-1).

CHAPTER 4

AVIATION UNIT MAINTENANCE (AVUM)

SECTION I. REPAIR PARTS; TOOLS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

4.1 COMMON TOOLS AND EQUIPMENT.

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

4.2 SPECIAL TOOLS, TMDE AND SUPPORT EQUIPMENT.

Refer to the Repair Parts and Special Tools List, (RPSTL) Appendix C, and the Maintenance Allocation Chart (MAC), Appendix B, for reference information concerning the special tools, TMDE, and support equipment required.

4.3 REPAIR PARTS.

Repair parts are listed and illustrated in the RPSTL. Appendix C, of this manual.

SECTION II. SERVICE UPON RECEIPT

4.4 INSPECTION OF UNPACKED EQUIPMENT.

4.4.1 Equipment Condition. Inspect the equipment for damage incurred during shipment in accordance with Table 4-1. If the equipment has been damaged, report the damage on SF 364 (Report of Discrepancy) in accordance with the instructions in DA PAM 738-750 (The Army Maintenance Management System).

4.4.2 Shipping Errors. Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies on SF 364.

4.4.3 Product Quality. Deficiencies related to design, manufacturing processes, or maintenance and repair procedures, shall be reported on SF 368 (Product Quality Deficiency Report) in accordance with instructions in DA PAM 738-751.

4.4.4 Equipment Test. ALSE shop personnel will inspect, service, and operationally test each SRU-37/P prior to issue to crewmembers. Refer to Section V, Maintenance Procedures, of this manual.

4.4.5 Modification. Inspect equipment to see if it has been modified. No modifications are authorized at this time.

SECTION III. AVUM PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

4.5 GENERAL.

To ensure proper operation of the LRU-18/U raft, certain required PMCS are presented in Table 4-1. The PMCS are based upon the principles of Reliability Centered Maintenance (RCM) logic. Checks and services are arranged in a logical sequence requiring minimal time and motion to perform.

4.5.1 PMCS Procedures. Table 4-1, PMCS, lists the inspections and services required to keep the equipment in good operating condition.

a. The Item No. Column gives the order in which the PMCS shall be performed in numerical order.

b. The Interval Columns tells you when to do a certain check or service.

c. The Item to be Checked or Serviced Column lists the items to be checked.

d. The Procedure Column tells how to do the required checks and services.

e. The Not Fully Mission Capable If Column states the criteria by which the equipment cannot be used until corrective maintenance has been performed.

4.5.2 Inspection Intervals. Upon completion of the following inspection, DA Form 2408-21 (Life Raft Inspection Record) shall be initiated/updated in accordance with DA PAM 738-751.

NOTE

The service life for inflatable survival equipment shall be determined by condition rather than age. Equipment passing required inspections shall remain in service indefinitely, since inflation tests and inspections by using activities clearly show leakage caused by abrasion, porosity, deterioration, etc.

a. The Preflight Inspection shall be performed prior to each flight by the aircrew member to whom the life raft is assigned, or by ALSE personnel prior to issuance to crewmember.

b. All LRU-18/U decapitalize letters as required life rafts and containers shall be subject to the initial inspection prior to placing in service. The inspection cycle thereafter shall be every 360 days. In no case shall the interval exceed 366 days for the LRU-18/U. The functional test shall be performed prior to placing the LRU-18/U life raft in service, during every inspection cycle, and whenever an inflation assembly is replaced. The leakage test shall be performed during every inspection cycle. Unless operational requirements demand otherwise, the life raft inspection shall be performed by ALSE personnel.

Table 4-1. PMCS.

Item No.	Interval	Item To Be Checked Or Serviced	Procedure	Not Fully Mission Capable If:
1	Initial/360± Days	Container Assembly, Outer Case	To inspect container/cases, examine the following: a. Fabric for cuts, tears, deterioration, and abrasion. b. Retention tether line for security and wear. c. Seams for proper adhesion and stitching. d. Straps and handles for security and wear. e. All hardware for security of attachment, corrosion, damage, wear, and, if applica ble. ease of operation.	If any discrepancy is noted, remove from service and repair or replace IAW procedures in this chapter.
2	Initial/360± 6 Days	Beaded Inflation Handle	Inspect beaded inflation handle for the following: a. Attachment of inflation lanyard to beaded handle. b. Corrosion on snap fasteners and ease of operations. c. Cuts, tears, deterioration, abrasion, stains, and general cleanliness of fabric. d. Presence of safety tie on beaded inflation handle.	
3	Initial/360± 6 Days	LRU-18/U Life Raft	Inspect LRU-18/U life raft as follows: **NOTE** If color, location, or stitching patterns of repaired, replaced, or previously incorporated non critical items or features 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.	

Table 4-1. PMCS (Continued).

Item No.	Interval	Item to be Checked or Serviced	Procedure	Not Fully Mission Capable if:
3 (Cont.			a. Life raft fabric for cuts, tears, punctures, deterioration, and abrasion (Para 4.8.1). b. Seams for proper adhesion (Para 4.8.1). **NOTE** If patches exceed three. the life raft shall be condemned and removed from service. Serviceable components may be stripped and returned to stock or retained locally for repair parts. Condemned life raft can he used as patching material. C. All patches for proper adhesion (Para 4.8.1). d. Life raft base seam for separation (Para 4.8.1). e. Oral inflation tubes for deterioration (Para 4.8.1). f. All hardware for security of attachment, corrosion, damage, wear, and ease of operation (Para 4.8.1). g. Life raft for stains, dirt, and general cleanliness (Para 4.6.1). h. Any other parts for wear or damage. i. Perform Functional Test (Para 4.7.1). j. Perform Markings Inspection (Para 4.7.3). k. Perform Leakage Test (Para 4.7.2).	If any discrepancy is noted, remove from service and repair or replace IAW procedures in this chapter.

Table 4-1. PMCS. (Continued)

Item No.	interval	Item To Be Checked Or Serviced	Procedure	Not Fully Mission Capable If:
3	Initial/360± Days	Inflation Assembly	Inspect the inflation assembly as follows: a. Remove and discard ordnance tape. Loosen set screw and remove CO_2 cylin der from valve assembly. **NOTE** Do not discard set screw. b. Examine inflation device, actuating lever and lanyard for fraying, corrosion, stripped threads, and other damage. c. If required, remove any sharp edges from valve with a tine round file. d. Operate beaded inflation handle three or four times. Ensure that lever moves freely and ensure that piercing pin moves prop erly inside valve body. **NOTE** Each time inflation assembly gaskets or inflation assembly is removed and replaced for any reason, a functional test shall be conducted. Use new gaskets when replac- ing device. e. If any discrepancy is noted in a device that is not repairable in accordance with paragraph 4.8.4, remove the assembly and install a new inflation device.	If any discrepancy is noted, remove from service and repair or replace IAW proce- dures in this chapter.

SECTION IV. TROUBLESHOOTING

Table 4-2 lists common malfunctions that you may find with your equipment. Perform the tests, inspections, and corrective actions in the order they appear in the table.

Table 4-2. LRU-18/U Troubleshooting Procedures.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
1. RAFT DOES NOT PROPERLY INFLATE.
Step I. Inspect CO_2 cylinder for proper charge and thread seating. If defective, replace CO_2 cylinder. (Para 4.6.2).
Step 2. Inspect inflation valve assembly for corrosion, piercing pin function, and gasket installation. Remove, repair, or replace inflation valve assembly (Para 4.8.4).
Step 3. Inspect oral inflation valve assembly for foreign matter or damage. Remove foreign matter from inflation valve. If valve is damaged, replace it (Para 4.8.3).
Step 4. Inspect raft for obvious defects, such as cuts, tears, and ruptured seams. Patch raft as needed (Para 4.8.2).

SECTION V. MAINTENANCE PROCEDURES

This section contains maintenance procedures which are the responsibility of ALSE personnel as authorized by the MAC. All maintenance and inspection tasks shall be performed by qualified personnel with an ASI of H2 or Q2. Expendable items are listed at Appendix D and assigned item numbers for ease in cross referencing for part numbers.

4.6 SERVICING THE LRU-18/U

4.6.1 Service Life Raft and Container Assembly.

This task covers: Clean

Initial Setup

Tools/Equipment		Equipment Conditions
Pail, Utility	A-A-1273	Life Raft Removed From Container Assembly.
Materials/Parts		
Detergent, General Purpose	(D7)	
Lint-Free Cloth	(D3)	
Talc, Technical	(DI7)	

CAUTION

Ensure cleaning area is free of foreign objects such as dust and sand. These abrasive substances can rapidly wear away the LRU-18/U' s fabric because of in-flight vibrations. Solvents are not to be used in the cleaning of life rafts.

1. Cleaning the LRU-18/U Life Raft. To clean the LRU-18/U life raft, proceed as follows:

a. Prepare solution of detergent (D7) consisting of 1/4 to 1/2 ounce of detergent per gallon of water.

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

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

d. Rinse surface thoroughly with water: wipe with a cloth or sponge. Repeat this application until surface is free of all traces of solution.

e. Dry life raft with a lint-free cloth (D3) and apply a light coating of talc (D17) to prevent the raft from sticking together when folded.

2. Cleaning of Container. Clean in accordance with LRU-18/U procedures.

END OF TASK

4.6.2 Service Inflation Assembly and CO_2 Cylinder.

This task covers: a. Remove b. Install

Initial Setup

Tools/Equipment

Aircraft General Mechanic Tool Kit

Scale (gram)
Cylinder Thread Chaser Die
Torque Wrench 0-150 inch lb.

Materials/Parts

Silicone Compound (D16)
Tape. Ordnance (D18)
Thread. Nylon (D19)
Set, Gasket 105A5100-5
cylinder CO_2 MIL-C-52053TC

Equipment Conditions

Life Raft Removed From Container Assembly.

1. **Installation of CO_2 Inflation Assembly Protective Cover.** To install the CO_2 inflation assembly protective cover, proceed as follows:

   a. Open life raft assembly. Then position assembly on a flat surface.

   b. Remove CO_2 cylinder from valve assembly IAW Step 2a of this paragraph.

   c. Remove inflator cap nut and inflation valve from the raft. Discard the two gaskets on the valve stem. Remove damaged inflation assembly protective cover. Remove seat seal gasket from the inflator valve.

   d. Lightly coat base of piercing pin with silicone lubricant (D16).

   e. Place inflation valve protective cover upon the life raft. Ensure that inlet manifold stem hole is **aligned as shown.**

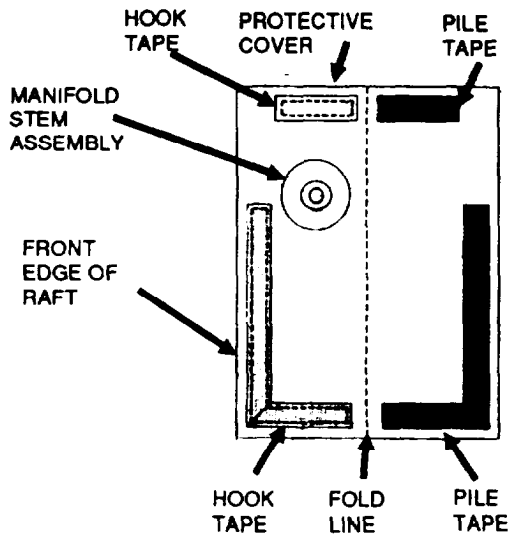
   NOTE

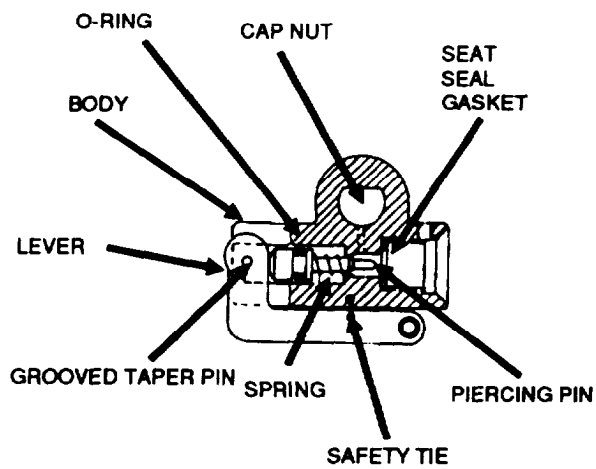
   When replacing gaskets, ensure that the top gasket has a larger internal diameter than the bottom gasket.

   f. Reinstall inflation valve on life raft using new gaskets from Kit 105AS100-5. Install new seat seal gasket.

   g. Install cap nut and torque to 25 inch lbs.

   h. Install CO_2 cylinder IAW step 2 this paragraph. Threads on CO_2 cylinder will point towards top of raft.





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4.6.2 Service Inflation Assembly and $C0_2$ Cylinder (Continued).

2. Installation of C02 Cylinder. To install a $C0_2$ cylinder on the life raft, proceed as follows:

a. Remove and discard ordnance tape. Ensure set screw is loose so as to not damage $C0_2$ cylinder threads.

NOTE

Do not discard set screw.

b. Weigh a charged $C0_2$ cylinder (MIL-C-52053TC) and compare the minimum stamped weight with the scale weight. Discard and replace cylinder if scale weight is less than total stamped weight on cylinder.

NOTE

Weight will vary according to manufacturer.

c. Ensure that inflator lever is in the cocked position.

d. Install seat seal gasket.

e. To assure a firm cylinder seat, conduct a cylinder thread count. The threaded portion of cylinder neck shall contain a minimum of seven full threads to assure a firm cylinder seat within valve body. Any cylinder found with less than seven full threads shall be discarded.

CAUTION

Steel threads on $C0_2$ cylinder can cause damage to aluminum threads on inflator if cylinder is not carefully threaded. If binding occurs during threading, replace cylinder.

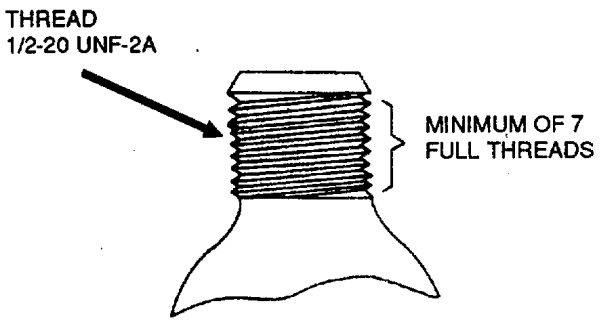
f. Using the Cylinder Thread Chaser Die, turn thread chaser to the full extent of the threads on $C0_2$ cylinder to cut free any excessive cadmium plate covering the threads.

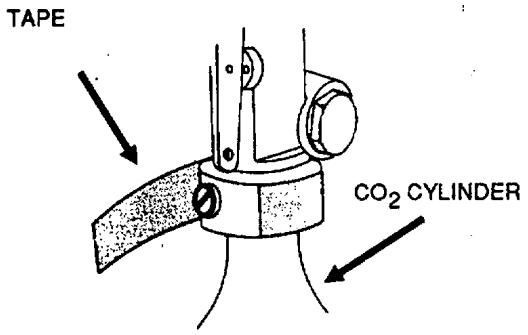
g. Lightly coat base of piercing pin with silicone lubricant (D16).

h. Screw cylinder into valve by hand until it bottoms against the gasket. Tighten an additional 1/2 to 3/4 turn.

i. Tighten locking screw to hold $C0_2$ cylinder in place.

j. Wrap ordnance tape (D18), cut to size, around inflator assembly neck to cover locking set screw.





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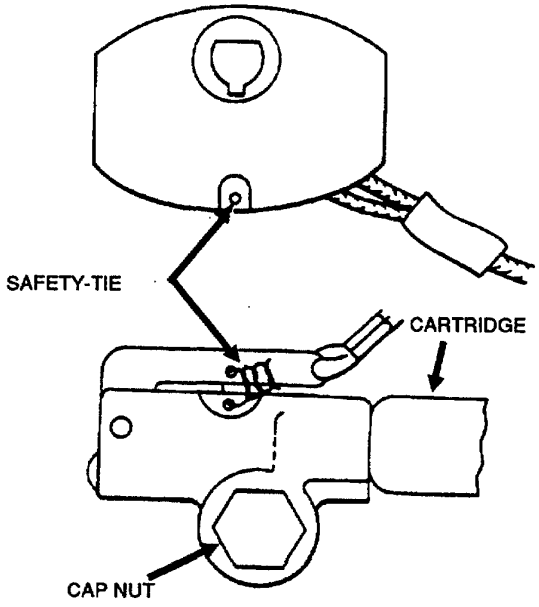
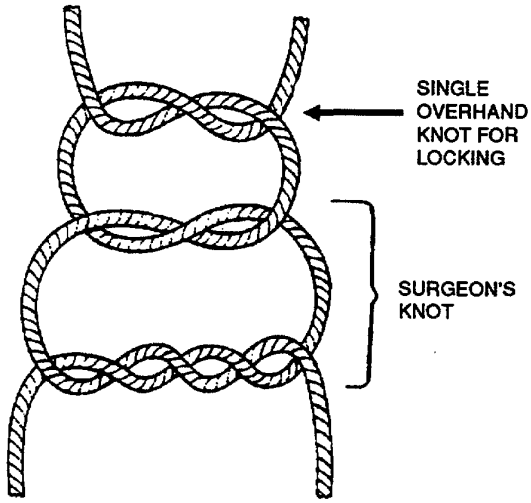
4.6.2 Service Inflation Assembly and $C0_2$ Cylinder (Continued).

k. Safety tie the actuation lever, in the cocked position, to the body with one loop of nylon thread (Dl9) using a surgeons knot with single overhand knot. See example below:

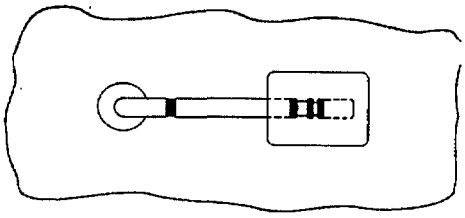




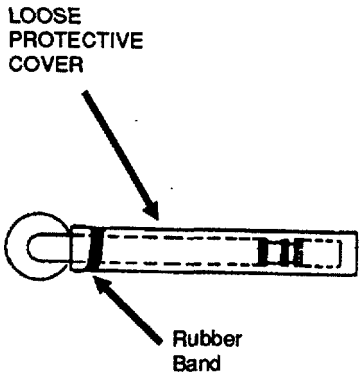
3. Covering of $C0_2$ Cell And Oral Cell Inflation Valves. To protect the oral inflation valves, proceed as follows:

a. Ensure that both inflation valves are locked in the closed position.

b. Insert $C0_2$ cell inflation valve into the protective pocket attached to raft as shown.



c. Cover oral cell inflation valve with the loose protective pocket and use a rubber band to secure pocket to valve.



END OF TASK

4.7 INSPECTION-ACCEPTANCE/REJECTION CRITERIA FOR SRU-37/P.

4.7.1 LRU-18/U Life Raft Function Test.

This task covers: Test

Initial Setup

Tools/Equipment

Gloves	(D25)
Vacuum Cleaner (or Shop Air Vac)	791-00-807-3704

Materials/Parts

3/8-or 1/2-Inch Diameter Rubber Hose 157E24-2201 (D15)

Equipment Conditions

Life Raft Removed From Container Assembly

1. Functional Test. To functionally test the LRU-18/U life raft assembly, proceed as follows:

CAUTION

For life raft inflation, ensure that there is adequate area free of foreign objects.

NOTE

A functional test shall be performed every third 120 ± 10 day inspection period. Functional tests will be accomplished with the cylinder attached to the life raft. Cylinder and valves will remain with the same life raft until the life raft is functionally tested, or inspection reveals the cylinder and valve to be unserviceable. This is to ensure that the cylinder and valve assembly is checked for proper function.

a. Open life raft container assembly, unfold life raft, and lay it flat.

b. Measure time of inflation; life raft shall inflate to design shape without evidence of restriction in less than 30 seconds.

c. Actuate inflation assembly.

d. If raft does not properly inflate, determine cause. (See Table 4-2.)

e. Examine life raft for obvious defects such as cuts, tears, and ruptured seams.

WARNING

To prevent burns, personnel removing $C0_2$ cylinders should wear gloves (D25).

f. If no obvious defects are found, remove the $C0_2$ inflation valve assembly.

g. Ensure that the check valve assembly is clean, free from foreign matter and not damaged. If check valve assembly is damaged, replace in accordance with paragraph 4.8.5.

h. Repair inflation valve assembly in accordance with paragraph 4.8.4.

i. If repairs are made, recheck in accordance with steps b and c.

j. Deflate life raft. Ensure that all carbon dioxide has been removed.

2. DEFLATION. To deflate the LRU-18/U life raft, proceed as follows:

a. Attach one end of rubber hose (D15) to vacuum source.

b. Unlock applicable oral inflation valve, hold in open position, and hold vacuum pump hose against end of inflation valve. When cell is collapsed, release oral inflation valve and screw lock closed.

NOTE

The vacuum source hose should be held at an angle to the inflation valve or air will not properly evacuate the cell.

END OF TASK

4.7.2 LRU-1 8/U Leakage Test.

This task covers: a. Test b. Remove c. Install

INITIAL SET UP

Tools

Test fixture (see Figure E-2).

Materials/Parts

(see Figure 4-2 and Table 4-1).
$C0_2$ Cylinder MIL-C-52053TC

Equipment Conditions

Life Raft Removed From Container Assembly

Personnel

2 (ASI-Q2)

1. Leakage Test. The LRU-18/U shall be subjected to a leakage test each Initial/120± 10 day inspection.

NOTE

Leakage Test cannot be performed with carbon dioxide gas in the life raft. Accurate temperature corrected pressure readings cannot be calculated with carbon dioxide present.

2. Test Fixture. 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 4-1. A suggested test fixture, consisting of two ON/OFF valves, pressure gauge and adapters, is shown in Figure E-2 in Appendix E. Figure E-2 shows the parts and materials required.

3. Test Procedure. To test LRU-18/U life rafts, proceed as follows:

CAUTION

Ensure test area is free of foreign objects.

a. Ensure all carbon dioxide and the $C0_2$ cylinder have been removed from any raft which has been functionally tested.

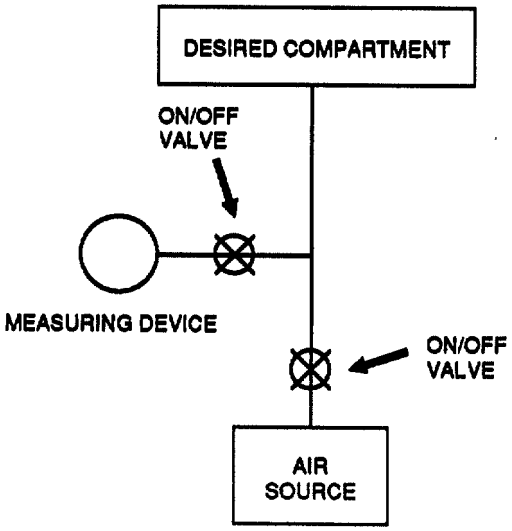


Figure 4-1. Test Rig Schematic.

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4.7.2 LRU-18/U Leakage Teat (Continued).

CAUTION

Measuring device ON/OFF valve must be closed when air feed valve is open.

NOTE

Refer to Table 4-3 for quick reference of life raft test pressures. Both cells may be tested simultaneously.

If a suitable air source is not available, water-pumped nitrogen (D13) may be substituted.

b. Unlock oral inflation valve of CO_2 cell and insert into 1/2-inch diameter rubber hose. Close measuring device ON/OFF valve and open valve to air supply and inflate life raft. Alternately position valves at measuring device and air supply until proper pressure of 2.0 psi is attained. Repeat procedure for oral cell, but inflate to 1.0 psi.

c. The air supply shall be securely shut off. After a minimum of 15 minutes, the pressure shall be readjusted in both cells to the original pressures called out in Table 4-3.

d. Disconnect air supply and check test Future for leaks. Ensure that all valves are closed.

e. Six hours after the readjustment period, the pressure shall be measured and corrections for changes in temperature made. For each lo F rise or drop in temperature, 0.031 (31/1000) psig shall be subtracted from or added to the final pressure reading to obtain the corrected pressure. For 0-10° F change see Table 4-4.

Table 4-3. LRU-18/U Test Pressures.

	Leakage Test Pressure (PSIG)	Minimum Pressure (PSIG)
CO_2 cell	2.0	1.6
Oral Cell	1.0	0.6

NOTE

If the life raft has been stacked during the 6-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.

f. If corrected pressure in CO_2 cell is below 1.6 psi or corrected pressure in oral cell is below 0.6 psi, inflate to leakage test pressure and coat with a soap solution to locate leaks. Mark leak areas. Rinse life raft with fresh water, air dry, and repair IAW paragraph 4.8.1.

NOTE

Steps g through i shall be performed only after leakage test readings have been recorded.

g. Deflate raft in accordance with paragraph 4.7.1.

h. Ensure that inflation valve lever is cocked.

i. Install new CO_2 cylinder in accordance with paragraph 4.6.2.

Table 4-4. 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	0.279
10	0.310
Rise in temperature: subtract from gauge reading. Fall in temperature: add to gauge reading.	

END OF TASK

4.7.3 LRU-18/U AND CONTAINER MARKINGS INSPECTION.

This task covers: a. Inspect b. Repair

INITIAL SETUP

Materials/Parts
Ink, Marking, Laundry, Black (D11)
Ink, Drawing, Waterproof, Yellow (D10)

Equipment Conditions
Life Raft Removed From Container Assembly

1. Marking Inspection. Compare markings on the life raft, container assembly and CO;! cylinder to markings shown in Tables 4-5. 4-6 and 4-7. Restore faded markings. Correct any markings which do not agree with the applicable table. To change markings, proceed as follows:

NOTE

Corrections to the CO_2 cylinder markings are not authorized. The cylinder markings inspection is primarily performed to check cylinder weight and for the correct NSN.

a. Paint over any incorrect marking using black laundry marking ink (D11).

b. Add correct marking as close as possible to specified location using yellow waterproof drawing ink (D10).

Table 4-5. LRU-18/U Life Raft Markings.

Marking		LOccation	Letter Height
LIFE RAFT, INFLATABLE, ONE-MAN TYPE LRU-18/U MANUFACTURER (applicable name) CONTRACT NO. (applicable number) DATE OF MANUFACTURE (month and year) SERIAL NO. (applicable number)		Outboard side forward end.	1/2 inch Yellow (See Note)
ORAL CELL:	TO ORALLY INFLATE, UNSCREW KNURLED RING, PUSH VALVE MOUTHPIECE DOWN, AND IMMEDIATELY BLOW THROUGH INLET.	Inboard right side adjacent to oral inflation valve.	1/4 inch Yellow (See Note)
CO_2 CELL:	TO INCREASE PRESSURE, UNSCREW KNURLED RING, PUSH MOUTHPIECE DOWN, AND IMMEDIATELY BLOW THROUGH INLET.	Inboard right side adjacent to oral inflation valve.	1/4 inch Yellow (See Note)
NOTE: Replacement marking shall be stamped or stenciled using yellow waterproof drawing ink.			

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4.7.3 LRU-18/U AND CONTAINER MARKINGS INSPECTION (Continued).

Table 4-6. LRU-18/U Container Markings.

Container	Marking	Location	Letter Height
LRU-18/P Container	HELICOPTER LIFE RAFT ASSEMBLY UP THIS SIDE AGAINST BODY  	Back Panel (Beaded Handle Side)	1 inch
		Front panel (Webbing belt Side)	1/2 inch
		Inside back panel	1/4 inch
	U.S. ARMY LIFE RAFT CROSS STRAP CONTAINER ASSEMBLY, MIL-C-81543 TYPE 1 MANUFACTURE (applicable name) CONTRACT NO. (applicable name) DATE OF MANUFACTURE (month and year) SERIAL NO. (applicable number)		

2. CO_2 Cylinder. Correction of markings on the CO_2 cartridge are not authorized. Table 4-7 shows the markings that should be on the cylinder body.

Table 4-7. CO_2 Cylinder Markings.

CYL. CO_2 2 Oz. 4220-00-837-3322 Sparklet Devices, Inc. MFD. (m/yr) Total Wt. 8.0 Oz. U.S.

END OF TASK

4.8 REPAIR/REPLACE LRU-18/U COMPONENTS.

4.8.1 Cementing the LRU-18/U Life Raft.

This task covers: a. Inspect b. Repair

INITIAL SET UP

Materials/Parts

Roller, Wooden (DI4)
Disposable Brush (D2)
Toluene (D20)
Adhesive (D1)
Talc, Technical (D17)

General Safety Instruction

WARNING

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

NOTE

Replacement of easily removed assembly components such as CO_2 inflation valves is authorized in addition to repair and replacement procedures documented in this section. The life raft shall be subjected to a functional and leakage test each time CO, inflation valves are removed and replaced for any reason, and each time inflation valve gaskets are replaced

1. Determination of Reparability. The LRU-18/U life raft shall be considered beyond repair for any of the following reasons.

a. Porous fabric areas on tubes.

b. Split or open tube seams.

C. Leakage test failure resulting from other than repairable cut, tear or puncture.

d. Holes, cuts, tears, or punctures within I inch of tube seams.

e. Damaged, malfunctioning, or excessively corroded inlet valve, manifold assembly, oral inflation valves, or oral inflation tubes.

f. Holes or abrasions exceeding 1 inch in length or diameter on tubes.

g. Oral inflation or inlet valve stem separating from the fabric.

h. Deterioration of the nylon fabric caused by oil, grease, or any other foreign substance.

I. Deterioration of the nylon fabric caused by an excessive mildewed condition.

j. Patches exceed three.

k. Determination by an ALSE inspector that the life raft requires excessive repair.

2. Cementing the LRU-18/U Life Raft. Cementing of the LRU-18/U life raft shall be performed as follows:

a. Place life raft on a clean, flat surface.

CAUTION

Ensure repair area is free of foreign objects.

Do not use Methyl Ethyl Ketone (MEK) to clean the LRU-18/U life raft. MEK will break down the polyurethane coating on the inside surface of the raft.

b. Clean both surfaces to be cemented with four applications of toluene. Apply toluene (D20) 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.

GO TO NEXT PAGE

4.8.1 Cementing the LRU-18/U Life Raft (Continued).

c. Prepare adhesive (D1) and accelerator mixture. Prepare only enough mixture for 8 hours use, as this is the effective active period for this mixture. Dispose of any remaining mixture at this time.

d. Using a small disposable brush (D2), apply adhesive to completely cover surfaces to be cemented. Use long, one-direction strokes and complete each surface before adhesive becomes tacky as the brush may pull tacky adhesive from the surface. Allow to dry for 10 minutes.

e. Apply a second coat of adhesive as in step d. Use brush strokes perpendicular to the original direction.

f. When second coat of adhesive has become tacky, place pieces together. If the cemented area has a cut or tear, butt the damaged edges together before applying the patch. Roll out air bubbles with a wooden (D14) or rubber roller. Inspect for proper application/cement.

g. Place a small weight over cemented area and allow to cure for a minimum of 60 hours.

h. Dust area with talc (D17).

END OF TASK

4.8.2 Patching the LRU-18/U Life Raft.

This task covers: a. Repair b. Test

INITIAL SET UP

Materials/Parts

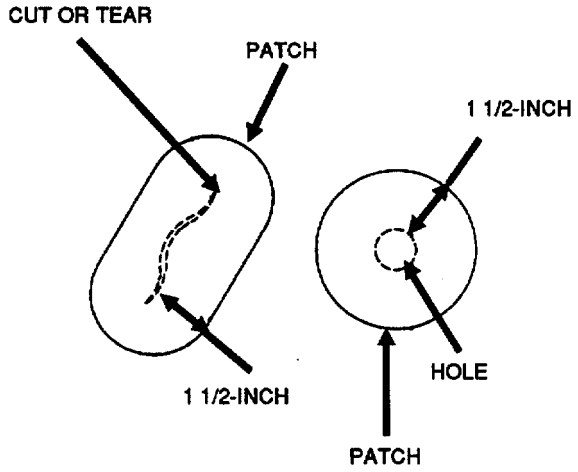
Cloth, Life Preserver, Type I, Sage Green	(D4)
Disposable Brush	(D2)
Toluene	(D20)
Adhesive	(D1)
Talc, Technical	(D17)

1. Patching the LRU-18/U Life Raft. Patching of the LRU-18/U life raft shall be performed as follows:

NOTE

Holes, cuts, tears, or punctures over 1-inch square are considered non-repairable on the LRU-18/U life raft

If patches exceed three, the life raft shall be condemned and removed from service. Serviceable components may be stripped and returned to stock or retained locally for repair parts. Condemned rafts can be used as patch material.



a. Cut a rounded patch 1 1/2-inch larger than damage on all sides.

b. Center patch over damaged area and trace an outline of patch on fabric.

c. Cement patch to damaged area in accordance with paragraph 4.8.1.

d. Dust area with talc (D117).

e. Perform leakage test in accordance with paragraph 4.7.2.

END OF TASK

4.8.3 Replace LRU-18/U Oral Inflation Valves.

This task covers: a. Replace

INITIAL SET UP

Material/Parts		Tools/Equipment	
		Tester, Spring	
Oral Inflation Valve		Disposable Brush	(D2)
Adhesive	(D1)	Cotton Swabs	(D26)
Isopropyl Alcohol	(D12)	Scale	

1. Replacement of Oral Inflation Valve. To replace the oral inflation valve, proceed as follows:

NOTE

Replacement oral inflation valves can be obtained only through salvage of non-repairable inflatable survival equipment.

a. Carefully cut through metal clamp, securing oral inflation valve to oral inflation tube and removing the metal band and oral inflation valve.

b. If the oral inflation tube was damaged during removal of valve, trim off damaged section.

c. Clean both surfaces to be cemented with alcohol (D12) and cotton swabs (D26). Allow areas to dry.

d. Using a small disposable brush (D2), carefully apply a small amount of adhesive (D1) to the surfaces of the tube and the valve, which are to be cemented together.

e. Immediately place oral inflation valve into oral inflation tube. Oral inflation valve should be inserted up to valve shoulder. Inspect for proper application/cement.

f. Tightly wrap the cemented portion of the oral inflation tube with cord or wire and allow to cure for 24 hours. After cure period remove cord or wire.

g. (Oral tube without brass clamp) Apply a 40 to 50 inch lb. pull to oral valve to ensure security of attachment

h. Wrap wire around oral valve assembly. Attach scale to other end of wire and obtain a 40-50 inch lb. pull. Ensure during test that the oral tube is held to prevent tube from separating from raft.

i. Inspect for separation of oral valve from tubing.

j. Perform life raft leakage test in accordance with paragraph 4.7.2.

END OF TASK

4.8.4 Repair Inflation Assembly.

This task covers: a Repair b. Remove c. Install

INITIAL SET UP

Tools/Equipment
Aircraft General Mechanic Tool Kit
Torque Wrench 0-1 50 inch lbs.

Materials/Parts

Lubricant, Silicone (D16)
Kit, Gasket 105AS100-5
Valve, Inflation, Type II MIL-I-23145
Abrasive Mat (D5)
Corrosion Preventive Compound (Aimguard) Type I (D6)
Thread, Nylon (D19)

1. Repair of $C0_2$ Inflation Valve. To repair the $C0_2$ inflation valve, proceed as follows. See Figures 4-2 and 4-3.

a. Remove $C0_2$ cylinder from valve assembly by removing and discarding ordnance tape. Ensure set screw is loose so as not to damage $C0_2$ cylinder threads.

NOTE

Do not descard set screw

b. Remove $C0_2$ cylinder from valve. Remove inflator cap nut and inflation valve from the raft. Discard the two gaskets on the valve stem.

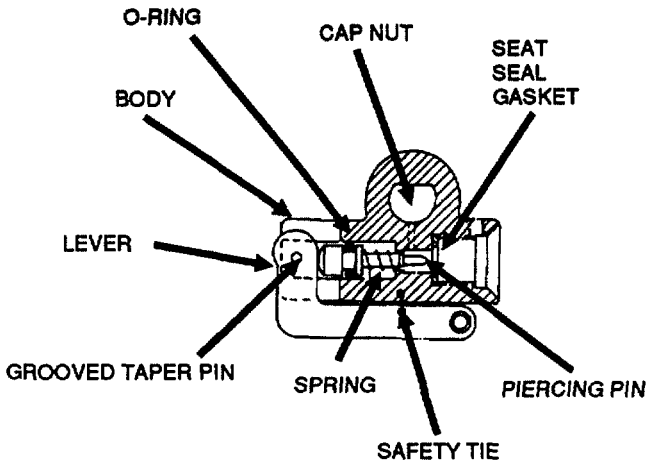


Figure 4-2. CO_2 Inflation Assembly.

c. Remove grooved taper pin (retaining lever) from inflation valve, using awl and mallet. See Figure 4-2.

d. Remove lever, spring, and piercing pin.

e. If spring is broken or corroded, replace entire valve, in accordance with paragraph 4.6.2.

f. If piercing pin or actuating lever is corroded, remove corrosion with the 240 grit emery cloth (D5). Do not damage 0-ring on piercing pin. Wipe off any dirt or moisture from actuating lever and apply a thin coat of corrosion preventive compound (D6) and allow to dry.

g. Clean residue from actuating lever on piercing pin. Lightly coat base of piercing pin with silicone lubricant (D16).

h. Reassemble inflation valve and operate actuating lever three or four times. Ensure that lever and piercing pin move freely.

i. If piercing pin and lever do not move freely, replace entire valve, in accordance with paragraph 4.6.2.

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4.8.4 Repair Inflation Assembly (Continued).

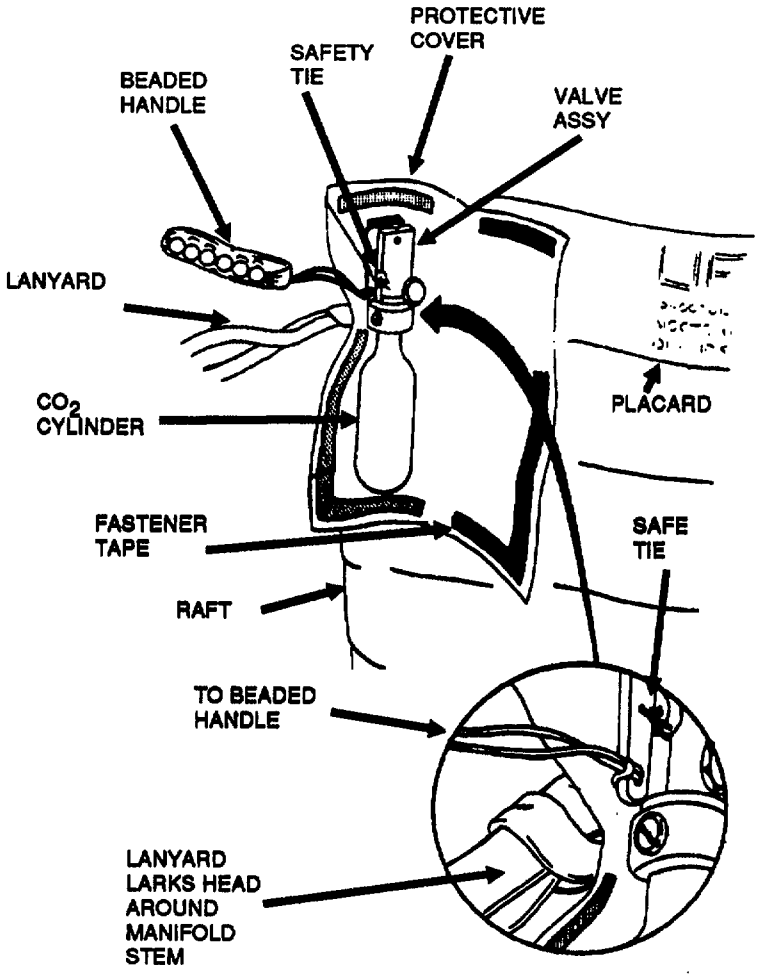


Figure 4-3. Inflation Assembly Installation.

END OF TASK

4.8.5 Replace Inflation Assembly Check Valve Assembly.

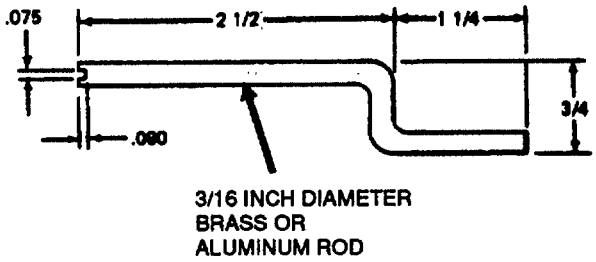
This task covers: a. Repair b. Remove c Install

INITIAL SETUP

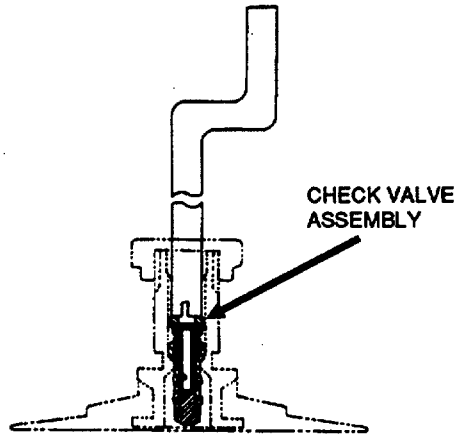
Tools/Equipment

Aircraft General Mechanic Tool Kit	
Check Valve Assembly (Schrader Type)	6100-T
Valve Core Tool	318M0007POOl
Torque Wrench	0-150 inch lbs.

1. **Replacement of Check Valve Assembly**. To replace a defective check valve assembly, proceed as follows:



NOTE:
DIMENSIONS ARE IN INCHES



a. If not available, fabricate a valve core tool as shown.

b. Remove inflator cap nut

c. Insert valve core tool and unscrew check valve from valve stem.

d. Insert new check valve in valve stem and tighten with valve core tool hand tight

e. Replace cap nut and torque to 25 inch lbs

f. Perform a functional and leakage test on the life raft $C0_2$ cell in accordance with paragraphs 4.7.1 and 4.7.2.

END OF TASK

4.8.6 Replace Handle and Layout Pull Test.

This task covers: a. Repair b. Remove c. Install

INITIAL SETUP

Materials/Parts

Handle, Beaded Inflation 975AS121-12
Thread, Nylon (D19)

Tools/Equipment

Spring Tester 0-50 lbs

1. **Replacement of Beaded Inflation Handle Assembly**. To replace the beaded inflation handle, proceed as follows:

NOTE

Support/hold, with your hand, the inflation activating lever to prevent inadvertently activating inflation assembly.

a. Remove inflation lanyard from inflation assembly.

b. Test the new/replacement beaded inflation handle by snapping the handle onto the container and attaching a gauge to the webbing between the third and fourth beads on the beaded handle. Exert a pull on the gauge and the snaps should release at 9 lbs. of pull.

c. Place gauge on the new/replacement beaded inflation handle lanyard and hold the other end of the beaded handle and exert a 25 lb pull.

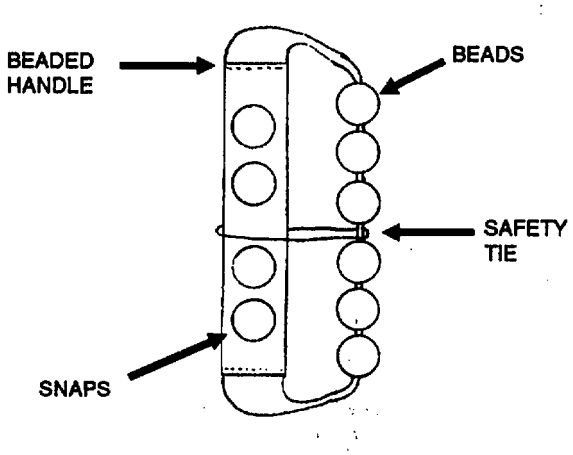
d. Beaded inflation handle must be replaced if pull standards are not met

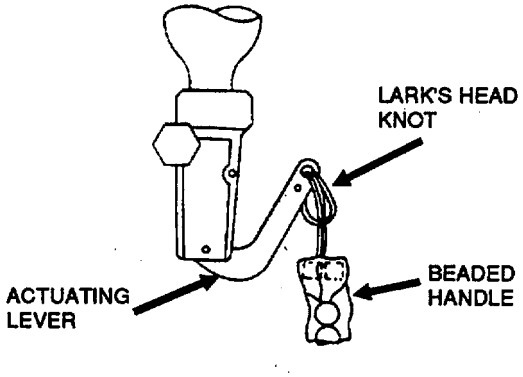
e. Pass the beaded handle's lanyard loop through the hole in the activation lever on the $C0_2$ inflation assembly.

f. Form a lark's head knot and pull tight

g. Pack life raft in accordance with paragraph 4.9.1.

h. Safety tie the beaded part of the beaded inflation handle to the female snap webbing with one loop of thread (D19). Pull the thread sufficiently to permit a 1/2 + 1/8 inch space between the middle beads and webbing. Tie off using a surgeons knot with a single overhand knot.





END OF TASK

4.8.7 Replace Container Assembly Buckle-Male and Female.

This task covers: a. Repair b. Remove c. Install

INITIAL SETUP

Tools/Equipment

Sewing Machine

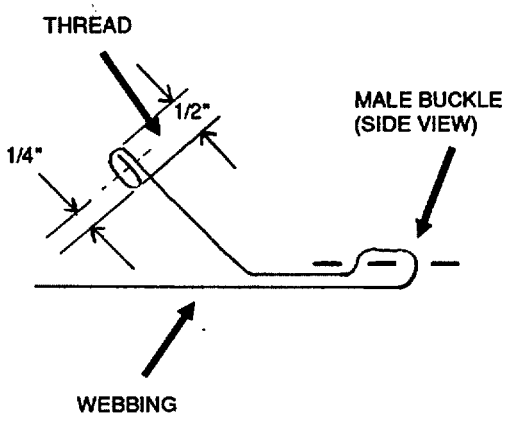
Materials/Parts

Thread, Nylon	(D19)
Buckle Assemblies, Male/Female	101-0150-5614

1. To replace the male end of the buckle assembly, proceed as follows:

   a. Carefully cut stitching and remove male buckle by unreeving webbing belt from buckle.

   b. Reeve webbing through adjuster slide on new buckle and restitch as shown.



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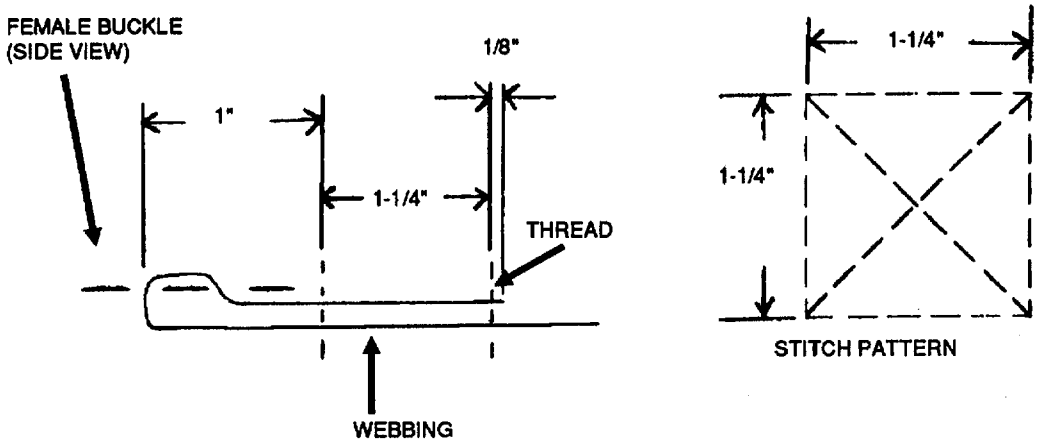
4.8.7 Replace Container Assembly Buckle-Male and Female (Continued).

2. To replace the female end of the buckle assembly, proceed as follows:

   a. Carefully cut stitching and remove female buckle by unreeving webbing belt from buckle.

   b. Reeve webbing through new buckle, and restitch as shown.



END OF TASK

4.8.8 Repair C02 Protective Cover.

This task covers: a. Remove b. Install

INITIAL SET UP

Tools/Equipment

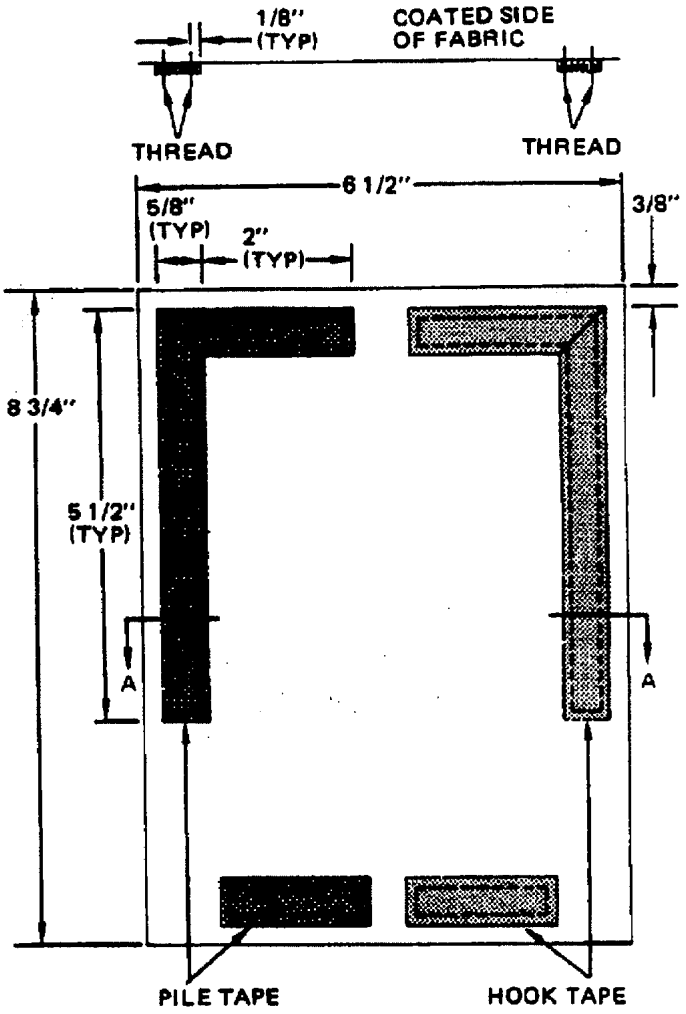
Sewing Machine

Materials/Parts

Cloth, Coated Nylon (D4)
Thread, Nylon (D19)
Fastener Tape, Hook, Type II, Synthetic, Black (D8)
Fastener Tape, Materials/Parts Pile, Type II, Synthetic, Black (D9)

1. To repair a protective cover for the $C0_2$ inflation assembly, proceed as follows:

   a. Cut one 5 1/2-inch length and two 2-inch lengths of hook and pile tape. Sew to the coated side of the nylon cloth using 8 to 10 stitches per inch.



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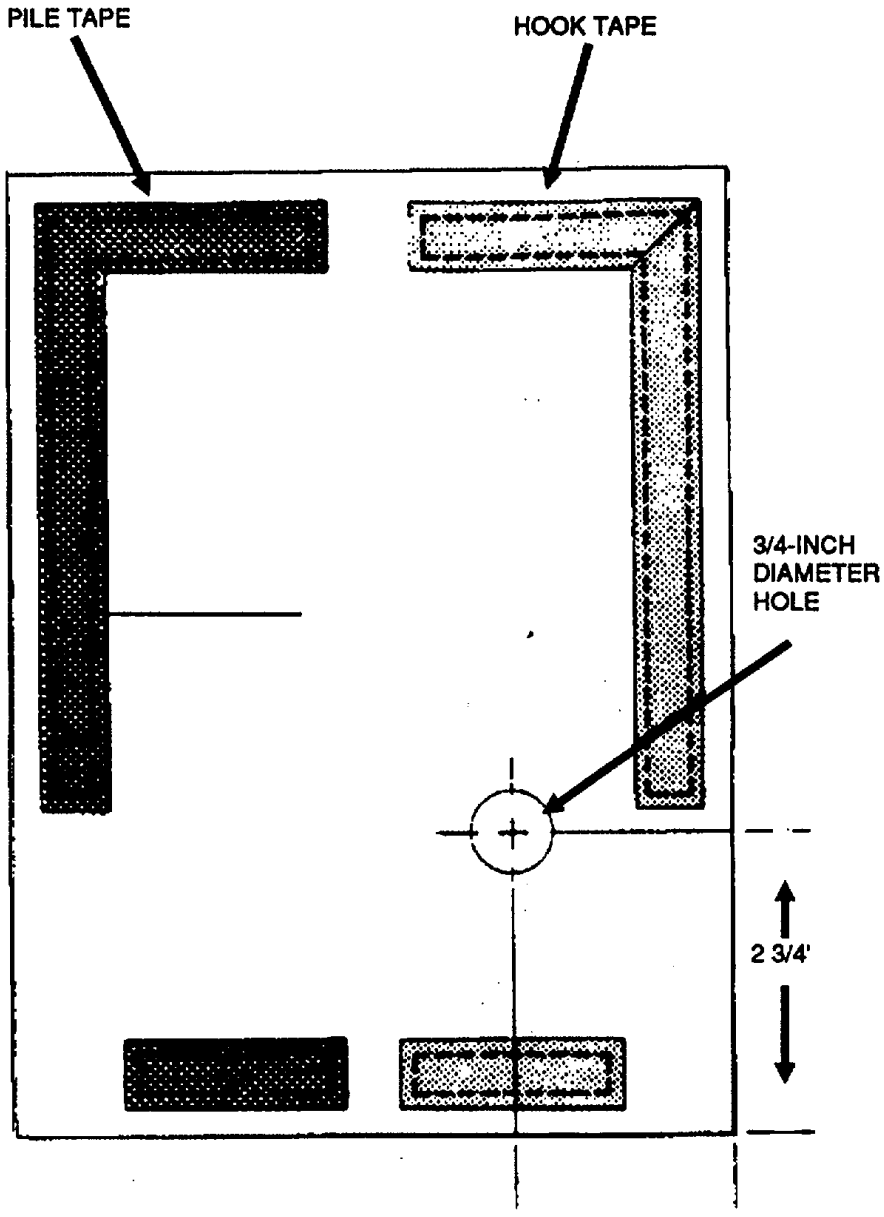
4.8.8 Repair $C0_2$ Protective Cover (Continued).

b. Position coated nylon cloth, coated side up, over cutting board and punch a 3/4-inch hole.



END OF TASK

4.8.9 Repair/Fabricate Container Assembly Tether Line.

This task covers: a. Remove b. Install

INITIAL SET UP

NOTE

Refer to Appendix E for fabrication instructions.

4.9 ASSEMBLY OF LRU-18/U AND CONTAINER.

4.9.1 Packing the LRU-18/U Life Raft into the Container Assembly.

This task covers: a. Assembly

INITIAL SET UP

Equipment Condition

Deflated Life Raft

Materials/Parts

LRU-18/U Life Raft Assembly	1521AS101-1
Container Assembly	4220-01-364-4480
Thread, Nylon	(D19)
Needle, Size 6	(D23)
Cord, Nylon	(D24)
Talc	(D17)

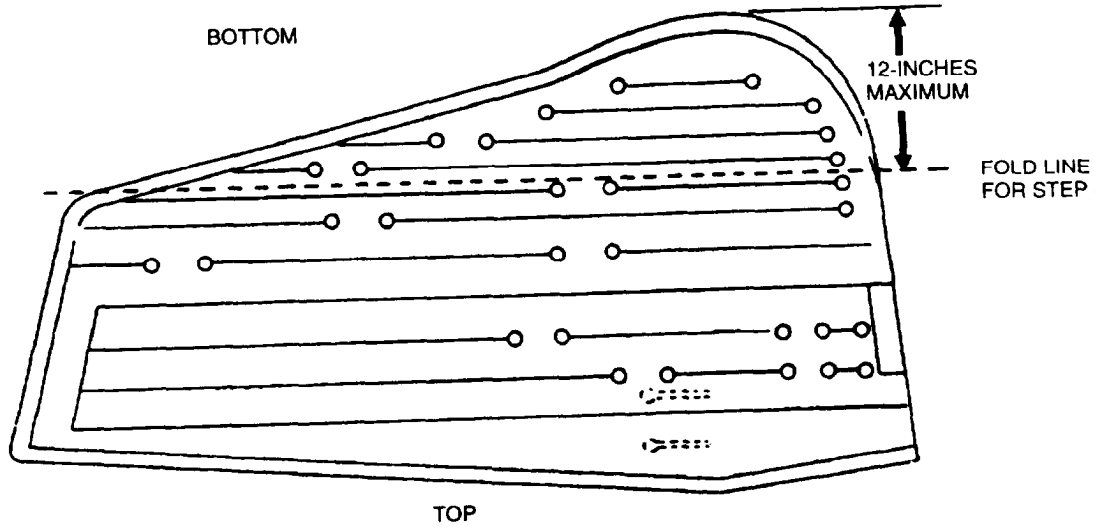
1. **Packing LRU-18/U Life Raft Into Container Assembly.** To pack an LRU-18/U life raft in the container, proceed as follows:

   a. Ensure life raft and container have been inspected in accordance with Table 4-1.

   b. Prior to packing, ensure that both cells have been thoroughly deflated. Ensure oral inflation valves are locked and properly stored in accordance with para 4.6.2.

   C. Ensure CO_2 cylinder is properly installed and seated in accordance with Paragraph 4.6.2 and that beaded inflation handle is properly attached to actuation lever in accordance with paragraph 4.8.6. Cover CO_2 inflation assembly with anti-chafing cover.

   d. Lay the life on the packing table as shown below and lightly dust entire raft with talc (D 17). Note fold line for the next step (one inch below the fourth seal line). For simplicity, the beaded handle is omitted in the following folding diagrams.



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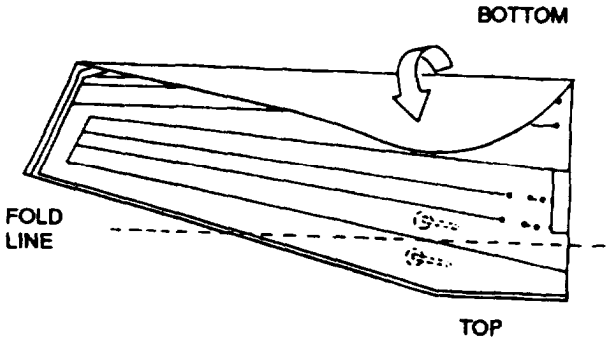
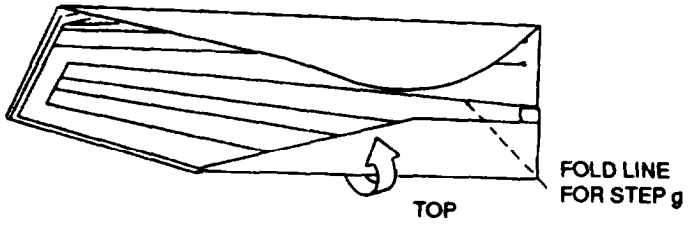
4.9.1 Packing the LRU-18/U Life Raft into the Container Assembly (Continued).

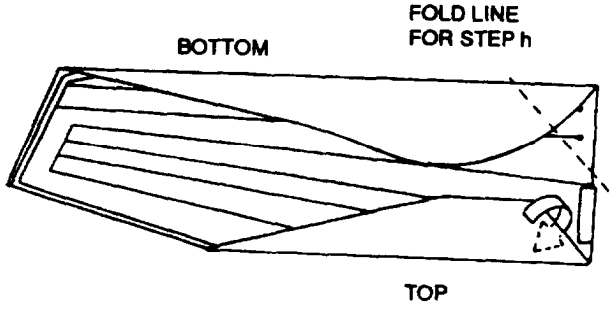
e. Fold bottom over and down, as shown below. Note the fold line for the next step.



f. Fold top over and up. Note the fold line for the next step.



g. Tuck flap under as shown below to uncover the CO_2 inflation assembly. Note fold line for the next step.



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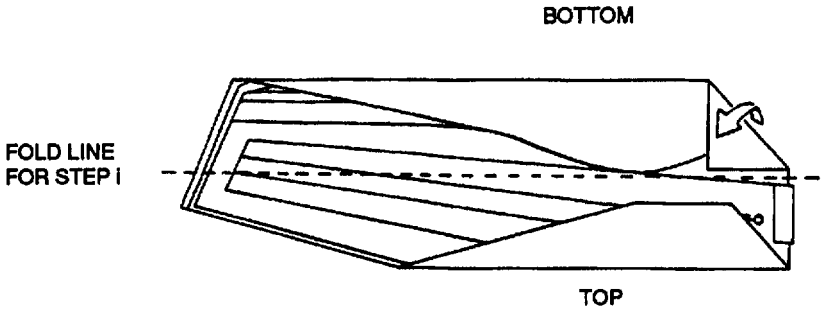
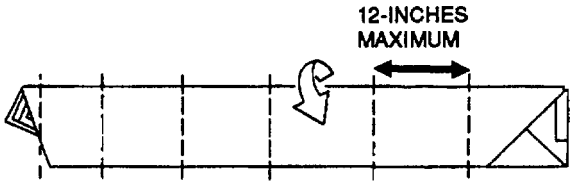
4.9.1 Packing the LRU-18/U Life Raft into the Container Assembly (Continued).

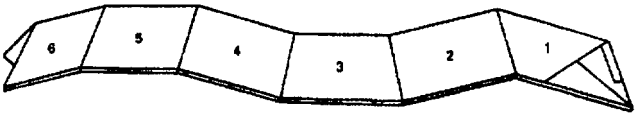
h. Fold the top right corner of the bottom down as shown. Note that the fold line for the next step is halfway between the top and bottom.



i. Fold down bottom as shown and note the fold lines to complete folding. The width of the folded raft should not exceed 12 inches.



j. Step j is the perspective, partially folded view of step i, steps k through n indicate the proper folding method. The packer shall ensure that the overall width of the panels, when folded, does not exceed 12 inches. Note the numbers assigned to the panels.



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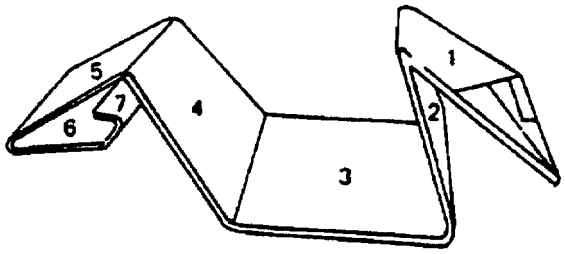
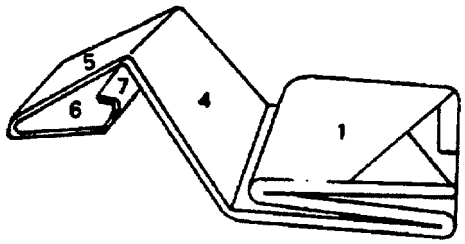
4.9.1 Packing the LRU-18/U Life Raft into the Container Assembly (Continued).

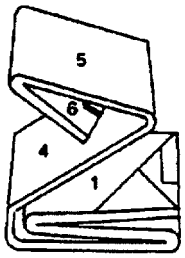
k. Fold panels 1 through 7 as shown.



l. The top panel (panel 1) shall cover panels 2 and 3.



m. Fold panel 4 over panel 1, then proceed to close panel 5 over panels 6 and 7.



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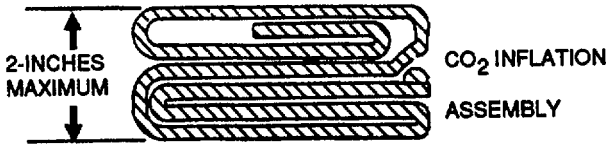
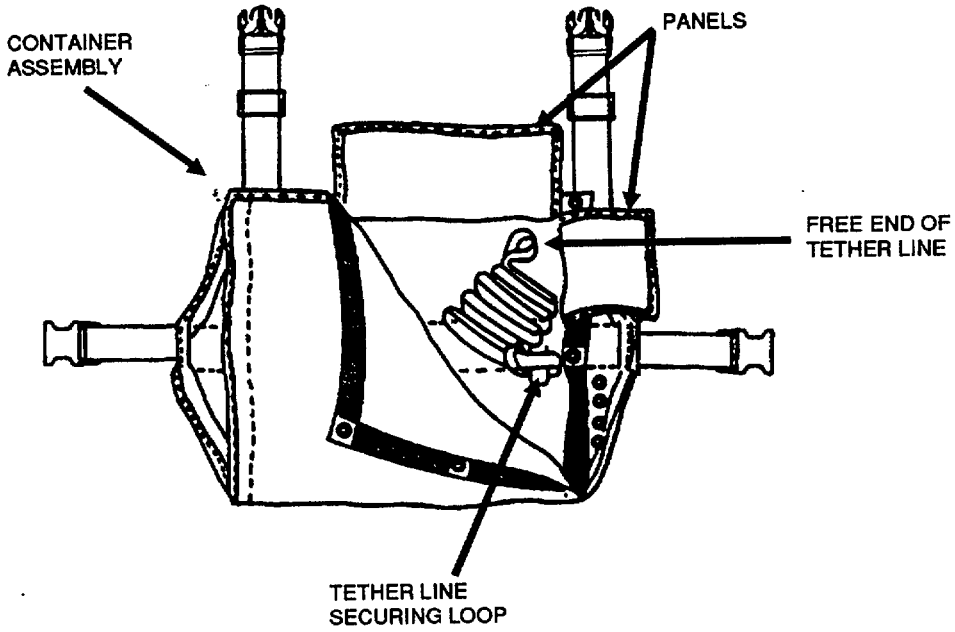
4.9.1 Packing the LRU-18/U Life Raft into the Container Assembly (Continued).

n. Shown is an expanded end-view of the raft, folded as required for proper fit and optimum performance. The overall height when compacted shall not exceed 2 inches.



o. Place the cross strap container assembly on the table as shown so that the panels are open and the outside facing of the container is folded back to allow for insertion of the life raft



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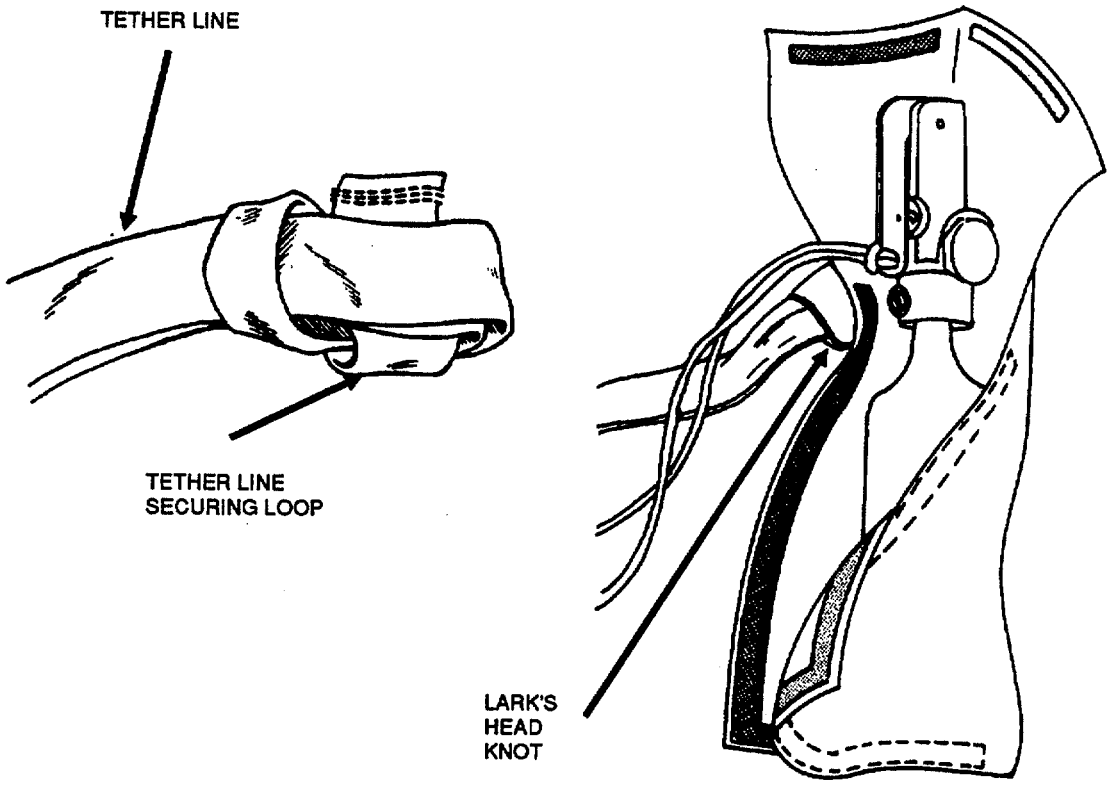
4.9.1 Packing the LRU-18/U Life Raft into the Container Assembly (Continued).

p. Secure the tether line to the container securing loop with a lark's head knot by passing the tether line through the loop.

q. Form a lark's head knot on the free end of the tether line large enough to pass over the entire $C0_2$ inflation assembly (between the antichafing cover and the life raft). Tighten the knot around the manifold stem. This knot will lie between the raft and the $C0_2$ inflation assembly. Secure the knot with two tuns of cord (D24). Tie the ends of the thread with a surgeon's knot, followed by a square knot.



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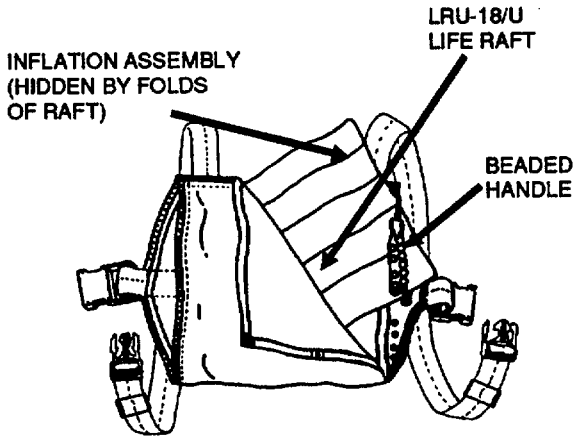
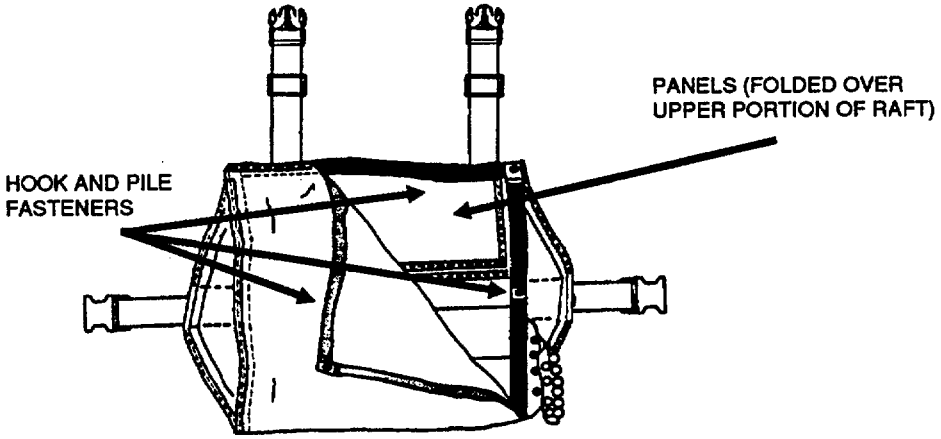
4.9.1 Packing the LRU-18/U Life Raft into the Container Assembly (Continued).

r. Fold the tether line in loops of approximately six inches; secure with a rubber band; and store to the left of the $C0_2$ inflation assembly between panels 1 and 4. Allow enough slack in the tether between the raft and the securing loop to allow for insertion of the raft into the pouch of the container assembly. Insert the raft as shown, forcing it firmly into the pouch with the $C0_2$ inflation assembly on the right hand side.



s. Cover the upper right and top portions of the raft with the container panels as shown and ensure that the beaded inflation handle lanyard is placed above the center snap fastener before securing the hook and pile facing and the two snaps of the container facing.



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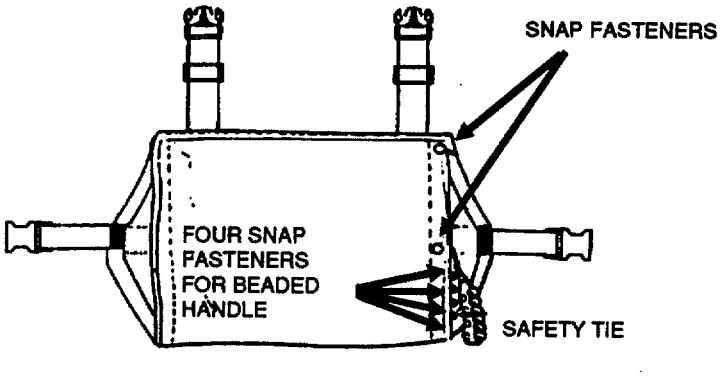
4.9.1 Packing the LRU-18/U Life Raft into the Container Assembly (Continued).

t. Secure cover with the hook and pile fasteners and the two snap fasteners. Then snap the beaded inflation handle to the four snap fasteners (shown unfastened).



u. Safety tie beaded inflation handle with one loop of nylon thread (D19). Pull thread sufficiently to permit 1/2 + 1/8 inch space between the middle beads and webbing. Tie off ends with a surgeon's knot followed by a single overhand knot.

v. Complete DA Form 2408-21.

w. Install DD Form 1574.

END OF TASK

APPENDIX A
REFERENCES

A.1 SCOPE.

This appendix lists all forms and publications referenced in this manual and required by the user to operate and maintain the LRU-18/U.

A.2 ARMY REGULATIONS.

Reporting of Transportation Discrepancies in Shipment	AR 55-38
Dictionary of United States Army Terms	AR 310-25
Authorized Abbreviations and Brevity Codes	AR 310-50
Fire Prevention and Protection	AR 420-90
Packaging Improvement Report	AR 700-58
Army Material Maintenance Concepts and Policies	AR 750-1

A.3 FORMS.

Serviceable Label-Materiel (Yellow)	DD Form 1574
Unserviceable (Condemned) Label-Materiel (Red)	DD Form 1577
Serviceable (Reparable) Label-Materiel (Green)	DD Form 1577-2
Recommended Changes to Publications and Blank Forms	DA Form 2028
Recommended Changes to Equipment Technical Manuals	DA Form 2028-2
Life Raft Inspection Record	DA Form 2408-21
Report of Discrepancy	SF 364
Product Quality Deficiency Report	SF 368

A.4 DA PAMPHLETS.

Consolidated Index of Army Publications and Blank Forms	DA PAM 25-30
Military Publications Posting and Filing	DA PAM 310-13
Army Maintenance Management System	DA PAM 738-750
Army Maintenance Management System-Aviation (TAMMS-A)	DA PAM 738-751
Destruction of Life Support Equipment to Prevent Enemy Use	DA PAM 750-244-1-2

A.5 FIELD MANUALS.

First Aid for Soldiers	FM 21-11

A.6 TECHNICAL BULLETINS.

Calibration Requirements for the Maintenance of Materiel	TB 43-180

A.7 TECHNICAL MANUALS.

Painting Operations Instructions for Field Use	TM 43-0139
General Aircraft Maintenance Manual	TM 1-1500-204-23-1
Storage and Materiel Handling	TM 743-200-1
Procedures for the Destruction of Aviation Life Support Equipment to Prevent Enemy Use	TM 750-244-1-2
Procedures for the Destruction of Aircraft and Associated Equipment to Prevent Enemy Use	TM 750-244-1-5

APPENDIX B

MAINTENANCE ALLOCATION CHART

SECTION 1. INTRODUCTION

B.1 MAINTENANCE ALLOCATION CHART .

a. This Maintenance Allocation Chart (MAC) assigns maintenance functions in accordance with the Three Levels of Maintenance concept for Army aviation. These maintenance levels - Aviation Unit Maintenance (AVUM, Aviation Intermediate Maintenance (AVIM), and Depot Maintenance - are depicted on the MAC as:

AVUM, which corresponds to an 0 Code in the Repair Parts and Special Tools List (RPSTL)

AVIM, which corresponds to an F Code in the Repair Parts and Special Tools List (RPSTL)

DEPOT, which corresponds to a D Code in the Repair Parts and Special Tools List (RPSTL)

b. The maintenance to be performed below depot and in the field is described as follows:

(1) AVUM activities will be staffed and equipped to perform high frequency On-Aircraft maintenance tasks required to retain or return aircraft systems to a serviceable condition. The maintenance capability of AVUM will be governed by the MAC and limited by the amount and complexity of ground support equipment (GSE), facilities required, authorized manning strength, and critical skills available. The range and quantity of authorized spare modules/components will be consistent with the mobility requirements dictated by the air mobility concept. (Assignments of maintenance tasks to divisional company size aviation units will consider the overall maintenance capability of the division, the requirement to conserve personnel and equipment resources, and air mobility requirements.)

(a) Company Size Aviation Units: Perform those tasks which consist primarily of preventive maintenance and maintenance repair and replacement functions associated with sustaining a high level of aircraft operational readiness. Perform maintenance inspections and servicing to include preflight, daily, intermediate, periodic (or phased), and special inspections as authorized by the MAC or higher headquarters. Identify the cause of equipment/system malfunctions using applicable technical manual troubleshooting instructions, built-in-test equipment (BITE), installed aircraft instruments, or test, measurement, and diagnostic equipment (TMDE). Replace worn or damaged modules/components that do not require complex adjustments or system alignment and which can be removed/installed with available skills, tools, and ground support equipment. Perform operational and continuity checks and make minor repairs to the electrical system. Inspect, service and make operational, check capacity and pressure of hydraulic systems. Perform servicing, functional adjustments, and minor repair/replacement to the flight control, propulsion, power train, and fuel systems. Accomplish airframe repair that does not require extensive disassembly, jigging, or alignment The manufacture of airframe parts will be limited to those items which can be fabricated with tools and equipment found in current air mobile tool and ship sets. Evacuate unserviceable modules/components and end items beyond the repair capability of AVUM to the supporting AVIM.

(b) Less than Company Size Aviation Units: Aviation elements organic to brigade, group, and battalion headquarters, and other detachment size units are normally small and have less than ten aircraft assigned. Maintenance tasks performed by these units will be those which can be

accomplished by the aircraft crew chief or assigned aircraft repairman and will normally be limited to preventive maintenance, inspections, servicing, spot painting, stop drilling, application of non stress patches, minor adjustments, module/component fault diagnosis, and replacement of selected modules/components. Repair functions will normally be accomplished by the supporting AVIM unit

(2) AVIM provides mobile, responsive "One-Stop" maintenance support. (Maintenance functions which are not conducive to sustaining air mobility will be assigned to depot maintenance.) AVIM may perform all maintenance functions authorized to be done at AVUM. Repair of equipment for return to user will emphasize support or operational readiness requirements. Authorized maintenance includes replacement and repair of modules/components and end items, which can be accomplished efficiently with available skills, tools, and equipment. AVIM establishes the Direct Exchange (DX) program for AVUM units by repairing selected items for return to stock when such repairs cannot be accomplished at the AVUM level. The AVIM level inspects, troubleshoots, performs diagnostic tests, repairs, adjusts, calibrates, and aligns aircraft system modules/components. AVIM units will have the capability to determine the serviceability of specified modules/components removed prior to the expiration of the Time Between Overhaul (TBO) or finite life. Module/component disassembly and repair will support the DX program and will normally be limited to tasks requiring cleaning and the replacement of seals, fittings, and items of common hardware. Airframe repair and fabrication of parts will be limited to those maintenance tasks which can be performed with available tools and test equipment. Unserviceable reparable modules/components and end items which are beyond the capability of AVIM to repair will be evacuated to Depot Maintenance. AVIM will perform aircraft weight and balance inspections and other special inspections which exceed AVUM capability. AVIM provides quick response maintenance support, including aircraft recovery and air evacuation, on-the-job training, and technical assistance through the use of mobile maintenance contact teams. The AVIM also maintains authorized operational readiness float aircraft AVIM shall provide collection and classification services for service able unserviceable materiel. (The aircraft maintenance company within the maintenance battalion of a division will perform AVIM functions consistent with air mobility requirements and conservation of personnel and equipment resources. Additional intermediate maintenance support will be provided by the supporting non divisional AVIM unit.)

NOTE

Nomenclatures used throughout the MAC are approved item names. Those terms/nomenclatures expressed in parentheses are generic in nature and are not to be considered as official terminology.

B.2 USE OF THE MAINTENANCE ALLOCATION CHART (SECTION II).

a. The MAC assigns maintenance functions to the lowest category of maintenance based on past experience and the following considerations:

(1) Skills available.

(2) Work time required.

(3) Tools and test equipment required and/or available.

b. Only the lowest category of maintenance authorized to perform a maintenance function is indicated. If the lowest maintenance category cannot perform all tasks of any single maintenance function (e.g., test, repair), then the higher maintenance level(s) that can accomplish additional tasks will also be indicated.

c. A maintenance function assigned to a maintenance category will automatically be authorized to be performed at any higher maintenance category.

d. A maintenance function that cannot be performed at the assigned category of maintenance for any reason may be evacuated to the next higher maintenance category. Higher maintenance categories will perform the maintenance functions of lower maintenance categories when required or directed by the commander that has the authority to direct such tasking.

e. The assignment of a maintenance function will not be construed as authorization to carry the related repair parts or spares in stock. Information to requisition or otherwise secure the necessary repair parts will be as specified in the associated RPSTL.

f. Normally there will be no deviation from the assigned level of maintenance. In cases of operational necessity, maintenance functions assigned to a maintenance level may, on a one-time basis and at the request of the lower maintenance level, be specifically authorized by the maintenance officer of the level of maintenance to which the function is assigned. The special tools, equipment, etc., required by the lower level of maintenance to perform this function will be furnished by the maintenance level to which the function is assigned. This transfer of a maintenance function to a lower maintenance level does not relieve the higher maintenance level of the responsibility for the function. The higher level of maintenance will provide technical supervision and inspection of the function being performed at the lower level.

g. Changes to the Maintenance Allocation Chart will be based on continuing evaluation and analysis by responsible technical personnel and on reports received from field activities.

B.3 MAINTENANCE FUNCTIONS .

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test To verify serviceability by measuring the mechanical or electrical characteristics of an item and compare those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or *gases.*

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services or other maintenance actions to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards in appropriate technical publications, i.e., Depot Maintenance Work Requirement ()MWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipments/components.

B.4 EXPLANATION OF COLUMNS IN THE MAC, SECTION II .

a. Functional Groups (Columns I and 2). The functional groupings shown in the sample below identify maintenance significant components and assemblies.

Group Number	Description
01	Container
02	LRU-18/U Life Raft

b. Maintenance Function (Column 3). Column 3 lists the functions to be performed on the items listed in column 2.

c. Maintenance Level (Column 4). The maintenance levels AVUM, AVIM, and DEPOT are listed on the Maintenance Allocation Chart with individual columns that include the work times for maintenance functions at each maintenance level. Work time presentations such as "0.1" indicate the average time it requires a maintenance level to perform a specified maintenance function. In this case, "0.1" indicates one-tenth of and hour, not one minute. If a work time has not been established, the columnar presentation shall indicate"____" Maintenance levels higher than the level of maintenance indicated are authorized to perform the indicated function.

d. Tools and Test Equipment Reference Code (Column 5 and Section III). Common tool sets (not individual tools), special tools, and test and support equipment required to perform maintenance functions are listed alphabetically in Section III with a reference number to permit cross-referencing to column 5 in the MAC. In addition, the maintenance category authorized to use the device is listed along with the item National Stock Number (NSN) and, if applicable, the tool number to aid in identifying the tool/device.

e. Remarks Code (Column 6 and Section IV). Remarks (identified by an alphabetical code in column 6) and other notes (identified by a number in parentheses in the applicable column) are listed in Section IV to provide a ready reference to the remark/note.

B.5 EXPLANATION OF COLUMNS IN TOOLS AND TEST EQUIPMENT REQUIREMENTS, SECTION III.

a. Column 1, Tools or Test Equipment Reference Code. The tool and test equipment reference code correlates with a code used in the MAC, Section II, Column 5.

b. Column 2, Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment

c. Column 3, Nomenclature. Name or identification of the tool or test equipment.

d. Column 4, National Stock Number. The National Stock Number of the tool or test equipment

e. Column 5, Tool Number. The manufacturer' s part number.

B.6 EXPLANATION OF COLUMNS IN REMARKS, SECTION IV.

a. Column 1, Remarks Code. The code recorded in column 6, Section II.

b. Column 2, Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

SECTION II. MAINTENANCE ALLOCATION CHART FOR SRU-37/P LIFE RAFT AND CONTAINER ASSEMBLY

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level AVUM (0)	AVIM (F)	DEPOT (D)	(5) Tools & Equip Ref. Code	(6) Code
00	LRU-18/U						
01	Container Assy						
0101	Outer Case	Inspect	0.1				A
		Service	0.3			5	B
		Replace	0.4				
		Repair	1.0				C
0102	Beaded Inflation Handle	Inspect	0.1				A
		Replace	0.1			8	
0103	Tether Line	Inspect	0.1				A
		Replace	0.2				D
0104	Cross Strap Assy	Inspect	0.1				A
		Repair	1.1				C
		Replace	0.5				D
02	LRU-18/U						
0201	VEE Bottom Life Raft	Inspect	0.3				A
		Service	4.0			5	B
		Test	--			6, 7	E
		Repair	5.0			8, 9	C
		Replace	**0.4**				D
0202	CO_2 Cylinder	Inspect	0.1				A
		Test	**0.2**			1, 3	F
		Replace	0.1				
		Repair	--			4	**C**
0203	Inflation Assy	Inspect	0.1			9, 1	A, E
		Service	--				
		Test	0.3				
		Repair	--			2	C
		Replace	0.1				

SECTION III. TOOLS AND TEST EQUIPMENT REQUIREMENTS

Tool or Test Equipment Reference Code	Maintenance Level	Nomenclature	National Stock Number	Tool Number
1	AVUM	Tool Kit, Aircraft Mechanic, General	5180-00-323-4692	SC518099
2	AVUM	Wrench, Torque 0-150 inch lb.	5120-00-524-4489	
3	AVUM	Scale, Weighing	6670-00-461-9898	
4	AVUM	Chaser, Cylinder Thread	1377-01-069-4040	1842-008-01
5	AVUM	Pail, Utility	7240-00-160-0455	
6	AVUM	Safety Goggles	4240-00-052-3776	
7	AVUM	Vacuum Cleaner 115V-AC	7910-00-550-9115	
8	AVUM	Tester, Spring Resiliency	6670-00-254-4634	
9	AVUM	Test Fixture, Leakage	Local Manufacture	
10	AVUM	Gauge, Pressure	6685-00-757-1950	

NOTE: Tools and Test Equipment listed above can be substituted by equivalent tools and test equipment.

SECTION IV. REMARKS

Remarks Code	Remarks
A	Visual inspection of all components for cuts, tears, abrasion, deterioration, security of attachment, ease of operation, corrosion, wear, and damage.
B	Clean container assembly or raft assembly with detergent and water only. No solvents shall be used. Dry with lint-free cloth. Apply talc. Work area must be free of abrasive material.
C	Repairs are limited to tears, rips, punctures, corrosion, or replacement of defective components.
D	Fabricate tether line and cross straps.
E	Functional/leakage test of raft.
F	Weight check of C02 cylinder.

APPENDIX C
AVIATION UNIT MAINTENANCE
REPAIR PARTS AND SPECIAL TOOLS LIST

SECTION I. INTRODUCTION

C.1 SCOPE.

This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of aviation unit maintenance of the LRU-18/U. It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the source, maintenance and recoverability (SMR) codes.

C.2 GENERAL.

In addition to Section I, Introduction, this Repair Parts and Special Tools List is divided into the following sections:

a. **Section II. Repair Parts List.** A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence.

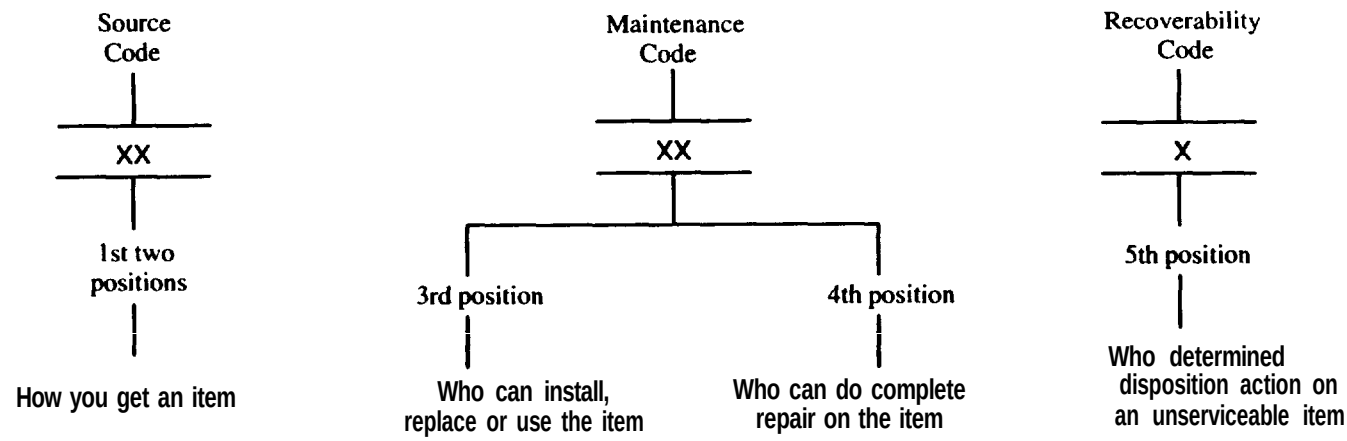
b. **Section III. Special Tools List.** A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL for the performance of maintenance.

c. **Section IV. Cross-reference Indexes.** A list, in National item identification number (NIIN) sequence, of all National stock numbers (NSN) appearing in the listing, followed by a list in alphanumeric sequence of all part numbers appearing in the listing. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance.

C.3 EXPLANATION OF COLUMNS (SECTIONS II AND III).

a. ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.

b. SMR CODE (Column (2)). The Source, Maintenance, and Recoverability (SMR) code is a 5-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instruction, as shown in the following breakout:



NOTE

Complete Repair Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

(1) Source Code. The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

Code	Application/Explanation
PA, PB, PC, PD, PE, PF, PG	Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the 3rd position of the SMR code. **NOTE** Items coded PC are subject to deterioration.
KD, KF, KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.
MO- (Made at org/ AVUM Level) MF- (Made at DS/ AVUM Level) MH- (Made at GS Level) ML- (Made at Specialized Repair Act (SRA) MD- (Made at Depot)	Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the Bulk Material group of the repair parts list in this RPSTL. If the itme is authorized to your by the 3rd position code of the SMR code, but the source code indicates it is ma& at a higher level, order the item from the higher level of maintenance.
AO- (Assembled by org/AVUM Level) AF- (Assembled by DS/AVIM AH- (Assembled by GS Category) AL- (Assembled by SRA) AD- (Assembled by Depot)	Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated adn assembled at the level of maintenance indicated by the source code. If the 3rd position code of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

XA- Do not requisition an "XA"-coded item. Order its next higher assembly. (Also, refer to the NOTE below.)

XB- If an "XB" item is not available from salvage, order it using the Commercial and Government Entity Code (CAGEC) and part number given.

XC- Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer's part number.

XD- Item is not stocked. Order an "XD"-coded item through normal supply channels using the GAGEC and part number given, if no NSN is available.

(2) Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the SMR Code as follows:

(a) The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following levels of maintenance.

Code	Application/Explanation
C	-Crew or operator maintenance done within organizational or aviation unit maintenance.
O	-Organizational or aviation unit category can remove, replace, and use the item.
F	-Direct support or aviation intermediate level can remove, replace, and use the item.
H	-General support level can remove, replace, and use the item.
L	-Specialized repair activity can remove, replace, and use the item.
D	-Depot level can remove, replace, and use the item.

(b) The maintenance code entered in the fourth position tells whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized repair functions.) This position will contain one of the following maintenance codes.

NOTE

Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.

Code	Application/Explanation
O	-Organizational or aviation unit is the lowest level that can do complete repair of the item.
F	-Direct support or aviation intermediate is the lowest level that can do complete repair of the item.

H -General support is the lowest level that can do complete repair of the item.
L -Specialized repair activity (designate the specialized repair activity) is the lowest level that can do complete repair of the item.
D -Depot level is the lowest level that can do complete repair of the item.
z -Nonreparable. No repair is authorized.
B -No repair is authorized. (No parts or special tools are authorized for the maintenance of a "B" coded item). However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

(3) Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR Code as follows:

Code	Application/Explanation
Z	-Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in 3rd position of SMR Code.
O	-Reparable item. When uneconomically reparable, condemn and dispose of the item at organizational or aviation unit level.
F	-Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support or aviation intermediate level.
H	-Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.
D	-Reparable item. When beyond lower level repair capability, return to depot Condemnation and disposal of item not authorized below depot level.
L	-Reparable item. Condemnation and disposal not authorized below specialized repair activity (SRA).
A	-Item requires special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

c. National Stock Number (Column (3). The National Stock Number (NSN) for the item is listed in this column.

d. GACEC (Column (4)). CAGEC is a 5-digit alpha numeric code which is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

e. Part Number (Column (5)). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

NOTE

When you use a NSN to requisition an item, the item you receive may have a different part number from the part ordered.

f. **Description and Usable on Code (UOC) (Column (6)).** This column includes the following information:

(1) The Federal item name and, when required, a minimum description to identify the item.

(2) The usable on code, when applicable (see paragraph C.4, Special Information).

(3) The statement "END OF FIGURE" appears just below the last item description in Column 6 for a given figure in both Section II and Section In.

g. Unit of Measure (U/M) (Column (7)). Indicates the standard of the basic quantity of the listed item as used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr, etc). When the unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

h. Qty (Column (8)). The QTY (quantity incorporated in unit) column indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that that quantity is variable and the quantity may vary from application to application.

C.4 EXPLANATION OF COLUMNS (SECTION IV).

a. National Stock Number (NSN) Index.

(1) Stock Number Column. This column lists the NSN by National Item Identification Number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN, as follows:

NSN
5305-01-674-1467
NIIN

When using this column to locate an item, ignore the first 4 digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

(2) Fig. Column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in Section II and Section II.

(3) Item Column. The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

b. Part Number Index. Part numbers in this index are listed by part number in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

(1) CAGEC Column. The CAGEC is a 5-digit alpha numeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

(2) Part Number Column. Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

(3) Stock Number Column. This column lists the NSN for the associated part number and manufacturer identified in the PART NUMBER and CAGEC columns to the left

(4) FIG. Column. This column lists the number of the figure where the item is identified/located in Section II and Section III.

(5) ITEM Column. The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

C.5 SPECIAL INFORMATION.

a. Usable On Code. The usable on code appears in the lower right comer of the Description column heading. Usable on codes are shown as "UOC: ....." in the Description Column (justified left) on the first line applicable item description/nomenclature. Uncoded items are applicable to all models.

b. Fabrication Instructions. Bulk materials required to manufacture items are listed in the Bulk Material Functional Group of this RPSTL. Part numbers for bulk materials are also referenced in the description column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in Chapter 4 and Appendix E.

c. Assembly Instruction. Detailed assembly instructions for items source coded to be assembled from component spare/repair parts are found in Chapter 4. Items that make up the assembly are listed immediately following the assembly item entry or reference is made to an applicable figure.

d. Indentured List. Some items in the DESCRIPTION column are indentured by a dot(s). Indentured items are a component(s) of the preceding item(s) with one less indenture level.

C.6 HOW TO LOCATE REPAIR PARTS.

a. When National Stock Number or Part Number is Not Known.

(1) First. Using the table of contents, determine the assembly group or subassembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.

(2) Second. Find the figure covering the assembly group or subassembly group to which the item belongs.

(3) Third. Identify the item on the figure and note the item number.

(4) Fourth. Refer to the Repair Parts List for the figure to find the part number for the item number noted on the figure.

(5) Fifth. Refer to the Part Number Index to find the NSN, if assigned.

b. when National Stock Number or Part Number is Known.

(1) First. Using the National Stock Number or Part Number Index, find the pertinent National Stock Number or Part Number. The NSN index is in National Item Identification Number (NMN) sequence (see C4.a(1)). The part numbers in the Part Number index are listed in ascending alphanumeric sequence (see C4.b). Both indexes cross-reference you to the illustration/figure and item number of the item you are looking for.

(2) Second. Turn to the figure and item number, verify that the item is the one you are looking for, then locate the item number in the repair parts list for the figure.

NOTE

If you have the part number, look in the PART NUMBER column of the part number index. Identify the figure and item number and look up the item on the figure in section II.

C.7 ABBREVIATIONS. (NOT APPLICABLE).

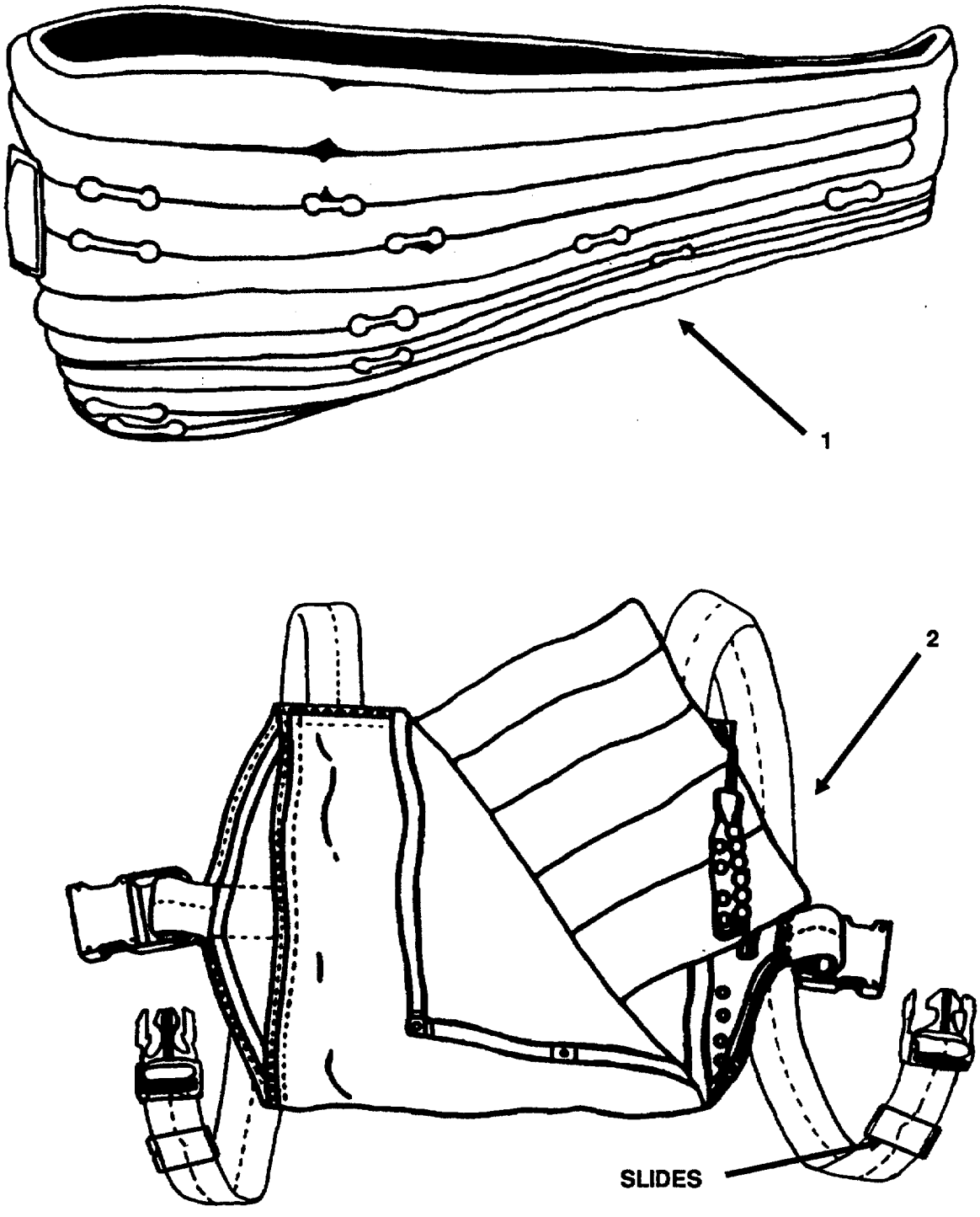


Figure C-1. Life Raft and Container Assembly.

Section II

(1) Illustration (a) Fig. No.	(1) Illustration (b) Item No.	(2) SMR Code	(3) National Stock Number	(4) CAGEC	(5) Part Number	(6) Description Usable on code	(7) U/M	(8) Qty Inc. in Unit
						Group 00 Life Raft and Container Assembly		
C-1	1	AOOOO	4220-01-272-8004	07627	1521AS102-1	Life Raft, Inflatable, LRU-18/U (See Fig C-3 for Breakdown)	E A	1
C-1	2	AOOOO	4220-01-364-4480	81996	1680-ALSE-015	Container Assembly (See Fig. C-2 for Breakdown)	EA	1
						END OF FIGURE		

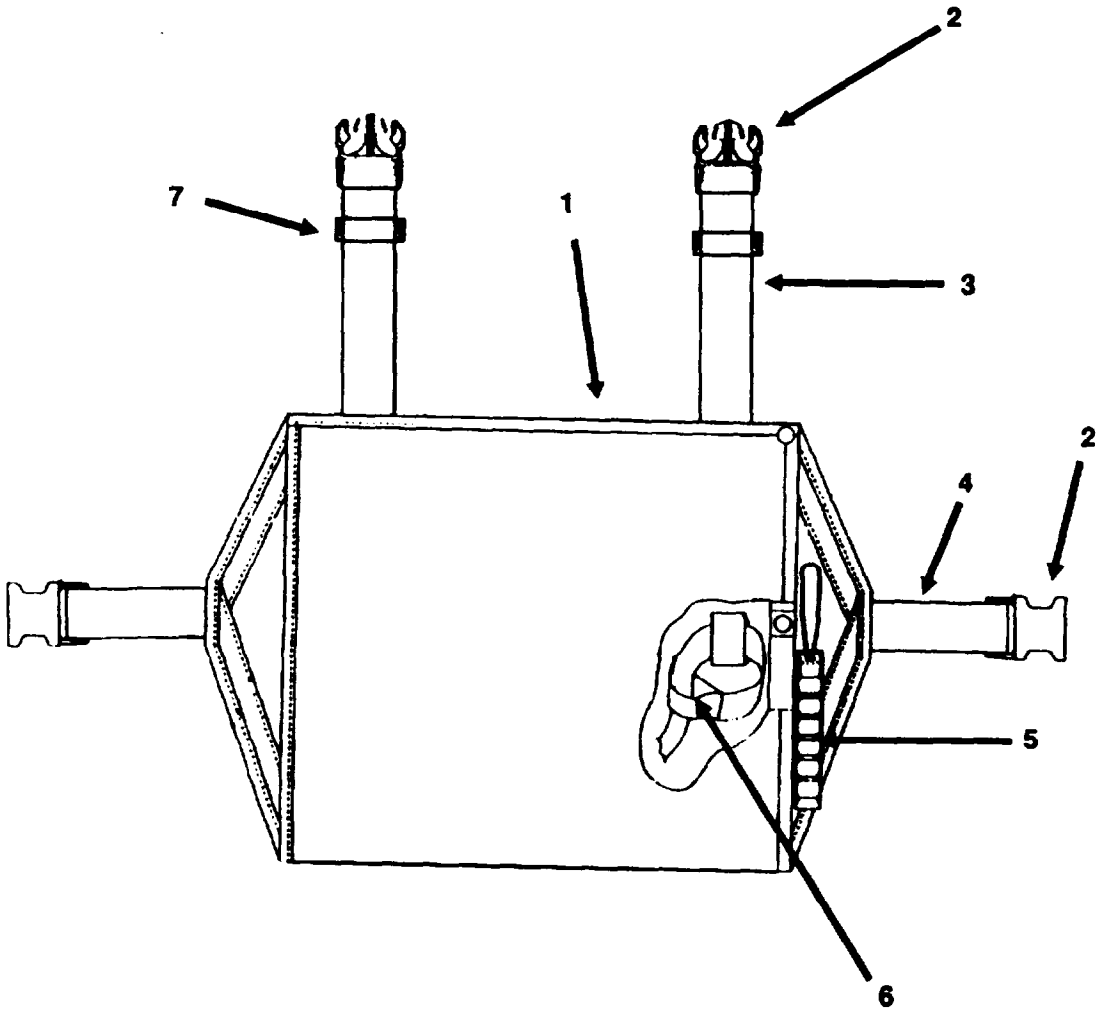


Figure C-2. Crass Strap Container Assembly.

Section II

(1) Illustration (a) Fig. No.	(1) Illustration (b) Item No.	(2) SMR Code	(3) National Stock Number	(4) CAGEC	(5) Part Number	(6) Description Usable on code	(7) U/M	(8) Qty Inc. in Unit
						Group 01 Container Assembly		
C - 2	1	PA000	4220-01-364-4480	81996	1680-ALSE-015	Container	E A	1
C-2	2	PAOOZ	(TBD)	82599	101-0150-5614	Buckle Assembly, 1-1/2" (Male and Female)	EA	2
C-2	3	PAOOZ	8305-00-263-2472	81349	MIL-T-5038	Webbing Nylon C1 1, Type IV, 1-1/2" wide by 60" long (Made from MIL-T-5038G)	YD	2
C-2	4	PAOOZ	8305-00-263-2472	81349	MIL-T-5038	Webbing, Nylon C1 1 Type. IV, 1-1/2" wide by 33-1/4" long (Made from MIL-T-5038G)	Y D	1
C-2	5	PA000	4220-01-120-4752	30003	975AS121-11	Handle, Beaded Inflation w/o releasing pin lanyard	E A	1
C-2	6	MOOOZ	8305-00-753-6497	06908	MIL-T-5038	Tether Line (Made From MIL-T-5038)(See Appendix E)	E A	1
C-2	7		(TBD)		105-0150-5914	Slide Retainer	EA	2
					Note:	The strap assembly consists of Part Number 101-0150-5914.		
						END OF FIGURE		

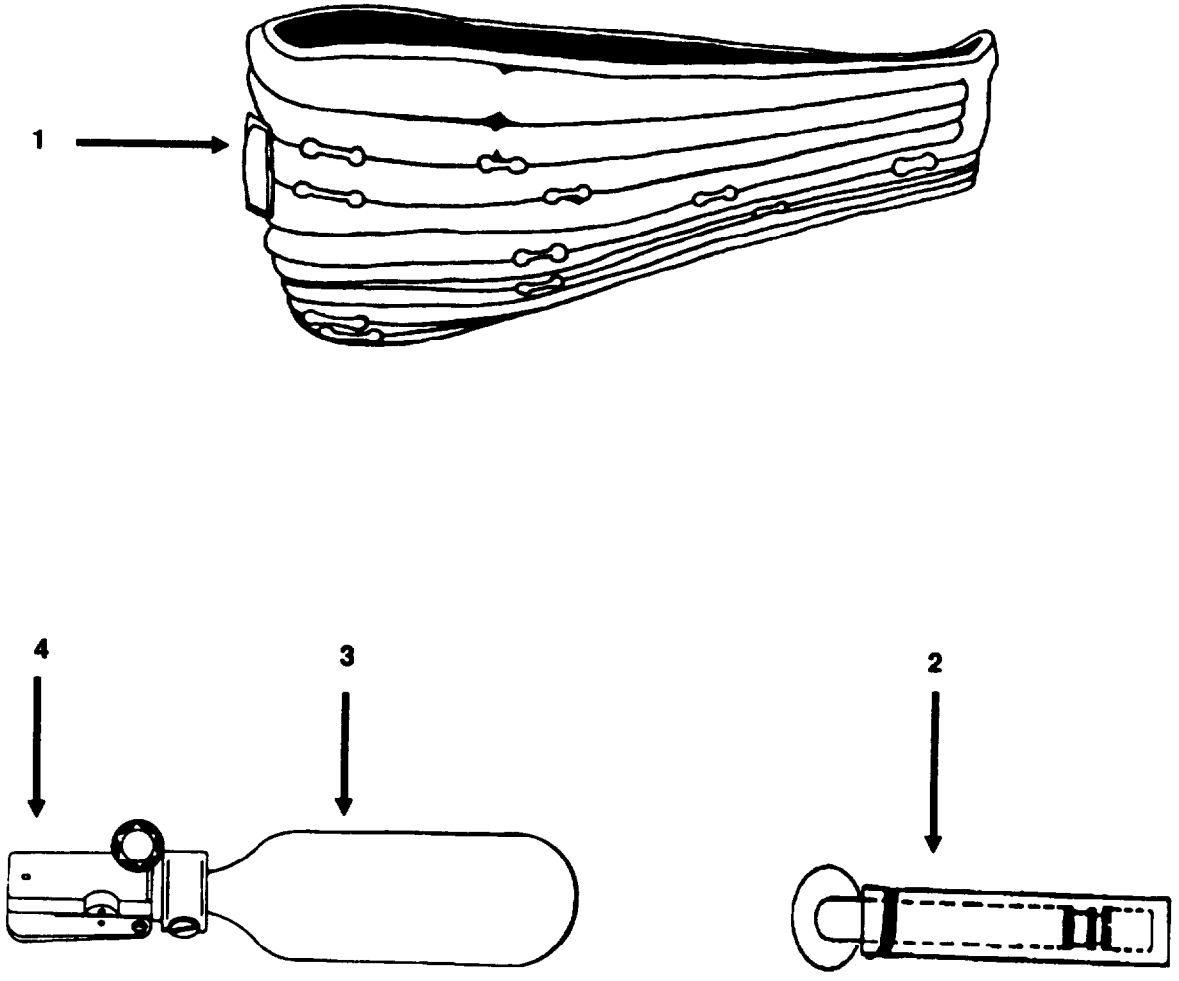


Figure C-3. LRU-18/U Assembly.

Section II

(1) Illustration (a) Fig. No.	(1) Illustration (b) Item No.	(2) SMR Code	(3) National Stock Number	(4) CAGEC	(5) Part Number	(6) Description Usable on code	(7) U/M	(8) Qty Inc. in Unit
						Group 02 LRU-18/U		
C-3	1	PA000	4220-01-272-8004	07627	1521AS102-1	Vee Bottom Life Raft	EA	
C-3	2	PAOZZ	4220-01-081-0322	27515	67A319D18-1	Valve, Pneumatic Inflater	EA	
C-3	3	PAOZZ	4220-00-837-3322	81349	MIL-C-52053	Cylinder, Carbon Dioxide	EA	
C-3	4	PA000	4220-00-561-0094	81349	MIL-I-25370	Inflation Assembly	EA	
					Note:	Part Number 105AS100-5, NSN 5330-00-498-6964, contains two top, two bottom and two seat seal gaskets.		
						END OF FIGURE		

SECTION III. SPECIAL TOOLS LIST

Not Applicable

SECTION IV. CROSS - REFERENCE INDEXES

National Stock Number Indexes

National Stock Number	Fig #	Item #
8305-00-263-2472	C-2	3
8305-00-263-2472	C-2	4
4220-01-081-0322	C-3	2
4220-01-081-3322	C-3	3
4220-01-120-4752	C-2	5
4220-01-272-8004	C-1	1
4220-01-272-8004	C-3	1
4220-01-364-4480	C-1	2
4220-01-364-4480	C-2	1
4220-00-561-0094	C-3	4
8305-00-753-6497	C-2	6

GO TO NEXT PAGE

SECTION IV. CROSS - REFERENCE INDEXES (Continued)

Part Number Indexes

CAGEC	Part Number	National Stock Number	Fig #	Item #
81349	MIL-C-52053	4220-00-837-3322	C-3	3
81349	MIL-I-25370	4220-00-012-3571	C-3	4
81349	MIL-T-5038	8305-00-263-2472	C-2	3
81349	MIL-T-5038	8305-00-263-2472	C-2	4
81349	MIL-T-5038	8305-00-753-6497	C-2	6
82599	101-0150-5614		C-2	2
82599	105-0150-5914		C-2	7
07627	1521AS102-1	4220-01-272-8004	C-1	1
07627	1521AS102-1	4220-01-272-8004	C-3	1
81996	1680-ALSE-015	4220-01-364-4480	C-1	2
81996	1680-ALSE-015	4220-01-364-4480	C-2	1
27515	67A319D18-1	4220-01-081-0322	C-3	2
30003	975AS121-11	4220-01-120-4752	C-2	5

APPENDIX D

EXPENDABLE AND DURABLE ITEMS LIST

SECTION I. INTRODUCTION

D.1 SCOPE.

This appendix lists expendable and durable items you need to maintain the LRU-18/U. Expendable maintenance supplies and materials used in this manual are identified at Section II. An item number is assigned to each expendable for ease of location and reference. Wherever they appear in the manual, item numbers are preceded by a D to identify them as expendables from Appendix D. For example, toluene, technical has the number D20. Ail expendable numbers in this manual refer to the list at Section II.

a. **Column (1) - Item Number.** This number is assigned to the entry in the listing for referencing when required.

b. **Column (2)** - Level. This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew
O - Unit Maintenance
F - Direct Support Maintenance

c. **Column (3) - National Stock Number.** This is the national stock number assigned to the item; use it to request or requisition the item.

d. **Column (4) - Description.** Indicates the federal item name and, if required, a description to identify the item.

e. **Column (5) - Unit of Measure (U/M) Unit of Issue (U/I).** This measure is expressed by a two-character alphabetical abbreviation (e.g., EA, IN, PR). If the unit of measure differs from the unit of issue as shown in the Army Master Data File (AMDF), requisition the lowest unit of issue that will satisfy your requirements.

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST

Item Number	Level	National Stock Number	Description	(U/M) (U/I)
1	0	8040-00-142-9913	Adhesive, MIL-A-5540	KT
2	0	7920-00-5 14-2417	Brush, acid swabbing	GR
3	0	7920-00-044-9281	Cloth, cleaning, MIL-C-85043	BX
4	0	8305-00-935-1759	Cloth coated, MIL-C-19002	YD
5	0	5350-00-967-5093	Cloth, mat, abrasive, 240 grit, MIL-A-9962	SH
6	0	8030-01-041-1596	Corrosion preventive compound, MIL-C-85054	CN

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST (Continued)

Item Number	Level	National Stock Number	Description	(U/M) (U/I)
7	0	7930-00-282-9699	Detergent, general purpose, MIL-D-16791	GL
8	0	8315-00-001-3587	Fastener Tape, hook, MIL-F-21840	YD
9	0	8315-00-066-5054	Fastener Tape, pile, MIL-F-21840	YD
10	0	7510-00-161-4256	Ink, drawing TT-I-531	BT
11	0	7510-00-161-4229	Ink, marking, laundry, TT-I-542	PT
12	0	6810-01-136-7012	Isopropyl alchohol TT-I-735A grade A	GL
13	0	6830-00-134-3709	Nitrogen, technical, Fed Spec BB-N-411	EA
14	0	5120-00-243-9401	Roller, hand	EA
15	0	4720-00-540-1962	Hose, rubber, 1/2”	FT
16	0	6850-00-664-1257	Silicone compound	TU
17	0	6810-01-080-9589	Talc, technical, ML-T-50036	CO
18	0	7510-00-074-4946	Tape, ordnance, PPP-T-60 TY4CL1	RO
19	0	8310-00-204-3749	Thread, nylon, Type II, Size E. V-T-295	YD
20	0	6810-00-281-2002	Toluene, Technical. TT-T-548	GL
21	0	2640-00-050-1229	Valve, core, 6100-T	EA
22	0	8305-00-263-2472	Webbing, nylon 1 1/2 in,, ME T-5038G	YD
23	0	3530-00-033-5386	Needle, Sewing Machine	EA
24	0	4020-00-014-6699	Cord, Nylon	YD
25		8415-00-280-1648	Gloves, Cloth	PR
26	0	6515-00-303-8200	Applicator. Disposable	PG

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APPENDIX E

ILLUSTRATED LIST OF MANUFACTURED ITEMS

E.1 INTRODUCTION.

a. This appendix includes instructions for making items authorized to be manufactured or fabricated at aviation unit maintenance.

b. All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list on the illustration.

E.2 TETHER LINE ASSEMBLY INSTRUCTIONS.

a. Fold webbing to dimension shown in figure and stitch as shown using size E nylon thread (D19), 8 to 10 stitches per inch. Backstitch a minimum 1/2 inch.

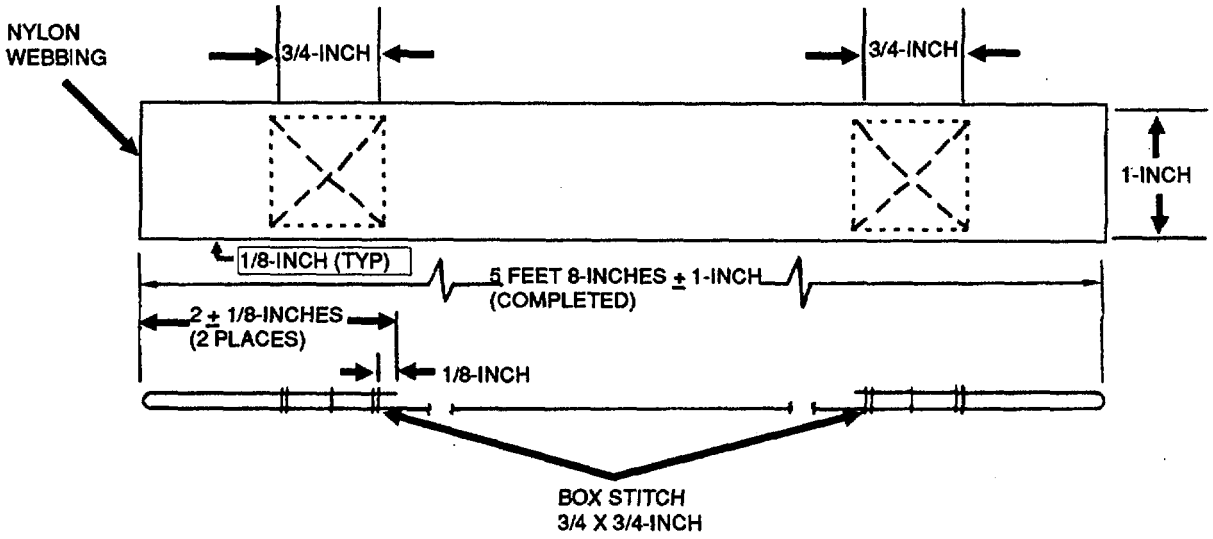
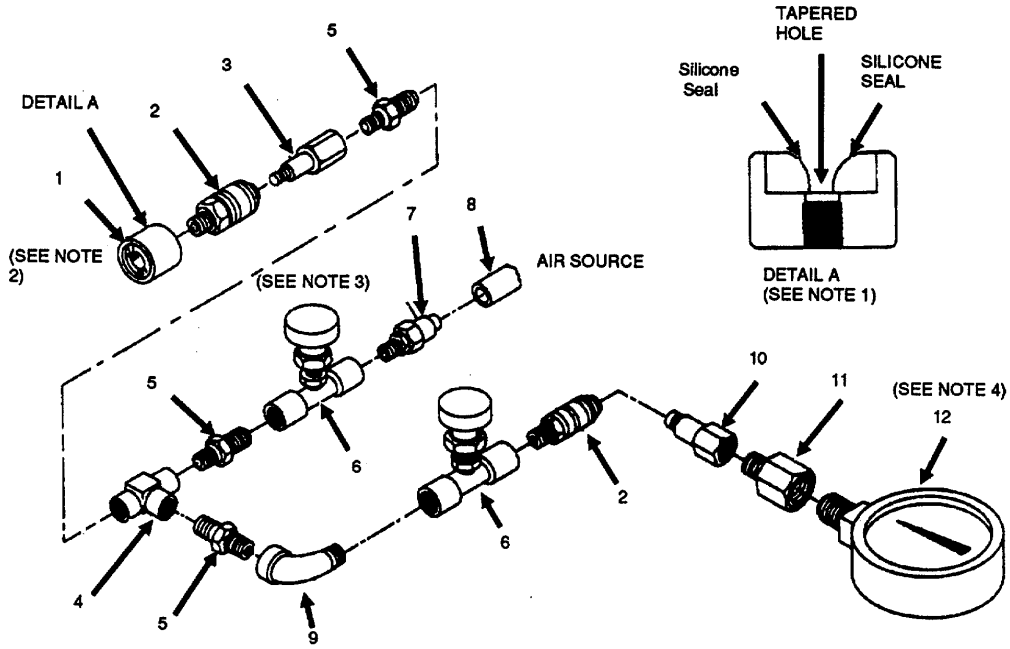


Figure E-1. Tether Line

Table E-1. Fabrication of Tether Line (SRU-37/P).

Quantity	Materials Required Description	Reference
6 Feet	Webbing, Nylon, Type II, 1 Inch, Yellow	MIL-T-5038 8305-00-753-6487
As Required	Thread, Nylon, Type II, Size E	V-T-295

E.3 LRU-18/U LEAKAGE TEST FIXTURE INSTRUCTIONS.



1. Connector (MS22023-1 See Note 1 and 2)
2. Fitting Air Hose, Push-Type (2 Each, 4730-00-516-3826)
3. Coupling, Air Hose Male (Part of Item 2)
4. Fitting, Female, T, 1/8 Inch Pipe Thread (4730-00-278-3989)
5. Adapter, Male, 1/8 Inch Pipe Thread (3 Each 4730-00-186-7797)
6. Valve, Female, 1/8 Inch Pipe Thread (126231) (2 Each 4820-00-529-2609 See Note 3)
7. Adapter, Hose (08395) (4730-00-287-1784)
8. Hose, Rubber, 1/2 Inch O.D. (4720 00-540-1962)
9. Fitting, Street, L-Type 1/8 Inch Pipe Thread (4730 00-231-5605)
10. Coupling, Air Hose, Female (81895) (Part Of Item 2)
11. Adapter, 1/8 to 1/4 Inch (4730 00-529-1487)
12. Gauge, Pressure, 0 to 5 PSIG (Or Equal) (6685-00-953-9090 See Note 4)

NOTES

1. Fill large threaded hole with silicone seal (manufactured by General Electric). Silicone seal must be tapered to receive oral valve. Taper may be formed with a small wooden stick while applying silicone seal or allowing seal to cure sufficiently to allow use of a sharp knife to form taper. Insure air passage is provided for.

2. Use hose, rubber, 5/8 inches I.D. if MS 22023-1 is not available.

3. Ensure air feed valve is closed prior to opening of measuring device.

4. Read gauge in vertical position.

Figure E-2. LRU-18/U Leakage Test Fixture.

APPENDIX F

TORQUE LIMITS

F.1 SCOPE. This appendix lists the standard torque values applied to self-locking nuts (Table F-1) and to tube coupling nuts (Table F-2) used in the maintenance of the SRU-37/P.

F.2 SELF-LOCKING NUTS. The breakaway torque values listed in Table F-1 provide a means for determining the reusability of self-locking nuts. Breakaway torque values shall be determined as follows:

a. Install self-locking nut on screw or bolt with a minimum of two screw threads providing through nut. Face of nut shall not be in contact with any mating surface.

b. Using a torque wrench fitted with an appropriate size socket, slowly remove nut and note torque value at which nut begins to turn. This is the breakaway torque. Self-locking nuts that do not meet the minimum breakaway torque value shall be replaced.

Table F-1. Self-Locking Nut Breakaway Torque Values.

Thread Size	Min. Breakaway Torque (Inch Pounds)	Min. Breakaway Torque Thread Size	(Inch Pounds)
10-32	2.0	5/8-18	32.0
1/4-28	3.5	3/4-16	50.0
5/16-24	6.5	7/8-14	70.0
3/8-24	9.5	1-12	90.0
7/16-20	14.0	1-1/8-12	117.0
1/2-20	18.0	1-1/8-12	143.0
9/16-18	24.0	---	---

F.3 TUBE COUPLING NUTS. The torque values listed in Table F-2 are for steel tubing with steel coupling nuts. Specific torque values, applicable to SRU-37/P maintenance, are stated in the pertinent maintenance tasks described in Chapter 4 of the this manual.

Table F-2. Tube Coupling Nut Torque Limits.

Tube O.D.	Hex Nut	Torque Requirement (Inch Pounds)
1/4	9/16	135 - 150
3/8	11/16	270 - 300
1/2	7/8	450 - 500
5/8	1	650 - 700
3/4	1 1/4	900 - 1000
1	1 1/2	1200- 1400
1 1/4	2	1200- 1400

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By Order of the Secretary of the Army

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official: Milton H. Hamilton

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army

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To: mpmt%avma28@st-louis-emh7.army.mil

Subject: DA Form 2028

1. **From:** Joe Smith
2. Unit: home
3. Address: 4300 Park
4. **City:** Hometown
5. **St: MO**
6. **Zip:** 77777
7. **Date Sent:** 19-OCT-93
8. **Pub no: 55-2840-229-23**
9. **Pub Title: TM**
10. **Publication** Date: 04-JUL-85
11. Change Number: 7
12. Submitter Rank: MSG
13. **Submitter FName:** Joe
14. Submitter MName: T
15. **Submitter LName:** Smith
16. **Submitter Phone:** 123-123-1234
17. **Problem: 1**
18. Page: 2
19. Paragraph: 3
20. Line: 4
21. NSN: 5
22. Reference: 6
23. Figure: 7
24. Table: 8
25. Item: 9
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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 27.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters =.155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 125.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 100 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C