U.S. Department of
Homeland Security

United States
Coast Guard

AVIATION LIFE SUPPORT EQUIPMENT SYSTEMS PROCESS GUIDE

CGTO PG-85-00-310-A

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CGTO PG-85-00-310-A dated 24 March 2022 supersedes CGTO PG-85-00-310-A dated 17 November 2021.

24 March 2022

U.S. Department of
Homeland Security

**United States
Coast Guard**

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MEMORANDUM

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To: CGTO PG-85-00-310-A Users

Subj: AVIATION LIFE SUPPORT EQUIPMENT SYSTEMS PROCESS GUIDE, CGTO PG-85-00-310-A

1. PURPOSE. This memorandum promulgates the Aviation Life Support Equipment Systems Process Guide, CGTO PG-85-00-310-A.

2. ACTION. All Coast Guard personnel and contractors who support the aviation enterprise are required to adhere to the guidelines set forth in the enclosed process guide.

3. DIRECTIVES AFFECTED. This process guide supersedes CGTO PG-85-00-310-A dated 17 November 2021.

4. DISCUSSION. This process guide ensures procedural consistency for the Aviation Life Support Equipment Systems by establishing specific guidelines that will be followed.

5. CHANGES. Recommendations for changes and improvements to the Aviation Life Support Equipment Systems Process Guide will be submitted via the chain of command to ALC Engineering Services Division (ESD), using the Aviation Technical Information Portal (ATIP) Deficiency Report (CG-22).

6. ENVIRONMENTAL ASPECTS AND IMPACT CONSIDERATIONS. Environmental considerations were examined in the development of this publication and have been determined to not be applicable.

#

HIGHLIGHTS		
CG-22 No.	**Location**	**Description of Change**
501001383577	Chapter 5.N.3.a.	Updated step
501001383577	Chapter 5.N.3.b.	Added step and relabeled subsequent steps
501001383577	Chapter 5.N.4.	Deleted caution and added note
501001385665	Chapter 6.G.2.c.	Added note
501001389068	Chapter 6.G.3.	Added step and renumbered subsequent step
501001389068	Chapter 6.G.4.	Updated step
501001389068	Chapter 6.P.4.b.	Updated step
501001389068	Chapter 6.P.4.c.	Updated step
501001389068	Chapter 6.P.5.b.	Updated step

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GLOSSARY

ENCLOSURE INDEX
Enclosure (1) AUF Authorized Equipment List for Gunner Units
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Enclosure (3) USCG Aircraft Tempest-Approved Headset/Helmet List

CHAPTER 1. OVERVIEW

A. **PURPOSE** This process guide provides information critical for proper maintenance and utilization of Coast Guard Aviation Life Support Equipment (ALSE). Procedures found in the appropriate ALSE Maintenance Procedure Cards (MPC) take precedence, but will refer to this process guide for supplemental maintenance procedures.

B. **CONTENTS** This process guide contains instructions, technical data, illustrations, procedures, inspection intervals, and descriptions pertinent to configuration, modification, application, and use of Coast Guard ALSE systems and rescue equipment. The process guide, combined with applicable MPCs, cannot cover every possible repair or discrepancy that could arise. For any malfunction or discrepancy not discussed in the process guide or MPC, contact ALSE Technical Services or ALSE Prime Unit for further guidance. The Shop Chief has the ability to initiate a basic repair as necessary, but that repair shall not alter the functionality or integrity of the life support equipment (e.g., reinforcement of a damaged handle).

All data relevant to Coast Guard ALSE, formerly contained in Coast Guard, Air Force, and Navy publications, have been assimilated by this process guide.

The Aviation Logistics Center (ALC) maintains the NAVAIR 13-1-6 (Aviation Crew System) series manuals. ALC ALSE Technical Services will formulate, produce, and distribute applicable equipment change actions to the equipment and to respective sections of this process guide.

C. **UPDATES** This process guide will be updated periodically. The superseded publication shall be discarded. Compliance with all directives (Commandant Instructions, Coast Guard Technical Orders, etc.) issued after the date of the latest index is required.

CHAPTER 2. INFLATABLE EQUIPMENT

A. INTRODUCTION Inflatable devices that are maintained by Coast Guard aviation units for the purpose of crew and passenger survival and as lifesaving devices will be placed in service, inspected, maintained, and repaired in accordance with the appropriate ACMS/MSR MPC. These MPCs are provided by ALC Engineering Services Division (ESD) and are available in the Aviation Technical Information Portal (ATIP).

B. LIFERAFT MANAGEMENT

1. Repairs For determination of repairability, refer to Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series). Repairs will be completed in accordance with the applicable inflatable MPC or the text-only Inflatables Repair MPC.

2. Barometric Conversion Table

Table 2-1. Barometric Conversion Table

Press Diff (in hg)	Corr (psi)	Press Diff (in hg)	Corr (psi)	Press Diff (in hg)	Corr (psi)	Press Diff (in hg)	Corr (psi)	Press Diff (in hg)	Corr (psi)
0.01	0.005	0.16	0.078	0.31	0.152	0.46	0.225	0.61	0.299
0.02	0.010	0.17	0.083	0.32	0.157	0.47	0.230	0.62	0.304
0.03	0.015	0.18	0.088	0.33	0.162	0.48	0.235	0.63	0.309
0.04	0.020	0.19	0.093	0.34	0.167	0.49	0.240	0.64	0.314
0.05	0.025	0.20	0.098	0.35	0.172	0.50	0.245	0.65	0.319
0.06	0.030	0.21	0.103	0.36	0.176	0.51	0.250	0.66	0.323
0.07	0.035	0.22	0.108	0.37	0.181	0.52	0.254	0.67	0.328
0.08	0.040	0.23	0.113	0.38	0.186	0.53	0.260	0.68	0.333
0.00	0.045	0.24	0.118	0.39	0.191	0.54	0.265	0.69	0.338
0.10	0.049	0.25	0.123	0.40	0.196	0.55	0.270	0.70	0.343
0.11	0.054	0.26	0.127	0.41	0.201	0.56	0.275	0.71	0.348
0.12	0.060	0.27	0.132	0.42	0.206	0.57	0.279	0.72	0.353
0.13	0.064	0.27	0.137	0.43	0.211	0.57	0.284	0.73	0.358
0.14	0.069	0.29	0.142	0.44	0.216	0.59	0.289	0.74	0.363
0.15	0.073	0.30	0.147	0.45	0.221	0.60	0.294	0.75	0.368
Rise in pressure: Subtract from gauge reading.									
Fall in pressure: Add to gauge reading.									

C. CO_2/N_2 SERVICING SYSTEM

NOTE

To ensure a minimal amount of moisture input to inflation assemblies, all CO_2 shall pass through two purifier assemblies connected in series. The purifier cartridges in each assembly shall be replaced after 250 pounds of CO_2 have passed through cartridges.

1. CO_2/N_2 Charging System Features

   a. Charges the cylinders with N_2 and CO_2 with a single filler nozzle attachment

b. Air dryer that provides the shop and charging system with desiccated and filtered air

2. Compressed Air Dryer Features

a. Dries compressed air to protect the CO_2/N_2 pump from freezing during operation, and to provide high-grade filtered dry air for general shop use

b. Dries air to a dew point of -40 °F (IOS 8573.1 Class 1.2.1)

c. Maximum pressure: 150 PSIG

d. Operating temperature: 41-122 °F

e. Need not be mounted in the shop

3. Operation The dryer column contains two chambers of desiccant material. While one is drying the compressed air (absorption), the other is simultaneously undergoing regeneration (desorption). Approximately every 2 minutes, the two columns automatically reverse in function. At changeover, the air in the desorption column is vented to the atmosphere.

4. System Maintenance

a. Inspections

(1) Accept Upon original issue, when received from supply, or when accepted from another unit for permanent custody.

(2) Inspection Every 12 months in accordance with MPC 121001.0. If possible, complete at the same time the bottle needs to be filled during LRU-25 or LRU-33 inspection.

b. Compressed Air Dryer Desiccant Material typically exceeds 10,000 hours (3-1/2 years, 8 hours per day). The primary indication that the desiccant requires changing is the CO_2/N_2 pump freezing during operation.

c. Dryer Filters Typically last 2 to 3 years. Before the system is used, check for debris or liquid in the filter bowls and clean as required to assure proper operation.

d. Before each use, visually check the conditions of the valves and hoses.

e. Scale calibration (QA).

D. LRU-25/A CREW RAFT

1. Introduction The LRU-25/A crew raft is designed to provide an emergency flotation system in the event of emergency water-ditching for the involved aircrew and passengers. The LRU-25/A is a dual-tube, nonreversible liferaft with a self-erecting canopy. The LRU-25/A is manufactured from yellow urethane-coated nylon and has a volume of 26.8 cubic feet, and the operating pressure is 1.3 to 4.7 PSIG.

Normal capacity is six persons and overload capacity is nine persons. Inflation time is 30 seconds. It has a water-activated internal light system. The LRU-25/A liferaft assembly is used for aircrews in H-60, H-65, and C-144 aircraft.

2. Configuration The LRU-25/A crew raft is configured for manual deployment and inflation. It consists of five major subsystems: The inflatable liferaft, an inflation assembly, a repair kit, a urethane-coated nylon carrying case, and a survival items container.

3. Description The liferaft is composed of two structurally joined, pneumatically independent tube assemblies which are hexagonal in shape. The top tube incorporates an arch tube that is a separate air-holding chamber, inflated by utilizing an internal relief valve that directs pressure from the top tube into the arch tube. The canopy arch tube supports the canopy and when fully inflated prevents collapse in severe conditions. The bottom tube incorporates a ballasting system to provide stability and an inflatable boarding ramp. The boarding ramp is made of a separate air-holding chamber inflated through an internal relief valve. A noninflatable insulated floor is suspended below the bottom tube.

a. The inflation/deflation valves are spring-loaded poppet-type valves which open or close automatically by the attachment or removal of the valve adapter on the manual inflation pump. To increase the air pressure in either tube, push the pump adapter firmly into the inflation/deflation valve of that tube. Squeeze the pump until the desired pressure has been obtained.

b. Each overpressure relief valve is operated by a spring-loaded piston and sealed by an O-ring. The external relief valve operating pressure is approximately 3.2 PSIG. The internal relief valve operating pressure is approximately 2.9 PSIG.

c. A heaving ring and line assembly are provided as a rescue aid which may be hand-thrown to persons in the water who are unable to reach the liferaft. The heaving line incorporates a length of nylon cord which is tied off to the lifeline on the inside of the liferaft. The free end of the line has a 6-inch floating rubber tossing ring or quoit attached.

d. Lifelines located externally on the lower tube perimeter, and internally on the upper tube, serve as aids for survivors to grasp from the water and while seated in the liferaft. The lifelines are constructed of 1-inch wide webbing attached to the inflatable at intervals by means of fabric patch material.

e. The sea anchor is a cone-shaped cloth bag with a cord bridle attached to the cable and is used to control the drift rate and orientation of the liferaft with respect to the wind.

f. A lightweight canopy is packed, installed on the liferaft, and is automatically erected upon deployment of the liferaft. The canopy can be detached for ease of rescue and in hot environments.

4. Function Deployment and inflation of the LRU-25/A is found in the applicable aircraft flight manual. The LRU-25/A liferaft is not reversible. If it inflates upside down and does not self-right, pulling on the righting strap will easily right the liferaft to the upright position. The location of the righting strap is indicated on the bottom of the liferaft. To right the liferaft, find the righting strap where it attaches to the raft near the inflation assembly. Turn the raft until the wind is in your face. Pull the righting strap hand-over-hand, lifting the far side of the raft out of the water. It may be necessary to push your feet or knees into the side of the raft and lean back when pulling. As the raft comes over, protect your face and head, then use the righting strap to pull yourself out from under the liferaft.

5. Inspection Intervals The following are inspection intervals for the LRU-25/A crew raft:

a. Acceptance On original issue, when received from supply, or accepted from another unit for permanent custody

b. Leak Test Inspection Intervals not to exceed 360 days

c. Functional Test On acceptance and at intervals that coincide with every third leak test, or every 36 months

6. Repair Procedures For determination of repairability for the liferaft and/or container, refer to Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series), Chapter 2, Paragraph D.2 and Paragraph D.3. All repairs will be in accordance with MPC 256204.0.

7. CO_2 Inflation Assembly Configuration

   a. The LRU-25/A crew raft inflation assembly consists of an aluminum cylinder reinforced with overlapping carbon filaments bonded with epoxy resin. It is rated at 3,500 ±100 PSIG at 70 °F with a combination charge of 2.20 pounds of CO_2 and 1.7 pounds of N_2.

   b. A pull force of 6 to 15 pounds is required to actuate the inflation valve.

   c. The overpressure rupture disk will rupture at 4,500 to 4,900 PSIG.

   d. The cylinder pressure gauge utilizes a GO-NO-GO color band to indicate cylinder pressure.

   e. The inflation valve utilizes a common filler valve for inflation assembly filling and bleeding.

   f. The cylinder is required to be hydrostatically tested every 5 years (60 months) and has a service life of 3 hydrostatic tests or a life limit of 15 years from the date of manufacture.

E. LRU-33/A WING RAFT

1. Introduction The LRU-33/A liferaft is designed to provide an emergency flotation system in the event of emergency water-ditching for the involved aircrew and passengers. The LRU-33/A is a dual-tube, nonreversible liferaft with a self-erecting canopy. The LRU-33/A is manufactured from yellow urethane-coated nylon and has a volume of 86.3 cubic feet, and the operating pressure is 1.5 to 3.6 PSIG at 70 ºF.

   Normal capacity is 20 persons and overload capacity is 30 persons. Inflation time is 30 seconds. It has a water-activated internal light system. The LRU-33/A 20-person liferaft assembly is used as an HC-130 wing raft.

2. Configuration The liferaft is configured for manual deployment and inflation, and consists of five major subsystems: The inflatable liferaft, an inflation assembly, a repair kit, a urethane-coated nylon carrying case, and a survival items container.

3. Description The LRU-33/A liferaft is hexagonal in shape, composed of two structurally joined pneumatically independent tube assemblies. It is inflated from one CO_2 composite cylinder. The top tube incorporates an arch tube which supports the canopy and when fully inflated prevents collapse in severe conditions. The bottom tube incorporates a ballast system that provides stability and two inflatable boarding ramps. A noninflatable insulated floor is suspended below the bottom tube. The floor is covered with a foam fabric which provides minimal insulation and partial protection from hypothermia. Topping-off valves are spring-loaded poppet valves and are located in both the upper and lower tubes. These valves open automatically with the insertion of the adapter on the hand-inflation pump. The valve closes automatically when the adapter is removed from the topping-off valve. To increase the air pressure in either tube, insert the pump adapter into the topping-off valve and squeeze the pump repeatedly until the desired pressure has been obtained. The relief valve is a spring-loaded piston sealed by an O-ring, and limits the maximum pressure when rising internal gas temperature increases the internal pressure. The relief valve opening pressure is approximately 3.2 PSIG (2.2 N/cm^2), and the closing pressure is 2.4 PSIG (1.7 N/cm^2).

4. Function Procedures for the inflation and deployment of the LRU-33/A from the wing raft compartment are found in the applicable aircraft flight manual. During inflation, the valve release cable activates the inflation cylinder discharge valve releasing compressed gas equally into each flotation tube. Check valves, located at the inflation assembly hose attachment point on the liferaft, prevent pressure from moving between tubes. The canopy support tube facilitates upright inflation of the liferaft in the water. In the case of the raft inflating inverted or being overturned, a righting strap is manufactured into the underside of the floor to aid in righting the raft.

5. Inspection Intervals The following are inspection intervals for the LRU-33/A wing raft.

   a. Acceptance On original issue, when received from supply, or accepted from another unit for permanent custody

b. Leak Test Inspection Intervals not to exceed 360 days

c. Functional Test On acceptance and at intervals that coincide with every third leak test, or every 36 months

6. Repair Procedures For determination of repairability for the liferaft and/or container, refer to Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series), Chapter 2, Paragraph D.2 and Paragraph D.3. All repairs will be in accordance with MPC 256420.0.

7. CO_2 Inflation Assembly Configuration

a. The LRU-33/A inflation assembly consists of an aluminum cylinder, reinforced with overlapping carbon filaments bonded with epoxy resin. It is rated at 3,500 ±100 PSIG with a combination charge of 3.06 pounds of CO_2 and 5.7 pounds of N_2. A pull force of 6 to 15 pounds is required to actuate the inflation valve. The overpressure rupture disk will burst at 4,500 to 4,900 PSIG. The cylinder pressure gauge utilizes a numbered GO-NO-GO color band to indicate cylinder pressure. The inflation valve utilizes a common filler valve for inflation assembly filling and bleeding. The valve requires no disassembly or rebuild after actuation, prior to recharge. The cylinder is required to be hydrostatically tested every 5 years.

8. Crew Raft Storage Cradle Figure 2-1 illustrates the construction dimensions for building an LRU-33/A crew raft storage cradle. The wood used shall be 1- x 4-inch pine shelving or equal. The purpose of this cradle is for storage, not packing. Storing the LRU-33/A crew rafts in these cradles will provide shape integrity and facilitate fitting the packed wing raft into the wing raft compartment on the aircraft.

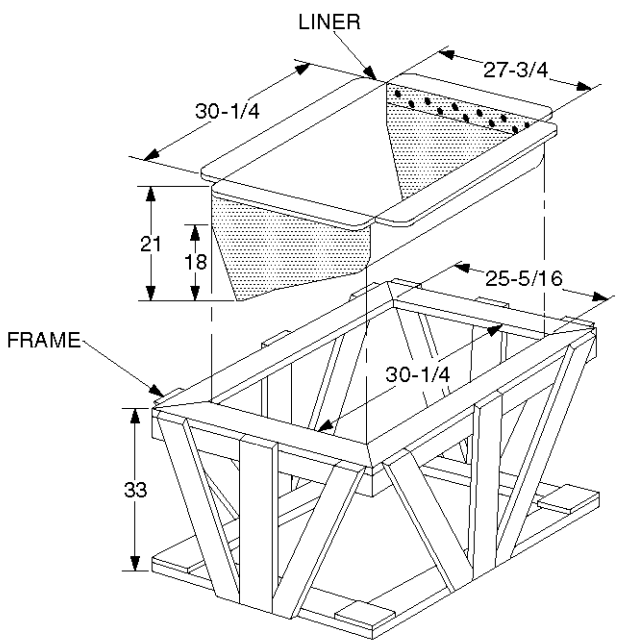


Figure 2-1. LRU-33/A Crew Raft Storage Cradle Dimensions

F. RSLR-1 LIFERAFT

1. Configuration The RSLR-1 liferaft is a single-person liferaft used in rotary wing aircraft for deployment to a helicopter Rescue Swimmer (RS) or person(s) in the water. It is constructed of polyurethane-coated nylon fabric using Radio Frequency (RF) welding. It weighs 7 pounds and provides 180 pounds of flotation.

a. Main Inflation Tube

(1) The buoyancy tube is a single, U-shaped tube constructed of polyurethane-coated nylon fabric using RF welding for seam construction. Internally, the tube is divided into two independent air-holding chambers, upper and lower, separated by a bulkhead. In the event that one air-holding chamber is deflated, the remaining chamber may be inflated to regain the original shape of the raft.

(2) The upper and lower chambers of the main tube are inflated mechanically through CO_2 inflation assemblies located on the main tube.

NOTE

When the inflation assembly is activated, the actuation levers will separate from the main valve body.

(3) There are two locking oral inflation valves on the main tube: At the CO_2 inflation assembly and on the opposite side of the main tube. These valves will inflate the chamber on that side of the main tube. In the event that one air-holding chamber of the main inflation tube is damaged and deflates, the remaining chamber may be inflated to regain the original shape of the raft.

(4) The inflation lanyard is also the retention lanyard and is connected to the raft by a Lark's Head knot around the CO_2 inflation assembly valve.

b. Canopy/Canopy Tube

(1) The canopy tube is independent of the main tube. It is inflated only through a locking oral inflation valve located to the left of the user inside the raft.

(2) The canopy support tube supports the canopy above and away from the head of the user to provide head room and ventilation when the canopy is closed.

(3) When unzipped, the canopy may be rolled and stowed under hook-and-pile tape, located in four positions on the rear and right side of the main tube perimeter.

(4) The canopy has a window to provide external visual reference and a vent above the sea anchor attachment point.

(5) The sea anchor attaches at the back of the raft, allowing the raft to face downwind when deployed.

c. Raft Floor The raft floor has dimensions of 10 x 4 x 3 inches, and its design allows for a slight recline position with the center of gravity below the waterline, increasing inherent stability.

2. Activation To inflate, pull on the inflation/retention lanyard. The raft should inflate to the design shape within 30 seconds. After boarding the raft, the canopy may be raised by releasing the hook-and-pile stow straps and orally inflating the arch. Complete canopy erection is achieved by pulling one or two of the supplied zippers.

3. Inspection Intervals The following are inspection intervals for the RSLR-1 liferaft:

a. Acceptance On original issue, when received from supply, or accepted from another unit for permanent custody

b. Leak Test Inspection Intervals not to exceed 180 days

c. Functional Test On acceptance and at intervals that coincide with every sixth leak test, or every 36 months

4. Repair Procedures For determination of repairability for the liferaft and/or container, refer to Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series), Chapter 2, Paragraph D.2 and Paragraph D.3. All repairs will be in accordance with MPC 256201.0.

G. POD-8 LIFERAFT

1. Introduction The POD-8 liferaft is a lightweight, air-droppable, octagonal-shaped, eight-person raft with a large, single 15-inch diameter tube. It is constructed of 210 denier

nylon, polyurethane double-coated fabric and provides over 200 pounds of buoyancy per person.

2. Description The POD-8 liferaft has two air-holding chambers with internal sleeves which allow the raft to regain its original shape and buoyancy in the event of a puncture. It has a 2,000-PSI, dry-air closed inflation system (one for each air-holding chamber), water-activated light, pressure relief valves and manual backup hand inflation pump, four boarding ladders, and a righting strap on the underside of the raft.

3. Configuration/Function The POD-8 liferaft can be used as a single droppable raft with survival items included or as part of a kit with survival items in separate bag(s) connected by yellow polypropylene line.

   a. ADR-8 The ADR-8 is a single POD-8 raft. It is equipped with an inflation lanyard and can be dropped inflated or uninflated. The 12-foot Aerial Delivery System (ADS) shall be used for its deployment from a fixed wing aircraft.

   b. ASRK-16 The ASRK-16 is an aerial sea rescue kit consisting of three containers: Two POD-8 lilferafts and one waterproof survival equipment bag, designed to stay afloat for 6 hours after deployment. Each raft is equipped with an inflation lanyard, allowing the rafts to be deployed inflated.

   c. ASRK-24 The ASRK-24 is an aerial sea rescue kit comprised of five containers. Containers one, three, and five each contain a POD-8 lilferaft. Each raft is equipped with an inflation lanyard, allowing the rafts to be deployed inflated. Containers two and four are waterproof survival equipment containers, each designed to remain afloat for 6 hours after deployment.

   d. Deployment Deployment procedures for the different configurations of the POD-8 liferaft can be found in each aircraft type flight manual.

4. Inspection Intervals The following are inspection intervals for the POD-8 liferaft, no matter what configuration the raft is a part of:

   a. Acceptance On original issue, when received from supply, or accepted from another unit for permanent custody

   b. Leak Test Inspection Intervals not to exceed 360 days

   c. Functional Test On acceptance and at intervals that coincide with every third leak test, or every 36 months

5. Repair Procedures For determination of repairability for the liferaft and/or container, refer to Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series), Chapter 2, Paragraph D.2 and Paragraph D.3. All repairs will be in accordance with MPC 256160.0 (ADR-8), MPC 256171.0 (ASRK-16), and/or MPC 256170.0 (ASRK-24).

6. CO_2 Inflation Assembly Configuration POD-8 inflation assembly consists of two 125-cubic inch cylinders, each rated at 3,000 PSIG. The pressure relief valve is designed to vent at 4,200 to 4,500 PSIG. The inflation valve utilizes a common filler valve for inflation assembly filling and bleeding. The valve requires rebuild after actuation, prior to recharge. The cylinder is required to be hydrostatically tested every 3 years (36 months) and has a service life of 8 hydrostatic tests (24 years).

H. MASS RESCUE OPERATIONS LIFERAFT

1. Introduction The Mass Rescue Operations (MRO) 20-person liferaft, P/N 64510-103, made by Air Cruisers is the only authorized mass rescue operations liferaft. It is a commercial raft system serviced by the manufacturer and funded by Districts with a mass rescue response requirement. The MRO raft is used as an emergency flotation platform to be deployed from rotary wing aircraft or vessel to large groups of survivors in the water.

2. Configuration/Inflation The MRO raft is configured to be dropped and subsequently inflated from a helicopter in a hover, or minimum forward airspeed. It is not prerigged with an inflation lanyard; therefore, when deploying this raft, the flight mechanic will obtain a trail line from the Search and Rescue (SAR) board and pay out approximately 3 feet from each end. The weak

link end of the trail line shall be attached to the inflation cable on the raft. A weight bag shall be attached to the other end. Deployment and inflation procedures are found in the MH-65D Flight Manual, CGTO 1H-65D-1.

3. Inspection Intervals Mass casualty rafts are inspected and repacked by the manufacturer at 5-year intervals. AST shops will do an annual visual inspection of the raft to verify location and condition of the packaging. This annual visual inspection will be enrolled in ACMS as a Special Requirement (SR) item. The 5-year inspection will be enrolled in ACMS as an SR inspection to ensure tracking on the Maintenance Due List (MDL) to allow for planning of asset availability.

I. PASSENGER AND SURVIVAL VEST MAINTENANCE

1. Post-Flight Cleaning Vest Bladders The steps in the following table shall be used for the post-flight cleaning of passenger and survival vest bladders.

STEP	ACTION
1	Remove the air bladder from the container or case.
2	Prepare a solution of cleaning compound consisting of one part compound to three parts water.
3	Apply the cleaning solution to soiled area with a spray or swab.
4	Allow the solution to remain on the surface for several minutes, and then agitate with soft brush or rag.
5	Rinse the surface thoroughly with water; wipe with a cloth or sponge. Repeat this application until surface is free from all solution.
6	Dry the raft with lint-free cloth.

2. Post-Flight Cleaning of Vest Cases and Bladder Containers The steps in the following table shall be used for the post-flight cleaning of vest cases and bladder containers.

STEP	ACTION
1	Remove the air bladder from the vest shell or bladder container.
2	Close the slide fasteners of the vest shell or bladder container to prevent damage to the fabric.
3	Using mild soap and warm water, launder by hand.
4	Thoroughly rinse with warm, fresh, tap water.
5	Gently squeeze out the excess water; do not wring.
6	Hang the vest shell or bladder container on wooden hanger to air-dry in a well-ventilated area.

3. Replacement of Nylon Cord Replacement of the nylon cord securing the bladder assembly to the casing shall be performed in accordance with the applicable equipment MSR MPC.

J. MD1127 ROTARY WING PASSENGER VEST

1. Configuration The MD1127 rotor wing passenger vest is a constant-wear vest that weighs 2.2 pounds (with inflation cylinder installed). It is designed to provide passenger emergency flotation on Coast Guard rotary wing aircraft. When inflated, the MD1127 provides sufficient buoyancy to turn an unconscious person face-up. When fully inflated, the MD1127 provides a minimum effective buoyancy of 35 pounds. The MD1127 is universal in size and is designed to fit most adults. This can be worn over bulky outer clothing, and has adjustable nylon waist belts which secure an easy-to-wear position, allowing for maximum freedom of movement.

   a. Flotation Bladder Assembly The MD1127 incorporates a dual-chamber inflatable cell constructed from polyurethane-coated nylon, which is separated by an internal floating baffle. The floating baffle allows either chamber to fully inflate the lifevest.

b. Inflation Assemblies The MD1127 dual-chamber inflatable cell design incorporates a primary inflation cell accessed from a CO_2 inflation system and an oral inflation system, along with a secondary cell accessed from its own oral inflation system.

c. Vest/Flotation Casing The lifevest is styled as a protective collar fitted around the neck and front chest. The protective collar is constructed from 6-ounce Nomex®. The outer shell of the MD1127 is not integral with the inflation cell, but acts as a cell enclosure by opening the Velcro® seals; when deflated, the inflation cell is folded and placed back into the cell enclosure.

d. Survival Equipment A signal whistle, emergency strobe signal, and a signal mirror are located in the equipment pocket, left side on the waist belt (when worn).

2. Function The CO_2 inflation assembly pull lanyard is identified by five red plastic beads that extend below the inflation assembly protective flap on the right side of the vest (when worn). In case the primary inflation cell has been punctured or fails to inflate, the lifevest may be inflated orally by the secondary inflation cell, inside protective collar, left side of vest (when worn). The oral inflation systems consist of an oral tube and oral valve. The oral inflation valve is normally closed and is opened by depressing the mouthpiece when inflating or deflating.

3. Inspection Interval The following are inspection intervals for the MD1127 rotor wing passenger vest:

a. Acceptance On original issue, when received from supply, or accepted from another unit for permanent custody

b. Leak Test Inspection Intervals not to exceed 180 days

c. Functional Test On acceptance and at intervals that coincide with every sixth leak test, or every 36 months

d. Routine Inspections Routine inspections will be performed as follows:

(1) MD1127 Preflight Check Use the steps in the following table to perform a preflight inspection of an MD1127 passenger vest:

STEP	ACTION
1	Have qualified personnel fit the MD1127 passenger vest to the wearer and describe proper use.
2	Open the inflation device cover and ensure that there is a CO_2 cylinder installed securely into the inflation valve.
3	Visually check that the inflation lever is in armed position and assure the presence and security of yellow breakaway thread securing the inflation lever to the inflation valve body.
4	Check that beaded inflation lanyard is securely attached to the inflation lever and that the webbing/Velcro® tab is attached to the hook tape sewn inside inflation device cover.
	WARNING **ENSURE THAT INFLATION LANYARD IS READILY ACCESSIBLE, EXTENDING FROM THE PROTECTIVE COVER.**
5	Open the oral inflation valve cover and ensure that locking ring on inflation valve is in the locked position. Close oral inflation flap.
6	Visually inspect the Velcro® closure tape on the flotation bladder casing for any separation. If separation is found, close the separation by pressing the Velcro® tape on each side of the bladder cover together.
7	Inventory survival equipment and inspect for proper attachment and location.
8	Noted discrepancies should be reported to Maintenance Control/AST shop and the MD1127 passenger vest shall be removed from service until repaired or replaced.

4. MD1127 Rotor Wing Passenger Vest Repairs The MD1127 shall be maintained and repaired in accordance with the applicable MPC. For determination of repairability, refer to Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series), Chapter 2, Paragraph K.

K. AV-35 FIXED WING PASSENGER VEST The passenger lifevest is an airline-style lifevest in a vacuum-sealed package. These are sealed at the manufacturer and are not opened for inspection at the unit level.

CAUTION

THE AV-35A, AV-35H, AND FV-35/3505-401 ARE THE ONLY AUTHORIZED AIRLINE-STYLE PASSENGER LIFE PRESERVERS FOR USE ON COAST GUARD FIXED WING AIRCRAFT.

1. Configuration The AV-35 life preserver is stored on fixed wing aircraft and is not a constant-wear vest. It is a CO_2-inflated, heat-sealed, dual-chamber configuration equipped with oral inflators for each chamber. This lifevest is manufactured in accordance with TSO-C13f Adult-Child category and has a buoyancy of 35 pounds (minimum) for a person weighing 35 pounds and over. A survivor locator light is attached to the upper edge of the flotation cell. The battery is suspended below the bottom edge of the flotation cell.

2. Function Two inflators are operated by pulling each red plastic handle labeled JERK TO INFLATE. Actuation of the inflation valve punctures the CO_2 cartridge and inflates the two buoyancy chambers through the manifold in the CO_2 inflation assembly. Secondary inflation of each buoyancy chamber can be accomplished through the oral inflators if one or both of the primary inflation systems fails to operate, or if additional pressure is required.

3. Inspection Intervals The following inspections are to be accomplished using the appropriate MSR MPC:

   a. Acceptance On original issue, when received from supply, or accepted from another unit for permanent custody.

   b. Visual Inspection Due every 12 months, not to exceed 60 months from date of manufacture. If date of manufacture is 60 months or greater, return vest in accordance with MPC 256206.0.

   c. Leak Inspection Every 60 months from date of manufacture (located on inside back of sealed bag).

4. Modifications and Repairs No modifications are required nor authorized for the fixed wing passenger vest. Required repairs will be accomplished at the manufacturer in accordance with the appropriate MSR MPC.

L. LPU-26/P SURVIVAL VEST

1. Configuration The LPU-26/P survival vest is designed for constant wear, and is used by fixed wing aircrew members. It weighs approximately 5 pounds, including equipment, and provides a minimum of 22 pounds of buoyancy. The LPU-26/P survival vest consists of the following subassemblies:

   a. Flotation Bladder Assembly The LPU-26/P flotation bladder consists of a single bladder with two (upper and lower) chambers.

   b. Inflation Assemblies The upper and lower chambers are inflated mechanically through CO_2 inflation valves, or orally by means of built-in oral inflation tubes.

   c. Vest/Flotation Casing The vest/flotation casing is constructed of lightweight blue Nomex® mesh with a belt assembly that contains the pocket subassemblies for individual survival equipment stowage. The bladder assembly is attached to the vest/flotation casing with gutted Type III nylon cord. The LPU-26/P comes in one size and is secured to the wearer with a slide fastener closure and an adjustable belt assembly.

d. Survival Equipment Two pockets are provided (one on the left of the wearer and one on the right) for stowage of survival equipment. The type and quantity of survival equipment shall be in accordance with the applicable MPC.

2. Function Inflation of the LPU-26/P is either by a CO_2 cartridge contained in the vest or by the built-in oral inflation valve. After aircraft egress, inflate the LPU-26/P by pulling down and slightly outward on the CO_2 inflation valve assembly pull toggle. The oral inflation tubes should be used to top off an inflated preserver, or to inflate a preserver if the inflation valve assembly malfunctions.

3. Inspection Intervals The following are inspection intervals for the LPU-26/P survival vest:

a. Acceptance On original issue, when received from supply, or accepted from another unit for permanent custody

b. Leak Test Inspection Intervals not to exceed 180 days

c. Functional Test On acceptance and at intervals that coincide with every sixth leak test, or every 36 months

d. Routine Inspections Routine inspections will be performed as follows:

(1) LPU-26/P Preflight Check Use the steps in the following table to perform a preflight check of the LPU-26/P:

STEP	ACTION
1	Check exposed metal/plastic parts for corrosion and/or damage.
2	Check vest/flotation casing for wear, tears, abrasions, and contamination (oil, fuel, etc.).
3	Check attachment of inflation lanyard safety tie.
4	Check survival equipment for proper attachment, location, and quantity.
	WARNING **ENSURE THAT INFLATION PULL TOGGLE IS READILY ACCESSIBLE, EXTENDING FROM THE FLOTATION CASING.**
5	Report noted discrepancies to AST shop supervisor or Maintenance Control.

(2) LPU-26/P Weekly Check Use the steps in the following table to perform a weekly check of the LPU-26/P survival vest:

STEP	ACTION
1	Check exposed metal/plastic parts for corrosion and/or damage.
2	Check vest/flotation casing for wear, tears, abrasions, security of stitching, and contamination (oil, fuel, etc.).
3	Check attachment of inflation lanyard safety tie. If missing, replace. The lanyard safety tie may be replaced without removing the vest from service.
4	Check inflation assembly and breakaway thread. Ensure CO_2 cartridge is secured.
5	Check survival equipment for proper attachment, location, and quantity.
	WARNING **ENSURE THAT INFLATION PULL TOGGLE IS READILY ACCESSIBLE, EXTENDING FROM THE FLOTATION CASING.**
6	Report noted discrepancies to AST shop supervisor or Maintenance Control.

4. LPU-26/P Repairs The LPU-26/P shall be maintained and repaired in accordance with the applicable MPC. For determination of repairability, refer to Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series), Chapter 2, Paragraph K.

M. LPU-27/FW SURVIVAL VEST

1. Configuration The LPU-27/FW survival vest is designed for constant wear by fixed wing aircrew members. The design incorporates a low-profile flotation collar while eliminating common problems such as collar rub, neck fatigue, and hindered range of motion while wearing a flight helmet. It weighs 2.63 pounds (without survival items) and provides a minimum of 44 pounds of buoyancy. The LPU-27/FW survival vest consists of the following subassemblies:

   a. Flotation Bladder Assembly The LPU-27/FW flotation bladder consists of a single bladder with two (upper and lower) chambers.

   b. Inflation Assemblies The upper and lower chambers are inflated mechanically through CO_2 inflation valves, or orally by means of built-in oral inflation tubes.

   c. Vest/Flotation Casing The vest/flotation casing is a combination of fire-retardant webbing and Nomex®/Kevlar® hybrid cloth, providing robust wear resistance and fire retardancy. It comes in one size, has a built-in survivor locator light and whistle, and is secured to the wearer with a slide fastener closure and adjustable belt and leg strap assemblies.

   d. Survival Equipment Four pockets are attached using the MOLLE pocket mounting system for stowage of survival items. The type and quantity of survival equipment shall be in accordance with the applicable MPC.

2. Function Inflation of the LPU-27/FW is either by one 40-gram CO_2 cartridge contained in the vest or by the built-in oral inflation valve. After aircraft egress, inflate the vest by pulling down and slightly outward on the CO_2 inflation valve assembly pull toggle. The oral inflation tubes should be used to top off an inflated bladder, or to inflate the vest if the inflation valve assembly malfunctions.

3. Inspection Intervals The following are inspection intervals for the LPU-27/FW survival vest:

   a. Acceptance On original issue, when received from supply, or accepted from another unit for permanent custody

   b. Leak Test Inspection Intervals not to exceed 180 days

   c. Functional Test On acceptance and at intervals that coincide with every sixth leak test, or every 36 months

   d. Routine Inspections Routine inspections will be performed as follows:

      (1) LPU-27/FW Preflight Check Use the steps in the following table to perform a preflight check of the LPU-27/FW survival vest:

STEP	ACTION
1	Check exposed metal/plastic parts for corrosion and/or damage.
2	Check vest/flotation casing for wear, tears, abrasions, and contamination (oil, fuel, etc.).
3	Check attachment of inflation lanyard.
4	Check survival equipment for proper attachment, location, and quantity.
	WARNING **ENSURE THAT INFLATION PULL TOGGLE IS READILY ACCESSIBLE, EXTENDING FROM THE FLOTATION CASING.**
5	Report noted discrepancies to AST shop supervisor or Maintenance Control.

(2) LPU-27/FW Weekly Check Use the steps in the following table to perform a weekly check of the LPU-27/FW survival vest:

STEP	ACTION
1	Check exposed metal/plastic parts for corrosion and/or damage.
2	Check vest/flotation casing for wear, tears, abrasions, security of stitching, and contamination (oil, fuel, etc.).
3	Check attachment of inflation lanyard.
4	Check inflation assembly and breakaway thread. Ensure CO_2 cartridge is secured.
5	Check survival equipment for proper attachment, location, and quantity.
	WARNING **ENSURE THAT INFLATION PULL TOGGLE IS READILY ACCESSIBLE, EXTENDING FROM THE FLOTATION CASING.**
6	Report noted discrepancies to AST shop supervisor or Maintenance Control.

4. LPU-27/FW Repairs The LPU-27/FW shall be maintained and repaired in accordance with the applicable MPC. For determination of repairability, refer to Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series), Chapter 2, Paragraph K. For supplemental repair procedures, refer to Paragraph 2.B. or Paragraph 2.I. of this process guide.

N. LPU-27/PE SAR WARRIOR SURVIVAL VEST

1. Configuration The LPU-27/PE survival vest is designed for constant wear in rotary wing aircraft and is used only by aircrew members trained in its use. When worn correctly, the design is sufficient to keep an aircrew member in a head-back, airway-open position in a moderate sea-state whether conscious or unconscious. The weight of the LPU-27/PE is 12.5 pounds including equipment and provides 65 pounds of buoyancy. The LPU-27/PE survival vest consists of the following three assemblies:

   a. Carrier Vest Assembly Constructed from mesh panels with supporting webbing frame, utilizing adjustable leg and torso straps to adjust the fit to individual aircrew member. The LPU-27/PE comes in one size and secures to the wearer with a 10-inch nylon slide fastener, a chest strap, and leg straps that secure with Cobra® fittings.

   There are six pockets for storing survival items. The type and quantity of survival equipment shall be determined by the applicable MPC. The Survival Egress Air System (SEAS-1) pocket has two vertical rows of four pull-the-dot snaps. This serves as the platform for the Chemical, Biological, and Radiological (CBR) adapting bracket.

   b. Flotation Collar Assembly The flotation collar assembly is made up of the following subassemblies:

      (1) Flotation Bladder The LPU-27PE flotation bladder is a dual-chamber bladder. The upper and lower chambers of the bladder are inflated mechanically through CO_2 inflation assemblies, located on the left of the wearer and identified by a pull lanyard laced through 10 black, 1/2-inch diameter plastic beads. There are two locking oral inflation valves located on the bladder on the right of the wearer.

      (2) Flotation Casing The flotation bladder casing is constructed of Nomex® and attaches to the vest carrier with four bayonet fittings and two pull-the-dot snaps.

2. Function The LPU-27/PE should be inflated after egress from the aircraft. The manual inflation lanyard is on the left of the wearer, and the oral inflation valves are on the right of the wearer. The locking oral inflation valves may be used to top off an inflated bladder.

3. Inspection Intervals The following are inspection intervals for the LPU-27/PE survival vest:

a. Acceptance On original issue, when received from supply, or accepted from another unit for permanent custody

b. Leak Test Inspection Intervals not to exceed 180 days

c. Functional Test On acceptance and at intervals that coincide with every sixth leak test, or every 36 months

d. Routine Inspections Routine inspections will be performed as follows:

(1) LPU-27/PE Preflight Check Use the steps in the following table to perform a preflight check on an LPU-27/PE survival vest:

STEP	ACTION
1	Visually check the slide fastener on the flotation bladder casing for any separation. If separation is found, return vest to the AST shop.
2	Ensure the snaps at the bottom of each side of the flotation bladder casing are secured. Ensure that the three snaps that secure the inflation lanyard to the casing are secured.
3	Ensure the flotation bladder casing assembly is securely attached to the carrier vest assembly by the two pull-the-dot snaps and four bayonet fittings.
4	Inventory survival equipment and check for proper attachment and location.
5	Check the SEAS-1 as follows: a. Remove the SEAS-1 from its pocket, inspecting the security of the slide fastener and closure snap on pouch. b. Check the SEAS-1 for external damage. c. Remove the mouthpiece from mouthpiece holder, inspect the mouthpiece assembly, then reinsert into the mouthpiece holder. d. Ensure that the pressure reading is in the green area on the regulator pressure indicator gauge.
6	Place the vest in the aircraft at the crew position of the wearer, or otherwise stow in a designated location and label for the crew position of the wearer on the aircraft.
7	Report any discrepancies to Maintenance Control/AST shop.

(2) LPU-27/PE Donning and Adjustment Before donning the LPU-27/PE aircrew survival vest, ensure the vest harness webbing is not twisted or misrouted, and that the leg straps hang free. Harness webbing adjusters are located at five locations on the vest harness. Each leg strap has an adjustment buckle, two vertical adjusters to adjust torso length on the back of the vest harness, and one horizontal adjuster buckle on the back of the vest harness.

STEP	ACTION
1	With the zipper open, don the survival vest.
2	Take a deep breath and hold it; attach the chest strap buckle and adjust it to a snug, not tight, fit. Release breath.
3	Close the LPU-27/PE survival vest by closing the slide fastener.
4	Attach 1-inch Fastex chest buckle. (This secures the bladder.)

STEP	ACTION
	NOTE Assure that there are approximately 5 inches between top of neck and flotation collar back. This allows room for helmet clearance and keeps the bladder off of the neck of the wearer. If the distance is less, use the vertical torso adjustment straps on the back of the vest to correct fit as needed.
5	Attach both leg strap buckles and adjust them for a snug, not tight, fit.
6	Route the free end of the webbing on all adjustment straps through the elastic keeper and secure it with the hook-and-pile tab.

(3) LPU-27/PE Post-Flight Check Use the steps in the following table to perform a post-flight check of an LPU-27/PE aircrew survival vest:

STEP	ACTION
1	Check the SEAS-1 for external damage.
2	Remove from mouthpiece holder, check the mouthpiece assembly, then reinsert into mouthpiece holder.
3	Ensure the pressure reading is in the green area on the regulator pressure indicator gauge.
4	Check the regulator for signs of salt air/water contamination and cleanliness.
5	Return SEAS-1 to pocket, close slide fastener, and secure snap.
6	Report any discrepancies to Maintenance Control/AST shop.

(4) LPU-27/PE Weekly Check Use the steps in the following table to perform a weekly check of an LPU-27/PE aircrew survival vest:

STEP	ACTION
1	Check the bladder casing for wear and tear, abrasions, and contamination (oil, fuel, etc.).
2	Check the flotation bladder casing slide fastener for separation.
3	Check the survival equipment pockets for wear and tear, abrasions, and contamination (oil, fuel, etc.). Inspect the slide fasteners and snaps for proper operation.
4	Ensure that the slide fastener security snaps at the bottom of each side of the flotation bladder casing are secured. Ensure that the three snaps securing the beaded inflation lanyard to the casing are secured.
5	Ensure that the flotation bladder casing assembly is securely attached to the carrier vest assembly by the two pull-the-dot snaps and four bayonet fittings.
6	Inventory the survival equipment and check for proper attachment and location.
7	Ensure that all the fit-adjustment straps are routed correctly and not twisted.
8	Ensure all webbing adjustment buckles are not damaged and are functioning correctly.
9	Ensure all Cobra® fittings function correctly.
10	Ensure reflective tape on vest hoisting loops is undamaged and hoisting loops are stored in stowage loops provided.
11	If any discrepancy is noted, the LPU-27/PE shall be removed from service and repaired in accordance with the applicable MPC.

4. LPU-27/PE Repairs The LPU-27/PE shall be maintained and repaired in accordance with the applicable MPC. For determination of repairability, refer to Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series), Chapter 2, Paragraph K.

NOTE

Survival vest bladders are considered nonrepairable. If the top or bottom bladder fails a leak test due to puncture, porous material, or seam separation, the bladder shall be replaced.

O. LPR-27/PEG SURVIVAL VEST

1. Configuration The LPU-27/PEG survival vest is to be used by aircrew personnel involved in Airborne Use of Force (AUF) missions only. The vest shell is very similar to the LPU-27/PE, except the PEG vest uses the Tactical Flotation Support System (TFSS) instead of a flotation collar. The LPU-27/PEG survival vest consists of the following three assemblies:

   a. Carrier Vest Assembly Constructed from mesh panels with supporting webbing frame, utilizing adjustable leg and torso straps to adjust the fit to individual aircrew member. The LPU-27/PEG comes in one size and secures to the wearer with a 10-inch nylon slide fastener, a chest strap, and leg straps.

   There are four pockets for storing survival items. The type and quantity of survival equipment shall be determined by the applicable MPC. The SEAS-1 pocket has two vertical rows of four pull-the-dot snaps. This serves as the platform for the CBR adapting bracket.

2. Flotation System The TFSS is a flotation device specifically designed for covert war fighters, combat swimmers, and/or maritime airborne operations personnel. It was designed to provide 45 pounds of positive buoyancy in seawater at a depth of 33 feet, 57 pounds of positive flotation at a depth of 15 feet, and 80 pounds of flotation on the surface.

3. Function The left and right bladders are independent of each other. They are attached to the vest using the MOLLE system. Manual inflation consists of two separate handles (left and right). Each beaded handle is pulled separately to inflate both bladder chambers. Each bladder has a locking oral inflation valve to be used to top off an inflated bladder.

4. Inspection Intervals The following are inspection intervals for the LPU-27/PEG survival vest:

   a. Acceptance On original issue, when received from supply, or accepted from another unit for permanent custody

   b. Leak Test Inspection Intervals not to exceed 180 days

   c. Functional Test On acceptance and at intervals that coincide with every sixth leak test, or every 36 months

   d. Routine Inspections Routine inspections will be performed as follows:

      (1) LPU-27/PEG Preflight Check Use the steps in the following table to perform a preflight inspection of an LPU-27/PEG aircrew survival vest:

STEP	ACTION
1	a. Visually inspect the flotation assembly on each side of the vest. b. Assure beaded inflation handle webbing is securely attached with hook-and-pile tape on each side of the assembly. c. Assure each flotation assembly closure flap is closed securely with hook-and-pile closure tape. d. Assure each flotation assembly is securely attached to the horizontal MOLLE webbing on vest and attachment webbing is snapped securely into place.
2	From the right side of the wearer, inventory survival equipment for proper attachment and location; refer to applicable MPC for location reference.

STEP	ACTION
3	Inspect the SEAS-1 as follows: a. Remove the SEAS-1 from its pocket, inspecting the security of the slide fastener and closure snap on pouch. b. Inspect the SEAS-1 for external damage. c. Remove the mouthpiece from mouthpiece holder, inspect the mouthpiece assembly, then reinsert it into the mouthpiece holder. d. Assure that the pressure reading is in the green area on the regulator pressure indicator gauge.
4	Place the vest in the aircraft at the crew position of the wearer, or otherwise stow in a designated location and label for the crew position of the wearer on the aircraft.
5	If discrepancies are found, return vest to the AST shop.

(2) LPU-27/PEG Donning and Adjusting with Body Armor Carrier Before donning the LPU-27/PEG survival vest, ensure the vest harness webbing is not twisted or misrouted and that the leg straps hang free.

Harness webbing adjusters are located at six locations on the vest harness. The chest strap and each leg strap have an adjustment buckle, two vertical adjusters to adjust torso length on the back of the vest harness and one horizontal adjuster buckle on the back of the vest harness.

NOTE

The LPU-27/PEG aircrew survival vest was designed to be worn over a body armor carrier with plates. Large adjustments of the survival vest fitment webbing may be required to assure proper fit over the armor carrier.

STEP	ACTION
1	a. Don the body armor carrier with ballistic plates, adjusting the carrier to fit while taking a deep breath. b. Attach side buckles on carrier.
2	Don the survival vest, attach the chest strap buckle, and snug the adjuster strap to tighten the vest around the body armor carrier.
3	Close the LPU-27/PEG survival vest by closing the slide fastener, assuring the bottom edge of the vest is below the bottom edge of the body armor carrier.
4	Attach both leg strap buckles and adjust them for a snug, not tight, fit.
5	Route the free end of the webbing on all adjustment straps through the elastic keeper and secure it with the hook-and-pile tab.

(3) LPU-27/PEG Post-Flight Inspection The post-flight inspection shall be performed by the crewmember that wore the LPU-27/PEG vest. Use the steps in the following table to perform a post-flight inspection of an LPU-27/PEG survival vest:

STEP	ACTION
1	Inspect the SEAS-1 for external damage.
2	Remove from mouthpiece holder, inspect the mouthpiece assembly, then reinsert into mouthpiece holder.
3	Ensure the pressure reading is in the green area on the regulator pressure indicator gauge.

STEP	ACTION
4	Inspect regulator for signs of salt air/water contamination and cleanliness.
5	Return the SEAS-1 to pocket, close slide fastener, and secure snap.
6	Report any discrepancies to maintenance control/AST shop.

(4) LPU-27/PEG Weekly Inspection Use the steps in the following table to perform a weekly inspection of an LPU-27/PEG aircrew survival vest:

STEP	ACTION
1	Inspect the bladder casing for wear and tear, abrasions, and contamination (oil, fuel, etc.).
2	Inspect the flotation bladder hook-and-pile closure for separation.
3	Inspect the survival equipment pockets for wear and tear, abrasions, and contamination (oil, fuel, etc.). Inspect the slide fastener and snaps for proper operation.
4	Ensure that the webbing securing the inflation assembly to the MOLLE webbing on the vest is routed appropriately and secured at the bottom with the snap.
5	Inventory and inspect the survival equipment for proper attachment and location.
6	Ensure that all the fit-adjustment straps are routed correctly and not twisted.
7	Ensure all webbing adjustment buckles are not damaged and are functioning correctly.
8	Ensure all Cobra® fittings function correctly.
9	Ensure reflective tape on vest hoisting loops is undamaged and hoisting loops are stored in stowage loops provided.
10	Ensure hoisting loop on the back of the vest is stowed down into the 2-inch webbing stow loop.
11	If any discrepancy is noted, the LPU-27/PEG shall be removed from service and repaired in accordance with the applicable MPC.

(5) LPU-27/PEG Repairs The LPU-27/PEG shall be maintained and repaired in accordance with the applicable MPC. For determination of repairability, refer to Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series), Chapter 2, Paragraph K.

NOTE

Life vest bladders are considered nonrepairable. If the bladder fails a leak test due to puncture, porous material, or seam separation, the bladder shall be replaced. Replacement of buckles and hardware are not authorized at the unit level.

P. NATIONAL CAPITAL REGION (NCR) SURVIVAL VEST

1. Configuration The NCR survival vest is designed for constant wear in rotary wing aircraft and is used only by aircrew members trained in its use. It provides a positive righting moment (face-up) with approximately 35 pounds of buoyancy. The NCR vest consists of the following assemblies:

   a. Vest Assembly It is constructed of nylon mesh for comfort, weighs less than 2 pounds (without survival items), and is universally sized. The waist can be adjusted from 30 to 48 inches using the Delrin® waist adjustors. All hardware is noncorrosive and has two pockets, one for survival equipment and the other for SEAS-1 bottle. The type and quantity of survival equipment shall be determined in the applicable MPC.

b. Flotation Collar Assembly The flotation collar assembly consists of the following subassemblies:

(1) Flotation Bladder The NCR flotation bladder is a dual-chamber bladder which can be inflated mechanically through a CO_2 inflation assembly located on the right of the wearer and can be identified by a pull lanyard with four red beads. It is constructed of heavy-duty, puncture- and abrasion-resistant nylon and features two oral inflation tubes on the left of the wearer which can be used to top off an inflated bladder or to inflate if the CO_2 inflation assembly malfunctions.

(2) Flotation Casing The flotation bladder casing is constructed of high-tenacity 420-denier nylon cloth with a neoprene collar for comfort and attaches to the vest attachment points using Type III nylon cord.

2. Inspection Intervals

a. Acceptance On original issue, when received from supply, or accepted from another unit for permanent custody

b. Leak Test Inspection Intervals not to exceed 180 days

c. Functional Test On acceptance and at intervals that coincide with every sixth leak test, or every 36 months

d. Routine Inspections Routine inspections will be performed as follows:

(1) Preflight Check Use the steps in the following table to perform a preflight check of the NCR survival vest:

STEP	ACTION
1	Check plastic buckles for damage and proper routing of webbing.
2	Check vest slide fastener and components for security and function.
3	Check vest mesh body/flotation casing for wear, tears, abrasions, and contamination (oil, fuel, etc.).
4	Ensure beaded inflation lanyard snap is securely attached to the snap inside the vest casing.
5	Check survival equipment for proper attachment, location, and quantity.
6	Check SEAS-1 second-stage mouthpiece cover and attaching tie-wrap and webbing for security.
7	Check the SEAS-1 as follows: a. Check the SEAS-1 cylinder for external damage and pitting. b. Check the second-stage mouthpiece assembly. c. Check pressure reading in the green zone on the regulator gauge pressure indicator.
	WARNING **ENSURE THAT THE BEADED INFLATION TOGGLE IS READILY ACCESSIBLE, EXTENDING FROM THE FLOTATION CASING.**
6	Report noted discrepancies to AST shop supervisor or Maintenance Control.

(2) Post-Flight Check Use the steps in the following table to perform a post-flight check on a SEAS-1:

STEP	ACTION
1	Check the SEAS-1 for external damage.
2	Check the mouthpiece/second-stage regulator for cleanliness and corrosion.

STEP	ACTION
3	Check for a pressure reading in the green zone on the regulator gauge pressure indicator.
4	Check hoses for kinks or bends.
5	Ensure that the swivels on each end of the hose function correctly.
6	If any discrepancy is noted, the preserver shall be removed from service and the discrepancy corrected.

(3) Weekly Check Use the steps in the following table perform a weekly checks of the NCR aircrew survival vest:

STEP	ACTION
1	Check plastic buckles for damage and proper routing of webbing.
2	Check vest slide fastener and components for security and function.
3	Check vest mesh body/flotation casing for wear, tear, abrasion, and contamination (oil, fuel, etc.).
4	Ensure beaded inflation lanyard snap is securely attached to the snap inside the vest casing.
5	Check survival equipment for proper attachment, location, and quantity.
6	Check SEAS-1 second-stage mouthpiece cover, attaching tie-wrap and webbing for security.
7	Check the SEAS-1 as follows: a. Check the SEAS-1 for external damage and pitting. b. Check the second-stage mouthpiece assembly. c. Check pressure reading in the green zone on the regulator gauge pressure indicator. d. Check security of attachment of SEAS-1 assembly. e. Check regulator for signs of salt air/water contamination and cleanliness.
	WARNING **ENSURE THAT BEADED INFLATION TOGGLE IS READILY ACCESSIBLE, EXTENDING FROM THE FLOTATION CASING.**
8	If any discrepancy is noted, the preserver shall be removed from service and repaired in accordance with procedures in this chapter and inspected with the appropriate MPC.

3. NCR Survival Vest Repairs The NCR survival vest shall be maintained and repaired in accordance with the applicable MPC. For determination of repairability, refer to Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series), Chapter 2, Paragraph K.

NOTE

There are no authorized repairs to the beaded pull inflation handle. If damaged or inoperable, replace using P/N 489-2 (Lifesaving Systems Corp.).

Q. HELICOPTER RESCUE SWIMMER HARNESS (TRITON)

1. Configuration The TRITON is a constant wear, hoistable rescue harness with dual recovery capability used by helicopter rescue swimmers. It is constructed of MIL-SPEC webbing and low-profile, quick-adjusting, stainless steel hardware. When hoisted, the upright, slightly reclined, and seated position allows for total use of operator hands. It weighs approximately 9.5 pounds (including equipment) and provides variable buoyancy up to 35 pounds with reduced bulk.

2. Flotation The vest is made of 210-denier nylon with heat-sealable urethane coating. The single flotation bladder consists of one chamber which can be manually inflated by pulling on the inflation toggle on the right side of the wearer. The oral inflation tube is on the outside of the vest on the top right side of the wearer.

3. Specifications The following table lists the technical specifications:

Table 2-2. Technical Specifications

Harness Webbing	MIL-SPEC Nylon Type 8	Breaking Limit: 4,000 pounds
Load-Bearing Webbing	MIL-SPEC Nylon Type 13	Breaking Limit: 7,000 pounds
Hardware	V-Ring (Titanium)	Breaking Limit: 10,000 pounds
	Talon II Safety Hook (Titanium)	Breaking Limit: 8,000 pounds
	Leg and Waist Buckles	Breaking Limit: 2,500 pounds

4. Procurement TRITON harnesses are ordered through ALC. Refer to ALSIPS located on ALSE Technical Services website for part number and NIIN.

5. Inspection Intervals

a. Acceptance On original issue, when received from supply, or accepted from another unit for permanent custody

b. Leak Test Inspection Every 180 days

c. Functional Test On acceptance and every 24 months

d. Life Limit

(1) Harness 96 months from date of initial inspection

(2) Flotation Bladder No life limit and is serviceable as long as it passes the functional and leak test inspections

e. Routine Inspections Routine inspections will be performed as follows:

(1) Day Duty Inspection

(a) It is the responsibility of each AST to perform a duty day inspection on their harness. This inspection shall also be performed again after participating on a flight that does not require a post-usage inspection.

(b) Use the steps in the following table to perform a duty day inspection of a helicopter rescue swimmer harness:

STEP	ACTION
1	Inspect exposed metal parts for corrosion, damage, and operation.
2	Inspect harness for cut or frayed webbing and stitching, and stains that would indicate contaminants (oil, fuel, blood, etc.).
3	Inspect flotation cell cover for wear, tears, abrasions, and contamination (oil, fuel, blood, etc.).
4	Inspect attachment of inflation lanyard safety tie.
5	Inspect survival/rescue equipment for proper condition, secure attachment, correct location, appropriate quantity, and proper operation.

STEP	ACTION
	WARNING **ENSURE THAT INFLATION PULL TOGGLE IS READILY ACCESSIBLE, EXTENDING FROM THE FLOTATION CASING.**
6	If any discrepancy is noted, the harness shall be removed from service and repaired in accordance with procedures in this chapter.

f. Post-Use Inspection It is the responsibility of each AST to perform a post-use inspection on their harness after the last water and/or land deployment of the day in accordance with MPC 256019.1, Item 6.

6. Helicopter Rescue Swimmer Harness Repairs The TRITON shall be maintained and repaired in accordance with the applicable MPC. For determination of repairability, refer to Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series), Chapter 2, Paragraph K.

CHAPTER 3. AERIAL DELIVERY SYSTEMS

A. OVERVIEW Management of the Aerial Delivery Systems (ADS) assemblies will consist of inspection intervals and procedures outlined in the appropriate MSR MPC.

B. INSPECTION INTERVALS Inspection of the ADS assemblies will be performed in accordance with the applicable MSR MPC. The following are inspection intervals for the ADS assemblies:

1. Routine Inspection The routine inspection is not reportable in ACMS. It shall be performed on all in-service ADS assemblies installed in aircraft in a ready status at least one time per calendar week in conjunction with the specific aircraft routine inspection. This inspection is a visual in-place inspection with minimum requirements and shall be performed as follows:

STEP	ACTION
1	Inspect the container exterior and harness assembly for fraying and contamination, and security of attachments.
2	Inspect exterior for damage and corrosion.
3	Inspect for correct number and security of waxed nylon six-cord break cord attach points and 80-pound break tape on the butterfly snap.

2. Annual Inspection All cargo parachute assemblies will be inspected on a calendar basis in accordance with the applicable MSR MPC, not to exceed 1 year from last inspection.

3. Special Inspection A special inspection of ADS assemblies in storage or in service will be performed whenever conditions warrant. The AST shop supervisor, following review of the circumstances or conditions to which the ADS assembly has been subjected, will determine the extent of the special inspection. If another inspection is warranted, the AST shop supervisor will direct the appropriate inspection, regardless of the last inspection date.

C. CONTAMINATION All cargo parachute assemblies shall be inspected for several types of contamination.

1. Acid/Alkaline Contamination Testing

   a. Dampen suspected area with distilled water.

   b. Remove a full-range test paper (0.0 to 14.0) from the pH test paper kit (NIIN 00-420-0507). Holding one end, place the other end on the dampened area. A color change will indicate the appropriate pH and which specific short-range test strip to use.

   c. Place the short-range test strip on the dampened area. Match the color change on the test strip to the color chart supplied with the kit to indicate the approximate pH level. A pH reading of 5.0 to 9.0 is in the safe zone. Replace assembly if excess acidity (below 5.0) or alkalinity (above 9.0).

2. Saltwater An ADS assembly that has been contaminated by saltwater shall be cleaned in accordance with Paragraph 3.D. and inspected as soon as possible after contamination. Any portion of an ADS assembly which has been immersed in saltwater for a period of more than 24 hours or cannot be cleaned within 36 hours after immersion shall be used for cargo drop practice only and not used as an operational cargo ADS assembly.

3. Freshwater Any ADS assembly that has been contaminated by freshwater (lake, pond, river, etc.) or is damp shall be hung in the wet locker to dry. After drying, inspect the ADS assembly for deterioration.

4. Mildew or Fungus If an ADS assembly is contaminated with mildew or fungus, wash the affected area with a mild soap and water solution, rinse thoroughly with clean, fresh water, and hang by the vent lines in a wet locker to dry.

5. Firefighting Agent ADS assemblies exposed to light water, protein foam, PKP, or combinations thereof, shall be thoroughly washed within 30 hours after exposure. ADS assemblies exposed to firefighting chemicals and not washed within 30 hours shall be considered unserviceable. Metallic parts that have been exposed to firefighting chemicals

shall be disassembled, washed, dried, and examined. Metallic components treated in this manner may be returned to service, if undamaged. Fabric parachute components exposed to soda acid discharge shall be removed from service and destroyed.

6. Petroleum Products Oil, grease, hydraulic fluid, and other petroleum stains shall be removed by repeated applications of mild soap and water solutions to the affected area. Each application shall be followed by a rinse in clean, fresh water. Hang the assemblies by the vent lines in wet locker to dry.

7. Biohazard Removal of biohazard contamination shall be accomplished by spraying the contaminated area with Clean-Gear II and washing the canopy in accordance with applicable sections of this chapter.

8. Non-Biohazard Mud, dirt, sand, and trash shall be removed by hanging the parachute at vent lines and allowed to dry, then shaken out thoroughly. If necessary, brush lightly with soft brush. In exceptional cases, it may be necessary to wash the entire assembly.

D. CLEANING ADS CANOPIES Washing ADS parachute canopies removes the finish on the fabric; therefore, only wash them when necessary to avoid fabric deterioration. Two methods of cleaning are presented, hand-washing and machine-washing. Cleaning by hand should be attempted first. If hand-washing does not clean the part, try machine-washing.

1. Materials Required

   a. A smooth bathtub or large deep sink is acceptable.

   b. Front loading tumble-type washing machines shall be used. The washing machine must have a temperature control, gentle wash cycle, and rinse cycle.

   c. Any tumble action dryer which can be controlled so that air temperature does not exceed 60 °C (140 °F) is acceptable.

CAUTION

DO NOT USE FORCED-HEAT DRYER.

   d. Mild clothes detergent or soap solution and a water softener may be used.

2. Hand-Washing To hand-wash an ADS assembly, proceed as follows:

NOTE

To reduce fabric deterioration, hard water may be softened with 1 tablespoon of sodium metaphosphate per gallon of water.

STEP	ACTION
1	Wrap all metal fittings in heavy flannel cloth.
2	Immerse the assembly in clean, fresh water not to exceed 60 °C (140 °F). Gently move items, by hand, until all air pockets are removed.
3	Agitate, by hand, while water flows through and around fabric.
	CAUTION DO NOT WRING CANOPY FABRIC.
4	After a short time (not to exceed 10 minutes), remove from tub and allow to drain as completely as possible.
5	After draining and rinsing the tub, refill with water. Repeat steps 2 through 5 twice.
6	If a large tub is not available, hang the assembly by the canopy vent lines and spray clean, using clean, fresh water not to exceed 60 °C (140 °F).

STEP	ACTION
	CAUTION DO NOT WRING CANOPY FABRIC.
7	Hang the ADS assembly by the canopy vent lines in a wet locker until dry. If the ADS assembly is to be dried outdoors, refer to Paragraph 3.D.4., or if machine-drying, refer to Paragraph 3.D.5.
8	When assembly is dry, remove the flannel cloth from the fittings.
9	Record reason and date of washing on applicable MSR MPC.

3. Machine-Washing To machine-wash an ADS assembly, proceed as follows:

STEP	ACTION
1	Wrap all metal fittings in heavy flannel cloth.
2	Gather the suspension lines together and tie with cord every 3 feet from the ends to the canopy skirt.
3	Place ADS canopy and suspension lines loosely in a large cloth, mesh laundry bag.
4	If washing deployment bag, remove all rubber bands.
5	Add soap and water (water softener if necessary) prior to placing ADS assembly in the washing machine.
6	Wash on gentle cycle.
7	Hang the ADS assembly by the canopy vent lines in a wet locker until dry. If the ADS assembly is to be dried outdoors, refer to Paragraph 3.D.4., or if machine-drying, refer to Paragraph 3.D.5.
8	Record reason and date of washing on applicable MSR MPC.

4. Outdoor-Drying The ultraviolet rays of the sun will damage nylon and will ruin a canopy in a short time. Dyed fabric, such as international orange, deteriorates faster than the natural (white). The chart below demonstrates how the rays of the sun rapidly deteriorate nylon. Tests indicate that once nylon is exposed to the sun, the damage is done. It will not regain its strength if stored out of the sun.

Outdoors, Summer Sun	% Breaking Strength In Pounds Lost
7 Days	52%
14 Days	71%
21 Days	94%

Ultraviolet damage is identified by a yellowish color when viewed in daylight and a white fluorescence when viewed by ultraviolet light. Dyed components are usually excessively faded. Due to this deterioration of the canopy fabric, all units with access to wet lockers shall not dry ADS assemblies outdoors. Units that do not have access to wet lockers shall limit drying ADS assemblies to shaded areas only. Outdoor drying areas shall be set up so that no part of the ADS assembly will come in contact with the ground or side of a building.

5. Machine-Drying If a machine-drying facility is available, it may be used for drying ADS assemblies. Machine-drying should be used only after 1 hour of drip-drying while suspended full length. No ADS components shall be left in the dryer any longer than necessary to complete drying. Where indoor-drying is available, ADS components should be removed from dryer while slightly damp and suspended for air-drying.

CAUTION

ENSURE ALL RUBBER BANDS ARE REMOVED FROM THE ADS PRIOR TO MACHINE-DRYING.

CHAPTER 4. SURVIVAL EQUIPMENT AND KITS

A. OVERVIEW

1. Inspection Schedule All survival equipment and survival kits shall be inspected in accordance with the phase cycle of the equipment in which the items are installed.

NOTE

If a survival item has an expiration date, that date shall be noted on the remarks section of the MPC for which it is installed and inspected without exception.

Individual issue equipment and survival kits shall be inspected at intervals not to exceed 180 days, unless stated otherwise in this chapter, or the appropriate MSR MPC. All equipment that has been immersed in water shall immediately undergo a post-usage inspection and maintenance as noted for each specific piece of equipment.

2. Repair of Survival Equipment Repair of survival equipment and survival kits are restricted to replacement of items that fail inspection, unless stated otherwise.

B. CUTTING TOOLS

WARNING

USE CAUTION WHEN INSPECTING CUTTING TOOLS TO AVOID INJURY. GREAT CARE SHOULD BE TAKEN WHEN USING A KNIFE WHILE IN A LIFERAFT TO PREVENT PUNCTURING THE RAFT FABRIC.

1. Pocket Survival Multitool

   a. Multifunction survival tool made of corrosion-resistant stainless steel with a variable combination of tools depending on manufacturer and model

   b. Can include blade(s), pliers, wire cutters, ruler, can/bottle opener, screwdrivers (flat head/Phillips), file, leather awl, punch, saw

   c. Shall have owner initials engraved on it and should be kept clean, sharpened, and returned to carry case when not in use

2. Pocket Hook Knife

   a. Opposing, stainless steel, replaceable cutting blades intended for cutting through webbing, parachute shroud lines, and line less than 1/4 inch in diameter (will not cut through steel cable)

   b. Characteristics:

      (1) Dimensions: 6-3/8 inches long, 1-1/2 inches wide, 1/4 inch thick

      (2) Cutting surface opening: 1/4 inch wide and 1-1/2 inches deep

      (3) Two 13/16-inch holes on the handle for gripping with two fingers

      (4) Slot, 13/16 inch wide, located at the base of the handle for webbing installation (attachment to survival vests)

3. Pocketknife

   a. Multipurpose survival tool constructed of stainless steel

   b. Consists of one blade, can opener, bottle opener, screwdriver, and leather awl

4. Pushbutton Release (PBR) Knife

WARNING

THE PBR KNIFE WILL BE ISSUED TO HELICOPTER RESCUE SWIMMERS (RS) ONLY. NO PERSON SHALL REMOVE A PBR KNIFE FROM COAST GUARD FACILITIES EXCEPT WHILE IN THE PERFORMANCE OF OPERATIONAL HELICOPTER RS DUTIES. PERSONS VIOLATING THIS REGULATON MAY BE SUBJECTED TO PRISON AND/OR FINES UNDER THE UNIFORM CODE OF MILITARY JUSTICE (UCMJ), STATE, AND/OR FEDERAL WEAPONS LAWS.

a. Standard issue pushbutton automatic opening knife for helicopter RS only, allowing for one-handed operation with gloves

b. Characteristics for the PBR knife are found in Chapter 9

c. Inspection of the PBR knife will be in conjunction with the Triton MPC

5. Aircrew Folding Knife

a. Refer to the applicable survival vest MPC for the authorized aircrew folding knife

6. Aircrew Survival and Egress Knife (ASEK)

a. Used as emergency aircraft egress tool and for land and/or water survival

b. Characteristics:

(1) Carbon steel blade with zinc phosphate finish 5 inches long, 0.1875 inch thick with saw teeth on the back (non-offset) and a partially serrated blade on front

(2) Overall length - 10.25 inches

(3) Lanyard hole, insulated guard, and the butt of the handle may be used as a hammer

c. Should be kept clean, sharpened, and inspected during ALSE aircraft weekly inspections

7. RS Fixed Blade Survival Knife

a. Characteristics listed in Chapter 9 of this process guide

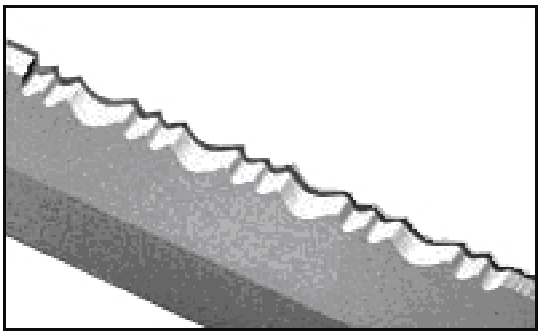
b. Used by RS as part of inland SAR ensemble

8. Sharpening Unless otherwise noted, all cutting tools listed in this chapter are sharpened using the following methods.

NOTE

Be aware that serrated and nonserrated blades require separate sharpening methods to ensure a sharp cutting edge and to extend the useful life of the tool.

Table 4-1.

	
Nonserrated Blade	Serrated Blade

a. Materials Required

(1) Spyderco Tri-Sharpmaker or equivalent (available on GSA)

(2) Whetstone, Type 1, P/N SS-S-736

(3) Lubricating Oil, General Purpose, VV-L-820

(4) Linen Cloth

b. Serrated Edge Sharpening To sharpen a serrated blade, use a sharpening system such as the Spyderco Tri-Sharpener or equivalent. Follow directions that accompany the sharpening system being used.

(1) General Serrated Sharpening Using a slow steady movement, assure that the honing surface passes through each serration, and across each point. After sharpening the serrated side of the blade, pass the flat side of the blade across the honing surface using the same pressure to remove any burrs on that side of the blade. (Refer to Figure 4-1.)

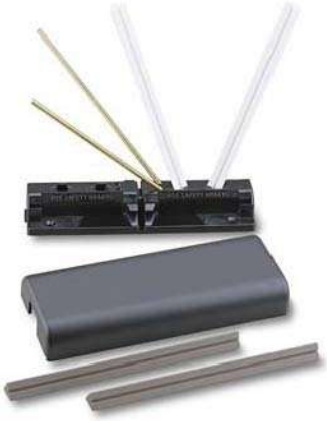


Figure 4-1. Serrated Knife Sharping Kit

WARNING

DO NOT TEST THE SHARPNESS OF ANY BLADE USING THE FACE OF YOUR THUMB OR OTHER FINGERS.

c. Nonserrated Edge Sharpening Nonserrated blades are sharpened using a flat whetstone or an appropriate sharpening system. Follow directions that accompany the sharpening system being utilized. When using a flat whetstone, use the following procedures. (Refer to Figure 4-2.)

Figure 4-2. Flat Whetstone

(1) Prepare the whetstone by applying a few drops of lubricating oil to the sharpening surface and spreading across the surface evenly.

(2) Hold the blade edge in a manner to keep the blade at a 20-degree angle to the sharpening surface. (Refer to Figure 4-3.)

(3) Press lightly on the blade and using a circular motion, work the ground edge of the nonserrated blade against the stone for 5 to 8 seconds.

(4) Turn the blade over and repeat Paragraph 4.B.8.c.(2) and Paragraph 4.B.8.c.(3) above. Carefully wipe the blade with linen cloth, leaving a light coating of oil on the blade.

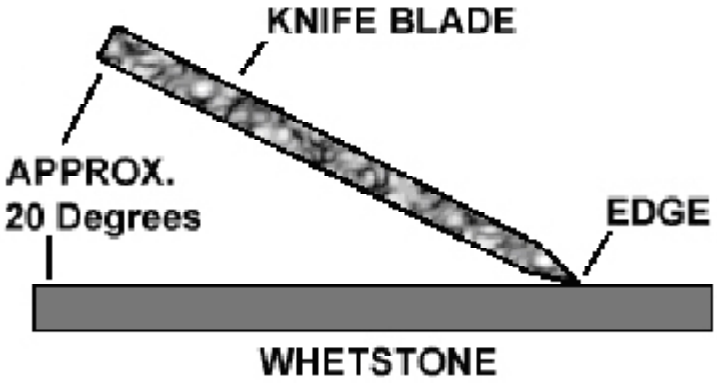


Figure 4-3. Sharpening Angle

9. Cleaning and Corrosion Removal and Prevention

a. Cleaning Depending on what the cutting tool has been exposed to, clean using the following procedures:

(1) If the cutting tool has been exposed to saltwater or marine environments, thoroughly rinse in freshwater.

(2) When debris or sticky substances have accumulated on or between the blades, the tool may be cleaned in a mild solution of detergent and water.

(3) To remove tar and similar substances, clean the tool with turpentine or other mineral spirits. Do not use chlorine products.

(4) After cleaning, dry the tool and apply light machine oil or a water-displacing product to force out moisture trapped in the joints.

b. Corrosion Removal and Prevention Rust and corrosion will likely occur in the absence of proper maintenance. The cutting tool should be cleaned, dried, and reoiled periodically to inhibit rust and corrosion. This is especially true if the tool is used in a damp or marine environment.

(1) Clean the cutting tool in accordance with Paragraph 4.B.9.a.

(2) Reoil pivoting areas with a light machine- or penetrating-type oil.

(3) Buff corroded or stained surfaces with a polishing cloth, nonmetallic abrasive pad, or soft-bristle brush.

10. Maintenance and Inspection

a. All cutting tools will be maintained and inspected in accordance with the liferaft, survival vest, or survival kit MPC in which the cutting tool is installed.

b. Cutting tools installed in survival vests will be visually inspected before each flight as part of the vest preflight.

c. For cutting tools with blades that cannot be sharpened, replace the blades, if applicable, or replace the cutting tool.

d. Pocket Hook Knife Blade Replacement The body of the pocket hook knife consists of two pieces joined by five Phillips screws. To separate the halves, remove the screws and set aside. Gently pry the two halves apart. The cutting blades are held in alignment by four posts. The two posts at the narrow junction of the blades are round, and the two at the opening are oval. This ensures proper alignment when installing the new replacement blades. Remove the dulled or damaged blades, and discard. Place the new blades correctly onto the alignment pins. Ensure the non-beveled sides of the blades are facing together. Align the halves of the hook knife handle and place together. Replace the Phillips screws and tighten snugly.

C. VISUAL AND AUDIBLE SIGNALING/MARKING DEVICES The following signaling devices are configured into survival vests used on Coast Guard aircraft and will be inspected during the survival vest preflight inspection, as well as during the scheduled inspection in accordance with the MSR MPC inspection interval for each vest. When this equipment is incorporated into survival kits (crew raft, liferaft, Arctic/Antarctic Survival Kit (AASK), Cold Weather Aircrew Survival Kit (CWASK)), they will be inspected in accordance with the phase cycle of the equipment in which the items are installed.

1. Distress Strobe Marker

a. Lightweight, compact, battery-operated strobe light used to signal rescue resources

b. High-impact-resistant thermoplastic case with provisions in the bottom end for receiving AA batteries

c. Battery compartment, one hand-operated switch (if required), and case are watertight

d. List of authorized strobe lights found on the ALSIPS or refer to the applicable MPC

e. Minimum requirements:

(1) 150,000 peak lumens per flash

(2) Omnidirectional 360 degrees

(3) Flash Rate = 60 ±10 flashes per minute

(4) Visibility: 2 miles

(5) Duration: 8 hours continuous at 32 °F

(6) Waterproof to 33 feet (1 atmosphere)

2. MK-79 MOD 2 Signal Flare Kit

NOTE

For operating instructions, handling and storage, and safety precautions relating to signal flares, refer to Pyrotechnic, Screening, Marking, and Countermeasure Devices Manual, NAVSEA SW050-AB-MMA-010, Chapter 5.

a. Hand-launched aerial signal flare consisting of one MK-31 projector and seven MK-80 flare cartridges.

b. Fires 12,000 candlepower red pyrotechnic star.

c. Reaches altitude of 250 to 650 feet lasting 4.5 seconds.

d. Visible up to 3/4 mile during daylight and 10 miles at night.

e. To prevent premature ignition, ensure firing lever is pulled back and locked prior to installing the cartridge into the projector.

3. MK-124 MOD 0 Signal Flare

WARNING

THE BURNING END OF THE FLARE WILL BECOME EXTREMELY HOT. ENSURE THAT THE FLARE IS HELD CLOSE TO THE UNIGNITED END OF THE SIGNAL FLARE WHEN IT IS BURNING.

a. Handheld day and night distress signal used to attract attention of rescue resources or be used to indicate wind direction.

b. Night End Distinguished by two raised ridges, white ignition lever with red inscription NIGHT USE FLARE END, produces 3,600 candlepower red flame lasting 20 seconds and visible up to 8 miles.

c. Day End Red ignition lever with orange inscription DAY USE SMOKE END, produces orange smoke lasting 20 seconds and visible up to 1/2 mile, depending on wind condition.

CAUTION

THE MK-124 MOD-0 SIGNAL FLARE PRODUCES A NOXIOUS SMOKE WHEN IGNITED. ENSURE THE FLARE IS POINTED DOWNWIND AND EXTENDED BEYOND THE EDGE OF ANY PART OF THE RAFT OR INFLATABLE LIFESAVING DEVICE. AVOID BREATHING THE SMOKE.

4. MK-25 MOD 4/5 Location Marker

NOTE

For operating instructions, handling and storage, and safety precautions relating to location markers, refer to Pyrotechnic, Screening, Marking, and Countermeasure Devices Manual, NAVSEA SW050-AB-MMA-010, Chapter 11.

a. Deployed from aircraft to provide day or night reference points and/or to mark a location.

b. Produces yellow flame and white smoke for 13.5 to 18.5 minutes.

c. Arming cap has words SAFE (green letters) and ARM (red letters).

d. Marker will scuttle and sink within 3 to 12 hours after water impact, or 1 to 3 hours after ignition.

5. MK-58 MOD 1 Location Marker

   a. Deployed from aircraft to provide day or night long-burning, smoke and flame reference point marking on the ocean surface.

   b. Produces yellow flame and white smoke for 40 to 60 minutes.

   c. Visible for at least 3 miles under normal operating conditions.

WARNING

AIRCRAFT SHOULD NOT FLY AT LOW ALTITUDES OVER BURNING MARKERS. IGNITION OF THE SECOND CANDLE CAN BE FORCEFUL WITH FLAME OCCASIONALLY EJECTED UP TO 50 FEET.

6. Emergency Signal Mirror

   a. Active emergency signal that utilizes reflected sunlight to attract rescue resources.

   b. Thin black plastic film, which must be removed prior to use, protects the front mirrored side.

   c. Measures 2 x 3 inches, has brightness of approximately 8 million candlepower, is visible up to 40 miles, and will continue to be an effective signal in overcast conditions.

   d. Step-by-step operating instructions are printed on the back.

7. Chemical Light Wand (Chemlight)

   a. Provides visual reference for hoist hook, rescue equipment, and signaling by the RS during nighttime hoisting evolutions as well as pilot reference while in a hover.

   b. Source of light and signaling device to attract the attention of rescue resources in survival situation.

   c. Activation: Remove from foil package, bend plastic tube until audible snap is heard, and shake vigorously.

   d. Types and duration

      (1) 4-inch green/yellow/orange - 6-hour duration

      (2) 6-inch green/yellow/orange - 12-hour duration

8. Mini Flashlight

   a. Procured locally for aircrew members at the discretion of the command.

   b. Shall be explosive-proof type pocket flashlights.

   c. Light Emitting Diode (LED) bulbs will generally have extended battery and bulb life.

9. Dye Marker

   a. Yellow, vinyl resin-coated cloth pouch (dye medium inside pouch) with attaching tape at each corner for attachment to vest, clothing, etc.

   b. To open: Hold material at top of packet and tear pull tab.

   c. Rapid dispersion: Agitate packet of dye vigorously in the water.

   d. Use: Calm to moderate seas only, stream/river, or dragging it in the snow.

   e. Fluorescent green dye (does not glow) visible at approximately 2 miles at 3,000 feet altitude exhausted in 20-30 minutes and ceases to be a good target after 1 hour.

10. Emergency Signaling Whistle

   a. Audible signal used to attract rescue resources.

   b. Highly effective in limited visibility and darkness.

   c. Audible range: Approximately 1,000 yards depending on wind and surface conditions.

D. UNDERWATER EGRESS DEVICE

1. Survival Egress Air System (SEAS-1) The SEAS-1 is an emergency breathing device which provides 1 to 3 minutes of air for rotary wing aircraft egress. It can only be used by personnel trained in its use.

   a. Configuration SEAS-1 consists of an aluminum alloy cylinder rated to 3,000 PSIG, first-stage regulator (integrated valve, pressure indicator gauge, overpressure burst disk, fill port), and low-pressure second-stage regulator with hardcover.

   b. Hose The SEAS-1 low-pressure hose incorporated into survival vests is 20 inches long. The SEAS-1 hose incorporated into the SEAS-1 belt (RS only) is 27 inches long and swivels 360 degrees at the first- and second-stage connectors.

2. Inspection Intervals

   a. Acceptance On original issue, when received from supply, or accepted from another unit for permanent custody

   b. Inspection/Operational Check Every 180 days

   c. Stage One and Two Reconditioning Within 2 calendar years of regulator year of manufacture

   d. Life Limit 120 months (10 years) from original installation date

   e. Routine Inspections Routine inspections will be performed as follows:

      (1) Preflight Inspection of the SEAS-1 A SEAS-1 preflight inspection will be completed in conjunction with survival vest preflight. To perform a preflight inspection on a SEAS-1, proceed as follows:

STEP	ACTION
1	Remove the SEAS-1 from its pocket, inspecting the security of the slide fastener and closure snap on pouch.
2	Inspect the SEAS-1 for external damage.
3	Remove the mouthpiece from mouthpiece holder, inspect the mouthpiece assembly, then reinsert into the mouthpiece holder.
4	Ensure that the pressure reading is in the green area on the regulator pressure indicator gauge.

      (2) Post-Flight Inspection of the SEAS-1 The post-flight inspection shall be performed by the crewmember who wore the equipment that incorporates the SEAS-1. To perform a post-flight inspection on a SEAS-1, proceed as follows:

STEP	ACTION
1	Inspect the SEAS-1 for external damage.
2	Remove from mouthpiece holder, inspect the mouthpiece assembly, then reinsert into mouthpiece holder.
3	Ensure the pressure reading is in the green area on the regulator pressure indicator gauge.
4	Inspect regulator for signs of saltwater contamination and cleanliness.
5	Return SEAS-1 to pocket; close slide fastener and secure snap.
6	Report any discrepancies to Maintenance Control/AST shop.

(3) Post-Use Inspection of Training SEAS-1 Device SEAS-1 assemblies that are used only for training purposes shall be cleaned and inspected in accordance with the following procedures:

NOTE

Training SEAS-1 units will be enrolled in ACMS and will be inspected in accordance with the current MSR MPC.

STEP	ACTION
1	Service SEAS-1 to 3,000 PSIG.
2	Invert the device (regulator down) and purge the device.
3	After purging all air pressure, remove the regulator.
4	Soak the cylinder in a one-to-one solution of hot water and vinegar for 30 minutes. Rinse the interior of the bottle with clean tap water.
5	Rinse cylinder with fresh tap water and dry with lint-free towels, P/N UU-T-595.
6	Set the cylinder in an inverted position and allow interior of cylinder to thoroughly dry.
7	Perform a buildup and inspection/clean, and disinfect in accordance with applicable MSR MPC, then place the assembly in storage charged to a minimum of 100 PSIG to ensure no moisture enters cylinder while in storage.

(4) Disinfecting Training SEAS-1 Devices To protect individuals from potential infections, SEAS-1 devices used during training shall be disinfected after each trainee usage using the following procedure.

(a) Materials Required

[1] CLEAN-GEAR II, P/N CG747 (Georgia Steel and Chemical Co., 1-800-296-0351)

[2] Lint-Free Towels, P/N UU-T-595

STEP	ACTION
1	Rinse SEAS-1 mouthpiece with clean tap water.
2	Spray the SEAS-1 mouthpiece with CLEAN-GEAR II, then wipe the mouthpiece using a lint-free towel to ensure all areas are covered.
3	Allow mouthpiece to air-dry for 10 to 15 minutes.

3. Rescue Swimmer SEAS-1 Belt Provides helicopter RS with the ability to carry a SEAS-1 while wearing a water deployment ensemble.

a. Configuration Characteristics for the SEAS-1 belt are found in Chapter 9.

b. Function Worn at the waist with the holster positioned near the left hip, clear of other equipment worn by the swimmer.

c. Inspection Intervals

(1) Acceptance Before being placed in service, sew a cloth name tape to the middle of the horizontal back strap and SEAS-1 belt with noncontrasting thread, size E, V-T-295.

(2) Inspection Every 180 days in conjunction with the SEAS-1 inspection.

E. COMMUNICATIONS DEVICES

1. Rescue Swimmer Radio/Drop Radio

   a. Configuration The salient characteristics for the radio are found in Chapter 9 of this process guide. Refer to the applicable MPC for the current radio installed.

   b. Inspection Intervals All inspections shall be performed in accordance with the applicable MPC.

      (1) Acceptance Performed upon original issue, when received from supply, or accepted from another unit for permanent custody

      (2) Operational Check

         (a) Drop Radio - every 30 days

         (b) RS Radio - every 60 days

      (3) Post-Use Required after any use or immersion in saltwater in accordance with MPC 256096.0, Item 4

2. RS Communication In-Ear Headset

   a. Configuration The in-ear communication device consists of the in-ear headset with bone conduction microphone and control unit with button for Push-to-Talk (PTT). The device plugs directly into the RS radio.

   b. Inspection Intervals All inspections shall be performed in accordance with the applicable MPC.

      (1) Acceptance Required upon original issue, when received from supply, or when accepted from another unit for permanent custody

      (2) Inspection Every 60 days

3. 406 Personal Locator Beacon (PLB) with GPS Receiver

   a. Configuration The 406-MHz PLB is a manually activated emergency signaling device incorporating a 12-channel GPS receiver and a VHF transmitter that operates on 121.5 MHz.

NOTE

The 406 PLB will be secured by a lanyard in accordance with the appropriate MSR MPC that pertains to the equipment into which it is configured.

   b. Operation/Activation The 406 PLB is designed to be manually deployed and activated.

      (1) Activation instructions are found on the back of the PLB at the top.

      (2) The 15-digit Unique Identifier Number (UIN) and serial number are found on a sticker on back of the PLB. The UIN is used to register the PLB with National Oceanic and Atmospheric Administration (NOAA).

      (3) For optimum performance, the beacon antenna must be in the upright position facing the sky. Avoid submerging the antenna in water. This device is intended to operate on or above the ground or water while attached to the user.

      (4) An initial beep will indicate that the beacon is activated. While transmitting a distress signal, the red LED will flash once every 2 seconds, indicating that the beacon is active. An additional beep will sound every time the beacon transmits data to the satellites (approximately every 50 seconds).

   c. PLB Activation with GPS Receiver The ACR 406-MHz PLB is equipped with an internal GPS receiver. Once activated, the GPS receiver will turn on; search to find the latitude (LAT)/longitude (LON), and incorporate it into the 406-MHz signal.

For the first 6 hours after beacon activation, the internal GPS will start up every 30 minutes; search to find the LAT/LON, and incorporate it into the next 406-MHz signal. If for any reason the internal GPS cannot update the LAT/LON, the last position of the user, will be used for the next 4 hours. At that time, the GREEN LED will stop blinking and the RED LED will flash once every 5 seconds until new GPS data is obtained. Between 6 hours and the end of the operating life (minimum of 24 hours), a GPS location update is attempted every 60 minutes.

d. GPS Receiver Orientation When the PLB is activated, it is critical that it is not covered with any body part, water, clothing, etc. The GPS receiver is located under the bottom portion of the case where it is outlined with the text GPS, Give Clear View to Sky. To ensure optimum performance of the GPS receiver, the beacon requires an unobstructed view of the sky. Avoid submerging the GPS receiver in water if possible. Water will shield the GPS and inhibit the receiver, possibly causing difficulties obtaining GPS coordinates. Avoid leaning over the beacon to view the blinking LED as this may shield the GPS from adequate satellite signal reception.

e. Reporting Inadvertent PLB Activation A false alert is any activation of the beacon, intentional or otherwise, that does not result from a situation of grave and imminent danger.

The COSPAS - SARSAT system will normally detect PLB transmissions immediately after PLB activation. The COSPAS - SARSAT satellite constellation will locate the transmission within a few minutes of beacon activation, and location procedures will be initiated by United States Air Force Rescue Coordination Center (AFRCC).

If the PLB is activated accidentally, it should be deactivated immediately and reported to: U.S. AFRCC, phone: 1-800-851-3051. The information reported must include the following:

(1) Beacon UIN (found on back of PLB)

(2) Date

(3) Time

(4) Duration and cause of activation

(5) Location of beacon at the time of activation

NOTE

It is possible that when an inadvertent activation is reported to the U.S. AFRCC, the authorities will not have received the signal. This may indicate that the beacon was deactivated before transmitting the signal.

f. Deactivation To deactivate the 406-MHz PLB, depress the ON/OFF button for 2 seconds. Two fast GREEN LED flashes will be seen, and all blinking LED lights will stop, signifying that the beacon is no longer sending the distress message.

g. Self-Test For the appropriate self-test procedures, refer to MPC 256005.1. Only qualified Aviation Survival Technicians (AST) are permitted to perform self-testing on the PLBs. Self-testing and GPS testing shall not be performed outside of the ACMS scheduled interval.

h. Inspections Maintenance and inspections shall be in accordance with MPC 256005.1.

(1) Acceptance Required upon original issue, when received from the manufacturer or supply, or when accepted from another unit for custody

(2) Inspection/Operational Check Every 90 days

i. PLB Registration Each PLB will be registered with NOAA to assure appropriate response when the PLB is activated.

NOTE

Because each PLB will be registered to a specific unit, they will not be loaned or transferred to another unit under a temporary or permanent basis. When a helicopter RS transfers to another unit, the PLB will be turned in at the departing unit and returned to inventory, and a new PLB will be issued to the RS at the arriving unit.

(1) Initial Completed as part of acceptance

(2) Renewal Every 2 years from date of last registration

j. Battery

(1) Type: Class 2 (non-HAZMAT) lithium battery

(2) Replacement: 5 years from date of manufacture or after emergency use

(3) Operational Life: Minimum 24 hours

k. PLB Modifications and Repairs Unless described in the applicable MSR MPC, there are no modifications or repairs authorized for the PLB.

4. Automated Identification System (AIS) Beacon (MOB1)

NOTE

AIS beacons will only be installed in H-65 aircrew survival vests while deployed on a cutter.

a. Configuration The AIS beacon is a manually activated personal locating device with an integrated GPS. Once activated, it transmits an alert and position of the person to nearby vessels equipped with an AIS receiver.

b. Operation/Activation

NOTE

The AIS beacon does not float; therefore, it will be secured by a lanyard in accordance with the appropriate MSR MPC.

NOTE

The AIS beacon is limited in its operational range and, therefore, is not meant to replace the PLB. When an H-65 aircrew is deployed on a cutter with an AIS receiver in an emergency situation, the AIS device should be used in conjunction with the PLB as a secondary means of location.

(1) To activate, perform the following steps:

(a) Slide the red arming tab down.

(b) Pull the retaining lanyard attached to the grey activation slide; this will release the antenna and activate the beacon.

(c) If the strobe light does not start flashing, manually turn it on by holding down the ON key until the green LED starts flashing.

(2) The nine-digit Maritime Mobile Service Identity (MMSI) number and serial number are found on a sticker on the back of the AIS beacon. The MMSI number is a unique number assigned to each AIS beacon, which is transmitted and displayed to an AIS receiver when the beacon is activated.

(3) Once activated, the MOB1 will transmit a Man Overboard (MOB) status alert and send position alerts eight times per minute to all AIS-enabled vessels in the vicinity.

(4) The indicator LED will show eight short flashes during AIS transmission. The flash will be red during position acquisition and green when the GPS position is being received.

(5) Hold or secure the beacon with the antenna standing vertically. Keep the area marked Do not obstruct when armed, on the red arming slider, free from obstruction. Covering this area will interfere with the GPS reception.

c. Deactivation

(1) To deactivate after use or if it was accidently activated, press the TEST/OFF key until the LED flashes red twice, then release.

(2) Once deactivated, rewind the antenna in accordance with the AIS MPC using the small grey antenna rewinding tool.

d. Specifications

(1) Powered by lithium-ion batteries

(2) Waterproof to 10 meters

(3) 24+ hours of operational life

(4) AIS Transmission: Message 1 (Position, repeated eight times per minute), Message 14 (MOB status, repeated twice every 4 minutes)

(5) Warranty: 5 years (2 years in commercial applications)

(6) Range: Up to 5 nautical miles

(7) Dimensions: 1.5-inch width by 5.3-inch height x 1-inch depth

(8) Weight: 92 grams

e. Inspections

(1) Acceptance Upon original issue, when received from supply, or when accepted from another unit for permanent custody

(2) Inspection/Operational Check Every 180 days and/or prior to being installed in an aircrew survival vest for deployment

(3) Battery Life Limit 7 years or after emergency use

f. Modifications and Repairs The only authorized repairs and modifications are those described in the AIS MPC.

g. Storage

(1) AIS beacons will be stored in a watertight carrying case capable of holding six beacons when not installed in a survival vest.

(2) AIS beacons will only be installed and stored in aircrew survival vests while deployed on a cutter. The beacons will be removed from the survival vests and stored in the carrying case immediately upon the aircrew returning to home station.

(3) Storage temperature range: -30 to 70 °C

F. SURVIVAL KITS

1. Personal Survival Kits Kits whose contents are procured, assembled, and packaged to address the specific survival needs presented in the operating area of the current unit of the member.

a. Contents Must not contain firearms, ammunition, explosives, pyrotechnics, or caustic chemicals, and shall not pose an egress hazard to crewmembers

b. Approval Must be approved by the unit Engineering Officer

c. Inspection Annually in conjunction with flight gear inspection

2. RS Personal Land Survival Kit

   a. Region-specific personal survival kit used by ASTs consisting of the necessary equipment to increase chances of survival when faced with a situation in which they are left on land for a period greater than 24 hours

   b. Contents/Region Needed

      (1) Snow shoes - Northern latitudes

      (2) Trekking poles - Northern latitudes

      (3) Ice owls (Yak-Trak) - Northern latitudes

      (4) Knife - All regions

      (5) Fire starter - All regions

      (6) Cotton balls - All regions

      (7) Vaseline - All regions

      (8) 550 cord, 50 feet - All regions

      (9) Tarp/space blanket/DOT garbage bag - All regions (one of these)

      (10) Water procurement device - All regions

      (11) GPS - All regions

      (12) Bag - All regions (choice of bag)

3. Arctic/Antarctic Survival Kit (AASK)

   a. Provides survival items required by rotary wing aircrew members and passengers to survive in the Arctic or Antarctic for 15 days

   b. Two variations are as follows:

      (1) AASK-Core: Accommodates a three-person aircrew and contains tent, signaling devices, fuel-fired stove, and other survival equipment appropriate for the operating environment of the unit

      (2) AASK-PAX: Accommodates up to three passengers and contains extreme weather clothing, sleeping bags, eye protection, basic first aid supplies, and food

NOTE

The selection of the type of containers for packing and transporting the AASKs will be at the discretion of the AST shop supervisor, taking aircraft type, primary mission, and aircraft configuration into consideration.

   c. Inspection Maintenance and inspections shall be in accordance with MPC 256051.0.

      (1) Acceptance Upon original issue, when received from supply, or accepted from another unit for permanent custody.

      (2) Visual Every 180 days.

      (3) Inventory A list of all equipment carried in the AASK shall be documented on a locally generated inventory form and reviewed during the visual inspection for accuracy.

4. Cold Weather Aircrew Survival Kit (CWASK)

   a. Provides four crewmembers with sufficient equipment for cold weather survival

   b. Additional containers added as needed to accommodate the entire crew

c. Contents: Tent, four sleeping bags, food, fuel-fired stove, signaling devices, skin and eye protection, and additional survival equipment appropriate for survival in the specific area of operation

NOTE

The additional equipment will be at the discretion of the AST shop supervisor and will be determined considering the area of operations and the conditions under which the aircraft is operated.

d. Inspection Maintenance and inspections shall be in accordance with MPC 256050.0.

(1) Acceptance Upon original issue, when received from supply, or accepted from another unit for permanent custody.

(2) Visual Every 180 days.

(3) Inventory A list of all equipment carried in the CWASK shall be documented on a locally generated inventory form and reviewed during the visual inspection for accuracy.

5. Aerial Delivery System Canister (ADS-CAN)

a. Designed for aerial delivery of survival items necessary to sustain survivors until rescue efforts can reach them.

b. Orange cylindrical steel container, approximately 20 inches in height.

c. Maximum gross weight - 90 pounds (with or without 25-pound ballast bag).

d. Inspection Maintenance and inspections shall be in accordance with MPC 259002.0.

(1) Acceptance Upon original issue, when received from supply, or accepted from another unit for permanent custody.

(2) Visual Every 180 days.

(3) Inventory A list of all equipment carried in the ADS-CAN shall be documented on a locally generated inventory form and reviewed during the visual inspection for accuracy.

G. LIFERAFT SURVIVAL KIT CONTENTS The following equipment is configured into liferafts and survival kits used on Coast Guard aircraft. These survival items will be inspected in accordance with the phase cycle and applicable MPC of the equipment in which the items are installed.

1. Water Storage Bag

a. Constructed of flexible plastic capable of holding 5 quarts of water

b. Includes a plastic buckle and flexible nylon strap enabling the opening of the bag to be rolled down and closed

c. When inflated and closed securely, can be used as supplemental flotation

2. Nylon Cord

a. Uses: Attaching survival items after removal from container, fishing line or snare, constructing fishing net, securing spring traps, constructing shelter, or repairing clothes

b. Supplied in 50-foot lengths

c. Type I breaking strength - 100 pounds

d. Type III breaking strength - 500 pounds

3. First Aid Kit

a. Basic medical supplies used to treat personnel with injuries and help prevent infection after injury

b. Included as part of survival kit or mounted inside an aircraft

c. Survival Kit: Contents and inspection interval are in accordance with applicable survival kit or liferaft inspection cycle and applicable MPC

d. Aircraft: Contents and inspection interval are in accordance with applicable aircraft first aid kit MPC, not to exceed 12 months

4. Waterproof Lightweight Casualty Blanket

a. Lightweight, waterproof blanket made of aluminized orange/silver plastic and measures 96 x 56 inches

b. Acts as windbreak, sunshade, and/or poncho

c. Does not act as insulation, but reflects body heat back to user when held close to body

d. Some radar reflectivity over water and may be used for signaling as a position indicator

5. Bailing Sponge

a. Made from cellulose and comes in various sizes

b. Used to collect rainwater for drinking, bail excessive water from liferaft interior, or personal hygiene

6. Sunburn Preventative

a. Liquid cream used for protection against sunburn

b. Minimum SPF of 30

c. 2-year shelf life

d. Shall be free of Para-Amino Benzoic Acid (PABA) because PABA could cause an allergic reaction

7. Liferaft Hand Pump

a. Supplied in liferaft survival equipment container used to inflate sections of the liferaft not filled from inflation cylinder or top off inadequately inflated compartments.

b. Attaches to inflation ports on the body of the raft and is manually operated.

c. When not in use, ensure it is tied off to a handle inside the raft to prevent loss.

8. Forward Osmosis Filtration System

a. Converts saltwater or contaminated freshwater into a potable energy-providing drink.

b. Refer to the applicable equipment MPC for the current system being used.

9. Emergency Drinking Water Packet

a. Contains 4.5 ounces of pure drinking water

b. 5-year life limit

10. Survival Rations

a. Consists of candy and gum

b. Sugar content is a source of quick energy when no other food is available

c. 6-1/2-year life limit

11. Meals Ready to Eat (MRE)

a. Portable, complete meal providing protein, carbohydrates, and fat

b. Provides approximately 800 to 1,200 calories

c. Shelf life - 3 years at 80 °F or 6 months at 100 °F

d. Some contain Flameless Ration Heater (FRH)

WARNING

THE FRH MAY REACH TEMPERATURES OF 200 ºF, AND UP TO 250 ºF, IF ADEQUATE MOISTURE IS NOT ADDED AT THE TIME OF HEATER ACTIVATION. THIS IS SUFFICIENT HEAT TO CAUSE SEVERE BURNS IF PROLONGED CONTACT IS MAINTAINED WITH THE BARE SKIN. WHEN ACTIVATED, THE FRH PRODUCES HYDROGEN IN SMALL AMOUNTS. HYDROGEN WILL DISPLACE OXYGEN AND IS FLAMMABLE.

12. Liferaft Repair Kit

a. Designed to provide a rapid method of repair to a liferaft that has become damaged.

b. Refer to the applicable liferaft MPC for specific repair kit to be used.

CHAPTER 5. RESCUE EQUIPMENT

A. INTRODUCTION This chapter contains information relating to specific rescue equipment and the management of that equipment. The Aviation Survival Technician (AST) has the responsibility of maintaining and servicing all aircraft rescue equipment. Policies concerning quality assurance, records, and repair of rescue equipment are contained in Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series).

Unless otherwise stated, all scheduled maintenance and inspections accomplished on aircraft rescue equipment shall be done in accordance with the appropriate MSR MPCs.

B. FOLDING LITTER

1. Introduction The folding rescue litter is a stainless steel stretcher designed to evacuate a single injured person from land or sea during rescue operations. The litter folds in half, which provides compact storage.

2. Configuration The folding rescue litter is a stretcher constructed of stainless steel tubing and weighs approximately 45 pounds and has a load capacity in excess of 600 pounds. As an assembly, the folding rescue litter consists of the following components:

   a. Body The folding litter body is comprised of two halves that join and secure at four points on each half. The perimeter and bottom are constructed of stainless tubing. Flat stainless bar material joins the tubes for strength and rigidity. Each half of the folding litter body is lined with a semirigid black reinforced nylon mesh for patient support and comfort.

   b. Couplers The litter may be folded for storage by releasing the two couplers at each side of the litter and separating the halves, then nesting the lower half of the litter into the upper half. The top tube couplers are threaded with self-aligning pins. The bottom skid tubes join with hook-and-pin couplers.

   c. Flotation Half Logs and Floating Chest Pads The flotation half logs and chest pads are constructed of polyethylene foam with removable nylon covers. The flotation half logs are attached to the outside of the litter. The flotation logs and chest pads provide flotation for the litter.

   d. 5-Pound Ballast Weight A ballast weight provides counterweight stability so the litter will remain horizontal with a patient in the litter.

   e. Removable Hoisting Slings Hoisting slings provide the means to attach the litter to the helicopter hoist cable.

   f. Patient Restraint Straps Five patient restraint straps are provided for use restraining a patient in the folding litter. The floating chest pads are attached to the litter with this assembly.

   g. Patient Life Insert A patient lift insert is attached inside the litter frame to provide rapid and easy removal of patient from the litter.

NOTE

Two wool blankets are rolled and placed at the foot of the litter. These blankets are used to cover the patient, providing warmth during hoist and flight.

3. Function The folding rescue litter can be unfolded, locked, then lowered from and hoisted to a helicopter by means of a hoist cable in land/sea rescue operations. The folding rescue litter is used to hoist nonambulatory subjects from land or water. The folding capabilities allow it to be stored efficiently in the airframe cabin and to be assembled in flight when required.

4. Inspections and Intervals All inspections and maintenance will be in accordance with the folding litter MPC.

   a. Acceptance Upon original issue, when received from supply, or accepted from another unit for permanent custody

   b. Visual/Post-Use Every 90 days

c. Load Test Required on acceptance and after a hoist sling replacement

d. Decontamination and Cleaning Procedures outlined in MPC 256028.0, Item 6

5. Folding Rescue Litter Modifications and Repairs There are no modifications authorized to the folding litter. Repairs are limited to the replacement of litter components in accordance with the appropriate MSR MPC.

C. MEDEVAC BOARD

1. Introduction The MEDEVAC board is designed to stabilize a patient who has or may have a back or neck injury. The MEDEVAC board folds in half, which provides compact storage.

2. Configuration The MEDEVAC board weighs approximately 19 pounds and has a load capacity in excess of 300 pounds. It is a two-piece full-length aluminum backboard constructed with stainless steel screw couplers for strength and rigidity, allowing it to separate into halves for stowage. It is equipped with a protective storage/carrying case. The MEDEVAC board is designed for compact stowage inside the folding rescue litter. The MEDEVAC board has a nonporous surface making it impervious to contaminants. Oversized, replaceable hand straps assist in carrying and maneuvering the MEDEVAC board. The board has replaceable, color-coded, patient restraint straps with quick-close buckles and a disposable head restraint.

3. Function The MEDEVAC board is suited for stabilizing and removing a patient from a confined space to an area where the patient may be prepared for a litter hoist.

WARNING

WHEN USING THE MEDEVAC BOARD, ALL PATIENT RESTRAINT STRAPS SHALL BE USED.

CAUTION

THE MEDEVAC BOARD HAS NO FLOTATION CAPABILITY AND IS NOT ATTACHED TO THE RESCUE LITTER. TO PREVENT LOSS, REMOVE THE MEDEVAC BOARD PRIOR TO IN-WATER USE.

4. Inspections and Intervals The following are inspection intervals for the MEDEVAC board:

a. Acceptance Upon original issue, when received from supply, or accepted from another unit for permanent custody

b. Visual/Post-Use Every 90 days in conjunction with the inspection of the folding rescue litter in which it is installed

NOTE

Tracking and documentation of inspections of the MEDEVAC board shall be accomplished at the unit level since it is not enrolled in ACMS.

5. Modifications and Repair to the MEDEVAC Board There are no modifications authorized to the MEDEVAC board. Repairs are limited to the replacement of MEDEVAC board components.

D. RESCUE BASKET

1. Introduction The rescue basket is intended for hoisting survivors during helicopter rescue operations. It will float when placed in the water.

2. Configuration The rescue basket weighs approximately 40 pounds and has a load limit of 600 pounds. The basket is constructed of stainless steel. The design of the basket eliminates sharp corners, minimizing the potential for damaging the skin of the aircraft during operation. The rescue basket consists of the following components:

a. Flotation Tubes Two nylon-covered rigid foam floats silk-screened with REMAIN SEATED, a diagram of a seated individual, and USCG-branded retroreflective tape. These floats provide flotation for the rescue basket.

b. Folding Bail The folding bail hinges at each corner to allow it to fold down into the basket. The bail is equipped with a bail retention pin. When inserted correctly through both sides of the raised bail, the retention pin will prevent the bail arms from falling back into the basket.

3. Function The rescue basket is lowered to rescue personnel and survivors from a helicopter by means of a rescue hoist.

4. Inspections and Intervals All maintenance and inspections shall be in accordance with the basket MPC.

a. Acceptance Upon original issue, when received from supply, or accepted from another unit for permanent custody

b. Visual/Post-Use Every 30 days

c. Load Test Required on acceptance

5. Modifications and Repair to the Rescue Basket There are no modifications authorized to the rescue basket. Repairs are limited to the replacement of basket components in accordance with the appropriate MSR MPC.

NOTE

If a fluorescent dye penetrant inspection reveals cracks in the basket structure, submit MSR MPC 051006.1 for the basket and scrap locally.

E. RESCUE SLING

1. Introduction The rescue sling is a buoyant device designed for use in hoisting a single survivor during helicopter rescue operations.

2. Configuration The rescue sling is constructed of closed cell foam encased in a red ballistic nylon cloth cover and has a load capacity of 600 pounds. Webbing passes through and attaches with stitching to the cover of the sling. The rescue sling is attached to the helicopter rescue hook by the two V-rings sewn at each end of the webbing. There are two retaining straps that make up the chest retainer strap assembly. A stainless steel adjustable V-ring and snap hook join to secure the survivor into the survivor strop. The chest retainer strap assembly is secured to the cover of the survivor strop with three webbing straps. Both are secured by three 1-inch webbing straps with snap fasteners. The rescue sling is approximately 71 inches long.

WARNING

USE OF CHEST RETAINER STRAPS IS MANDATORY DURING USE OF THE RESCUE SLING, EXCEPT WHEN HOISTING COAST GUARD HELICOPTER RESCUE SWIMMERS.

3. Inspections and Intervals All maintenance and inspections shall be in accordance with the rescue sling MPC.

a. Acceptance Upon original issue, when received from supply, or accepted from another unit for permanent custody

b. Visual/Post-Use Every 30 days

c. Load Test Required only on acceptance

4. Modifications and Repair There are no modifications authorized to the rescue sling. Authorized repairs to the rescue sling are listed in the appropriate MSR MPC.

F. QUICK STROP

1. Introduction The quick strop is used in conjunction with the helicopter rescue swimmer harness for survivor rescue.

2. Configuration The quick strop is similar in design and materials to the survivor strop with some minor differences. The quick strop has a friction slide to snug the strop to the survivor.

There is a length-adjustable strap that is folded into a pocket on the back of the quick strop. The strap terminates in a snap hook. This strap is routed between the legs of the survivor, and then clipped into the friction slide when the survivor is unconscious.

3. Function The quick strop is utilized by the rescue swimmer for rapid survivor recovery or when the rescue area is restrictive.

4. Inspections and Intervals All maintenance and inspections shall be in accordance with the quick strop MPC.

   a. Acceptance Upon original issue, when received from supply, or accepted from another unit for permanent custody

   b. Visual/Post-Use Every 90 days

   c. Load Test Required only on acceptance

5. Modifications and Repairs to the Quick Strop There are no modifications authorized to the quick strop.

   There are no repairs authorized to the load-bearing webbing or webbing confluence point stitches. Quick strops with damaged or missing stitching or quick strops with damaged covers that cannot be repaired without sewing through the load-bearing webbing will be discarded and replaced.

G. PORTABLE SALVAGE PUMP

1. Introduction The pump is used for the emergency dewatering of vessels taking on water and in danger of sinking. It can be delivered to vessels from fixed wing aircraft using an Aerial Delivery System (ADS) or from rotary wing aircraft directly by hoist or indirectly by trail line.

2. Configuration

   a. Rated output of 120 to 150 gallons per minute at a 10-foot lift, and will operate for approximately 5 to 6 hours on the 1 gallon of gasoline supplied with the kit. An additional 1-gallon fuel container is optional, but may be added to the kit if required for operational area requirements.

   b. Four-cycle gasoline engine attached to a straight centrifugal pump that requires priming.

   c. Priming is accomplished by using a hand pump assembly, located on top of the centrifugal pump.

   d. Motor produces 3.5 horsepower at 3,600 RPM.

   e. A 20-foot long, 3-inch diameter, nonrigid discharge hose is attached to the pump assembly prior to packing in the container.

   f. Black rubber discharge check valve sleeve consists of a snug-fitting flexible rubber sleeve over a rigid aluminum-vented end cap, attached at the end of the nonrigid discharge hose.

   g. Discharge check valve sleeve provides back pressure to the pump, allowing the pump to take and maintain prime once it is operating.

   h. A 15-foot long, 2-inch diameter, clear, reinforced rigid suction hose with a metal debris strainer on the end prevents ingestion of large debris into the pump impeller that may disable the pump. After connecting the intake hose to the dewatering pump, the intake hose debris strainer must remain immersed in water to maintain pump prime and suction. If the debris strainer lifts out of the water and prime is lost, it must be reimmersed, and the pump reprimed to continue dewatering operations.

   i. Explosion-proof flashlight and a plastic assembly-and-operation instruction card are included.

3. Inspections and Intervals All maintenance and inspections shall be in accordance with the dewatering pump MPC.

a. Acceptance Upon original issue, when received from supply, or accepted from another unit for permanent custody

b. Visual Every 30 days

c. Test Run Every 60 days

d. Servicing Every 180 days

e. Post-Use Required when returned from SAR operations

4. Modifications and Repairs to the Portable Salvage Pump The only modifications authorized on the portable salvage pump are found in the current revision applicable MSR MPC. Repairs are limited to parts replacement within the AST shop capabilities. Repairs that exceed technician capabilities may be accomplished at a local small engine shop.

H. EMERGENCY MEDICAL TECHNICIAN (EMT) KIT

1. Introduction The EMT kit contains a variety of medical supplies in order to provide basic pre-hospital life support for rescued individuals.

2. Contents The contents and placement of supplies in the EMT kit shall be in accordance with the EMT kit MPC.

3. Inspections and Intervals All maintenance and repairs shall be in accordance with the EMT kit MPC.

a. Acceptance Upon original issue, when received from supply, or accepted from another unit for permanent custody

b. Inspection/Post-Use Every 90 days or after each use

4. Modifications and Repair

a. Modifications are limited to those required in the buildup procedures of the MPC.

b. CG EMT pack, P/N LBT-4000CG, comes with a lifetime warranty from the manufacturer London Bridge Trading Inc. (LBT). During inspection, if any cuts, tears, seam separation, broken slide fasteners, or any structural damage that compromises the integrity of the EMT bag are found, the bag shall be shipped back to LBT.

I. AUTOMATED EXTERNAL DEFIBRILLATOR (AED)

1. Introduction An AED is a lightweight, portable device that delivers an electric shock through the chest to the heart. The shock can potentially stop an irregular heartbeat and allow a normal rhythm to resume following cardiac arrest.

2. Authorized Devices Authorized AEDs are dependent on each unit airframe. Refer to Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series), Chapter 6. Any AED not listed on the certified PED list needs to be authorized through ALSE Technical Services.

3. Inspections and Intervals Certified AEDs shall be maintained and inspected in accordance with AUTO EXT defibrillator MPC.

a. Acceptance Upon original issue, when received from supply, or accepted from another unit for permanent custody

b. Inspection/Post-Use Every 30 days or after each use

c. Authorized Devices Not on Certified PED List Devices not on the certified PED list, but which have been authorized by ALSE Technical Services shall be inspected every 30 days or after each use in accordance with the manufacturer operating and maintenance instructions.

J. PATIENT MONITOR

1. Introduction A patient monitor is an electrical medical device consisting of one or more monitoring sensors, a processing component, and a screen display that provide and record patient medical vital signs. The vital signs that can be monitored using a patient monitor can

include body temperature, blood pressure, pulse rate, respiratory rate, and/or peripheral capillary oxygen saturation (SpO_2).

2. Authorized Devices Authorized patient monitors are dependent on each unit airframe. Refer to Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series), Chapter 6. Any patient monitor not listed on the certified PED list needs to be authorized through ALSE Technical Services.

3. Inspections and Intervals Certified patient monitors should be maintained and inspected in accordance with the manufacturer operating and maintenance instructions. Patient monitors should be enrolled in ACMS as a Special Requirement (SR) item to ensure tracking on the Maintenance Due List (MDL).

   a. Acceptance Upon original issue, when received from supply, or accepted from another unit for permanent custody

   b. Inspection/Post-Use Every 30 days or after each use

   c. Authorized Devices Not on Certified PED List Devices not on the certified PED list, but which have been authorized by ALSE Technical Services should be inspected every 30 days or after each use in accordance with the manufacturer operating and maintenance instructions.

K. EMERGENCY RECOVERY DEVICE

1. Introduction The Emergency Recovery Device (ERD) is designed for use in the H-60 to recover the helicopter rescue swimmer in the event the rescue hoist becomes unusable and no other means is available to recover the rescue swimmer.

2. Configuration The ERD consists of the following features:

   a. Base Plate Assembly The skyhook base plate assembly consists of the base plate, roller guide assembly, and capstan speed winch. There are two winch handles.

   b. Pro Traxion Pulley This pulley is a side-opening, self-arresting pulley used to direct the rescue line to the helicopter rescue swimmer from the ERD. This pulley is attached to the hard point on the helicopter hoist extension arm.

   c. 1/2-Inch Safety Glow Rope This is a 155-foot long (140 feet usable) white line with retroreflective thread woven into the outer casing for increased visibility at night.

3. Function The maximum hoisting weight is 300 pounds.

NOTE

The ERD was designed to recover rescue swimmers. This does not prevent it from being used to recover survivors. However, it is an extremely demanding maneuver for the flight mechanic. Aircrews should consider alternate means of recovery.

4. Inspections and Intervals All maintenance and inspections shall be in accordance with the ERD MPC.

   a. Acceptance Upon initial issue, when received from supply, or accepted from another unit for permanent custody

   b. Post-Use Every 180 days and whenever ERD is used for in-flight training

   c. Annual Lubrication 1 year from last completion

   d. Rope Replacement Every 36 months

5. Modifications and Repairs There are no modifications authorized for the ERD. Repairs are limited to the replacement of parts and components in accordance with appropriate MSR MPC.

L. HOIST QUICK SPLICE

1. Introduction The hoist quick splice is a repair device used in the event the hoist cable has been manually cut due to cable becoming damaged and is for operational use only.

2. Configuration The hoist quick splice consists of a plate which is constructed of 1/4-inch aluminum. Numbered grooved slots are provided in the plate for rapid routing of a hoist cable, and a standard rescue hook is attached to the plate with a stainless steel shackle. A spring clip is provided in slot No. 5 for locking the hoist cable into place.

WARNING

FAILURE TO INSERT THE CABLE PAST THE KEEPER CLIP IN NOTCH NO. 5 MAY RESULT IN THE CABLE UNWINDING OFF THE QUICK SPLICE.

3. Function The procedure to install the quick splice onto the hoist cable is as follows:

   a. Extend at least 3 inches of bitter end of severed hoist cable beyond the top plate of quick splice.

   b. Route the cable down into the start position (Slot 1) following the engraved directional arrows.

   c. Continue routing into slots 2, 3, 4, and 5.

NOTE

Cable routing slots 1, 3, and 5 are stamped on one side of the plate and slots 2 and 4 on the opposite side.

   d. Ensure cable is inserted and locked into slot 5.

4. Inspections and Intervals All maintenance and inspections shall be in accordance with the hoist quick splice MPC.

   a. Acceptance Upon original issue, when received from supply, or accepted from another unit for permanent custody

   b. Inspect/Post-Use Every 90 days

5. Modifications and Repairs

   a. No modifications authorized.

   b. Authorized repairs include removal of corrosion, burrs, and sharp edges with emery cloth in accordance with the MSR MPC.

M. HELICOPTER TRAIL LINE/WEIGHT BAG

1. Introduction The standard trail line is a 105-foot polypropylene line which can help minimize the time required to maintain a precise stable hover, reduce swinging of the rescue device, and add an additional margin of safety should a helicopter emergency occur. The 5-pound weight bag has a corrosion-resistant cast hook which is connected to the trail line, enabling the flight mechanic to deliver the trail line to the hoist area through the effect of wind and rotor wash.

   Commercial purchase of the weight bag is authorized. Refer to the ALSIPS for source information.

2. Configuration The trail line is fabricated locally with snap hooks eye spliced at both ends; one snap hook is connected by a weak link. When used for hoisting, weight must be attached to the trail line snap hook in the form of one or more 5-pound weight bags.

3. Function The trail line is used to stabilize rescue devices being hoisted to and from the helicopter. During certain hoisting evolutions, the helicopter rescue swimmer may need to be stabilized and directed using the trail line in conjunction with a trail line quick-release. The snap hooks also allow for the connection of two trail lines to form a 210-foot trail line, if required. The weak link is incorporated to prevent damage to the rescue equipment and/or helicopter by preventing entanglement with a vessel or ground structure. If the trail line becomes entangled, the weak link will break at approximately 300 pounds.

N. CREWMEMBER AIRCRAFT SAFETY BELTS

1. Introduction Crewmember aircraft safety belts (gunner's belts) are designed as a safety restraint for use by crewmembers and passengers who are not strapped into a seat retention system when a door, ramp, or hatch is open.

2. Configuration Each crewmember aircraft safety belt is made of nylon webbing and is provided with pull tabs and adjusting buckles for adjustment. Each type of aircraft safety belt has a latch-and-link assembly with a leather protector. Both rotary and fixed wing crewmember aircraft safety belts utilize the flat slide-lock snap hook to attach to airframe attachment points. They are both designed for a right-hand release.

   a. Rotary Wing Safety Belt The rotary wing crewmember aircraft safety belt is designed for single-hand release. A triangle-shaped, perforated lever is operational with thumb and forefinger while wearing flight gloves.

   b. Fixed Wing Safety Belt The fixed wing crewmember aircraft safety belt has a buckle latch-lock incorporated into the buckle that prevents inadvertent opening of the buckle when worn correctly. When the locking pin is up and locked into the detent, it allows the buckle to be opened. (Refer to Figure 5-1.) When the locking pin is rotated and released from the detent, a spring pulls it down into the locked position; the buckle is locked and cannot be opened.

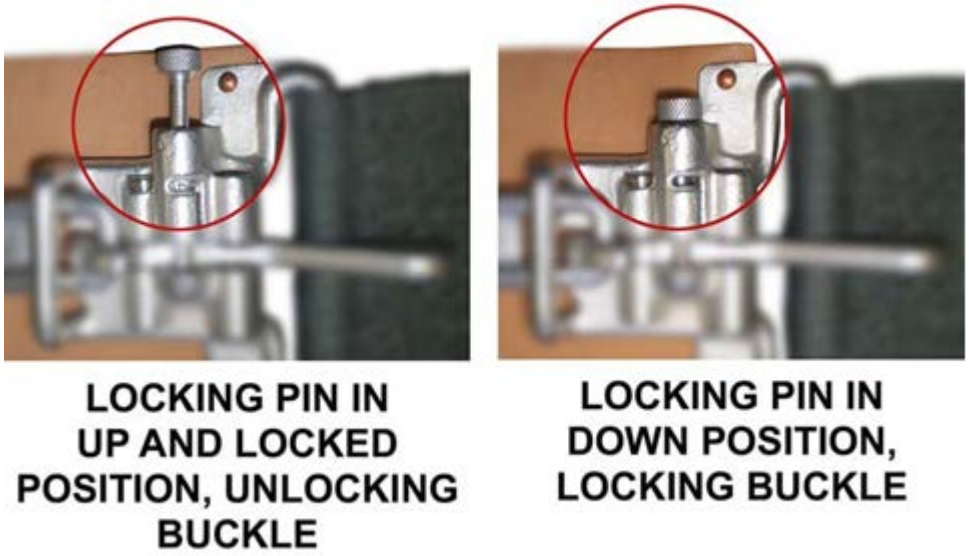


Figure 5-1. Fixed-Wing Crewmember Aircraft Safety Belt Locking Pin

   c. Safety Belt Connector Both fixed wing and rotary wing crewmember aircraft safety belts attach to the airframe by means of a flat slide-lock snap-hook connector. This connector is opened by depressing the spring-loaded button that extends up through the opening of the side of the sliding body of the connector, then sliding the body of the connector towards the webbing loop. To close, slide the body of the connector away from the webbing loop until the spring-loaded button snaps back into the detent of the body of the connector.

3. Inspections and Intervals

   a. Acceptance Upon original issue, when received from supply, or accepted from another unit for permanent custody.

   b. Weekly Inspection in conjunction with applicable ALSE seven-day inspection to verify serviceable condition and safe operation.

   c. Visual Every 30 days

   d. Post-Use (Rotary Wing) After each use when exposed to saltwater. Rinse with fresh tap water and air-dry, in addition to all visual inspection procedures.

NOTE

Both fixed and rotor wing crewmember aircraft safety belts serviceable life shall be determined based on the overall condition and correct operation outlined in the applicable aircraft weekly inspection. Fixed and rotor wing crewmember aircraft safety belts serviceable life will not be determined based on date of manufacture or time spent in service.

4. Modifications and Repairs

   a. No modifications authorized.

   b. Repairs are limited to the removing of corrosion with emery cloth. Damaged aircraft safety belts shall be locally scrapped immediately.

O. MESSAGE STREAMER

1. Introduction The message streamer is used to communicate with individuals when no other means of communications are available.

2. Configuration The message streamer dimensions are 5 by 6-1/2 inches. It is a plastic pouch with a brightly colored 7-foot vinyl streamer attached. The pouch has a watertight pressure-lock seal to contain the message. There is a smaller inner bag of sand for weight. The streamer stabilizes and slows the message streamer during its descent when deployed from an aircraft.

3. Function The message streamer may be deployed to survivors on a vessel, in the water, or on land. It may be deployed from fixed wing and rotor wing aircraft in order to send a message or provide instructions.

4. Inspection None required. Quantity and location should be verified during weekly aircraft inspections.

5. Modifications and Repairs to the Message Streamer Before placing the message streamer into aircraft inventory, the installation of a 3- x 1/2-inch piece of closed cell foam into the pouch is required to assure flotation if the message block is deployed to the water.

P. HOIST MANUAL CABLE CUTTER

1. Introduction Cable cutters are installed on rotary wing aircraft in the event the hoist cable needs to be manually cut.

2. Configuration The cable cutters are attached by a 62-inch retaining lanyard made of Type III nylon cord. One end of the retaining lanyard is attached to the cable cutter handle, and the other end has a brass snap hook attached. Refer to the applicable aircraft flight manual for location and storage of the cable cutters.

3. Inspections and Intervals

   a. Acceptance Upon original issue, when received from supply, or accepted from another unit for permanent custody. Buildup procedures are in Paragraph 5.P.5.

   b. Weekly In conjunction with ALSE aircraft weekly inspection. Overall condition of cable cutter and lanyard, check/remove corrosion on snap hook, and spray with corrosion preventive as needed.

c. Post-Use After each operational use. Rinse with fresh tap water, air-dry, and apply a light coat of corrosion preventive, wiping off excess, in addition to all visual inspection procedures.

WARNING

AVOID EYE AND SKIN CONTACT WITH CORROSION PREVENTIVE, FLUID FILM. AVOID INHALATION OR INGESTION. USE IN A WELL-VENTILATED AREA. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING OR EXPOSURE. REMOVE CONTAMINATED CLOTHING IMMEDIATELY.

4. Modifications and Repairs

a. No modifications authorized.

b. Authorized repairs include removal of corrosion and replacement of fabricated retaining lanyard and/or brass snap hook.

5. Buildup

a. Materials Required

(1) Wire Rope Cutter w/Aluminum Handles, NSN 5110-01-HS3-0300, P/N 22-WRC13

(2) 62-inch Cord, Fibrous (Type III), NSN 4020-00-240-2146, P/N MIL-C-5040

(3) Snap Hook, Brass, NSN 5340-00-275-4584, P/N MIL-15021

(4) Corrosion Preventive, Fluid Film, NSN 8030-01-381-6357

b. Buildup Cable cutters shall be built up as follows:

STEP	ACTION
1	Fabricate retaining lanyard by sear-cutting 62 inches of Type III nylon cord.
2	Attach one end of retaining lanyard to either handle hole using a bowline knot followed by a closely fitted overhand knot.
3	Attach the other end of the Type III nylon cord to the brass snap hook using a bowline knot followed by a closely fitted overhand knot.
4	Tie an overhand knot 10 inches from brass snap hook, forming a 2-inch loop.
	WARNING **AVOID EYE AND SKIN CONTACT WITH CORROSION PREVENTIVE, FLUID FILM. AVOID INHALATION OR INGESTION. USE IN A WELL-VENTILATED AREA. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING OR EXPOSURE. REMOVE CONTAMINATED CLOTHING IMMEDIATELY.**
	NOTE Only the metal parts need to be coated; the aluminum handles do not.
5	Spray metal cutting surfaces with a light coat of corrosion preventive, fluid film, and wipe off excess.

CHAPTER 6. PROTECTIVE EQUIPMENT

A. INTRODUCTION This chapter contains information relating to inspection, maintenance, and repair of protective equipment. Unless noted otherwise, protective flight equipment will be inspected in accordance with policies set forth in Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series), Chapter 7.

1. Air stations are required to use the ALC ALSE centralization process at ALC as the primary method for obtaining aviation centralized HGU-56/P flight helmet, RS protective helmet, MASSIF undergarments (a list can be located at ALC/ESD/ALSE Tech webpage), and RS and aircrew dry suits over other forms of procurement. Items ordered from ALC in this manner will be based on individual flight member requirements.

2. ALSE centralization procurement is a method of procurement for active duty Coast Guard pilots and members designated as Coast Guard aircrew (to include aviation mission specialist) or training to be qualified as a crew member and under flight orders.

   a. Flight gear for all other individuals not in a qualified aircrew position should be purchased from other sources through local unit funds.

3. Aircrew Dry Coveralls (ADC) shall be procured via direction from Paragraph 6.U.2. of this process guide. This procurement method is for active duty CG members.

   a. Procurement of ADCs for other individuals and requirements should be completed via the manufacturer through local unit funds.

   b. For members requiring high priority for procurements, units are requested to contact ALSE Technical Services for additional information.

4. A CG-4491 (Parts and Material Request/Use Form) shall be used for ordering aviation protective equipment from the ALC ALSE centralization process.

   a. One line item per member for a quantity of one each on the order form CG-4491; for items distributed from ALC ALSE centralization, with the exception of MASSIF undergarments (individual member may put eight line items for a quantity of two).

   b. In the Tech Data/Comments block on the CG-4491, units ordering the item shall put the member name receiving the item in this block.

   c. Each order should be given an order of Priority 5. A Priority 2 request may be given if mission-essential equipment and required within 5 days.

NOTE

Stockpiling protective equipment obtained from the ALC ALSE centralization process is prohibited.

B. FLIGHT SUIT

1. Sizing Flight suits are fitted to the aircrew member. Separate sizes are available for male and female aircrew.

   a. Male Men’s sizes normally correspond to the member's suit size.

   b. Female For female sizing, go by chest measurements first (i.e., for the numbered size). Female sizes are fitted according to torso size. Short, regular, and long refer to torso size, which does not correlate with height. Female aircrew with torso length of 69 inches or longer should test fit a long; below 64 inches should test fit a short. If slim through the hips, try a misses; if the crewmember has wider hipbones, or ample buttocks or thighs, test fit a women's cut.

2. Modifications Modifications to flight suits are limited to addition of required patches. (Refer to Figure 6-1.) To attach patches, proceed as follows:

STEP	ACTION
1	U.S. Flag (2-1/4 x 3-1/2 inches) shall be centered and attached to the upper left sleeve, below shoulder seam.
2	CG Logo (2-1/4 x 3-1/2 inches) shall be centered and attached above the right breast pocket.
3	Officer's Rank Insignia - Attach cloth embroidered rank insignia to flyer coveralls so that the outer edge of each insignia is placed 3/4 inch from the squared end of the epaulet (or shoulder seam if no epaulet). The size of the insignia should be equivalent to the metal shoulder grade insignia currently authorized in the Uniform Regulations, COMDTINST M1020.6 (series).
4	Placement of the specific rank insignia follows: **Admiral:** The single ray shall point towards the collar. **Captain:** The eagle's head is placed with the beak facing towards the collar, facing toward the front. **Commander/Lieutenant Commander:** The stem of the cluster shall point outwards, or away from the collar. **Lieutenant/Lieutenant Junior Grade:** The short side of each bar faces fore and aft. **CWO:** The short side of each bar faces fore and aft.
5	Optional: If worn, the rescue swimmer, EMT, or unit patch shall be centered and attached to the upper right sleeve, below shoulder seam, and should not exceed 5 inches in diameter.

NOTE

The Commanding Officer shall evaluate the local area OPSEC environment when deciding whether to allow the wearing of unit patches. Where OPSEC is questionable, patches should be affixed with hook-and-pile material.

Figure 6-1. Flight Suit Patch Placement

3. Repairs Repairs will be accomplished using E-thread at 6 to 8 SPI, and shall be restricted to repairing damaged and opened seams, small holes or tears, and replacement of hook-and-pile fastener tape.

NOTE

Only high-temperature resistant cloth, MIL-C-81280, and high temperature-resistant thread, MIL-T-83193, shall be used for repairs.

4. Care and Cleaning It is recommended that new flight suits be laundered prior to use in order to soften the fabric and eliminate any possible skin irritation that might occur due to original fabric harshness. Flight suits may be laundered at home or in a commercial-type washer and dryer.

STEP	ACTION
1	Wash in water up to 140 °F maximum.
	NOTE To reduce pilling of fabric, flight suits should be laundered inside out.
2	Use a standard laundry detergent. Do not use fabric softeners. Fabric softeners will decrease flame resistance.
3	Flat dry or machine dry on low heat.
	NOTE Do not press hook and loop fasteners.
4	Ironing or pressing is permissible; however, it is difficult to remove wrinkles or creases due to the high temperature-resistant qualities of the material.

C. FIRE-RESISTANT UNDERSHIRTS

1. Fire-Resistant (FR) undershirts provide the following properties that make them desirable for use under flight clothing. Machine wash them in warm water and air-dry or tumble-dry them on low temperature. Do not use fabric softener. Do not iron.

   a. Inherent, permanent flame resistance that will not wash or wear out for the wearable lifespan of the garment

   b. No-melt, no-drip fabrics that will not fuse to skin or ignite when exposed to open flames, and will self-extinguish when the ignition source is removed

   c. Moisture-wicking properties to move sweat and moisture away from the skin

   d. Rapid drying time

   e. Antimicrobial protection that resists bacterial growth

   f. Flat shoulder seams

2. FR undershirts are available in lightweight, midweight, and heavyweight for use in appropriate climates. The lightweight FR undershirt is available in short or long sleeves.

3. The FR undershirt fitment corresponds to the regular undershirt size of the individual user. Use the following table for accurate Drifire® ordering information:

Item	Style Number	Item Number	
Lightweight Short-Sleeved Tee Navy Blue	**DF2-446TS**	**20000112-NB**	**GSA Contract Number**
Small	DF2-446TS/NB/S	20000112-NB-S	GS-07F-5829R
Medium	DF2-446TS/NB/M	20000112-NB-M	GS-07F-5829R
Large	DF2-446TS/NB/L	20000112-NB-L	GS-07F-5829R
X-Large	DF2-446TS/NB/XL	20000112-NB-XL	GS-07F-5829R
XX-Large	DF2-446TS/NB/2XL	20000112-NB-XXL	GS-07F-5829R
XXX-Large	DF2-446TS/NB/3XL	20000112-NB-XXXL	GS-07F-5829R
Lightweight Long-Sleeved Tee Navy Blue	**DF2-446LS**	**20000117-NB**	**GSA Contract Number**
Small	DF2-446LS/NB/S	2000117-NB-S	GS-07F-5829R
Medium	DF2-446LS/NB/M	2000117-NB-M	GS-07F-5829R
Large	DF2-446LS/NB/L	2000117-NB-L	GS-07F-5829R
X-Large	DF2-446LS/NB/XL	2000117-NB-XL	GS-07F-5829R
XX-Large	DF2-446LS/NB/2XL	2000117-NB-XXL	GS-07F-5829R
XXX-Large	DF2-446LS/NB/3XL	2000117-NB-XXXL	GS-07F-5829R
Midweight Long-Sleeved Tee Navy Blue	**DF2-240LS**	**20000174-NB**	**GSA Contract Number**
Small	DF-240LS/NB/S	200174-NB-S	GS-07F-5829R
Medium	DF-240LS/NB/M	200174-NB-M	GS-07F-5829R
Large	DF-240LS/NB/L	200174-NB-L	GS-07F-5829R
X-Large	DF-240LS/NB/XL	200174-NB-XL	GS-07F-5829R
XX-Large	DF-240LS/NB/2XL	200174-NB-XXL	GS-07F-5829R
XXX-Large	DF-240LS/NB/3XL	200174-NB-XXXL	GS-07F-5829R
Heavyweight Long-Sleeved Tee Navy Blue	**DF2-CM-265ALS**	**20000069-NB**	**GSA**
Small	DF2-CM-265ALS/NB/S	20000069-NB-S	Open Market
Medium	DF2-CM-265ALS/NB/M	20000069-NB-M	Open Market
Large	DF2-CM-265ALS/NB/L	20000069-NB-L	Open Market
X-Large	DF2-CM-265ALS/NB/XL	20000069-NB-XL	Open Market
XX-Large	DF2-CM-265ALS/NB/2XL	20000069-NB-XXL	Open Market
XXX-Large	DF2-CM-265ALS/NB/3XL	20000069-NB-XXXL	Open Market

D. FABRICATION OF STANDARDIZED NAME TAG For personnel identification, a standardized leather or cloth name tag shall be worn on flight suits and flight jackets. If the resources are available to fabricate a leather name tag, proceed as follows.

1. Materials Required (if available in shop)

   a. 2- x 4-inch Precut Leather Name Tag Blanks

   b. 23 KT Gold Foil

   c. 18 PT News Gothic Caps

   d. Stamp Dies for RS Wings, Pilot Wings, AC Wings, AMS Wings, and CG Insignia

   e. Kingsley Stamp Machine

NOTE

Individual units are authorized to make unit name tags, but they must follow the standard name tag outline in Step 3 below.

STEP	ACTION
1	If available, use precut leather name tag blanks.
2	If available, set up gold stamp materials in accordance with the manufacturer instruction manual.
3	Print name tags as follows: TOP: Wings or CG Insignia (nonaviator) MIDDLE: First Name and Last Name BOTTOM: Rate (enlisted) or Rank (officer) and USCG
4	Attach hook tape as required. Adhesive-backed hook tape or a spray adhesive may be used; however, it is highly recommended that the leather name tags are sewn to the hook tape once attached. A clear plastic cover may be sewn over the face of the name tag (optional).

E. FLIGHT SUNGLASSES Flight sunglasses meeting the criteria set forth in Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series), are either: Nonprescription, commercially purchased, nonprescription HGU-4/P sunglasses (see ALSIPS), or prescription HGU-4/P sunglasses.

1. Fitting Commercially purchased flight sunglasses are available in a range of sizes allowing for proper fitting to individual aircrew.

   HGU-4/P flight sunglasses are fitted to the individual by adjusting the nose pads and temples to the comfort of the individual.

2. Modifications Ear loop wire temples may be exchanged for the straight temples on the HGU-4/P flight sunglasses.

   No modifications are authorized for commercially purchased non-HGU-4/P flight sunglasses.

3. Care and Cleaning When not in use, flight sunglasses should be kept in the case or container they were issued in. Care should be taken to avoid resting the glasses on their lenses.

   Body oils from the area of the nose and forehead can build up on the frame and lenses of the sunglasses. To clean the HGU-4/P sunglasses, hold under warm running water. Using a gentle soap, gently clean the lenses and frame thoroughly using your fingers. Dry with a clean, soft cloth or lens-quality tissue. Use a clean, dry, lens-quality tissue to polish the lenses after cleaning.

4. Repairs Repairs to HGU-4/P flight sunglasses are limited to replacing temples and tightening or replacing lens frame screws (see ALSIPS for NSN). No repairs are authorized for black plastic frame flight sunglasses.

F. G-1 LEATHER FLIGHT JACKET

1. Fitting The G-1 flight jacket is normally fitted to the aircrew member corresponding to his/her regular jacket size. The jacket is used with standard Coast Guard personal survival equipment. Allow for layers of clothing that may be worn under the jacket that may require sizing consideration. The G-1 flight jacket is provided in the following sizes:

Size	Chest Measurement
Small	34-36
Medium	38-40
Large	42-44
Extra Large - XL	46-48
Extra Extra Large - XXL	50-52

2. Modifications Modifications to the G-1 leather flight jacket are limited to the addition of authorized patches as described for summer flight coveralls. EMT, rescue swimmer, and aircraft type-related patches may be attached in a manner that maintains a military appearance.

WARNING
DO NOT WASH AND DRY THE G-1 LEATHER FLIGHT JACKET IN A WASHING MACHINE AND DRYER.

3. Care and Cleaning Wipe leather clean with a damp cloth and dry immediately. Dryclean for thorough cleaning of all jacket components.

4. Repair Repairs to the G-1 flight jacket are generally limited to cuff and waistband replacement. This repair should only be accomplished by ASTs familiar with this repair. Repairs may be accomplished by commercial sources.

5. Inspection

STEP	ACTION
1	Inspect fabric for condition (stains, fuel, oil, etc.), cuts, tears, and abrasions.
2	Inspect stitching for holes and tears.
3	Inspect hook-and-pile fasteners for secure attachment and closure.
4	Inspect slide fasteners for damage, security, and ease of operation. Inspect pull-tabs for presence and security of attachment.

G. MODULAR FLIGHT ENSEMBLE

1. Introduction The flight ensemble is a two-piece flight suit that consists of a jacket, pants, and belt, with an optional combat shirt and combat pants. (Refer to Figure 6-2, Figure 6-3, and Figure 6-4.) The flight ensemble is available in both male and female sizes XS through XXL in lengths short, regular, or long.

2. Salient Characteristics

   a. Jacket Closable upper arm pockets. Adjustable closure on wrists. Flame-resistant in accordance with ASTM D6413/F2302. Sage green in color. NAVAIR-approved for flight.

   b. Pants Closable cargo pockets. Flame-resistant in accordance with ASTM D6413/F2302. Sage green in color. NAVAIR-approved for flight.

Figure 6-2. Flight Ensemble - Flight Suit Jacket, Flight Suit Pants

Figure 6-3. Combat Shirt

Figure 6-4. Combat Pants

NOTE

The rigger-style belt (flame-resistant) and operational dress uniform belt (USCG UDC P/N 1001037834) are authorized to be worn with the modular flight ensemble.

c. Belt Rigger-style belt with cobra buckle. Flame-resistant in accordance with ASTM D6413/F2302. Sage green in color. NAVAIR-approved for flight. Alternate adjustable hook-and-loop pistol belt (PM-As only).

d. Combat Shirt (optional) High collar neck. Closable upper arm pockets. Adjustable wrist cuffs. Flame-resistant in accordance with ASTM D6413/F2302. Sage green in color. NAVAIR-approved for flight.

e. Combat Pants (optional) Closable hand, back, and cargo pockets. Kneepad pockets which accept removable kneepads. Flame-resistant in accordance with ASTM D6413/F2302. Sage green in color. NAVAIR-approved for flight.

f. Undergarments All authorized aircrew ensemble undergarments are permitted for wear under flight suit jacket (black or blue in color). Black, blue, or tan undershirts are authorized for under the combat shirt only.

3. Rank Insignia Placement

NOTE

Members must don the flight suit top to accurately place the rank insignias on the shoulders.

a. Determine outside, midpoint of the individuals shoulder, following a line along the highest part of the shoulder down to the apex of the shoulder where it drops away to the arm. (Refer to Figure 6-5.)

b. Mark center point using chalk. (Refer to Figure 6-5.)

c. Verify the left and right midpoint marks are uniform.

d. Place outside, center edge of the rank insignia at the midpoint mark. (Refer to Figure 6-6.)

e. Sew both sides of collar device.

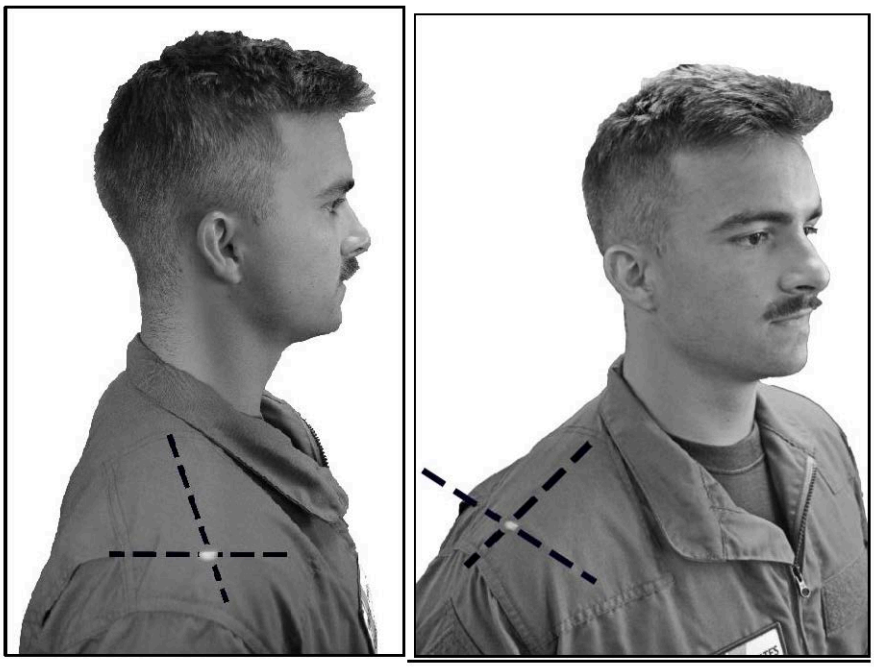


Figure 6-5. Locate Midpoint

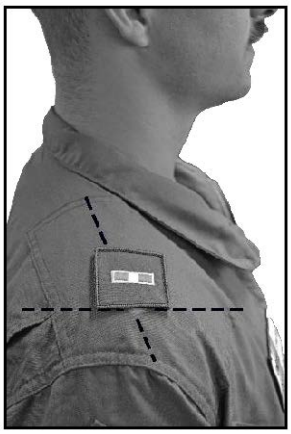


Figure 6-6. Insignia Location Using Marked Center Point

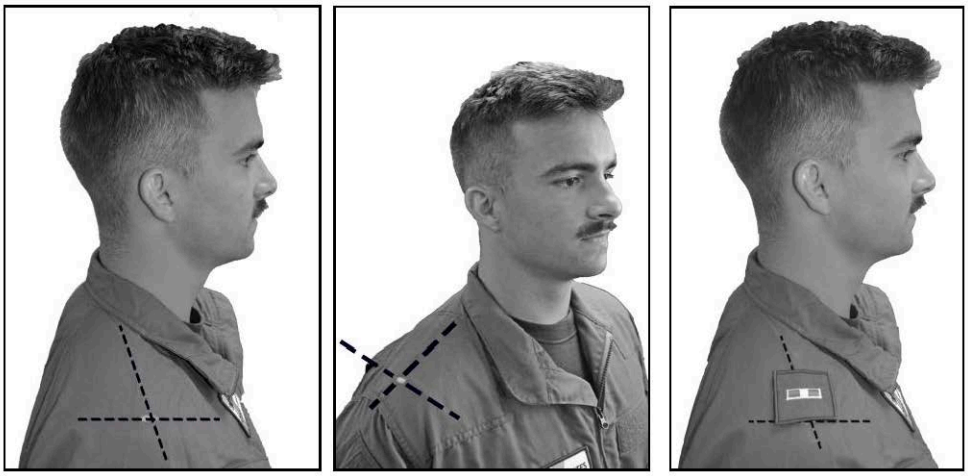


Figure 6-7. Massif Flight Suit Top

4. Application The two-piece flight ensemble may be worn by all Coast Guard aviation aircrew personnel for flight operations including Deployable Specialized Forces (DSF) personnel when conducting Aviation Special Missions (ASM) training or operations. While on base or conducting flight operations, personnel are authorized to wear the combat shirt in lieu of the flight suit jacket. When not on base or not conducting flight operations, personnel shall wear the flight suit jacket. The flight suit jacket shall be outfitted with the standard USCG patch, US flag patch, unit patch, and name tag. (Refer to Figure 6-1.) A flame-resistant moisture-wicking t-shirt (refer to Paragraph 6.C.) or the Multiclimate Protection System (MCPS) (refer to Paragraph 6.H.) is authorized for use under the flight ensemble jacket or combat shirt. The combat pants may be worn by precision marksman, DSF, and other aviation aircrew personnel that would benefit from the additional integrated kneepad features.

H. FLIGHT ENSEMBLE MULTICLIMATE PROTECTION SYSTEM (MCPS)

1. Introduction The flight ensemble MCPS is an environmental protective clothing system comprised of a waterproof, windproof, and breathable outer shell and four weights of insulating undergarments. Because of the different layering options, aircrew may adjust the amount of insulation needed for varying environmental conditions. The jacket and pant shell components may be substituted or combined with other authorized flight ensemble gear. When combined, the shell jacket and pants shall be worn on the outside to ensure proper environmental protection.

2. Shell Jacket Configuration The jacket is the outer layer of the system. A waterproof slide fastener front closure is incorporated into the jacket. A hook-and-pile tab at the top of the slide fastener is used to secure the collar. The jacket is equipped with two external slash pockets covered with envelope storm flaps secured by hook-and-pile tape. Hand-warmer pockets are located behind the slash pockets. The breast pocket located on the front left side is secured with a vertical waterproof slide fastener. There is a pen compartment covered with a flap and secured with hook-and-pile tape on the left sleeve, directly below the shoulder seam. There is a pocket that closes with a vertical slide fastener located beneath the pen compartment. The waist is kept snug with 2-inch elastic to reduce torso drafting.

   A removable hood is located inside the left side of the jacket in a pouch that is secured by hook-and-pile tape. The hood has a flexible bill to deflect rain. The removable hood attaches behind the collar of the jacket with four snaps. At the chin on each side of the hood are two snaps to secure the hood as well as an elastic drawstring to tighten the perimeter of the hood opening around the face. A flap at the nape of the hood adjusts the hood to the head.

   The jacket has provisions for the following:

   a. Mounting a name tape and USCG patch with a 2- X 4-inch hook-and-pile tape area on each side of the jacket breast

   b. A 4-inch diameter round hook-and-pile tape area on the right shoulder for a unit patch

   c. A 2- X 4-inch hook-and-pile tape area on the left shoulder for the American flag patch

3. Shell Trouser Configuration The trousers may be donned and worn over the flight suit. Incorporated into the shell trouser is a slide fastener at the fly and a tab with a snap to secure the waist, and elastic suspenders are provided to support the fit of the trouser. The suspenders are adjustable and attach to loops found inside the waist using hook-and-pile tape. There are two pockets, one located on the outside of each trouser leg at the upper thigh. They have a slide fastener closure, and a flap that closes with hook-and-pile tape. There are two vertical slide fasteners approximately 16 inches long, located at the outside of each leg opening to aid in donning while wearing boots. This opening is secured by a tab using hook-and-pile tape.

4. Insulation and Underwear The insulation and underwear layers allow aircrew personnel to achieve a personal level of comfort over a broad range of environmental conditions with modifiable insulating layers that wick moisture away from the body. These layers are authorized to be worn under all flight ensembles. The underwear also provides flame protection. There are four levels of insulating layers:

   a. Silk Weight Underwear (Base Layer) The silk weight underwear is a base insulating layer made up of Nomex® and Lycra®. It may be worn under any flight ensemble. The silk weight underwear top is a long-sleeved, crew neck pullover garment. On the sleeve is a thumb hole that holds the sleeve down during donning and keeps cold air off of the wrist during flight. When worn without utilizing the thumb hole, the cuff of the sleeve is folded back over the wrist. When worn with the silk weight underwear bottoms, the waistline of the underwear top is tucked in with at least 3 inches extending down into the waistline for a correct fit. The silk weight underwear bottom is a pull-on full-leg garment with an elastic waistline. There are 3/4-inch wide elastic stirrups at the end of each leg opening that keep the underwear legs down when pulling on outer garments and boots.

b. Midweight Insulation (Midlayer) The midweight insulation garment is a midlayer that may be worn under any flight ensemble constructed of Nomex®, nylon, and Spandex®. The inside of each garment is Nomex® fleece; the smooth outside surface is nylon and Spandex®. The midweight insulation top is a long-sleeved mock turtleneck garment. This garment is to be worn tucked into the waistline of the pants. The waistline of the garment is a mesh material that prevents excess bulking when the garment is tucked into the bottoms. The midweight insulation bottom is a pull-on full-leg garment with an elastic waistline. There are 3/4-inch wide elastic stirrups at the end of each leg opening that keep the underwear legs down when pulling on outer garments and boots.

c. Heavyweight Insulation and Bib Overall (Midlayer) The heavyweight insulation and bib overall are the heavyweight midlayers constructed of Nomex® and FR polyester. The inside and outside of the material is Nomex® fleece. The heavyweight insulation underwear top is a long-sleeved pullover garment. On the sleeve, is a thumb hole that holds the sleeve down during donning and keeps cold air off of the wrist during flight. When worn without utilizing the thumb hole, the cuff of the sleeve is folded back over the wrist. The top has a crewneck with a slide fastener at the neck opening extending down to the chest. The heavyweight insulation bottom is a pull-on full-leg garment with an elastic waistline. The heavyweight insulation bib overalls are designed to be worn over the flight suit and under the outer-shell trouser. It has suspenders that adjust with hook-and-pile tape and a slide fastener opening at the front. It is designed to be donned with boots on. The material is thinner around the knee to add flexibility and prevent binding.

NOTE

To provide a level of protection required for in-water immersion in water that is 45 °F or colder, the heavyweight insulating layer should be worn with either the midweight or silk-weight layers. These items replace the liner previously worn under dry suits.

d. Fleece Vest and Jacket (Midlayer) The vest and jacket may be worn under the shell jacket as an insulating layer or as an outer garment. Vest and jacket have inner and outer pockets. The collars on both garments have a tab with hook-and-pile tape used to keep the collar up if desired. Both garments are treated with a durable water-repellent finish. Machine-washing will not diminish the finish. Machine-drying in medium heat will reactivate the water-resistant finish.

e. Hot Johns® Balaclava (P/N MHDW00015) The balaclava is designed to be worn alone as an insulating layer or with a flight helmet. It protects the neck and throat areas from cold exposure and the four-way stretch Massif® fabric is full flame-resistant. It is black and comes in size S/M or L/XL.

5. Fitting

a. Male Size selection information for the shell and underwear/insulating components:

Male Mid and Heavyweight Shirts, Fleece Vests, Fleece Jacket, and Outer Shell	
Size	**Chest Measurement (inches)**
Extra Small	<34
Small	34-38
Medium	>38-42
Large	>42-46
Extra Large	>46-52

Male Mid and Heavyweight Drawers, Fleece Overall, and Outer Shell Trousers	
Size	**Waist Measurement (inches)**
Extra Small	<28
Small	28-32
Medium	>32-36
Large	>36-40
Extra Large	>40-46
Face Mask	Submit helmet size

NOTE

All items are available in short, regular, or long. Long should be used by individuals over 72 inches, regular for individuals from 67 to 72 inches, and short for individuals under 67 inches.

b. Female Size selection information for the shell and underwear/insulating components:

Female Underwear Shirts, Liner Shirts, Fleece Vest , Fleece Jacket, and Shell Jacket	
Size	**Chest Measurement (inches)**
Extra Small	<33
Small	33-35
Medium	>35-37
Large	>37-39
Extra Large	>39-52

Female Underwear Drawers, Liner Drawer, Fleece Bib, and Shell Trouser	
Size	**Waist Measurement (inches)**
Extra Small	<25
Small	25-27
Medium	>27-29
Large	>29-31
Extra Large	>31-35
Face Mask	Submit helmet size

NOTE

All items are available in short, regular, or long. Long should be used by individuals over 68 inches, regular for individuals from 64 to 68 inches, and short for individuals under 64 inches.

6. Modifications and Repairs There are no modifications authorized for the shell or layering components. Repairs shall be restricted to repairing damaged and opened seams, small holes or tears, and replacement of hook-and-pile fastener tape. Only high temperature-resistant thread, MIL-T-83193, shall be used for repairs.

7. Procurement Units shall procure undergarments through ALC only. Ordering information (stock numbers, part numbers, etc.) is located in ALSIPS found on the ALC ESD ALSE Technical Services webpage.

8. Care and Washing Insulation layers, underwear, and face mask will be machine washed in warm water with a mild detergent and tumbled dry at a low setting.

   Shell jacket and trousers will be machine washed in cold water with powdered detergent, then drip or tumble-dry at a low setting.

NOTE

Do not dryclean either insulating underwear or shell garments.

I. FLIGHT BOOTS

1. Salient Characteristics

   a. Safety toe, steel or composite, conforming to ANSI Z41, Part 99, I/75, C/75.

   b. Boots shall be tested for flame-resistance in accordance with National Fire Protection Association test method, NFPA Section 6-5, or Department of Defense (DoD) flame test specification.

   c. Soles shall comply with NFPA 1971, Section 6-49, or DoD flame test specification. Soles shall be constructed of black rubber and shall be nonmarking, nonmelting, and resistant to petroleum products. All stitching shall be black.

   d. Boot upper shall be black and be constructed of nonmelting materials such as full-grain cattle leather, 1,000-weight Cordura®nylon (fire-resistant), or equivalent. Uppers shall be 8 ±0.5 inches as measured from top of welt to top of upper. All stitching shall be black.

   e. Boot shall contain steel or fiberglass shanks bonded to insole.

   f. Inner bootie shall be comprised of soft, tanned cattlehide glove, pigskin liner, or a synthetic, breathable waterproof material. If synthetic is selected, the liner will consist of a polytetrafluoroethylene microporous material such as Gore-Tex®, at a minimum weight of 0.5 ounce/square yard. There shall be a cloth or synthetic comfort lining that protects the skin of the wearer. For winter boots, insulation must be a minimum of 200-gram Thinsulate® material or equivalent. Lacing eyelets shall be metal construction and black in color. Laces shall be of black synthetic material.

      No substitutions are authorized in accordance with the Coast Guard Air Operations Manual, COMDTINST M3710.1 (series), and this manual. Requests for waiver or substitution should be submitted to ALC ALSE Technical Services via ALSE Prime Unit (ATC Mobile).

   g. The following flight boot models are authorized:

      (1) Summer Weight Boot, Safety, 8-inch, PCG 02593, available through National Stock System (NSN), SOS S9T. Stock numbers 8430-01-464-5358, size 3N, to 8430-01-502-9199, size 16XW

      (2) Winter Weight Boot, Intermediate Cold/Wet, Safety Toe, PCG 02428, available through NSN, SOS S9T. Stock numbers 8430-01-451-0360, size 3N, to 8430-01-451-1261, size 14XW

2. Fitting The flight boot is fitted to the aircrew member and normally corresponds to the regular shoe size.

3. Modifications The only authorized modification to the flight boot is the addition of the optional slide fastener inserts.

CAUTION

INSERTS WITH METAL SLIDE FASTENERS ARE NOT AUTHORIZED.

NOTE

Coast Guard or DoD flight surgeons may authorize modifications to counter physical problems.

Inserts may be utilized with boots having fewer eyelets than the insert if eyelets on the inserts are skipped periodically as they are laced in. Adjust laces with boots on and the slide fastener closed. A 30-inch lace (i.e., NIIN 00-205-2760) should be used to lace in the insert. Knot one end of the lace and start at the top eyelet, lace down the side, across, and up the other side, knotting the end of the lace at the last (top) eyelet. Optional leather slide fastener inserts for laced boots are available from the stock system in two sizes. One has 10 pairs of eyelets (NIIN 00-020-8447) and the other has 9 pairs of eyelets (NIIN 00-020-8448).

4. Maintenance The aircrew member is responsible for maintenance of the boots. Maintenance is limited to cleaning and polishing. Polish used on shoes for everyday care is acceptable. There are no authorized repairs. Broken or worn laces may be replaced with manufacturer-authorized laces, or laces conforming to V-L-6 (NIIN 00-945-3969).

J. FLIGHT GLOVES

1. Introduction The following flight gloves are authorized to be worn by aircrew during ground and/or flight operations:

WARNING

FLIGHT GLOVES SHALL NOT BE ROLLED DOWN TOWARD THE HAND EXPOSING THE SKIN.

CAUTION

DO NOT WEAR GLOVES IF THEY HAVE BEEN SOAKED IN OIL OR FUEL. THE GLOVES SHALL BE WASHED PRIOR TO WEARING IF THEY HAVE BEEN SOAKED IN EITHER OF THESE LIQUIDS.

a. Nomex® Summer Flyer's Glove

(1) Available in sizes 7-12

(2) Constructed of soft sheepskin leather on the palm and front portion of fingers and a stretchable, lightweight knit aramid fabric covering the entire back of hand and wrist which will not melt or drip and will not support combustion

(3) Begin to char at 700 to 800 °F

b. Nomex® Winter Flyer's Glove

(1) Available in sizes 5-11

c. HWI Touchscreen Summer Flyer's Glove

(1) Available in sizes Small to XX-Large

(2) Constructed same as Nomex® Summer Flyer's Glove

(3) Leather on palm and fingers is touchscreen-compatible using a permanent treatment to provide the capability and will not wash out

(4) Open purchase item using information found in ALSIPS

d. Wiley-X Orion (Full Fingered)

(1) Available in sizes Small to XX-Large

(2) Constructed of lightweight Nomex®/Kevlar® weave throughout the fingers and back of hand for flame resistance and cut protection

(3) Leather wraps around top of the finger and has a reinforced leather palm with a hook-and-loop strap on the back of the wrist to adjust the fit

(4) Open purchase item using information found in ALSIPS

NOTE

Three-quarter-finger such as the WileyX® Aries are an optional glove that can be used by all aircrew members; however, all aircrew shall have a full-finger version of a flight glove with them at all times in case they are needed for protection against fire and temperature extremes.

e. Wiley-X Aries 3 QTR Fingered (Optional)

(1) Available in sizes Small to XX-Large

(2) Constructed of lightweight Nomex®/Kevlar® weave throughout the fingers and back of hand for flame resistance and cut protection

(3) Thumb, index, and middle fingertips removed for touchscreen ability

(4) Open purchase item using information found in ALSIPS

f. Camelbak Max Grip NT Full-Finger Glove

2. Fitting Flight glove size normally corresponds to the glove size of the aircrew member. The glove must fit snugly but not restrict full articulation of the fingers and wrist.

3. Modifications and Repairs Refer to Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series), Chapter 7, Paragraph G.4.

4. Cleaning The following are cleaning procedures for all flight gloves:

CAUTION

DO NOT USE ANY TYPE OF BLEACHING COMPOUND OR FABRIC SOFTENER.

STEP	ACTION
1	Don the gloves.
2	Wash with soap and water as if washing hands.
3	When gloves are clean, rinse and remove from hands.
4	Squeeze, but do not wring gloves to remove excess water.
5	Place the gloves flat on a towel, and fold the towel to cover gloves, ensuring gloves do not contact each other.

K. HOIST GLOVE

1. Introduction This glove is used by the helicopter flight mechanic to protect the hand from injury caused during hoisting by cable friction and cable burrs. The flight mechanic generally uses the half-finger hoist glove only on the hand used to manage the hoist cable during hoist operations.

2. Configuration The half-finger hoist glove is constructed predominately of leather with a hook-and-pile adjuster on the back of the glove. It is commonly known as a sailing glove.

3. Fitting The half-finger hoist glove is fitted to the aircrew member. The glove must be worn over either a Summer or Winter Nomex® flight glove. When adjusted, it will fit snugly but not restrict full articulation of the fingers and wrist.

4. Modifications and Repairs No modifications are authorized for the half-finger hoist glove. Repairs are limited to restitching seams.

5. Cleaning The following are cleaning procedures for the half-finger hoist glove:

CAUTION

DO NOT WEAR GLOVES IF THEY HAVE BEEN SOAKED IN OIL OR FUEL. THE GLOVES SHALL BE WASHED PRIOR TO WEARING IF THEY HAVE BEEN SOAKED IN EITHER OF THESE LIQUIDS.

CAUTION

DO NOT USE ANY TYPE OF BLEACHING COMPOUND OR FABRIC SOFTENER.

STEP	ACTION
1	Don the gloves.
2	Wash with soap and water as if washing hands.
3	When gloves are clean, rinse and remove from hands.
4	Squeeze, but do not wring gloves to remove excess water.
5	Place the gloves flat on a towel, and fold the towel to cover gloves, ensuring gloves do not contact each other.

L. SPH-5CG FLIGHT HELMET

1. Introduction The SPH-5CG flight helmet is a lightweight helmet assembly providing head protection, noise reduction, and communication enhancement for helicopter aircrew and passengers.

NOTE

The SPH-5CG has been replaced with the HGU-56P flight helmet. The SPH-5CG is an authorized flight helmet as long as it is Ready for Issue (RFI) condition and being inspected on an annual interval. The SPH-5CG shall be replaced with the HGU-56P flight helmet on an attrition basis. If an SPH-5CG requires repairs of any kind, it shall be scrapped and replaced with an HGU-56P.

2. Configuration The SPH-5CG helmet assembly features a dual-visor system with a mounting platform for Night Vision Goggle (NVG) attachment. The helmet assembly consists of an energy-absorbing rigid foam liner and a preformed Thermoplastic Liner (TPL), yoke-style retention with adjustable chin and nape straps, and a communications assembly featuring a quick-disconnect, boom-mounted microphone, and sound-attenuating ear cups. The helmet is available in three sizes: Small, medium, and large. Communications Ear Plugs (CEP) system (optional) can be installed to improve hearing protection and communications. It allows sound from the Internal Communications System (ICS) to travel unimpeded directly into the ear canal. It provides for improved volume and clarity while allowing the crewmember to reduce ICS volume settings.

3. Components

a. Helmet Shell The SPH-5CG helmet shell is made of nylon, graphite, and fiberglass cloth composition, edged with black rubber edge beading. Two cross straps and a chafing pad, located inside the helmet at each ear cup area, improve ear cup-to-head

tension and prevent ear cup chafing on the shell. Two helmet shell sizes (medium and large) are used for the three sizes of helmets. The helmet shell size medium is used for the small and medium helmets, and the size large shell is used for the size large helmet.

b. Liner System The SPH-5CG helmet incorporates a two-part liner system. The energy-absorbing liner attaches to the inside surface of the helmet shell and provides impact protection. The preformed TPL seats inside the energy-absorbing liner and provides a comfortable inner helmet liner which can be custom fit to an individual head size. Together they maintain an approximate 7/8-inch offset between the head and outer shell surface. Both liners are available in medium and large.

c. Energy-Absorbing Liner The primary purpose of the energy-absorbing liner is to absorb and reduce impact forces. The liner is formed from rigid foamed polystyrene plastic and is molded to conform to the contour of the inner shell surface. Hook fastener tabs on the outside surface of the liner mate with pile fastener on the inside of the shell to secure the liner in place. Hook fastener tabs on the inside surface of the liner secure the TPL to the energy-absorbing liner. The energy absorbing liner is available in four sizes: Small, medium, large, and extra-large

d. TPL The preformed TPL consists of a plastic layer assembly and a removable, washable cloth cover. The TPL cloth cover is ventilated black fabric featuring sides made of pile material to allow attachment to the hook fastener tabs on the energy-absorbing liner. The TPL is preformed in sizes small, medium, and large to fit a majority of head sizes without requiring custom fitting. However, if necessary, the TPL can be heat-softened and custom fit to an individual head shape.

CAUTION

DO NOT STORE HELMET IN A CLOSED COCKPIT OR AUTOMOBILE. GREENHOUSE EFFECT HEAT CAN CAUSE TEMPERATURES TO EXCEED 200 °F (93.3 °C) ON AN 85 °F (30 °C) DAY AND DAMAGE THE HELMET.

e. Retention Assembly The yoke-style retention assembly is designed to minimize forward rotation of the helmet and improve overall helmet retention. The retention assembly chin strap employs a double D-ring design for attachment and an adjustable nape strap at the rear. An adjustment buckle over the back of the nape strap allows further tightening of the retention assembly in the nape area. An optional chin cup is available for use when wearing NVG. The chin cup snaps over the chin strap D-rings and helps minimize forward movement of the helmet when using NVG. Depending on crewmember preference, the use of the chin cup in conjunction with NVG may eliminate the need for counterbalance weights normally worn on the rear of the helmet.

f. Ear Cup Assembly Each group assembly consists of a contoured plastic ear cup, cushioned ear seal, foam earphone holder, and spacer pad set. The contour of the ear cup assists in increasing the fit to the head of the wearer and the cushioned ear seal with the raised inner ring design helps increase sound attenuation and comfort. The ear cups attach to the retention assembly and can be rotated within the retention assembly to further enhance the fit.

The spacer pad set consists of two thin, 1/4-inch and two thick, 1/2-inch pads. The pads may be trimmed as necessary to achieve the best fit. The size and number of pads placed behind the ear cups to improve ear cup fit depends on crewmember comfort and sound attenuation needs.

g. COMM Cord, Earphones, and Connector The SPH-5CG helmet communications assembly consists of a quick-disconnect, boom-mounted microphone, a swivel assembly, dual earphones, a microphone cord, and a rear-mounted connector. The quick-disconnect feature allows installation or removal of the boom-mounted microphone and swivel assembly without requiring tools or disassembly of the boom.

The boom-mounted microphone and swivel assembly slide into (or out of) a bracket mounted on the helmet.

h. Microphone Boom, Helmet Mount, Mircrophone The microphone boom bracket mount on the swivel assembly hand-tightens or loosens the microphone as required. The microphone is covered with a foam pad to reduce wind interference. The microphone cord extends from the microphone and plugs into a connector mounted on the left rear of the helmet shell. The connector is part of the communications cord which extends to an earphone inside each ear cup, and also to a radio and intercom plug which extend from the rear of the helmet.

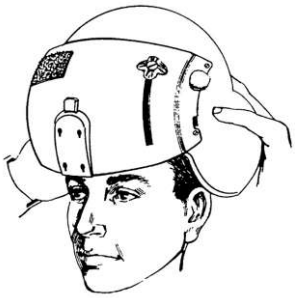
i. Dual-Visor Assembly The SPH-5CG helmet dual-visor assembly consists of the inner neutral visor, outer clear visor, and mounting platform for attachment of night vision equipment. The inner visor control knob is located at the left side of the visor housing and can be locked in one of three separate down positions. The outer visor control knob is installed in the left side slot of the visor housing and can be locked in place at any position.

The outer visor control knob may be changed to the right side to permit right-hand operation of the outer visor if so desired. The center of the dual-visor housing serves as the mounting platform for the ANVIS-6 NVG attachment. The ANVIS-6 NVG mount snaps onto and is locked in place by the housing mounting plate. The NVG mount is removed by depressing the spring-loaded tab at the top of the mounting plate. A 2- x 2-inch piece of pile material attaches to the visor housing for anchoring the ANVIS-6 cable.

4. Donning and Doffing

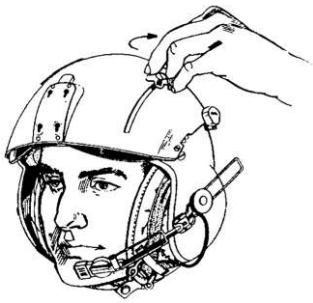
CAUTION

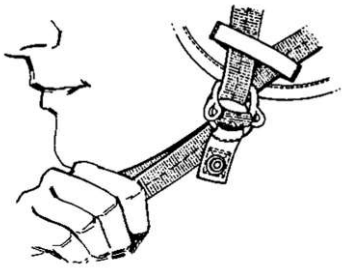
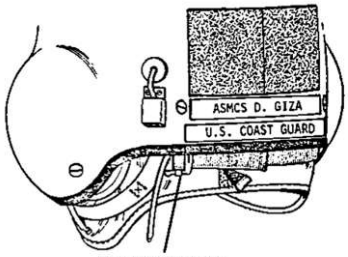
SPREAD HELMET ONLY ENOUGH TO ALLOW EASE OF DONNING. SPREADING THE EAR CUPS EXCESSIVELY MAY RESULT IN DAMAGE TO HELMET.

STEP	ACTION	
1	Hook thumbs over ear cups and spread helmet slightly apart.	
2	Position front edge firmly against the forehead as shown in the example and rotate helmet back and down onto head.	
3	Press helmet firmly downward with both hands to ensure helmet is properly seated on head.	

STEP	ACTION	
4	To remove the helmet, grasp helmet at earcups, loosen chin strap, hook thumbs inside the ear cups, and spread the helmet apart slightly, while rotating the helmet up and forward.	

5. Dual-Visor Assembly Operation The following are operating procedures for the dual-visor assembly:

STEP	ACTION	
1	Unlock visor by pushing down on actuator knob.	
2	Raise/lower visor by sliding knob along track while holding knob down.	
3	Lock visor by releasing actuator knob.	
The table below provides operating procedures for the inner visor:		
1	Unlock outer visor by turning center lock knob.	
2	Rotate visor by sliding knob along slot.	
3	Lock visor by turning knob until secure.	

STEP	ACTION	
The table below provides operating procedures for chin strap operation:		
1	Feed end of chin strap through D-rings.	
2	Split D-rings apart, loop chin strap end back through inner D-rings, and pull chin strap through D-rings.	
3	Tighten chin strap to desired tension.	
4	Release chin strap by splitting D-rings and pulling on chin strap.	
The table below provides operating procedures for nape strap adjustment:		
1	With helmet properly oriented on head, adjust nape strap to desired tension and fasten ends together.	 Nape Strap Adjustment
2	Pull strap through adjustment buckle and tighten to desired tension.	
3	Release nape strap tension by pulling strap back through adjustment buckle.	

6. Modifications Modifications are limited to the following:

   a. Addition of reflective tape

   b. Addition of pile tape

   c. Addition of aircrew name label

   d. Addition of USCG branding decals

   e. Addition of optional U.S. Coast Guard patch

7. Inspections

   a. Routine Inspections Consist of preflight and post-flight inspections by the crewmember

      (1) Preflight Inspections Prior to each flight, the crewmember should inspect the helmet assembly to assure it is in good working condition. This inspection should ensure the following:

STEP	ACTION
1	Helmet, liners, and ear cup assemblies are properly fit.
2	Chin strap and nape strap are properly adjusted, and retention assembly is attached to helmet with screws securely tightened.
3	Visors are clean, free from scratches, and operate properly.

STEP	ACTION
4	All communication components are properly installed, and earphones and microphone operate properly when tested.
5	All attaching hardware is securely tightened.

(2) Post-Flight Inspection After each flight, the crewmember should inform the AST shop of any component malfunction or damage to the helmet resulting from operational use.

b. Calendar Inspection Annually and when reporting aboard a new unit in accordance with the Flight Gear Annual MPC

8. Cleaning Components of the SPH-5CG helmet assembly can be cleaned if necessary. Procedures and equipment required to clean specified components are provided in the table below.

NOTE

It is recommended that the double-sided tape be replaced after each washing.

COMPONENT	CONDITION	CLEANING METHOD
Helmet Shell	Dirt, grease, scuff marks	Mild detergent and clean cloth. Use Naphtha for difficult stains.
Ear Cups	Dirt, perspiration	Wipe with damp cloth. Do not use excessive water, to ensure earphone protection.
Cord Assembly, Connector	Dirt, grease	Wipe with damp cloth.
Visors	Dust, grease, perspiration	Soft cloth and mild soap solution. Rinse with clean water.
Visor Housing, Track, Knob	Sediment, dirt buildup, grease	Clean cloth dampened with mild detergent solution.
Retention Assembly	Dirt, grease	Clean cloth dampened with water. Allow to dry thoroughly.
TPL Cloth Cover	Dirt, stains	Machine-wash (gentle cycle), or hand-wash with warm water, and let dry.
TPL Layers	Dirt	Hand-wash with soap and water only.

M. HGU-56/P FLIGHT HELMET

1. Introduction The HGU-56/P helmet is a lightweight assembly providing cranial protection, noise reduction, and communication enhancement for rotary wing flight crew.

2. Configuration The HGU-56/P helmet assembly features a dual-visor system which protects the eyes of the wearer from sun glare, flash fires, ballistic spall, dust, and foreign particles. The dual-visor assembly provides a mounting area for ANVIS NVG. The helmet assembly consists of an energy-absorbing liner which absorbs and reduces impact forces. The preformed TPL can be heat-softened and custom-fitted if necessary to optimize fit and comfort.

3. Components

a. Helmet Shell The HGU-56/P shell is made of composite material, tested to 150 grams in the crown, and 175 grams in the headband area. Lateral impact is tested to 150 grams in the ear cup area with a drop velocity of 6.0 m/sec. The retention assembly stabilizes the helmet on the head. It consists of ear cup retaining pads, a chin strap, and a nape strap pad with adjustable straps. The ear cup retaining pads are constructed with pile Velcro® to accommodate adjustment of ear cups and fitting of spacer pads. The retention assembly is attached with hardware at five points to the helmet shell.

b. Energy-Absorbing Liner The primary purpose of the energy-absorbing liner is to absorb and reduce impact forces. The liner is formed from rigid foamed polystyrene plastic and is molded to conform to the contour of the inner shell surface. It attaches to the shell with hook-and pile-tape.

c. TPL The preformed TPL consists of a plastic layer assembly and a removable, washable cloth cover which optimizes fit and comfort; it can be heat-softened and custom-fitted if necessary. The TPL cloth cover interior is ventilated black material, while the material which makes up the exterior will attach to the hook fastener tabs on the energy-absorbing liner and the nape pad of the retention system.

d. Retention Assembly The HGU-56/P retention assembly consists of ear cup retaining pads, a chin strap, and a nape strap pad with adjustable straps. The ear cup retaining pads are constructed with pile Velcro® to accommodate adjusting placement of ear cups and fitting of spacer pads. The retention assembly is attached at five points with hardware to the helmet shell.

e. Ear Cup and Communications Assembly The AIHS ear cup assembly and communication system consists of the following:

(1) Ear Cup Assembly Each ear cup is attached to an ear cup retaining pad. Spacer pads may be installed behind each ear cup retaining pad (against the helmet shell) if needed to improve ear cup fit. Ear seals provide comfort and sound attenuation.

(2) Communications Assembly Assembly consists of a pair of earphones, one tucked inside each receiver retainer and backed by a filler pad. A communications cord, attached to the outside of the ear cups and microphone, anchored to the helmet shell, and a boom swivel assembly, located on the left side of the helmet, serves as the mount for the boom and microphone.

f. Dual-Visor Assembly The dual-visor assembly has clear and neutral visor lenses, which are operated via actuating knobs. The housing visor assembly housing provides a mounting area for ANVIS goggles. Use the left-hand knob to raise or lower the outer visor. Use the right-hand knob to raise or lower the inner visor. To move the visor knob, brace a thumb against the visor track, squeeze the knob with a forefinger, and rotate the visor down or up as desired.

4. Donning and Doffing The HGU-56/P flight helmet is donned using the same procedure listed in Paragraph 6.K.4.

WARNING

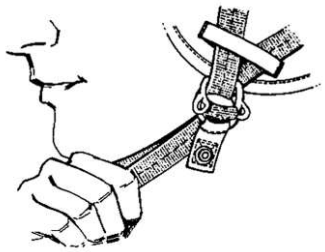
WHEN DONNING THE HELMET, ENSURE THAT THE NAPE STRAP PAD IS COMPLETELY PULLED DOWN AND THAT THE KEEPER TAB IS TAUT. FAILURE TO DO SO WILL DECREASE HELMET STABILITY AND MAY CAUSE INJURY TO THE WEARER.

WARNING

ALWAYS WEAR THE HELMET WITH THE CHIN STRAP PROPERLY ATTACHED AND ADJUSTED. FAILURE TO SECURE THE CHIN STRAP WILL DECREASE HELMET STABILITY AND MAY CAUSE INJURY TO THE WEARER.

CAUTION

SPREAD HELMET ONLY ENOUGH TO ALLOW EASE OF DONNING. SPREADING THE EAR CUPS EXCESSIVELY MAY RESULT IN DAMAGE TO HELMET.

STEP	ACTION	
1	Feed the end of the chin strap through the D-rings.	
2	Split the D-rings apart, loop chin strap end back through the inner D-rings, and pull the chin strap through D-rings.	
3	Tighten chin strap to desired tension.	
4	Release the chin strap by splitting D-rings and pulling on the chin strap.	
5	Adjust the nape strap pad position using the nape strap pull tabs. Tighten by grasping the two tabs, pulling to the back, and then pulling from side to side until the nape strap is snug.	
	NOTE When the nape strap pad is centered, both nape straps will be the same length.	
6	To remove the helmet, loosen and release chin strap, grasp helmet at earcups, hook thumbs inside the ear cups, and spread the helmet apart slightly while rotating the helmet up and forward.	

5. Modifications Modifications to the HGU-56/P flight helmet will be completed in accordance with the HGU-56 MPC and limited to the following:

   a. Addition of reflective tape

   b. Addition of pile tape

   c. Aircrew Name Tape The aircrew name tape shall be black tape with contrasting letters, 1/2 inch in height minimum, using rank/rate, last name.

   d. Addition of USCG branding decals

   e. Addition of optional U.S. Coast Guard patch

f. Modification for use of CEPs

6. Inspections To keep the helmet in satisfactory operating condition, the user should discover all deficiencies and have them corrected as soon as possible before additional damage or failure occurs.

a. Routine Inspections Consists of preflight and post-flight inspections by the crewmember.

(1) Preflight Inspection Prior to each flight, the user shall inspect all components of the helmet to assure it is in serviceable condition. Report any damage or discrepancies to the AST shop. This inspection should ensure the following:

STEP	ACTION
1	Helmet, liners, and ear cup assemblies are properly fit.
2	Chin strap and nape strap are properly adjusted, and retention assembly is attached to helmet with screws securely tightened.
3	Visors are clean, free from scratches, and operate properly.
4	All communication components are properly installed, and earphones and microphone operate properly when tested.
5	All attaching hardware is securely tightened.

(2) Post-Flight Inspection After each flight, the user shall inform the AST shop of any component malfunction or damage to any components of the helmet.

b. Calendar Inspection Annually and when reporting aboard a new unit in accordance with the Flight Gear Annual MPC.

c. Cleaning To assure proper operation of all components of the HGU-56/P, the user shall clean the helmet regularly according to the following procedures:

Component	Condition	Cleaning
Helmet Shell	Dirt, grease, scuff marks	Use mild detergent and clean cloth. Rinse all detergent of the shell.
Ear Cups	Dirt, perspiration	Wipe with a damp cloth. Excess water may damage earphone components.
Communications Cord Assembly	Dirt, grease	Wipe with damp cloth, dry thoroughly.
Visors	Dust, grease, perspiration	Use soft cloth and mild soap solution, rinse thoroughly.
Visor Housing, Track Knobs	Sediment, dirt buildup, grease	Use damp cloth dampened with mild soap solution. Use cotton-tipped swabs to reach track and seam crevices.
Retention Assembly	Dirt, grease	Use damp cloth dampened with mild soap solution. Allow to dry thoroughly.
Cloth Cover, TPL	Dirt, stains, odor	Machine-wash (gentle cycle) or hand-wash using warm water and gentle detergent. Allow to air-dry. (Do not machine-dry.)
Plastic Layers, TPL	Dirt	Wipe exterior layers with damp cloth. Replace double-sided tape after cleaning.

N. GATH GEDI HELMET

1. Description The Gath Gedi helmet is a low-profile, high-performance helmet built for medium- to high-impact used by helicopter rescue swimmers during rescue operations. Designed for water and land use, the helmet features a rounded low-profile fit to prevent drag when in the water and has increased padding to absorb higher impacts. It features full head coverage, removable ear protection, multiple visor and bill options, and multiple-impact-resistant liner. It meets the European whitewater helmet CE EN 1385 standard.
2. Features
   a. Small and round size and shape prevents bucketing or snagging. No hard lips or peaks that can scoop water or grab rocks or reef.
   b. Maximum coverage to include temple area, lower cranium, and ears.
   c. Lightweight (360 to 420 grams) reduces neck strain.
   d. Full peripheral vision with no blind spots.
   e. Designed to prevent water from draining over the eyes.
   f. Includes fitting pads and buckle system.
3. Components
   a. Shell: UV-stable, impact-resistant, quality ABS plastic
   b. See-Through Visors: UV-stable, shatterproof, polycarbonate plastic
   c. Peek Visor: UV-stable, shatterproof, flexible, nylon plastic
   d. Liner: Multi-impact EVA closed-cell foam
   e. Comfort Strip: Soft, closed-cell EVA foam
   f. Fittings: Custom-built screws and rivets made from strong noncorrosive material
   g. Retention System: Comfort strips secure helmet directly to the head
4. Sizing Measurements should be taken around the head - mid-forehead, just above the ears.

Helmet Size	Comfort Strip Fitted	Additional Strips	Fits Head Size
Small	10.5 mm	12 mm	540 - 555 mm
Medium	7.5 mm	9 mm	560 - 575 mm
Large	4.5 mm	6 mm	580 - 590 mm
X-Large	7.5 mm	9 mm	595 - 610 mm
XX-Large	4.5 mm	6 mm	610 - 620 mm
XXX-Large	4.5 mm	6 mm	620 - 630 mm

5. Application The Gath helmet can be used by rescue swimmers as part of the wetsuit ensemble, dry-suit ensemble, and inland SAR ensemble when deploying to the water and/or land.
6. Maintenance The buildup and calendar inspection will be completed in accordance with the Rescue Swimmer Ensemble MPC.
7. Modifications and Repair Repairs are limited to those outlined in the MSR MPC. The only authorized modifications are as follows:
   a. Addition of SOLAS retro tape
   b. Addition of the mask retaining strap
   c. USCG branding

O. TEAM WENDY EXFIL LTP HELMET

1. Description The Team Wendy EXFIL LTP bump helmet offers a stable, comfortable platform for mounting accessories, while providing the highest level of impact protection. It features a Zorbium® foam liner along with CAM FIT™ retention system with easily adjustable camlock sliders and a microadjustable Boa® dial. The EXFIL® Rail 2.0 accessory mounting system is compatible with all EXFIL® accessories and features T-slots for custom mounting.

2. Components

   a. Shell Assembly

      (1) Integrated Wilcox® aluminum NVG shroud.

      (2) Meets shock absorption requirements of BS EN 1385:2012.

      (3) Made of Lexan polycarbonate copolymer.

      (4) Hardware is stainless steel with MIL-DTL-13924D black oxide coating.

      (5) Side accessory rails made of glass reinforced polycarbonate.

   b. Liner System

      (1) Consists of three-piece Zorbium® foam impact liner with six modular comfort pads, all Berry-compliant materials.

      (2) Impact liner: Proprietary water-resistant film and loop fabric covering.

      (3) Comfort pads: Proprietary water-resistant film and antimicrobial wicking fabric covering.

   c. Retention System

      (1) CAM FIT™ retention with Boa® fit system for optimized stability and fit.

      (2) Camlock sliders for one-handed adjustment and secure fit.

   d. Rail 2.0 Accessory Mounting System

      (1) Compatible with all EXFIL® Rail 2.0 accessories.

      (2) Includes two Magpul® MOE® picatinny-style rails and mounting hardware.

      (3) Two T-slots for DIY custom mounting.

      (4) Includes shock cord kit for stabilizing NVG.

3. Sizing Helmet sizes are medium/large and X-large. To determine helmet size, measure and record the cranial circumference of the wearer, and select the helmet size based upon the parameters in the chart below:

Size	Head Circumference (inch)	Head Circumference (cm)	Hat Size
Size 1 (M/L)	21-1/2 - 23-1/2	55 - 60	6-7/8 - 7-1/2
Size 2 (XL)	Up to 24-3/4	Up to 63	Up to 7-7/8

4. Application

   a. Rescue Swimmers The YELLOW EXFIL LTP helmet may be worn as part of the wetsuit ensemble, dry-suit ensemble, or inland SAR ensemble during water and/or land deployments.

   b. Fixed Wing Aircrew The BLACK EXFIL LTP helmet is the replacement for the SOHAH helmet on an attrition basis. It can be used in conjunction with a communications headset. The Aeronox adapter plate (P/N 62108G23-B, ALC Stock Number 5855-01-HS-0618) is required to adapt the integral shroud system to the Coast Guard four-hole ANVIS NVG mount. The adapters are available from ALC.

5. Authorized Modifications

   a. Installation of NVG mount

   b. Addition of SOLAS retro tape

   c. USCG branding

6. Repairs Repairs to individual helmet components are unauthorized. If a discrepancy is found with any individual component, replace that component. The helmet shell may not be repaired if cracked or delaminated.

7. Maintenance The buildup and calendar inspection will be completed in accordance with the Rescue Swimmer Ensemble MPC or Flight Gear MPC (for fixed wing aircrew).

P. TEAM WENDY EXFIL BALLISTIC HELMET

1. Description The Team Wendy EXFIL ballistic helmet features a hybrid composite shell. A boltless CAM FIT™ retention quickly adjusts to individual head shapes, providing a comfortable and stable fit. A Zorbium® foam liner protects the cranium against impact. Customizable fit is achieved through a set of moveable comfort pads. The EXFIL® Rail 2.0 accessory mounting system is compatible with all EXFIL® accessories and features T-slots for custom mounting. A lanyard-compatible Wilcox® shroud secures any standard NVG mount.

2. Ballistic Performance

   a. Ballistic Performance: NIJ Level IIIA (according to NIJ STD 0106.01/0108.01)

   b. Fragment Performance: 17gr V50 ≥2,400 ft/sec (731 m/s)

   c. Backface Deformation: 9 mm (1,400 fps) BFD: <25 mm all locations (front/back/crown/sides) exposed to high temperature/humidity, solar, low temperature, altitude, seawater, and salt fog

   d. Blunt Impact: Performance exceeds current ACH blunt-impact protection requirements (per AR/PD 10-02) - Average below 70G across all impacts and temperatures

3. Weight The system weight includes helmet shell, accessory rails, impact liner, and retention system. (Refer to Table 6-4.)

Table 6-4. Helmet Weight by Size

Size	Complete System Weight	Shell Weight
Size 1 (M-L)	2.6 lb (1.18 kg)	1.75 lb (0.79 kg)
Size 2 (XL)	2.75 lb (1.25 kg)	1.8 lb (0.84 kg)

4. Configuration

   a. Boltless CAM FIT Retention System

      (1) Utilizes Boa® Closure System for optimized stability and fit.

      (2) The CAM FIT™ Retention System comes standard with the side release buckle on the left side of the face for right-eye dominant shooters. It is available in a Left Eye Dominant (LED) option that moves the buckle to the right side of the face for left-eye dominant shooters.

   b. Zorbium® Foam Liner and Replaceable Adjustment Pads (Refer to Figure 6-8.)

      (1) Sixteen customizable comfort pads in two thicknesses.

      (2) Replacement pads kit.

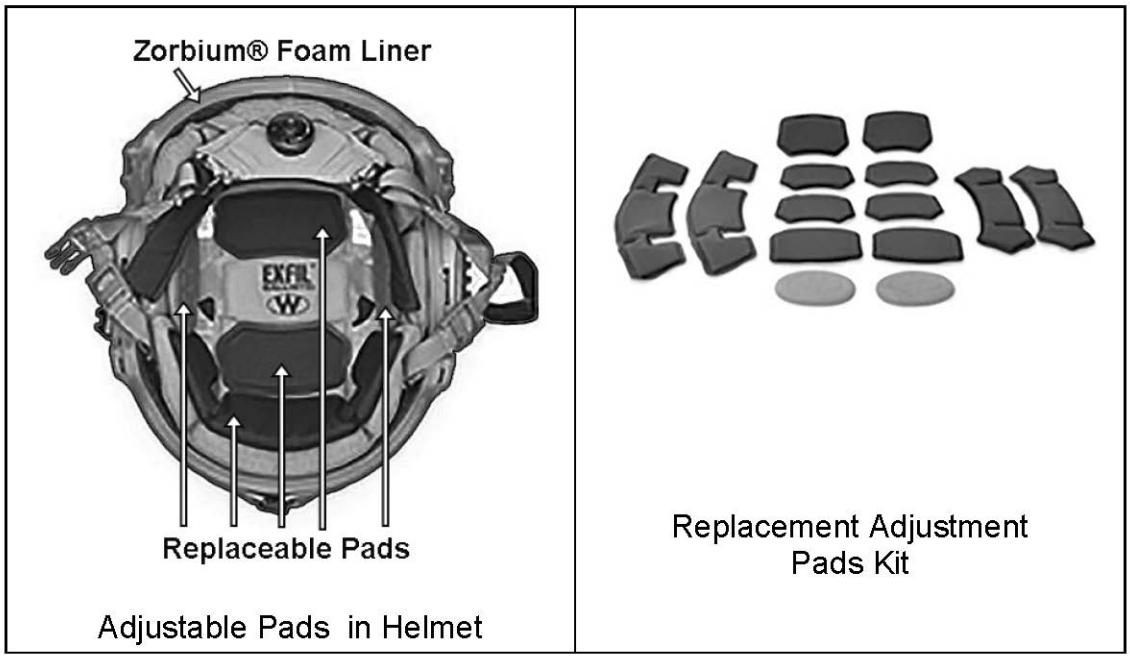


Figure 6-8. Foam Liner and Replaceable Pads

c. Rail 2.0 Accessory Mounting System (Refer to Figure 6-9.)

(1) Compatible with all EXFIL® Rail 2.0 accessories.

(2) Includes two MAGPUL MOE® picatinny-style rails and mounting hardware.

(3) Two T-Slots for straps.

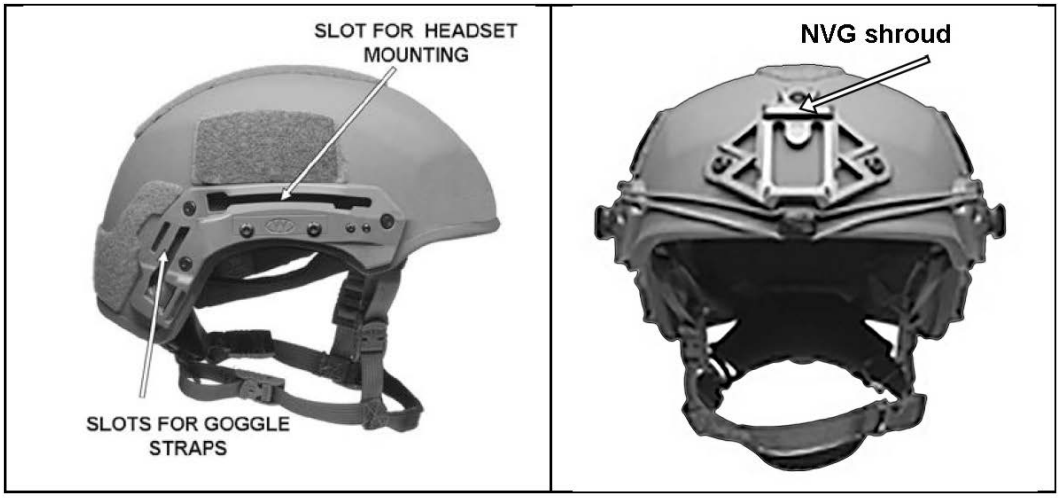


Figure 6-9. Accessory Mounting System

d. NVG Shroud

(1) Three-hole Wilcox® W shroud

(2) Lightweight aerospace-grade aluminum mount interface

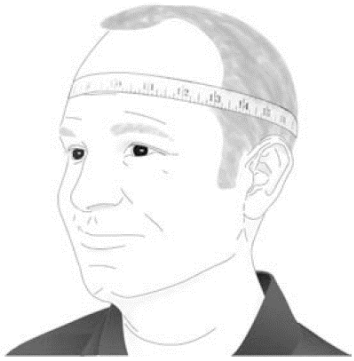
(3) Compatible with Aeronox® Ground Interface

(4) Compatible with Aeronox® NVG mount

5. Sizing

a. Initial/Helmet fitting sizes are medium/large and X-large. To determine helmet size, measure and record the cranial circumference of the wearer, and select the helmet size based upon the parameters in Table 6-5.

Table 6-5. Helmet Size by Cranial Circumference



Size	Head Circumference (inch)	Head Circumference (cm)	Hat Size
Size 1 (M-L)	20.5 - 23.5	52 - 60	6-5/8 - 7-1/2
Size 2 (XL)	23 - 24.75	58 - 63	7-3/8 - 7-7/8

b. After selecting the appropriately sized helmet, adjustments will be made using the liner comfort pads. Refer to Figure 6-10 for guidance.

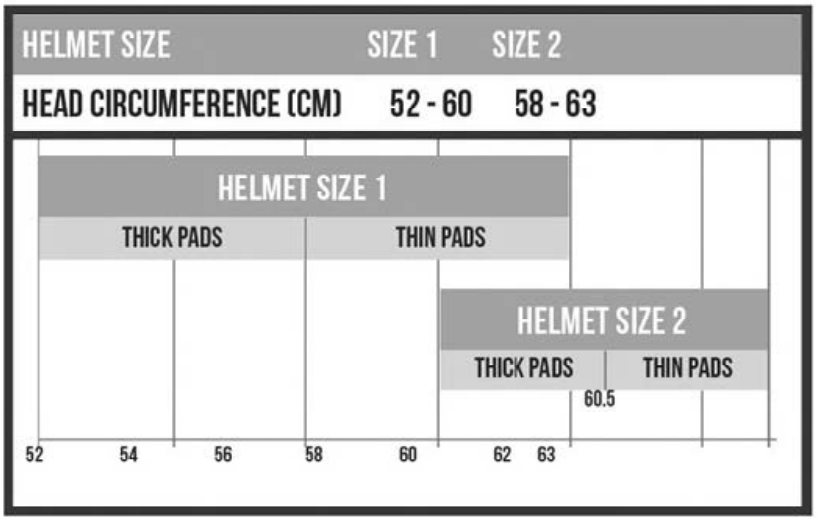


Figure 6-10. Liner Size Adjustment Using Adjustment Pads

6. Application The Team Wendy tactical ballistic helmet is only authorized for aerial gunners at Helicopter Interdiction Tactical Squadron (HITRON) and Airborne Use of Force (AUF) units.

7. Authorized Modifications

   a. Installation of NVG mount

   b. Installation of rail-mounted communication headset

   c. Addition of SOLAS retro tape

8. Cleaning Hand-wash with mild detergent and thoroughly rinse. Air-dry completely; do not machine-dry.

9. Repairs Repairs to individual helmet components are unauthorized. If a discrepancy is found with any individual helmet component, replace that component. The helmet shell may not be repaired if cracked or delaminated.

10. Inspections

    a. Routine Inspections Consist of preflight and post-flight inspections by the crewmember.

       (1) Preflight Inspection Prior to each flight, the crewmember should inspect the helmet assembly to assure it is in good working condition. Use the following table to perform a preflight inspection. If a discrepancy is found, bring helmet to AST shop for corrective action.

COMPONENT	EXAMINE FOR	ACTION
Retention Assembly	Broken buckles, torn or frayed webbing	Replace the retention assembly
Sizing Pads	Staining or mildew	Replace sizing pads
Helmet Shell	Delamination, cracking	Replace helmet shell

       (2) Post-Flight Insepction After each flight, the crewmember should inform the AST shop of any component malfunction or damage to the helmet resulting from operational use.

b. Calendar Insepction Annually and when reporting aboard a new unit in accordance with the Flight Gear Annual MPC.

Q. AIRCREW ANTI-EXPOSURE COVERALLS (MAC-10)

1. Calendar Inspection The AAEC calendar inspection will be accomplished yearly as follows:

STEP	ACTION	CORRECTIVE ACTION
1	Inspect fabric for condition (stains, fuel, oil, etc.), cuts, tears, and abrasions.	If soiled: clean in accordance with Paragraph 6.Q.4. Cuts, tears, abrasions: If the integrity of the suit is altered, remove suit from service. If integrity of suit is not altered (i.e., ripped pocket), repair or replace suit at discretion of shop supervisor. Repair shall not alter the integrity of the suit.
2	Inspect stitching for holes and tears.	Repair or replace suit at discretion of shop supervisor. Repair shall not alter the integrity of the suit.
3	Inspect hook-and-pile fasteners for secure attachment and closure.	Repair or replace suit at discretion of shop supervisor. Repair shall not alter the integrity of the suit.
4	Inspect slide fasteners for damage, security, and ease of operation. Inspect thong pull-tabs for presence and security of attachment.	If difficult to open/close, coat slide fastener with wax and retry. If still difficult, remove suit from service.
5	Inspect closed-cell foam insulation to assure seam integrity. Seams at shoulders and crotch shall be free of separation. If a seam is separated, it will be evident if the technician can press the inside liner against the outside material and no closed-cell foam is felt between them. If it is completely separated, the closed-cell foam insulating material will fall and bunch up at the cuff of both the arm and leg of the garment.	Remove suit from service.

2. Fitting The MAC-10 is fitted to the aircrew member based on height and chest size. Measurements should be taken over intended underclothing. There are 17 sizes available in international orange, sage green, and/or royal blue.

WARNING

ALL SLIDE FASTENERS SHALL BE CLOSED TO THEIR MAXIMUM LENGTH. SLEEVES OF THE COVERALLS SHALL ALWAYS BE CLOSED AT THE WRIST, OVER GLOVE CUFF.

3. Modifications and Repairs There are no modifications authorized on the aircrew anti-exposure coveralls. Repairs are limited to those that will not alter the integrity of the suit.

4. Cleaning Use the steps outlined in the following table to clean the aircrew anti-exposure coveralls.

CAUTION

DO NOT USE BLEACH OR CHLORINE PRODUCTS, STOW WET, AND IRON OR HANG IN DIRECT SUNLIGHT.

STEP	ACTION
1	Wash the MAC-10 by hand with mild soap or detergent and water.
2	When the MAC-10 is clean, rinse thoroughly.
3	Let hang dry on wooden hanger. DO NOT WRING OUT. This will cause damage to the insulating liner.
4	If immersed in saltwater, rinse with fresh water and let hang dry on wooden hanger.

R. WOOL SOCKS

1. Cleaning It is recommended that new wool socks be laundered prior to use in order to soften the fabric and eliminate any possible skin irritation that might occur due to original fabric harshness.
   a. Wash in cool water.
   b. Use a commercial detergent.
   c. After tumble-drying in a dryer set to cool, fold together neatly to prevent stretching.

S. COLD WEATHER INSULATING POLYPROPYLENE SOCKS

1. Cleaning Follow manufacturer suggested washing instructions, or follow these instructions:
   a. Wash in warm water.
   b. Use a commercial detergent.
   c. Tumble-dry on low heat.

T. IMMERSION SUIT

1. Inspection Intervals Inspection of the immersion suit shall be in accordance with the appropriate MSR MPC at the following intervals:
   a. Acceptance On original issue, when received from supply, or accepted from another unit for permanent custody
   b. Visual Inspection Intervals not to exceed 180 days
2. Donning The anti-exposure suit must be worn properly to be an effective survival tool. It is important to know how to don this suit in and out of the water. Donning procedures for in the water and out of the water are described in the table below:

IMMERSION SUIT DONNING (LAND)	
STEP	**ACTION**
1	Remove the suit from the container and lay out flat, waterproof zipper facing up.
2	Open the suit and sit down midway between the top and bottom of the zipper, facing the feet.
3	Put both legs in the suit one at a time, kicking gently to slide your feet into the legs of the suit.
4	With both legs in the suit, roll up to your knees.
5	Insert nondominant (weak) arm into the suit first.
6	Reach back with other arm and pull the hood over the head.
7	Insert dominant arm into the other sleeve of the suit.

IMMERSION SUIT DONNING (LAND)	
STEP	**ACTION**
8	From a sitting or standing position, look down and grab the zipper pull toggle.
9	Lift chin up, and pull the zipper toggle up, closing the zipper until the zipper stops.
10	Reach up and locate the chin flap, pulling it across the chin and attaching it to the Velcro® tape on the opposite side of the face opening.
11	If there are ankle straps, pull those across the ankle and attach to the Velcro® tape.
12	Do not inflate air bladder until in the water.
NOTE Donning the suit out of the water should be accomplished in 60 seconds or less.	

IMMERSION SUIT DONNING (IN WATER)	
STEP	**ACTION**
1	Remove suit from container and float the suit in front.
2	Pull the suit towards and under the feet at the surface.
3	Lying back in the water, slide one foot at a time into the suit.
4	Insert nondominant (weak) arm into the sleeve, then the dominant arm.
5	Reach back with the dominant arm and pull the hood onto the head.
6	Continuing to lie flat, locating the zipper toggle and closing the zipper.
7	Locate the chin flap and pull it across the chin, attaching it to the Velcro® tape on the opposite side of the face opening.

NOTE

Donning the suit in the water will cause the suit to partially fill with water. This water cannot be removed while submerged. Although your body will heat the water in the suit, heat retention is diminished in this condition.

3. Modifications and Repairs Authorized modifications and repairs to the immersion suit will be in accordance with the appropriate MSR MPC and those listed below:

NOTE

Immersion suit repairs are limited to separated seams, tears, and corroded waterproof zipper.

NOTE

Repaired items should be allowed at least 12 hours to set prior to using.

a. Neoprene Tear, Hole, or Seam Separation Repair The following are procedures for repairing tears, holes, or seam separation in neoprene immersion suits.

(1) Materials Required

(a) COTOL 240® Cleaner and Curing Accelerant, P/N 12414

(b) Aquaseal® Adhesive, P/N 10714

(c) Brush, Acid-Swabbing, NSN 7920-00-514-2417

(d) Cleaning Cloth, Low-Lint, NSN 7920-01-004-7847 (or reasonable equivalent)

STEP	ACTION
1	Clean and dry applicable area.
2	Conservatively trim jagged edges of tear until new material shows.
3	Using an acid brush, apply a small amount of COTOL 240® to clean and prep the area to be repaired. Allow COTOL 240® to air-dry.
	NOTE COTOL 240® may discolor neoprene material. **NOTE** If required, to prevent accidental adhesion to other neoprene surfaces, place plastic wrap or tape behind the area to be repaired.
4	Using Aquaseal®, apply a thin coat that completely covers the edges of the materials to be repaired.
	NOTE To accelerate the curing of the Aquaseal®, thoroughly mix one part cure accelerator, (COTOL 240®) with four parts Aquaseal® in a disposable container. Immediately apply a thin coat of the mixture to the damaged area after mixing.
5	Align the edges and apply firm and even pressure. Hold edges together for 2 to 3 minutes.
6	Allow 12 hours for Aquaseal® to cure, 2 hours if accelerant is used to expedite curing of the adhesive.

b. Instructions for Applying Iron Mendv® Over Aquaseal® Wetsuit Repair (optional)

(1) Materials Required

(a) Iron Mend® Iron-On Fabric Repair Kit

(b) Electric Clothes Iron

STEP	ACTION
1	Preheat clothes iron, setting temperature to ACRYLIC setting. This setting may be LOW or DELICATE on some irons. Do not use steam.
	NOTE The clothes iron should not come in direct contact with the neoprene surface. Always use Iron Mend® Heat Shielding paper between iron sole plate and the area to be repaired. An overheated iron will cause damage to neoprene. Never use an iron heated beyond the recommended settings or above 275 °F (135 °C). To test heat settings, pretest with a small piece of Iron Mend® on a noncritical part of the garment, e.g., inside leg or sleeve.
2	Cut Iron Mend® with scissors to overlap damaged area by 3/4 inch.
3	Put the neoprene item on a firm, flat surface prior to repairing. Place Iron Mend® patch over the damaged area with the urethane coating side down.
4	Place a full sheet of Iron Mend® heat shielding paper carefully over the patch.

STEP	ACTION
5	With a preheated iron, press the Iron Mend® patch down with a firm, even pressure for 10 seconds. Lift and rotate the iron and apply for another 10 seconds. Allow repair to cool for a few minutes before testing for secure adhesion. Some repairs may require a second heat application process with more pressure.
	NOTE To ensure a firm flat ironing surface when applying patch material to sleeves, legs, and irregular surfaces, insert a wooden 2- x 4-inch or similar wooden, plastic, or metal object into the leg or sleeve cavity or directly under the irregular surface. This will allow for direct pressure and create a single fabric layer. Apply more heat and/or pressure if necessary, according to instructions.

c. Neoprene Hole Repair The following are procedures for repairing holes in neoprene immersion suits.

(1) Materials Required

(a) Neoprene material of the same thickness as the item being repaired

(b) Cotol 240® cleaner and curing accelerant, P/N 12414

(c) Aquaseal® Adhesive, P/N 10714

(d) Brush, Acid Swabbing, NSN 7920-00-514-2417

STEP	ACTION
1	Trace the hole to be repaired onto a piece of paper, and use this as a pattern to cut out the repair material (neoprene). Using this pattern, cut out a patch conforming to the size and shape of the damage in the neoprene item to be repaired.
2	Ensure area to be repaired is clean and dry.
3	Glue the replacement piece into place using the gluing procedures in Paragraph 6.T.3.a.
	NOTE If required, to prevent accidental adhesion to other neoprene surfaces, place plastic wrap or tape behind the area to be repaired.
4	Using the instructions in Paragraph 6.T.3.b. for applying Iron Mend® over Aquaseal® wetsuit repair, apply Iron Mend® over inside and outside of neoprene patch.

d. Corroded Waterproof Zipper (Immersion Suit) The following are procedures for removing corrosion from and preventing further corrosion of the waterproof zipper of the immersion suit.

(1) Materials Required

(a) Small Parts Cleaning Brush, NSN 1005-00-494-6602

(b) Baking Soda, NSN 6810-00-264-6618 (1 pound)

STEP	ACTION
	NOTE Corrosion may present itself as a chalky white powder or green discoloration on the teeth on either side of the waterproof zipper.
1	Wet the brush and press into the baking soda, packing it into the brush bristles.
2	Firmly scrub the corroded portion of the waterproof zipper with the brush with moistened baking soda until corrosion is removed.

STEP	ACTION
3	Rinse the brush. Use the clean brush and clean water to rinse away baking soda from the zipper.
4	Dry the waterproof zipper.
5	Lubricate the waterproof zipper by running paraffin or a 50/50 mix of beeswax/paraffin up and down the zipper inside and out, leaving a coating to protect the zipper from corrosion.
	NOTE Do not use oil, silicone, or other petroleum-based lubricants on the suit zipper. It will damage the rubber and neoprene components of the suit.
6	After lubricating the zipper, brush away excess wax/paraffin from the suit.

4. Stowage To stow the anti-exposure suit for long periods of time, complete the following procedures:

STEP	ACTION
1	Ensure the suit is dry.
	WARNING **UNITS SHALL STOW SUITS PLACED INTO SERVICE WITH THE WATERPROOF ZIPPER IN THE OPEN POSITION, DOWN TO APPROXIMATELY 2 INCHES ABOVE THE BOTTOM ZIPPER STOP. THIS FACILITATES EASE OF CLOSING THE ZIPPER BY PREVENTING ZIPPER BINDING UNDER PULLING PRESSURE ON THE ZIPPER TOGGLE.**
2	Lubricate the zipper with paraffin or a 50/50 mix of beeswax/paraffin the full length of the zipper, inside and out, leaving a coating to lubricate and protect the zipper from further corrosion.
3	Store suits not on aircraft in a dry, well-ventilated locker/area.

U. AIRCREW DRY COVERALLS (ADC)

1. Fitting and Seal Adjustment The aircrew dry coverall is most effective when fit specifically to the individual. Specific measurements are taken of the aircrew member to assure an appropriate fit. Below is the sizing chart to be used for measurement of the aircrew member.

Order Size	Chest	Hip	Sitting Inseam Range	Sleeve	Weight	Height
XS	<33 in	30 - 36 in	32 - 41.5 in	32 in	100 - 125 lb	5 ft to 5 ft 8 in
S	33 - 38 in	33 - 39 in	32 - 41 in	33 in	115 - 150 lb	5 ft 1 in to 5 ft 9 in
M	38 - 42 in	36 - 42 in	32 - 41 in	34 in	140 - 175 lb	5 ft 2 in to 5 ft 10 in
L	42 - 46 in	39 - 45 in	33 - 42.5 in	36 in	165 - 200 lb	5 ft 6 in to 6 ft 1 in
XL	46 - 50 in	42 - 48 in	34 - 42.5 in	37 in	190 - 225 lb	5 ft 7 in to 6 ft 3 in
XXL	50 - 54 in	46 - 52 in	34 - 42.5 in	38 in	215 - 260 lb	5 ft 9 in to 6 ft 5 in
XXXL	54 - 58 in	50 - 56 in	34.5 - 42.5 in	39 in	250 - 295 lb	5 ft 10 in to 6 ft 7 in

a. How to Measure

(1) Chest/Bust For chest, measure just under arms and across shoulder blades holding the tape firmly and level. Bust measurements will be taken at the fullest point of the bust.

(2) Hip Measure the hips around the fullest point of the seat while standing.

(3) Sitting Inseam With the aircrew member seated, measure from the crotch to the middle of the inside of the knee (note measurement). Then measure from middle of the inside of the knee to the floor (note measurement). Add both measurements for complete sitting inseam measurement.

(4) Sleeve Length With arm relaxed at side and slightly bent, measure from the center back neck, over point of shoulder, down from outside of arm to wrist.

2. Procurement ADCs are ordered by the Flight Gear Issue Petty Officer through ALC website. Once on the ALC SharePoint, use the following step to complete the ordering form:

a. Select ESD / IOD Dry Suits

b. Select +Add new item at the bottom of the page.

c. Once the ALC SWITLIK Ordering Form page loads on the ALC SharePoint, select For sizing charts, please click here.

d. Once the SWITLIK U-ZIP-IT Anti-Exposure Dry Suit Sizing Form opens, print out a copy.

(1) Fill out the SWITLIK U-ZIP-IT Anti-Exposure Dry Suit Sizing Form for each member requiring a new suit by following the measuring directions on the form.

(2) The completed ADC measurements will be transferred to the ALC SWITLIK Ordering Form page on the ALC SharePoint.

(3) Save the completed SWITLIK U-ZIP-IT Anti-Exposure Dry Suit Sizing Form and file it with the member 538 once all measuring information is transferred.

e. Go back to the ALC SWITLIK Ordering Form page on the ALC SharePoint that first loaded by selecting +Add new item.

f. Populate the Point of Contact field with the name of the Flight Gear Issue Petty Officer.

g. Select the appropriate air station from the dropdown menu under the Air Station field.

h. Select the date under the Submission Date field.

i. Populate the Quantity field with the number of dry suits being ordered and click the page. A maximum of 24 dry suits can be ordered at one time.

(1) After the quantity has been entered, a row will appear for each new suit being ordered.

(2) Under the Name field, populate the name of each member the dry suit is being ordered for.

(3) Fill in sizing information collected from the SWITLIK U-ZIP-IT Anti-Exposure Dry Suit Sizing Form.

(4) Select the dry suit size from the dropdown menu under the Size field.

j. Populate the Unit Approving Officer field with the designated Approving Officer of the unit.

k. There is no need to select Click here to attach a file because all the measuring information needed is already transferred from the SWITLIK U-ZIP-IT Anti-Exposure Dry Suit Sizing Form.

l. Select Submit.

NOTE

Units shall designate the person responsible for approvals. The Approving Officer will receive an email prompting them to review the order.

m. The Approving Officer shall then select the hyperlink in the email.

n. Once the ALC SWITLIK Ordering Form page from the ALC SharePoint loads, the Approving Officer will select Edit Item on the top left toolbar of the page.

o. From the dropdown menu under the Unit Approving Officer Status field, select Approve or Deny.

p. Select Submit.

NOTE

The ADC order will then be received by the item manager at ALC for processing. A confirmation email of approved or denied will be sent to the Flight Gear Issue Petty Officer who submitted the order.

NOTE

It is extremely important that upon receiving the dry suit order, receiving units shall scan and email packing slips/invoices showing proof of delivery to: D05-SG-ALC-ALSETECH-SMB@uscg.mil. This is so accurate funding and records can be kept.

3. Adjustments

a. Neck and Wrist Seal Adjustment Aircrew dry coveralls require a neck and wrist seal to be waterproof for the wearer. The ADC has a tapered neck and wrist seal that must be adjusted before issuing to the aircrew member.

CAUTION

USE EXTREME CAUTION WHEN TRIMMING THE NECK SEAL. A SMOOTH TRIM LINE IS ESSENTIAL. EXCESSIVE TRIMMING CAN CAUSE THE NECK SEAL TO LEAK. DO NOT TRIM MORE THAN ONE RING AT A TIME, TESTING THE FIT AFTER EACH RING IS TRIMMED. DO NOT ATTEMPT TO CUT THROUGH TWO LAYERS OF MATERIAL AT ONCE. NICKING THE SEAL CAN CAUSE IT TO TEAR WHEN DONNING.

NOTE

Neck seals adjust to the wearer after a short time. Ensure the neck seal fits snugly and remains in contact with the neck throughout the range of normal head movement.

(1) If the neck seal is too tight when fitted to the aircrew member, remove the garment. Trim the neck seal one ring at a time until it fits comfortably and remains snugly in contact with the neck throughout the range of normal head movement.

(2) If the wrist seals are too tight, have the aircrew member remove the garment. Trim the wrist seals one ring at a time, until they fit comfortably and remain snugly in contact with the wrists throughout the range of normal arm, hand, and wrist movement.

(3) Redon dry suit and check seals.

WARNING

THE USE OF NECK RINGS DESIGNED TO HOLD THE NECK SEAL AWAY FROM THE NECK OF THE USER FOR COMFORT PURPOSES IS UNAUTHORIZED.

NOTE

A proper seal is essential for the dry suit to work. If the seal is loose, water will enter the suit. If too tight, circulation to the extremity will be restricted.

4. Inspection Interval Inspection of the ADC shall be in accordance with the Flight Gear Annual Inspection (Text Only), MPC 256163.0. The following are the inspection intervals:

   a. Acceptance Upon original issue, when received from supply, or accepted from another unit.

   b. Preflight/Post-Flight Performed by aircrew member to whom the ADC is issued prior to and after each flight in accordance with Paragraph 6.U.6. and Paragraph 6.U.7.

   c. Annual 1 year from last completion in conjunction with annual flight gear inspection. Signoff is recorded in ALMIS.

   d. Manufacturer Leak Test Every 2 years

   e. Service Life Limit 10 years.

5. Donning and Doffing

WARNING

AVOID EYE CONTACT WITH ANY TALC OR POWDER USED TO PREVENT DAMAGE TO SEALS WHEN DONNING THE ADC.

CAUTION

TO PREVENT DAMAGE TO THE ADC NECK AND WRIST SEALS, AIRCREW MEMBERS SHALL REMOVE ALL JEWELRY AND APPLY PROTALC DRY LUBRICANT/PROTECTANT PRIOR TO DONNING THE ADC. (REFER TO THE ALSIPS FOR SOURCE OF SUPPLY.)

NOTE

The ADC shall not be worn in direct contact with the skin. The aircrew member shall always wear a Dry Suit Undergarment (DSUG) in accordance with Coast Guard Air Operations Manual, COMDTINST M3710.1 (series).

STEP	ACTION
1	Don a DSUG suitable for the local climate.
2	Insert feet into the anti-exposure socks while seated.
3	Insert arms into the sleeves. If necessary, pull the wrist seal open with one hand while pushing the other hand through the seal.
4	Grasp the ADC by the zipper at the center of the back and pull it over the head.
5	Push the head through the neck seal. If necessary, pull the neck seal open with both hands while pushing the head through the seal.

STEP	ACTION
6	Turn 1 inch of the neck seal under to increase comfort and enhance its ability to seal against the skin.
	NOTE If the zipper gets stuck, carefully and slowly move the slider back and forth until it is free. Do not use excessive force. Help might be needed to close the entrance zipper.
7	Close the entrance zipper as follows: a. Grasp the seal block with the right hand. b. Pull the zipper lanyard with the left hand as far as range of motion allows. c. Change hand positions. Hold the seal block with the left hand, while pulling the lanyard with the right hand as far as range of motion allows. d. Change hand positions again. Pull the lanyard tight against the seal block while holding the closed zipper for leverage.
8	Close the relief port zipper. Ensure the slider is firmly seated against the seal block.
9	Vent any excess air out through the neck seal.
10	Don flight foots. Blouse any excess leg material over the outside of the boot.
11	To doff the ADC, carefully reverse the donning procedures.
12	Turn ADC inside out. Hang on a wooden or plastic hanger.
13	Allow ADC to air-dry in a cool, dry, well-ventilated area.

6. Preflight Inspection

CAUTION

TO AID IN PREVENTING CORROSION AND PROTECT THE SURROUNDING MATERIAL FROM CATCHING DURING OPENING AND CLOSING, APPLY A COMMERCIAL-TYPE PARAFFIN WAX ONTO TOOTHED PORTION OF ZIPPER. AVOID AND REMOVE EXCESS BUILDUP OF LUBRICATING WAX TO PREVENT ZIPPER JAM.

STEP	ACTION
1	Inspect water- and pressure-proof entry and relief portal slide fasteners for proper function, paying particular attention to sealing of the pull into the seal block when fastener is closed completely.
2	Inspect suit for broken stitches, seam separation, loose seam tapes, cuts, tears, abrasions, or deterioration of the ADC fabric. Ensure all zippers on accessory pockets are functional.
3	Inspect neck and wrist seals for proper bonding to the ADC and that no damage exists.
	NOTE Seals should be checked for looseness, which could permit passage of water inside the ADC.

7. Post-Flight Inspection To perform a post-flight inspection, proceed as follows:

STEP	ACTION
1	Perform all inspection steps of the ADC preflight inspection as described in the previous table.
2	Turn ADC inside out. Hang on a wooden or plastic hanger.
3	Allow ADC to air-dry in a cool, dry, well-ventilated area.

8. Modifications There are no authorized modifications for the ADC.
9. Repairs The manufacturer shall perform all repairs to the ADC. The following are the ADC repair policy guidelines:
   a. Any suit returned for repairs shall have the neck and wrist seals and both anti-exposure socks replaced regardless of their condition.
   b. Tears up to 6 inches in linear length in the ADC fabric may be repaired.
   c. Any ADC with tears over 6 inches in linear length or that have damaged waterproof slide fasteners shall be scrapped in accordance with established guidelines.
10. Leaking An ADC with leaks caused by porous material shall be removed from service and destroyed. A new ADC will be issued to the member.
11. Spot Cleaning

STEP	ACTION
	CAUTION DO NOT USE BLEACH OR SIMILAR LAUNDRY ADDITIVES. DO NOT DRYCLEAN THE ADC.
1	Clean grease and oil spots by rubbing a small amount of Simple Green degreaser onto the spot using a soft, clean, cotton cloth.
2	Thoroughly rinse the spot to remove the degreaser.

12. Washing

STEP	ACTION
	CAUTION PUT THE ADC INTO A NET LAUNDRY BAG PRIOR TO WASHING TO REDUCE WEAR. WASH THE ADC IN COLD WATER ONLY.
1	Hand-wash, or use a clothes washer on the delicate cycle. Follow the detergent manufacturer recommendations for the amount of detergent to use.
2	Rinse the ADC three times. Use cold, clean, freshwater for each rinse.
	CAUTION DO NOT USE DRYER OR IRON ON AIRCREW DRY SUIT. DOING SO WILL DAMAGE ADC.
3	Hang the ADC by the shoulders on a wooden or plastic hanger in a well-ventilated area. If air-drying, leave the entrance and relief zippers open. If tumble-drying, close the zippers and use the delicate fabric and lowest settings.
4	When the outside of the ADC is dry, turn it inside out to complete drying.

13. Storage To store the ADC for an extended period of time, proceed as follows:

CAUTION

THE ADC SHALL NOT BE STORED IN AN ATMOSPHERE CONTAINING HIGH CONCENTRATIONS OF OZONE. THE ADC SHOULD BE STORED IN A COOL, DARK PLACE AS PROLONGED EXPOSURE TO SUNLIGHT IS NOT RECOMMENDED. CARE SHOULD ALSO BE GIVEN TO KEEP THE ADC AWAY FROM ACIDS, GASOLINE, OIL, AND OTHER PETROLEUM PRODUCTS.

STEP/INSTRUCTION		ILLUSTRATION
1	Lay ADC flat on a clean, dry surface.	
2	Folds 1 and 2: Fold socks up to shoulders of suit; fold arms across shoulder.	

3	Fold 3: Fold knees up to shoulders of suit.	
4	Fold 4: Fold bottom edge to top edge.	

STEP	ACTION
1	Ensure that the ADC is clean and completely dry.
2	Close slide fasteners on ADC within 4 inches of end seal blocks.
	NOTE During periods of temporary storage (such as between flights), the ADC should be on a wooden or plastic hanger to minimize damage to fabric from repeated folding.
3	Fold the ADC in accordance with above table.
4	Place ADC in a cloth bag and clearly label with member name and unit.
5	Loosely pack bagged ADC in a locker or other appropriate storage container.
6	The ADC shall be stored in a controlled temperature environment (68 to 75 °F) away from areas where high temperatures and/or humidity may occur.

V. MINIMUM FLIGHT GEAR LIST

MINIMUM FLIGHT GEAR LIST (MINIMUM FLIGHT GEAR ISSUED TO COAST GUARD AVIATION PERSONNEL)			
	ITEM	**R/W**	**F/W**
1	FLIGHT SUIT	2 EA	2 EA
2	FLIGHT GLOVES, SUMMER	2 PR	2 PR
3	FLIGHT GLOVES, WINTER (NONPILOT ONLY - AS REQUIRED)	1 PR	1 PR
4	FLIGHT BOOTS	1 PR	1 PR
5	FLIGHT HELMET	1 EA	N/A
6	PROTECTIVE HELMET (AS REQUIRED)	N/A*	1 EA
7	HELMET BAG	1 EA	1 EA
8	DEPLOYMENT BAG	1 EA	1 EA
9	HEADSET, ICS	N/A*	1 EA
10	FLIGHT JACKET, G-1, LEATHER (Note)	1 EA	1 EA
11	MCPS FLIGHT SHELL (JACKET) (Note) (AS REQUIRED)	1 EA	1 EA
12	MCPS FLIGHT SHELL (TROUSER) (AS REQUIRED)	1 EA	1 EA
13	MCPS SILK WEIGHT INSULATING GARMENT, TOP (AS REQUIRED)	1 EA	1 EA
14	MCPS SILK WEIGHT INSULATING GARMENT, BOTTOM (AS REQUIRED)	1 EA	1 EA
15	MCPS MIDWEIGHT INSULATING GARMENT, TOP (AS REQUIRED)	1 EA	1 EA

16	MCPS MIDWEIGHT INSULATING GARMENT, BOTTOM (AS REQUIRED)	1 EA	1 EA
17	MCPS HEAVYWEIGHT INSULATION , TOP (AS REQUIRED)	1 EA	1 EA
18	MCPS HEAVYWEIGHT INSULATION , BOTTOM (AS REQUIRED)	1 EA	1 EA
19	MCPS HEAVYWEIGHT INSULATION, BIB OVERALL (AS REQUIRED)	1 EA	1 EA
20	MCPS FLEECE VEST (AS REQUIRED)	1 EA	1 EA
21	MCPS FLEECE JACKET (AS REQUIRED)	1 EA	1 EA
22	MCPS FACE MASK (AS REQUIRED)	1 EA	1 EA
23	WOOL SOCKS	2 PR	2 PR
24	COLD WEATHER POLYPROPYLENE SOCKS (AS REQUIRED)	1 PR	1 PR
25	AIRCREW DRY COVERALLS	1 EA	N/A
26	SUNGLASSES, HGU-4/P (If Available)	1 PR	1 PR
27	AIRCREW SURVIVAL AND EGRESS KNIFE (ASEK) (If Applicable)	1 EA	1 EA

*** Protective helmet and headset are authorized for rotary wing aircrew members operating as aerial gunners at HITRON and AUF Units.**

NOTE

Each unit Commanding Officer will determine the appropriate jacket for their Area of Operation Responsibility (AOR) from the list of authorized jackets.

W. PASSENGER (PAX) FLIGHT GEAR

1. Introduction All passengers flying aboard Coast Guard aircraft shall be outfitted in appropriate protective clothing based on the environmental conditions outlined in the Air Operations Manual, COMDINST M3710.1 (series).
2. Storage Units should maintain a PAX gear storage locker with standard flight gear items ready for issue. These items should include at a minimum:
   a. Flight suits/MAC-10s in various sizes
   b. Flight helmets (rotary wing) in various sizes
   c. Flight gloves in various sizes
3. Inventory PAX gear should be inventoried monthly for accountability.
4. Records PAX gear lockers should have a sign-in/sign-out log to include the following information:
   a. Date checked out and checked in
   b. Item and size
   c. Name of PAX
   d. Contact information of PAX
   e. Name of person issuing item(s)
   f. Name of person receiving item(s)
5. Inspection All PAX gear shall be inspected in accordance with the Flight Gear Inspection MPC. MAC-10s shall be inspected in accordance with Paragraph 6.Q. of this process guide.
   a. Acceptance Anytime a new piece of flight gear is added to the flight gear locker.
   b. Preflight/Post-Flight Complete prior to issuing PAX gear and when gear is returned. Repair or replace flight gear items as required.
   c. Monthly Inventory to ensure all flight gear is accounted for.

d. Annual 1 year from last completion.

NOTE

Air Operations Manual, COMDINST M3710.1 (series), requires flight gear to be inspected annually which includes PAX gear. The annual PAX flight gear inspection should be enrolled in ACMS as a Special Requirements (SR) item.

X. PERSONAL CLOTHING AND EQUIPMENT RECORD

1. Introduction The Personal Clothing and Equipment Record (Form AF-538) will be used to document all protective equipment and flight gear issued to each individual aircrew member. All AF-538s will be maintained and filed by the AST Shop, electronically and/or paper. The AF-538 can be found at the following CG Portal link:

https://cg.portal.uscg.mil/units/cg731/Awards%20%20Insignia/Insignia/Form%20AF-538.pdf

CHAPTER 7. FABRICATION

A. THREAD AND CORD

1. Introduction Thread is used in the AST shop for safety tacking, sewing, and attachment (securing) of equipment. This section will cover the common types of thread and cord used in these applications.

2. Thread Normally AST shops will use MIL-T-78780, nylon Z-twist type thread for the following reasons:

   a. The action of a sewing machine will twist Z-thread tighter

   b. High strength and controllable elongation

   c. High abrasion resistance

   d. Excellent elastic recovery

   e. Excellent resistance to alkaline and many other chemicals

   f. Resistance to attacks by mildew, fungus, and other microorganisms

Thread	Tensile Strength (Pounds Minimum)
A	2.75
AA	3.9
B	5.5
E	8.5
F	11.0
FF	16.0

3. Size 3 and Size 6 Cord Size 3 and size 6 cord are actually nylon thread. They are commonly used in the manufacturing of parachute riser assemblies, safety belts, and restraints. Both sizes are also used for tacking webbing.

4. Type I and Type III Parachute Cord Type I and Type III nylon parachute cords are of the sheath and core type parachute cord. The outer part of the cord is a woven sheath that encases a core of individual wound lines; together they make up the cord. Type I cord is used to tie survival items to lifevests and liferafts. Type III is commonly referred to as suspension line because it is used to suspend the parachute canopy when it is deployed. Type I and Type III can also be used with its core lines removed for various projects.

Cord	Tensile Strength (Pounds Minimum)
Type I	100
Type III	500
Type III with no core fibers (gutted)	300

B. WEBBING

Nylon webbing is manufactured in different sizes, widths, thickness, tensile strengths, and color identifications.

The following table describes commonly used webbings and examples of their use:

Webbing Type	Width (inches)	Tensile Strength (lb)	Color ID (if any)	Example of Use
I	9/16	500	N/A	Container reinforcing

II	1 ±1/32	600	N/A	Stowing band retainers
III	1-1/4	800	N/A	Sleeve bridles
IV	3 ±1/8	1,800	N/A	Container extensions, reinforcing, buffers
VI	1-23/32 ±1/16	2,500	Red center line	Container reinforcement, chaffing strips
VII	1-23/32 ±1/16	6,000	Yellow lines at each selvage	Harness webbing
VIII	1-23/32 ±1/16	4,000	Black center line	Container reinforcement
IX	3 ±3/32	9,000	N/A	Lap belts
XII	1-23/32 ±1/16	1,200	Red lines at each selvage	Chaffing strips
XIII	1-23/32 ±3/32	7,000	Black lines at each selvage	Harness webbing
XIX	1-3/4 ±3/32	10,000	Green line at center	Cargo tiedown

C. HOOK-AND-PILE TAPE

1. Attaching Hook-and-Pile Tape Hook-and-pile tape can be attached either by cementing or sewing.

   Hook-and-pile tape with an adhesive preapplied to the back is available, and used in several life support equipment applications. To use, simply remove the protective backing, place the hook or pile tape in the desired location, and use a rubber or wood hand roller to secure in place.

   The placement of the hook-and-pile tape will depend on the requirements of the specific assembly. Care should be taken to avoid locating the hook section in areas where it could rub, chafe, or irritate the skin of the wearer.

   Hook tape can cause chaffing to other materials, and care should be use when using hook tape as a fastener.

2. Hook-and-Pile Tape Choices Hook-and-pile tape is available in widths from 5/8 to 2 inches and many colors.

3. Sewing Hook-and-Pile Tape The attachment of hook-and-pile tape by sewing is a comparatively simple task. The following are procedures for sewing hook-and-pile tape:

STEP	ACTION
1	Select the appropriate width and color tape.
2	Cut it to the proper length.
3	Trim the four corners of both sides to prevent curling.
4	Sew a single row of stitches around all four edges, overlapping the stitch about 1 inch onto itself.

NOTE

Both pieces have a narrow selvage edge running lengthwise. Care should be observed when sewing to keep the stitches as close to this edge as possible.

Hook-and-pile tape may also be stitched in place using a zigzag stitch (if that machine type is available). Assure that the stitch width does not exceed twice the width of the selvage and that the outside stitches align with the outside edge of the tape. (Refer to Figure 7-1.) Using a zigzag stitch correctly will prevent the edges of the hook-and-pile tape from rolling up.

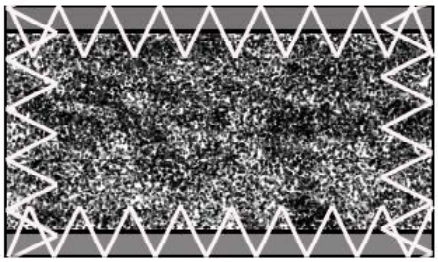


Figure 7-1. Zigzag Stitch

4. Using Adhesive to Attach Hook-and-Pile Tape When using adhesive to attach hook-and-pile tape, it is desirable to use hook-and-pile tape with preapplied self-adhesive when applying to nonfabric surfaces such as strobe signal lights. This application saves time and avoids the use of toluene and toluene-based adhesives.

The steps for attaching preapplied self-adhesive hook-and-pile tape are listed below.

a. Materials Required

(1) Wooden or Rubber Hand Roller

(2) 4- x 4-inch Gauze

(3) Isopropyl Alcohol, USP 70 Percent

WARNING

DO NOT USE ISOPROPYL ALCOHOL NEAR OPEN FLAME, HEAT, OR ELECTRICAL SPARKS. USE ONLY IN A WELL-VENTILATED AREA. USE THE APPROPRIATE PPE TO AVOID INHALING FUMES.

STEP	ACTION
1	Using a 4- x 4-inch gauze, clean the surface where the Velcro® is to be adhered with isopropyl alcohol, USP 70 percent, to remove any oil or contaminants.
2	Check the alignment, then place the tape onto the surface starting from one end of the hook-and-pile tape and working to the other end.
3	Using a wooden or rubber roller tool, roll out the tape to strengthen the adherence of the adhesive, and to remove any air bubbles.

The steps for attaching hook-and-pile with adhesive are listed below.

b. Materials Required

(1) Wooden or Rubber Hand Roller

(2) Soft Bristle Brush

(3) Isopropyl Alcohol, USP 70 Percent

(4) 4- x 4-inch Gauze

(5) Adhesive, EC-2141

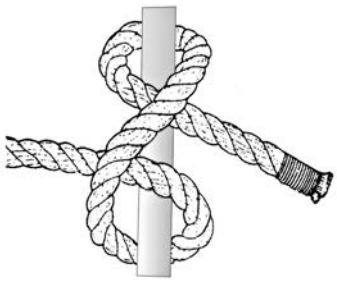
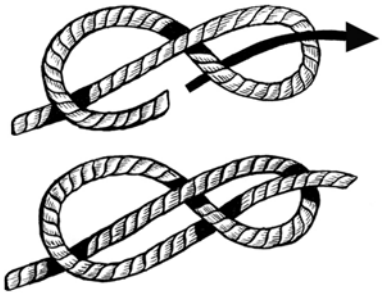
WARNING

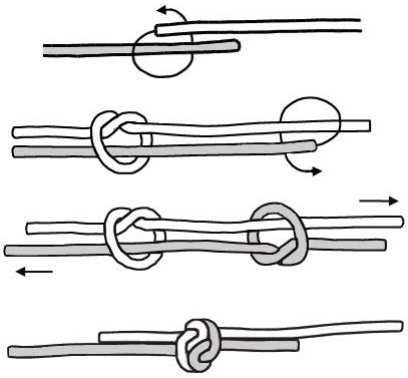
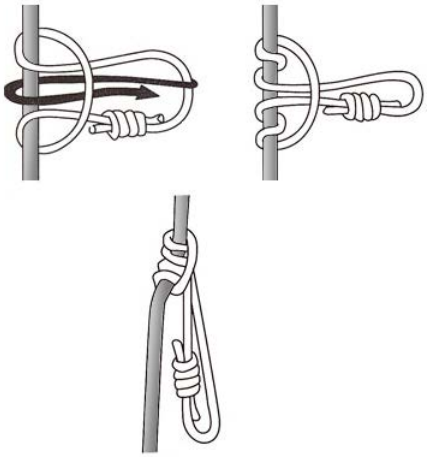
DO NOT USE ISOPROPYL ALCOHOL NEAR OPEN FLAME, HEAT, OR ELECTRICAL SPARKS. USE ONLY IN A WELL-VENTILATED AREA. USE THE APPROPRIATE PPE TO AVOID INHALING FUMES.

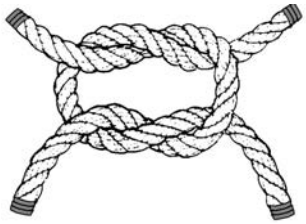
STEP	ACTION
1	Using a 4- x 4-inch gauze, clean the surface where the Velcro® is to be adhered with isopropyl alcohol, USP 70 percent, to remove any oil or contaminants.
2	Using the tape as a template, mark the area where glue is to be applied to the object.
3	Using a disposable brush, apply the cement, completely covering both surfaces to be cemented. Use long one-directional strokes and complete each surface before cement becomes tacky, as the brush may pull away the tacky cement from the surface. Allow to dry for 10 minutes.
4	Apply second coat of cement as in previous step. Use brush strokes perpendicular to the original direction.
5	When the second coat of cement has become tacky, place both pieces together. If cement area is a cut or tear, butt damaged edges together before applying patch. Roll out bubbles with a roller.
6	Allow cement to cure a minimum of 48 hours.

D. **KNOTS** A knot is a method of fastening or securing linear material such as line by tying or interweaving. It may consist of a length of one or several segments of line interwoven such that the line can bind to itself or to some other object.

1. Instructions for Knots Commonly Used in Life Support Equipment

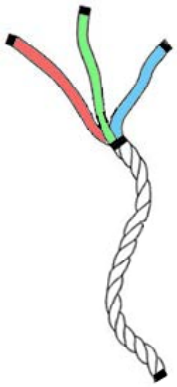
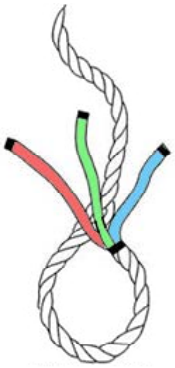
Knot	Example	Definition
Binder Knot		The simplest method of joining two threads or lines. The two ends are placed side by side and a simple overhand knot (also called a thumb knot) is then tied in both lines simultaneously. It will not slip when drawn tightly.
Bowline Knot		A knot formed by making a small overhand loop a desired distance from the end of the line. The end of the cord or line is passed through the loop from the underside of the main part of the line and back through the small loop. When this knot is drawn tight, it will not slip but still can be easily untied.
Clove Hitch Knot		A knot formed by making one turn around a post, bringing the end across the line, continuing around the post a second time and passing the end under the second loop.
Figure 8 Knot		A simple knot tied in the end of a cord or line by forming a loop and passing the end over and down through the loop.

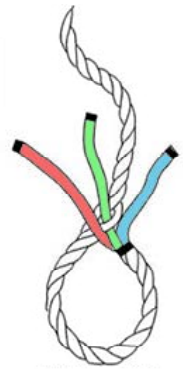
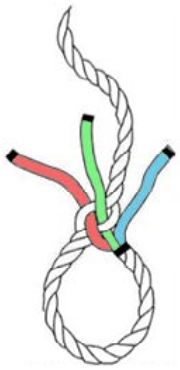
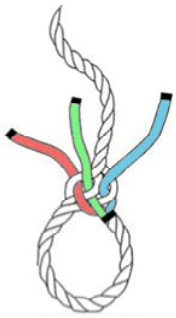
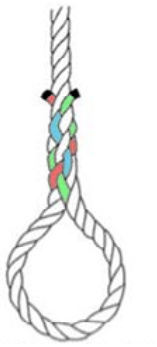
Knot	Example	Definition
Fisherman's Knot		A knot formed by laying the two working parts alongside and parallel to one another. Tie an identical overhand knot around each standing part with the other working end. Pull them together.
Lark's Head Knot		A knot formed around an attachment ring or bar by passing the free ends of the cord or line around the bar. It may also be used in the bight of a line.
Overhand Knot		A simple knot tied in the end of a cord or line by forming a loop and passing the end over and down through the loop.
Prusik Knot		A knot formed by forming a loop with one line, then wrapping the loop around the main line. Wrap the loop around the line a second time, and then pull to tighten.

Knot	Example	Definition
Square Knot		A knot formed by passing the end of the cord or line in the left hand over and under the end in the right hand and then reversing the process by passing the end in the right hand over and under the one in the left hand.
Surgeon's Knot		The surgeon's knot is similar to the square knot, except that the first overhand tie is wrapped around the cord or line twice.

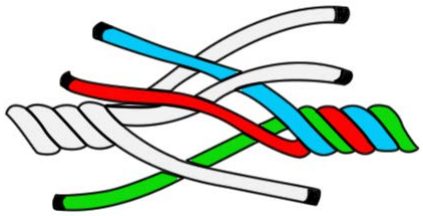
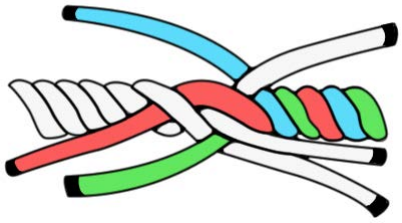
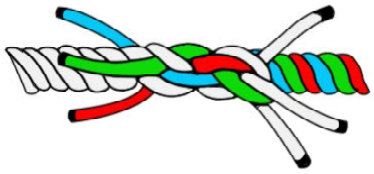
E. **BASIC SPLICING** A splice is used to join two pieces of line by weaving the strands of both ends into each other using a specific weaving pattern.

1. Instructions for Making an Eye Splice in Three-Strand Line

STEP	ACTION	EXAMPLE
1	Unlay the strands of the line approximately 12 inches. **NOTE** At the point where the strands are to cease separating, use masking tape to temporarily retain the twisted strands. Taking this step will aid in creating a tight splice.	
2	Make a bight the size of the eye required. Hold the strands up so that the middle strand is facing you.	

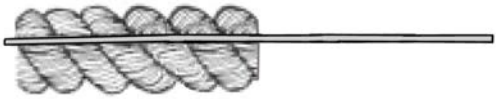
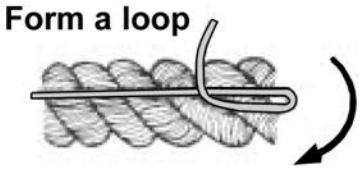
STEP	ACTION	EXAMPLE
3	Tuck the middle strand. **NOTE** Always tuck the middle strand first, and keep the right-hand strand of the side of the line that is facing forward. All tucks are made from outboard toward the user.	
4	Cross the left strand over the strand just tucked and under the strand just below it.	
5	Turn the entire eye splice over and tuck the last untucked strand.	
6	Pull all the strands tight. Pass each strand over the adjacent strand and under the next strand until three to four tucks have been made in each strand. With polypropylene line, carefully sear the bitter ends, being careful to avoid damaging the body of the splice.	

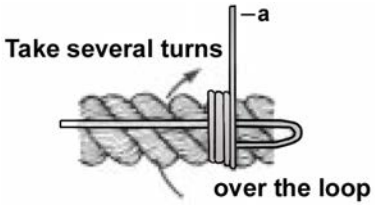
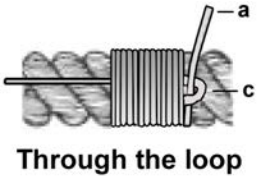
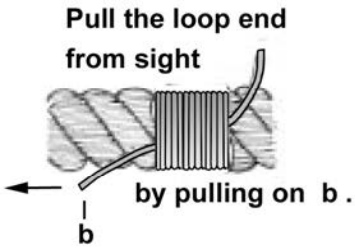
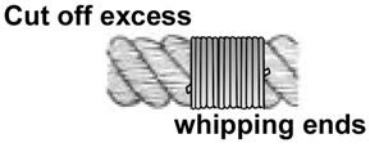
2. Instructions for Making a Short Splice in Three-Strand Line

STEP	ACTION	EXAMPLE
1	Unlay the strands of the line approximately 12 inches. Slide the two ends together, each strand between two strands of the other end.	
	NOTE It is desirable to wrap a seizing around the point where the two ends come together, using sail twine or removable tape. This will hold the work together temporarily while completing the splice.	
2	Make the first tuck under the nearest strand. Tuck over and under a minimum of four times to retain splice strength.	
3	If a temporary seizing is applied after Step 1, remove at this step.	
4	Cut off strand bitter ends. With polypropylene line, carefully sear the bitter ends, being careful to avoid damaging the body of the splice.	

F. **BASIC LINE WHIPPINGS** A whipping is a binding of twine or tape around the end of a line or rope to prevent the fibers from unraveling.

1. Instructions for Making a Temporary Whipping

STEP	ACTION	EXAMPLE
1	Lay the sail twine alongside the line to be whipped and extend past the end.	
2	Form an overhand loop in the sail twine so that the loop extends approximately 1/2 inch beyond the end.	

STEP	ACTION	EXAMPLE
3	Holding End a, make a series of turns over the loop toward the bitter end of the line until the length of the turns is about equal to the diameter of the line. Stop within 1/2 inch of the end of the line.	
4	Slip End a through the Loop c.	
5	Pull loop end from sight under the wraps by pulling on b.	
6	Cut off excess whipping ends.	

G. **<u>AUF LIFERAFT RETENTION HARNESS</u>** The AUF H-65 Raft Retention Harness is used in the H-65 aircraft only. It retains the crew liferaft in a position in the aircraft near a crew exit, so the crew can remove the raft during emergency egress.

1. <u>Raft Retention Harness Fabrication</u>

   a. <u>Materials Required</u>

      (1) Webbing, 1-inch Tubular, NSN 8350-00-082-5753 (as required)

      (2) Webbing, Type VI, Yellow, NSN 8305-00-753-6528 (as required)

      (3) Thread, Nylon, Size E, P/N V-T-295, NIIN 00-263-9931 (as required)

      (4) Webbing, 3/8-inch, NSN 8315-01-154-2162 (as required)

      (5) Fitting, Cargo Tiedown, NSN 1670-00-884-6554 (Qty 4)

      (6) Trail Line Quick-Release LSC, P/N 619 (Qty 2)

      (7) V-Ring LSC, P/N 384 (Qty 4)

      (8) Stainless Steel Slide Bar Adjuster LSC, P/N 451 (Qty 4)

      (9) Cloverleaf Ripcord Handle ParaGear, P/N M534 (Qty 1)

b. Material Preparation Use the following step/action table for the material preparation of the AUF harness:

STEP	ACTION
1	Sear-cut eight 15-inch pieces of Type VI webbing.
2	Sear-cut a 45-inch piece of 1-inch tubular nylon.
3	Sear-cut a 14-inch piece of 3/8-inch webbing.

c. Attaching V-Ring Use the following step/action table to attach the V-ring:

STEP	ACTION
1	Using one of the 15-inch pieces of webbing, mark 8 inches from one of the bitter ends.
2	Slide on the V-ring and trifold the webbing into a 2-inch box, using the mark as a reference point. (Refer to Table 7-1, Figure 1.)
3	Sew a box stitch on the trifolded webbing. (Refer to Table 7-1, Figure 2.)
4	Bar-tack a 1-inch trifold on the opposite end of V-ring. (Refer to Table 7-1, Figure 3.)
5	Repeat Steps 1 thru 4 for the remaining three 15-inch pieces of webbing.

d. Attaching Stainless Steel Slide Bar Adjuster and Cargo Tiedown Use the following step/action table to attach a stainless steel slide bar adjuster and cargo tiedown:

STEP	ACTION
1	Using one of the 15-inch pieces of webbing, mark 8 inches from one of the bitter ends.
2	Slide on the cargo tiedown and trifold the webbing into a 2-inch box, using the mark as a reference point. (Refer to Table 7-1, Figure 4.)
3	Slide on the stainless steel slide bar on opposite end of webbing. (Refer to Table 7-1, Figure 5.)
4	Connect bitter end of webbing with 2-inch box and sew together with a box stitch. (Refer to Table 7-1, Figure 6.)
5	Fold and shape the webbing into a V to fit on the cargo tiedown. (Refer to Table 7-1, Figure 5.)
6	Repeat Steps 1 thru 5 for the remaining three 15-inch pieces of webbing.

e. Attaching Two Trail Line Quick-Releases Use the following step/action table to attach two trail line quick-releases:

STEP	ACTION
1	Cut and remove the beaded handles from the two trail line quick-releases.
2	Using the 14-inch piece of 3/8-inch webbing, mark the middle by measuring 7 inches from one end.
3	Route the webbing through the metal pull-rings on the trail line quick-releases. (Refer to Table 7-1, Figure 7.)
4	With both bitter ends lined up on the mark in the middle, sew the length of the webbing to hold it together. (Refer to Table 7-1, Figure 7.)

f. Fabricate Release Handle Use the following step/action table to fabricate a release handle:

STEP	ACTION
1	Using the 45-inch piece of 1-inch tubular nylon, mark 11-1/2 inches from bitter end.
2	Trifold a 1-inch box and sew a box stitch forming a 4-inch loop. (Refer to Table 7-1, Figure 8.)
3	Mark 7 inches from other end and slide on release handle.
4	Trifold the webbing into a 2-inch box, using the mark as a reference point. Place the middle of the 3/8-inch webbing across the edge closest to the release handle and in the middle of the trifold. (Refer to Table 7-1, Figure 9 and Figure 10.)
5	Sew a box stitch to hold the webbing pieces together. (Refer to Table 7-1, Figure 9 and Figure 10.)
QA REQUIRED (1)	

Table 7-1. Figures for Buildup Instructions

FIGURE 1	**FIGURE 2**
FIGURE 3	**FIGURE 4**
FIGURE 5	**FIGURE 6**

Table 7-1. Figures for Buildup Instructions Continued

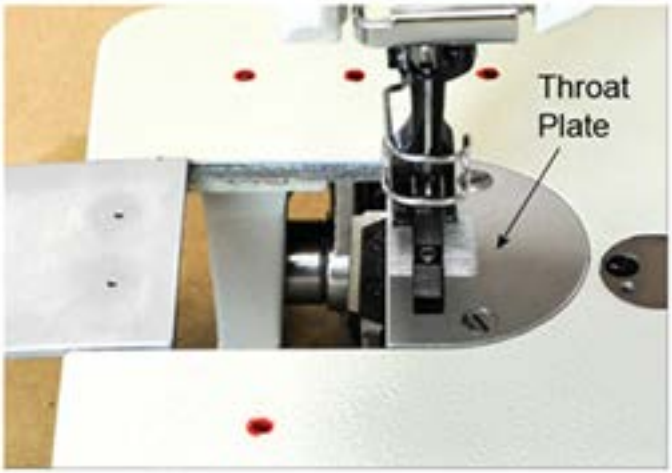
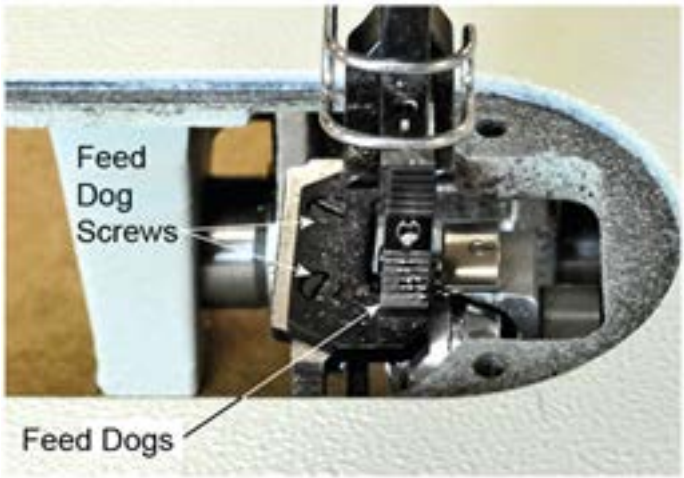
FIGURE 7	FIGURE 8
FIGURE 9	**FIGURE 10**

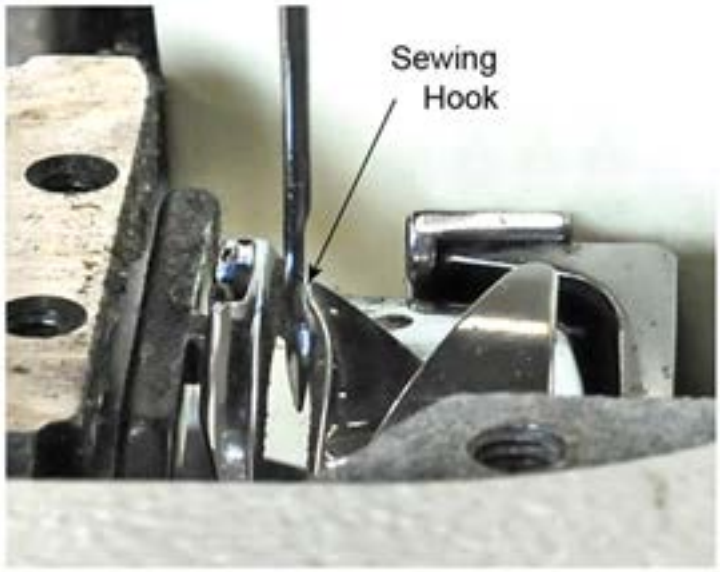
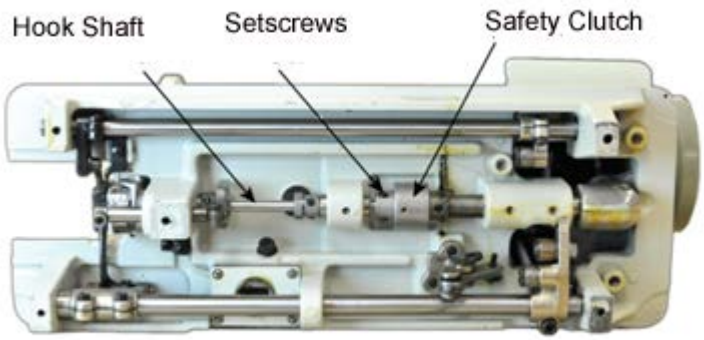
H. <u>TIMING SEWING HOOK TO NEEDLE</u> The following step action guide illustrates timing the sewing hook to the needle:

CAUTION

DO NOT USE EXCESSIVE FORCE TO TURN THE BALANCE WHEEL.

STEP	ACTION	ILLUSTRATION
1.	Secure power to sewing machine and set to 0 SPI.	
2.	Raise presser foot.	
3.	Ensure needle is in full-up position.	
4.	Remove needle and bobbin thread.	

STEP	ACTION	ILLUSTRATION
5.	Loosen thumbscrew and remove faceplate.	
6.	Remove bed slide. Remove two throat plate screws and remove the throat plate.	
7.	Remove feed dog.	
8.	Rotate balance wheel until needle is on the upstroke.	

STEP	ACTION	ILLUSTRATION
9.	Ensure sewing hook is aligned to needle scarf as shown.	
	NOTE: If hook and needle are aligned, sewing hook is timed to needle; continue to Step 17. If they are not aligned, continue to Step 10.	
10.	Tilt machine back.	
11.	Loosen three setscrews on safety clutch 1/2 turn.	
12.	Rotate balance wheel until needle is on the upstroke and level with sewing hook.	
13.	Rotate sewing hook shaft until sewing hook is aligned with needle scarf.	
	NOTE Ensure that the sewing hook shaft or safety clutch is not moved prior to tightening setscrews.	
14.	Tighten all three setscrews on safety clutch.	

STEP	ACTION	ILLUSTRATION
15.	Reinspect alignment of sewing hook and needle scarf.	
16.	Tilt machine forward.	
17.	Replace feed dog, throat plate, bed slide, and faceplate.	
18.	Rethread sewing machine.	
19	Check sewing machine for proper operation.	

CHAPTER 8. HELICOPTER RESCUE SWIMMER AUTHORIZED EQUIPMENT LIST

A. PURPOSE

1. As per the Coast Guard Helicopter Rescue Swimmer Manual, COMDTINST M3710.4 (series), this list is the only authorized equipment to be used when performing all the duties of a qualified and unqualified Rescue Swimmer (RS). These duties include mission readiness, unit training, and physical fitness training. This mandate is to ensure ASTs stationed in nonflying billets have authorization to procure and maintain RS equipment necessary to maintain the readiness posture prescribed in the Helicopter Rescue Swimmer Manual, COMDTINST M3710.4 (series). Substitution of equipment of a lesser quality than prescribed is prohibited without the approval of the Coast Guard RS Program Manager.

2. AST students attending AST A school at the Aviation Technical Training Center (ATTC) are classified as RS in training; therefore, they are authorized all equipment and organizational clothing required for training to include Underwater Demolition (UDT) swim shorts, compression shorts, and plain white and green t-shirts.

3. A detailed list containing part numbers for all RS equipment is listed in this chapter and may be found in the ALSIPS, available through ALC ALSE Technical Services.

4. To ensure that safety is not compromised, all equipment ordered must meet all of the salient characteristics listed for the prescribed equipment. Equipment of a lesser grade is not authorized and is not to be used by the RS.

5. When options are available, it is up to the individual RS to determine which piece of equipment to use.

6. Items listed with the commercial known source of supply are not supported by the Federal Stock System.

7. Helicopter Rescue Swimmer Organizational Clothing (HRSOC) will be standardized, with CG-711 determining items and vendors that meet the standards prescribed. Two shirt styles will allow flexibility to meet dynamic environmental needs for the broad geography of units.

   Initial issue consists of the following: Six dry-fit shirts (two long-sleeved and four short-sleeved/tank top), three pairs of workout shorts, two sets of cold weather gear, one foul weather exercise suit, two swimsuits, and one pair of athletic shoes.

   After initial issue, gear will be turned in and replaced on a one-for-one basis when determined to be no longer serviceable by the unit AST Shop Chief. All HRSOC will be secured and tracked alongside all other organizational clothing (i.e., flight suits, helmets, flight boots). Issued items and turn-ins will be logged on Form AF-538. This form will be maintained for each individual throughout the aviation career of the member. This tracking process has ensured accountability in Coast Guard Aviation for many years. By using the same accountability processes of flight gear issue, units will be able to identify trends in the quality and resilience of the clothing being used. This will ensure quality control for the brands used and support program decisions on equipment and vendors of choice. It will also prevent abuse of the clothing policy, preventing excessive equipment turn-ins for HRSOC. Over the longer term, data on the AF-538 will provide a realistic life expectancy for the HRSOC to gauge expected replacement timeframes, and to assist in budgeting for equipment purchasing.

8. After thorough testing and evaluation, the following equipment has been proven to meet the quality and safety standards for the Helicopter RS Program. Salient characteristics and source of supply have been listed for each item. While this list contains known sources of supply, it is not intended to limit competition, and in many cases, it is not to be used as a basis for sole source procurement.

9. The RS ensemble will be inspected at intervals not to exceed 1 year from last inspection in accordance with the applicable MPC.

10. Air stations and AST shops are required to use ALC ALSE centralization process as a priority for obtaining RS equipment over other forms of procurement.

    a. Items ordered from ALC in this manner are specifically for individual CG rescue swimmers.

11. Passenger and survivor (Duck) flight gear should be purchased from other sources through local unit funds.

12. A CG-4491 (Parts and Material Request/Use Form) shall be used for ordering aviation protective equipment from the ALC ALSE centralization process. As noted in Paragraph 6.A.4. of this process guide.

NOTE

Stockpiling rescue swimmer equipment obtained from the ALC ALSE centralization process is prohibited.

B. ORGANIZATIONAL CLOTHING

1. Shorts

    a. Salient Characteristics RS shorts will be black, with or without pockets, with 2 to 8 inches of inseam, and the manufacturer logo, if present, will not exceed 1 inch.

    b. Known Sources of Supply

        (1) Patagonia www.patagonia.com

        (2) Under Amour www.underarmour.com

        (3) Hylete www.hylete.com

2. Compression Shorts

    a. Salient Characteristics RS compression shorts will be polyester/spandex fabric, black, tight fitting with 4 to 8 inches of inseam and may be worn in conjunction with running shorts as long as they do not extend past the hem of the running shorts.

    b. Known Sources of Supply

        (1) Patagonia www.patagonia.com

        (2) Under Amour www.underarmour.com

        (3) Hylete www.hylete.com

3. Female Swimsuit

    a. Salient Characteristics Female RS swimsuit will be a black one-piece swimsuit. The manufacturer logo, if present, will not exceed 1 inch.

    b. Known Source of Supply

        (1) Kiefer www.kiefer.com

4. Shirts

    a. Salient Characteristics RS shirts will be durable, moisture wicking, and breathable. These will be gray, tank top or crew neck, long- or short-sleeved, with a 3-3/4-inch helicopter RS logo silk-screened on the left breast. The manufacturer logo, if present, will not exceed 1 inch.

    b. Known Sources of Supply

        (1) Patagonia www.patagonia.com

        (2) Under Amour www.underarmour.com

        (3) Hylete www.hylete.com

5. Cold Weather Gear

   a. Salient Characteristics RS cold weather gear will be gray, crew neck, or hooded. Construction will be durable, moisture wicking, and breathable. The hooded top may have a zipper. All will have a 3-3/4-inch helicopter RS logo silk-screened on the left breast. Pants may or may not have pockets, have an elastic waistband, and a drawstring with no helicopter RS logo. The manufacturer logo, if present, will not exceed 1 inch.

   b. Known Sources of Supply

      (1) Patagonia www.patagonia.com

      (2) Under Amour www.underarmour.com

      (3) Hylete www.hylete.com

6. Foul Weather Exercise Suit

   a. Salient Characteristics RS foul weather exercise suit will be solid black in color, of durable, breathable, waterproof material. The jacket will be hooded and may be open front with a zipper or pullover. The manufacturer logo, if present, will not exceed 1 inch.

   b. Known Sources of Supply

      (1) Arc'teryx www.arcteryx.com

      (2) REI www.rei.com

7. Foul Weather PT Gloves

   a. Salient Characteristics RS foul weather PT gloves will be black, light-duty fleece/polypropylene, wind-resistant gloves. The manufacturer logo, if present, will not exceed 1 inch.

   b. Known Sources of Supply

      (1) REI www.rei.com

      (2) Mountain Hardwear www.mountainhardwear.com

      (3) Outdoor Research www.outdoorresearch.com

8. Foul Weather Headgear

   a. Salient Characteristics RS foul weather headgear will be black in color and of a polypropylene/spandex/polyester fleece blend to provide comfortable fit and effective insulation, resist ultraviolet exposure, and have moisture-wicking capabilities. The manufacturer logo, if present, will not exceed 1 inch.

   b. Known Sources of Supply

      (1) Blackhawk www.blackhawk.com

      (2) Mountain Hardwear www.mountainhardwear.com

9. Workout Shoes

   a. Salient Characteristics Due to the extensive physical fitness requirements outlined in Coast Guard Helicopter Rescue Swimmer Manual, COMDTINST M3710.4 (series), it is imperative that helicopter RSs obtain a high-quality athletic shoe that will provide durability, comfort, and support, preventing knee and lower back injuries caused by use of lesser quality equipment. The shoes must provide grip and stability in wet or immersed environments. The cost of the shoes shall not exceed $150.00 per pair.

NOTE

Considerations shall be made to accommodate the RS who requires special footwear due to low, medium, or high arches, narrow foot widths, overpronation/underpronation/subpination tendencies, or combinations of these conditions.

b. Known Sources of Supply

(1) Road Runner Sports www.roadrunnersports.com

(2) Zappos www.zappos.com

(3) Rogue www.roguefitness.com

10. Workout Socks

a. Salient Characteristics Due to the extensive physical fitness requirements outlined in Coast Guard Helicopter Rescue Swimmer Manual, COMDTINST M3710.4 (series), it is imperative that helicopter RSs obtain a high-quality athletic/running sock made of fabric that will provide cushioning, comfort, friction reduction, and breathability/moisture-wicking properties to prevent foot problems caused by use of lesser quality equipment. Socks shall be white, black, or gray in ankle or calf length. Any visible manufacturer logo should not exceed 1 inch.

b. Known Sources of Supply

(1) Under Amour www.underarmour.com

(2) Road Runner Sports www.roadrunnersports.com

(3) Zappos www.zappos.com

11. Watch

a. Salient Characteristics

(1) The watch crystal must be of a hardness equal to or greater than 9 Mohs (i.e., sapphire).

(2) The watch crystal must be below the level of the watch bezel.

(3) The watch band or band options must be of appropriate length to be worn with a dry suit or wetsuit.

(4) It must be able to independently acquire the signal of the US GPS and GLONASS satellite constellation within 5 minutes of activation with a clear view of the sky.

(5) It must have the ability to load waypoints in latitude and longitude.

(6) It must be able to use the following position formatting:

(a) DMM - Degrees and decimal minutes (hddd°mm.mmm’)

(b) DMS - Degrees, minutes, seconds (hddd°mm’ss.s”)

(c) DD - Decimal degrees (hddd.ddddd°)

(7) It must have the ability to track and record the movements of the user when tracking is activated and provide a return route using the recorded track.

(8) It should have preloaded maps.

(9) The watch will have a built-in heart rate monitor or the capability to synchronize with a chest-worn heart rate monitor.

(10) The watch will have stopwatch and lap counter.

(11) Watch must be a dark conservative color.

(12) Cost of the watch will not exceed $650.00.

b. Known Sources of Supply

(1) Garmin www.garmin.com

(2) Strohman Enterprise www.strohmanenterprise.com

12. Pool Workout Googles

a. Salient Characteristics Pool workout goggles may be clear or tinted, with or without corrective lenses.

b. Known Source of Supply

(1) Kiefer www.kiefer.com - Precision Optical Racer Goggle

13. Helicopter Rescue Swimmer/EMT Patches

a. Salient Characteristics Coast Guard Helicopter RS and EMT patches are authorized.

b. Known Source of Supply

(1) Wess Wessling's Coast Guard Patches www.rexmwess.com - Item No. W4838

14. Cloth Name Tapes

a. Salient Characteristics Cloth name tapes are 1-inch width, blue cotton webbing with white 3/4-inch embroidered lettering, sewn to RS equipment (harness, bags, etc.).

b. Known Source of Supply

(1) Uniform Distribution Center (UDC) www.uscg.mil/hq/g-w/g-wp/udc

C. RESCUE SWIMMER EQUIPMENT

1. Dry Suit

a. Salient Characteristics Dry-suit ensemble body is constructed of orange trilaminate fabric and/or fire-retardant Nomex® with yellow sleeves. SOLAS-grade retroreflective panels are stitched around the sleeves to facilitate enhanced hand signals at night. The neck and wrist seals are latex or neoprene. The entry and relief zippers are waterproof. Heavy-wear fabric is incorporated on high-wear areas of the seat and knees. The suit has attached waterproof socks.

b. Known Source of Supply Diving Unlimited International www.dui-online.com

c. Dry Suit Ordering Dry suits are ordered by the Flight Gear Issue Petty Officer through the ALC website at: https://cg.portal.uscg.mil/units/alc/COCO/_layouts/viewlsts.aspx. Once on SharePoint, use the following steps to complete the ordering form:

(1) Select (ESD / IOD DUI BPA).

(2) Select (**+**Add new item) at the bottom of the page.

(3) Once the ALC DUI Ordering Form page loads on the ALC SharePoint, select (For how to measure, please click here).

(4) Once the DUI Drysuit Measuring Instructions opens, print out a copy so that a reference for measuring is available.

(5) Go back to the ALC DUI Ordering Form page on the ALC SharePoint that first loaded by selecting (**+**Add new item).

(6) Select (For Sizing Chart, please click here). Once the DUI Military Drysuit System Order Form loads, complete the form as follows:

(a) Fill in the Customer Name, Day Phone, Command, and Date.

NOTE

To reorder the same size dry suit for someone, add (Drysuit S/N: xxxxxx) with the dry suit serial number after the customer name in the (Customer Name) field on the DUI Military Drysuit System Order Form. The dry suit serial number is found on the back inside tag.

(b) In section 1 DRYSUIT STYLE: Select (USCG R/S Trilaminate) or (USCG R/S Nomex).

(c) In section 2 DRYSUIT SIZE: Select (Male) or (Female) and fill in the dry suit measurements by using the DUI Drysuit Measuring Instructions reference printed out earlier.

(d) In section 5 WRIST SEALS: Select Attached (Latex).

(e) In section 6 NECK SEAL: Select Attached (Latex).

(f) Save the completed DUI Military Drysuit System Order Form to a file on the computer, so it can be attached to the ALC DUI Ordering Form at a later time.

(g) Print a copy of the completed DUI Military Drysuit System Order Form and file it with the member Form 538.

(7) Go back to the ALC DUI Ordering Form page on the ALC SharePoint that first loaded by selecting (**+**Add new item).

(8) Populate the (Point of Contact) field with name of Flight Gear Issue Petty Officer.

(9) Select the air station from the drop-down menu under the (Air Station) field.

(10) Select the date under the (Submission Date) field.

(11) Populate the (Quantity) field with the number of dry suits being ordered and click the page.

(a) After the quantity has been entered, a row will appear for each dry suit being ordered.

(b) Under the (Name) field, populate each member name for which a dry suit is being ordered.

(c) From the drop-down menu under the (Dry suit) field, select (Nomex or Trilaminate).

(d) Check the box under (Size Chart Attached).

(12) Select (Click here to attach a file).

(13) After Attach File loads, select (Browse...).

(14) Select the completed DUI Military Drysuit System Order Form file previously saved to the computer, and select (Open).

(15) Select (Attach).

(16) Populate the (Unit Approving Officer) field with the unit designated approving officer.

(17) Select (Submit).

NOTE

Units shall designate the person responsible for approvals. The Approving Officer will receive an email prompting them to review the order.

(18) The Approving Officer shall then select the hyperlink in email.

(19) Once the ALC DUI Ordering Form page from the ALC SharePoint loads, the Approving Officer will select (Edit Item) on the top left toolbar of the page.

(20) From the drop-down menu under the (Unit Approving Officer Status) field, select (Approve or Deny).

(21) Select (Submit).

NOTE

The dry suit order will then be received by the item manager at ALC for processing. A confirmation email of approval or denial will be sent to the Flight Gear Issue Petty Officer who submitted the order.

NOTE

It is extremely important that upon receiving the dry suit order, receiving units shall scan and email packing slips/invoices showing proof of delivery to: D05-SG-ALC-ALSETECH-SMB@uscg.mil. This is so accurate funding and records can be kept.

2. Dry Suit Socks

a. Salient Characteristics Dry suit socks are used for thermal protection of the feet of the wearer under the RS dry suit, and may be layered to attain individual protection, comfort, and fit. Dry suit socks may be wool, polypropylene, 50/50 silk-wool blend, Nomex®, or polyester fleece.

b. Known Sources of Supply

(1) National Stock System

(a) NSN 8440-00-153-6717 (size 10)

(b) NSN 8440-00-153-6718 (size 11)

(c) NSN 8440-00-153-6719 (size 12)

(d) NSN 8440-00-153-6720 (size 13)

(e) NSN 8440-00-153-6721 (size 14)

(2) White's Diving www.whitesdiving.com

(3) REI www.rei.com

3. Dry Glove

a. Salient Characteristics Durable rubber material with integrated or removable liner. Provides maximum dexterity. Latex wrist seal to prevent water intrusion into the glove.

b. Known Source of Supply Diving Unlimited International www.dui-online.com

4. Wetsuit

a. Salient Characteristics Wetsuits shall be front- or back-zippered entry, black or orange in color (multicolored or patterned prints are not authorized), and constructed of lightweight, ultra-stretch, or quick-dry/water-repellant exterior neoprene or neoprene blend. Seams shall either be glued and blindstitched or taped/welded (full-thickness stitching and flatlock seams are not authorized on full-length wetsuits). Full-length wetsuits shall have internal wrist and ankle seals to prevent flushing. Manufacturer logos on extremities shall be noncontrasting. Units are authorized to purchase a variety of 2MM, 3MM, 4MM, 5MM, and 7MM wetsuits based on the seasonal water/air temperature and personal protection needs of the unit.

b. Known Sources of Supply

(1) XCEL www.xcelwetsuits.com

(2) Patagonia www.patagonia.com

(3) O'Neill www.oneill.com

(4) Rip Curl www.ripcurl.com

5. Rash Guard

a. Salient Characteristics Black rash guard is a lightweight form-fitting undergarment constructed of Lycra® or Spandex®, one- or two-piece. Pieces may be worn together, or separately as required by the helicopter RS to facilitate ease of donning of the wetsuit ensemble, to provide insulation by hindering the flow of water under the wetsuit layers.

b. Known Sources of Supply

(1) Quiksilver www.quiksilver.com

(2) XCEL www.xcelwetsuits.com

NOTE

The full-body rash guard is not to be used as an insulating layer in the dry suit.

6. Surf Cap

a. Salient Characteristics RS surf cap may be black or orange in color and vary in thickness based on the seasonal water/air temperature and personal protection needs of the unit. Cap is constructed of lightweight, ultrastretch, or quick-dry/water-repellant exterior neoprene or neoprene blend.

b. Known Sources of Supply

(1) XCEL www.xcelwetsuits.com

(2) O'Neill www.oneill.com

(3) Patagonia www.patagonia.com

7. Hood

a. Salient Characteristics RS hood may be black or orange in color and vary in thickness based on the seasonal water/air temperature and personal protection needs of the unit. Hood is constructed of lightweight, ultrastretch, or quick-dry/water-repellant exterior neoprene or neoprene blend.

b. Known Sources of Supply

(1) XCEL www.xcelwetsuits.com

(2) O'Neill www.oneill.com

(3) Patagonia www.patagonia.com

8. Wetsuit Glove

a. Salient Characteristics Gloves may be black or high visibility in color and vary in thickness based on the seasonal water/air temperature and personal protection needs of the unit. Gloves are constructed of lightweight, ultrastretch, or quick-dry/water-repellant exterior neoprene or neoprene blend. Gloves will have grip palms and be slip-on, with or without wrist straps.

b. Known Sources of Supply

(1) XCEL www.xcelwetsuits.com

(2) Patagonia www.patagonia.com

(3) Glacier Gloves www.glacieroutdoor.com

9. Wetsuit Booties

a. Salient Characteristics Booties may vary in thickness based on the seasonal water/air temperature and personal protection needs of the unit. Booties are constructed of lightweight, ultrastretch, natural/synthetic rubber or quick-dry/water-repellant exterior

neoprene or neoprene blend. Booties may be round/split toe and with/without zip or strap closures.

b. Known Sources of Supply

(1) XCEL www.xcelwetsuits.com

(2) Patagonia www.patagonia.com

10. Amphibious Work Boot

a. Salient Characteristics Neoprene/synthetic canvas lace-up ankle-high boot/shoe with a reinforced rubber sole for lateral stability. The boot/shoe will be all black or of subdued colors. The boot/shoe is designed to be worn in conjunction with the RS wetsuit or dry suit. This shoe/boot provides increased lateral stability, ankle integrity, and foot protection over wetsuit booties.

NOTE

When ordering the amphibious work boot, it is recommended to size up to one to two sizes to allow for dry suit foot insulation thickness. It is recommended that two pairs are purchased for each RS. It is advisable to issue one pair to be worn with the wetsuit, and one pair to be worn with the dry suit, because of foot size difference caused by each ensemble.

b. Known Sources of Supply

(1) The Rescue Source www.rescuesourcestore.com

(2) Zappos www.zappos.com

(3) Altama www.altama.com

11. Mask, Black, Silicone

a. Salient Characteristics Standard depth, low-volume mask or triview design. Chemical light attachment point. Clear prescription or nonprescription tempered lenses.

b. Known Sources of Supply

(1) Aqualung/U.S. Divers www.aqualung.com

(2) Sea Vision USA www.seavisionusa.com

12. Snorkel, Black, Silicone

a. Salient Characteristics Traditional flex snorkel with dual-bite block comfort-bite mouthpiece, with a nonpurge valve body assembly.

b. Known Source of Supply Aqualung/U.S. Divers www.aqualung.com

13. Mask Strap

a. Salient Characteristics Solid black silicone mask strap.

b. Known Source of Supply Aqualung/U.S. Divers www.aqualung.com - Wraparound Mask Strap

14. Snorkel Keeper

a. Salient Characteristics Solid black silicone/rubber figure 8 snorkel keeper.

b. Known Source of Supply Aqualung/U.S. Divers www.aqualung.com

15. Swim Fins

a. Salient Characteristics RS swim fin will be a black, traditional open-heel rubber/polymer plastic design with adjustable buckles or flexible straps. Swim fin pockets must be large enough to allow proper fit when wearing the required RS deployment ensemble and footwear.

NOTE

Hands-free heel strap release buckles are not authorized.

b. Known Sources of Supply

(1) Aqualung/U.S. Divers www.aqualung.com

(2) Amron International www.amronintl.com

16. Fin Straps

a. Salient Characteristics Solid black silicone rubber, quick-release/quick-adjusting buckles, or standard metal adjusting buckles.

b. Known Sources of Supply

(1) Aqualung/U.S. Divers www.aqualung.com

(2) Amron International www.amronintl.com

17. Handheld VHF Radio

a. Salient Characteristics RS handheld VHF radio will function on Coast Guard VHF-FM working channels (16, 21a-23a, 78a-83a) and have rapid-scanning capabilities. It will be a compact transceiver with a waterproof rating of IPX8. It will be powered by a (minimum) 6-watt lithium ion battery to facilitate a minimum of 12 to 14 hours of battery life (when fully charged), with a large backlit display for ease of viewing. It shall have a remaining battery power indicator and weather alert. It will have an external port to facilitate use of mission-specific auxiliary accessories such as external microphones. It will also have an incorporated lanyard attachment.

b. Known Source of Supply ICOM www.icomamerica.com - Model No. IC-M73

18. Hook Knife

a. Salient Characteristics RS hook knife will be solid black in color with replaceable blades and an incorporated lanyard attachment. Overall length is not to exceed 6-1/2 x 1-1/2 x 1/4 inches (length x width x cut width).

b. Known Source of Supply Para-Gear Equipment Co., Inc. http://para-gear-equipment-co-inc.sbcontract.com/profile.htm

19. Knife

a. Salient Characteristics RS knife will be constructed of primarily noncorrosive materials and need minimal breakdown to perform preventative and post-use maintenance for corrosion. An auto-open mechanism is required to allow one-hand opening of the knife, a blade lock to assure user safety during use, and an incorporated lanyard attachment.

Dimensions/weight of the RS knife will not exceed:

(1) 8-1/2-inch overall length

(2) 3-3/4-inch blade length

(3) 1/8-inch blade thickness

(4) 4.9 ounces (weight)

b. Known Sources of Supply

(1) Knife, Automatic, Switchblade, NSN 1095-01-446-4348

(2) Spyderco Autonomy, P/N C165GSOR, Spyderco (See ALSIPS)

20. Flashlight

a. Salient Characteristics RS flashlight will be waterproof to a minimum of 30 meters. The lamp of the flashlight will be halogen, Xenon®, or LED, with an incorporated lanyard attachment.

b. Known Sources of Supply

(1) Lifesaving Systems, Inc. www.lifesavingsystems.com

(2) Pelican www.pelicanproducts.us

(3) Underwater Kinetics www.uwkinetics.com

21. Trail Line Quick-Disconnect

a. Salient Characteristics Trail line quick-disconnect is a stainless steel snap shackle with a red beaded handle.

b. Known Source of Supply Lifesaving Systems, Inc. www.lifesavingsystems.com

22. SEAS-1 Belt

a. Salient Characteristics The RS SEAS-1 belt is constructed of yellow 2- x 45-inch long webbing with a 2-inch Fastex® Camloc buckle. A nylon holster with two snap closures is located on the belt to hold the SEAS-1 cylinder assembly.

b. Known Source of Supply Lifesaving Systems, Inc. www.lifesavingsystems.com - P/N 576-3

23. Chemical Light Straps

a. Salient Characteristics The chemical light straps are constructed of black 1-inch nylon webbing. There are three stainless snaphooks, arranged to allow suspension from a hoist hook by one hook, with a chemical light attached to and suspended from each of the two remaining hooks.

b. Known Source of Supply Lifesaving Systems, Inc. www.lifesavingsystems.com - P/N 230

24. RS Protective Helmet

a. Salient Characteristics

(1) Yellow or orange in color, constructed of a UV-stable impact-resistant ABS shell with multi-impact EVA closed cell foam liner

(2) Must meet all performance requirements of EN 1385 approved (or better) standard for white water helmets

(3) Internal support and retention harness may be adjustable or fixed to fit over an insulating layer (thin cap or hood)

(4) Padding/sizing components and liner will be removable to accommodate sizing, cleaning, and replacement

(5) Helmet will have adjustable chinstrap

NOTE

There are no accessories authorized for attachment to the RS protective helmet. The only authorized modification for the RS protective helmet is the addition of the mask retention strap (Gath) and SOLAS reflective tape.

b. Known Sources of Supply

(1) Murrays Snow and Watersports www.murrays.com - Gath Model (Gedi), sizes S-XXXL

(2) Team Wendy www.teamwendy.com

(a) EXFIL LTP (Yellow/RS mods) Size 1: 72-61S-UC

(b) EXFIL LTP (Yellow/RS mods) Size 2: 72-62S-UC

NOTE

To provide the greatest degree of waterproof protection (hydrostatic head) and Moisture Vapor Transfer Rate (MVTR), the materials that make up the outer shell components shall meet or exceed a hydrostatic head of 28,000 mm/24 hours, and an MVTR of 25,000.

25. USCG IFAK-(Black) Leg Pouch Medical Kit

    a. Salient Characteristics The IFAK leg pouch medical kit will be constructed of 500D CORDURA® solution-dyed nylon, (no front pocket) sand and water resistant, self-repairing zipper with silent 550 cord pulls, LE-style attachment system compatible, leg strap with Quick-Grip™.

    b. IFAK Leg Pouch Medical Kit Contents:

        (1) 2 x Nitrile Trauma Gloves (1 pr)

        (2) 2 x Nasopharyngeal Airway 28F with Lubricant

        (3) 2 x Petrolatum Gauze (3 x 18 inches)

        (4) 1 x HyFin® Chest Seal

        (5) 1 x C-A-T® (Combat Application Tourniquet®)

        (6) 1 x ETD™ 6 in Emergency Trauma Dressing

        (7) 1 x S-Rolled Gauze™ (4.5 inches x 4.1 yards)

        (8) 1 x Z-Fold Vacuum Packed QuikClot® Combat Gauze

        (9) 1 x Polycarbonate Eye Shield

        (10) 1 x GeckoGrip™ Rescue Tape

    c. Known Source of Supply NSN 6545-01-572-7248

26. Gear Bag

    a. Salient Characteristics The RS gear bag will be black and may have wheels. Gear bag volume shall be a minimum 6,700 cubic inches.

    b. Known Sources of Supply

        (1) Aqualung www.aqualung.com

        (2) Lifesaving Systems, Inc. www.lifesavingsystems.com

27. Belt, Safety, Aircrewman

    a. Known Sources of Supply

        (1) Capewell Aerial Systems, LLC www.capewellaerialsystems.com

        (2) USCG Crewman Belt, P/N MS 16070-21M1

28. Water Rescue Mannequin

    a. Salient Characteristics The water mannequin should have a lifelike appearance and may have articulating arms and legs.

    b. Known Sources of Supply

        (1) Lifesaving Systems, Inc. www.lifesavingsystems.com

        (2) Dummies Unlimited www.dummiesunlimited.com

        (3) Rescue Technology www.rescuetech1.com

D. DISENTANGLEMENT TRAINING EQUIPMENT

1. Aviation Parachute Harness

   a. Training Harnesses PCU-56 (most common), PCU-78/P

   b. Known Source of Supply Aerial Machine and Tool www.aerialmachineandtool.com

      (1) PCU-56

         (a) Small Regular, P/N 814AS200-1, NIIN 01-357-4397

         (b) Medium Regular, P/N 814AS400-1, NIIN 01-376-7243

         (c) Large Regular, P/N 814AS600-1, NIIN 01-385-6722

         (d) X-Large Regular, P/N 814AS700-1, NIIN 01-491-9658

      (2) PCU-78/P

         (a) Small, P/N 1979AS1200, NIIN 01-572-9429

         (b) Medium, P/N 1979AS1300, NIIN 01-572-9424

         (c) Large, P/N 1979AS1400, NIIN 01-572-9400

2. Survival Vest

   a. CMU-36/P Worn over PCU-56 harness. The PCU-78/P is a standalone harness and vest.

   b. Known Source of Supply Aerial Machine and Tool www.aerialmachineandtool.com

      (1) One Size Fits All, P/N 3561AS300-2C, NIIN 01-568-9791

3. Accessories

   a. Canopy Release Adapter, two per assembly, P/N 015-710001-1, NIIN 00-148-8492

   b. Lap Belt Adapter, two per assembly, P/N 015-11366-1, NIIN 00-986-8334

   c. Canopy, Personnel Parachute, 28-foot, P/N 60a113e5-18, NIIN 01-083-1397

   d. Canopy, Ejection Seat, 21-foot, P/N MBEU147610, NIIN 99-005-0444

4. Known Source of Supply Aerial Machine and Tool www.aerialmachineandtool.com

E. INLAND SAR ENSEMBLE The helicopter RS performs Search and Rescue (SAR) in various environments including the subarctic and temperate rainforests. Providing SAR capabilities in these environments require specific protective clothing that provides protection from extreme temperatures and precipitation, as well as from terrain and flora.

The following salient characteristics provide the highest quality equipment to provide this level of protection and from which will not be deviated.

NOTE

Inland SAR is defined as anywhere other than the maritime environment. Based on the environmental conditions, terrain, and/or type of mission being conducted, all other RS-authorized equipment may be used in conjunction with the equipment listed for inland SAR.

1. SAR Helmet Refer to Paragraph 8.C.24.

2. Jacket, Outer Shell

   a. Salient Characteristics

      (1) The outer shell jacket will be constructed of either a Gore-Tex Pro® or equivalent material to provide the highest level of waterproof capability with maximum moisture transfer.

      (2) Substantial pit zips to allow maximum venting during exertion.

(3) Optional vents on front.

(4) Taped internal seams.

(5) An adjustable waist or bottom, with an optional internal snow skirt, is required to prevent wind and snow intrusion.

(6) An optional collar inside the hood to deflect rain off the neck in the event the hood is removed from the head to accommodate body heat regulation.

(7) Outside pockets that are harness compatible (accessible when the jacket is worn with the RS harness), with highly water-repellant zippers.

(8) An adjustable fixed hood with brim that is helmet-compatible.

(9) Wrist closures that are snag-free and easily adjusted with gloves worn.

(10) At least one internal pocket with water-resistant zipper closure.

b. Known Sources of Supply

(1) Arc'teryx www.arcteryx.com

(2) North Face www.thenorthface.com

(3) REI www.rei.com

NOTE

The insulation in the insulated Durable Water Repellency (DWR) jacket will be a synthetic material, not bird down.

3. Jacket, DWR, Insulated The insulated DWR jacket can be worn without the outer shell jacket as an external layer. It may be used as an additional insulating layer, when temperatures support the need for an external insulating shell over base and warming layers, without the need for rain protection.

a. Salient Characteristics

(1) DWR-coated, breathable outer material

(2) Harness-compatible outside pockets

(3) One internal pocket

(4) Synthetic insulation

b. Known Sources of Supply

(1) North Face https://www.thenorthface.com/

(2) REI www.rei.com

NOTE

To provide the greatest degree of waterproof protection (hydrostatic head) and MVTR, the materials that make up the outer shell components shall meet or exceed a hydrostatic head of 28,000 mm/24 hours, and an MVTR of 25,000.

NOTE

Snow use may require a choice of bib over the pants.

4. Pants or Bib, Outer Shell

a. Salient Characteristics

(1) Outer shell pants or bib will be constructed of either a Gore-Tex Pro® or equivalent material to provide the highest level of waterproof capability with maximum moisture transfer.

(2) Outer shell pants or bib as required by the Area of Operation Responsibility (AOR).

(3) Articulated knees.

(4) Kick patches in cuff.

(5) Taped internal seams.

(6) Hand pockets with water-resistant zipper.

(7) Elastic waist with snap closure and zip fly.

(8) Belt loops with incorporated web belt.

(9) Built-in adjustable/removable suspenders.

(10) Integrated gaiters to prevent snow intrusion.

(11) Side zippers on each leg with double or two-way zipper sliders to accommodate venting to control temperature during exertion, and donning/doffing without boot removal.

b. Known Sources of Supply

(1) Arc'teryx www.arcteryx.com

(2) North Face www.thenorthface.com

(3) REI www.rei.com

NOTE

At no time will cotton be worn as any component of the RS inland SAR ensemble, to include underwear, socks, or a head cover.

5. Base Insulating Layer

a. Salient Characteristics

(1) The base insulating layer and two warming layers will be constructed of high-quality synthetic or high-quality natural composition such as Merino wool. It will be treated to prevent degradation caused by perspiration and bacteria growth.

(2) The insulating layers utilized with the RS dry suit ensemble (MASSIF) meet the requirements to provide adjustable base layers depending on the environment of utilization.

b. Known Source of Supply MASSIF www.massif.com

6. Warming Layer

a. Salient Characteristics

(1) The base insulating layer and two warming layers will be constructed of high-quality synthetic or high-quality natural composition such as Merino wool. It will be treated to prevent degradation caused by perspiration and bacteria growth.

(2) The insulating layers utilized with the RS dry suit ensemble (MASSIF) meet the requirements to provide adjustable base layers depending on the environment of utilization.

b. Known Source of Supply MASSIF www.massif.com

7. Socks and Sock Liners

a. Salient Characteristics

(1) Well-fitting boot-height socks of synthetic or natural fiber (wool) or a composite of these designed for active use with boots in wet and cold environments.

(2) Padding or layering in the heel and areas of pressure from the boot.

b. Known Source of Supply REI www.rei.com

NOTE

Land SAR ensemble boots shall require little to no break-in prior to use. There is no requirement for a steel or composite toe.

8. Boots, Rugged Terrain

   a. Salient Characteristics

      (1) Lightweight construction

      (2) High-traction VIBRAM® sole

      (3) Combinations of GoreTex®, leather, and composite upper

      (4) Waterproof bootie

      (5) Molded EVA midsole

      (6) Durable lace eyelets

      (7) Insulation will be determined by the area of operation

      (8) Crampon heel shelf optional if required for operational area

   b. Known Sources of Supply

      (1) Asolo www.asolo.com/en

      (2) Salomon www.salomon.com/us

      (3) La Sportiva www.sportiva.com

      (4) REI www.rei.com

      (5) ALSIPS

9. Head Gear

   a. Salient Characteristics

      (1) Thin synthetic insulating, wicking layer that can be worn comfortably under an appropriately adjusted SAR helmet.

      (2) Another hat may be thicker, for use when temperatures require more insulation during times of activity that do not require the use of the SAR helmet, that is easily stored in the pocket of the outer shell jacket or insulated DWR jacket.

   b. Known Source of Supply REI www.rei.com

10. Gloves

   a. Salient Characteristics

      (1) Windproof, breathable with a gripping palm surface.

      (2) Snug/close fitting to avoid loss or entanglement in equipment.

      (3) Slip-on with or without wrist-securing closure (Velcro®).

      (4) Quick-dry synthetic construction.

      (5) Minimum insulation if required by operational area.

      (6) Reinforced palm/fingers for durability, hand protection.

   b. Known Source of Supply REI www.rei.com

11. Glove Shell A three- or five-finger glove shell or mitten to provide additional insulation over regular gloves in colder environments.

   a. Salient Characteristics

      (1) Windproof, waterproof, breathable with a gripping palm surface.

      (2) Varied degree of insulation depending on environment used.

(3) Wrist cords with cord locks to prevent loss when doffing.

b. Known Source of Supply REI www.rei.com

12. Knife, Survival, Fixed Blade with Scabbard

a. Salient Characteristics

(1) Blade length: 4.5 to 5.0 inches

(2) Blade thickness: 0.019 to 0.022 inch

(3) Overall knife length not to exceed 10.0 inches

(4) Full-tang blade

(5) Pack-mountable scabbard

(6) Partially serrated blade

(7) Suggested knife: GERBER Strongarm Fixed Blade; GSA advantage availability

b. Known Source of Supply GERBER www.gerbergear.com

13. Bivouac Shelter, Lightweight, Rapid Deployment

a. Salient Characteristics

(1) Single-person capacity

(2) Three-season capability

(3) Weight: 1.75 pounds or less

(4) Inflatable structural support to allow deployment in less than 30 seconds

(5) Suggested Bivouac Shelter: Nemo Equipment, SABRE® SE Airbeam Shelter

b. Known Source of Supply Nemo Equipment www.nemoequipment.com

14. Sleeping Pad, Insulated, Ultralight, Airpad

a. Salient Characteristics

(1) Single-person capacity

(2) Pad thickness: 2.5 inches

(3) Packed size: 8 to 9 x 4 to 5 inches

(4) R-Value: 3.2 minimum

(5) Suggested sleeping pad, insulated, ultralight, airpad: Therma-Rest, NeoAir XLite sleeping pad

b. Known Source of Supply REI www.rei.com

F. VERTICAL SURFACE OPERATIONS EQUIPMENT

1. Face Mask

a. Salient Characteristics The mask is worn in conjunction with the aircrew protective helmet and will protect the eyes, face, and chin of the wearer from rotor wash debris during vertical deployment.

b. Known Source of Supply GSA Advantage www.gsaadvantage.com - Helix Thermal Paintball Mask

2. Ballistic/Tactical Eyewear

a. Salient Characteristics The low-profile ballistic/tactical eye protection will have interchangeable clear/tinted antifog lenses. The lenses will have an ANSI Z87 rating. An elastic headband will provide retention. These are worn with the aircrew protective helmet during vertical deployment.

b. Known Source of Supply GSA Advantage www.gsaadvantage.com - WileyX (SG-1 goggles)

3. Rappel Gloves

a. Salient Characteristics Rappel gloves will be high visibility in color and be constructed of cowhide or synthetic leather with protective wear pads on palm and fingers. Gloves provide hand protection for safety personnel during vertical surface training operations.

b. Known Sources of Supply

(1) Rescue Technology www.rescuetech1.com

(2) Mechanix Gloves www.mechanix.com

4. Rescue Harness

a. Salient Characteristics The rescue harness is constructed of 1-3/4-inch webbing that encompasses the legs and waist, utilizing integrated D-rings and adjustable buckles. This harness shall meet UL classification of NFPA 1983 (2001) and ANSI A10.14 (1991). This harness is used for safety personnel during vertical surface training operations.

b. Known Source of Supply The Rescue Source www.rescuesource.com - CMC Pro Series Harness, P/N HA9330, sizes S = 26 to 30 inches, R = 30 to 44 inches, XL = 42 to 46 inches

5. Boots

a. Salient Characteristics These boots will be black, leather/Gore-Tex®/Cordura®. They may be summer or winter weight boots with protected toes. The soles will be chemical/oil slip-resistant. This equipment is used for safety personnel during vertical surface training operations.

b. Known Source of Supply Rocky Boots www.rockyboots.com - Alpha Force Composite Toe Duty Boot

6. Rain Gear

a. Salient Characteristics This high-visibility rain gear will be two-piece (jacket with integrated hood and pants), constructed of Gore-Tex® or similar quality waterproof-breathable material. The construction will be durable, with reinforced seat and knees. This equipment is used for safety personnel during vertical surface training operations.

b. Known Sources of Supply

(1) North Face www.thenorthface.com

(2) REI www.rei.com

7. Rescue Rope Equipment Bag

a. Salient Characteristics The rescue rope equipment bag will be constructed of high-visibility 1,000 denier Cordura® nylon with integrated shoulder straps. The bag will be capable of carrying 250 feet of 1/2-inch 11-mm kermantle line. This equipment is used for safety personnel during vertical surface training operations.

b. Known Source of Supply CMC Rescue www.cmcrescue.com - Rope Bag No. 3, P/N 430301

8. Signal Sleeves

a. Salient Characteristics Signal sleeves are constructed of yellow acrylic fabric with four 1-inch bands of SOLAS-grade retroreflective material sewn evenly around the circumference of the sleeves. These sleeves enhance hand-signaling visibility by the RS during vertical surface operations.

b. Known Source of Supply Lifesaving Systems Corp. www.lifesavingsystems.com - P/N 465

9. Rescue Loop

a. Salient Characteristics The rescue loop is constructed of 1-inch tubular webbing (4,500 foot-pounds), length 6 to 12 inches. This is used to attach ascender to safety harness. This equipment is used for safety personnel during vertical surface training operations.

CAUTION

APPROPRIATE TRAINING SHALL PRECEDE USE OF THIS EQUIPMENT PRIOR TO USE.

b. Known Source of Supply Rescue Technology www.rescuetech1.com - 12 inches, P/N 76120121

10. Locking Carabiner

a. Salient Characteristics The locking carabiner is an aluminum screw or quick-lock carabiner, with a minimum 23 kilo Newton (kN) rating at the major axis. This equipment is used for safety personnel during vertical surface training operations.

CAUTION

APPROPRIATE TRAINING SHALL PRECEDE USE OF THIS EQUIPMENT PRIOR TO USE.

b. Known Source of Supply Omega www.omegapac.com - ISO Cold Forged Jakes

11. Expansion Anchors

a. Salient Characteristics The stainless steel expansion anchor shall meet CE EN 795 A1 and CE EN 959 classes. Special consideration should be made to purchase the correct type of anchor for the vertical surface rock composition and structure. This equipment is used for safety personnel during vertical surface training operations.

CAUTION

APPROPRIATE TRAINING SHALL PRECEDE USE OF THIS EQUIPMENT PRIOR TO USE.

b. Known Source of Supply Petzl Professional www.petzl.com

12. Rope Ascender

a. Salient Characteristics The rope ascender will be milled from high-strength thick-wall aluminum alloy extrusion. Rigging point must accommodate several carabiner types. Ascenders are used with safety ropes during vertical surface training operations. This equipment is used for safety personnel during vertical surface training operations.

CAUTION

APPROPRIATE TRAINING SHALL PRECEDE USE OF THIS EQUIPMENT PRIOR TO USE.

b. Known Source of Supply Rescue Technology www.rescuetech1.com

G. ICE OPERATIONS EQUIPMENT

1. Ski Goggles

a. Salient Characteristics The ski goggles lenses will be fog-resistant nonglare, UV protected. An adjustable headband will secure the goggles to the wearer, to be worn during ice operations.

b. Known Source of Supply Scott www.scottusa.com

2. Ski Helmet

   a. Salient Characteristics The ski helmet will be a full-shell ski helmet constructed of polycarbonate plastic with an Expanded Polystyrene Liner (EPS) and adjustable nylon chin strap. Helmet shall meet CE-EN 1077 or ASTM F2040 standards.

   b. Modifications

      (1) Addition of SOLAS retro tape

      (2) USCG branding

   c. Known Sources of Supply

      (1) Snow Shack www.snowshack.com - Giro Helmet

      (2) Scott www.scottusa.com - Shadow III, black

3. Ice Awls

   a. Salient Characteristics The ice awls are constructed of two 4-inch plastic cylinders that contain a sturdy steel pick protected by a retractable, spring-loaded guard.

   b. Known Source of Supply Rescue Source www.rescuesource.com - Pick of Life, P/N IR1600

4. Ice Crampons

   a. Salient Characteristics The ice crampons shall be hinged/semirigid or rigid crampons to be used in conjunction with boots while climbing hard snow slopes or ice.

   b. Known Sources of Supply

      (1) Stabil Implus https://stabil.implus.com

      (2) REI www.rei.com

      (3) Cabelas www.cabelas.com

5. Ice Cleats

   a. Salient Characteristics Ice cleats will be Vibram® soled construction with cast-hardened replaceable cleats and Velcro® retaining straps.

   b. Known Sources of Supply

      (1) REI www.rei.com

      (2) Cabelas www.cabelas.com

6. Snow Shoes

   a. Salient Characteristics Snow shoes will be constructed of aluminum tubing or aluminum frame with adjustable bindings. Snow shoes are to be used in conjunction with boots while walking on deep snow.

   b. Known Source of Supply REI www.rei.com

7. Kneepads

   a. Salient Characteristics The kneepads will be black, tactical-style kneepads with a hard shell to protect the knee (patella) during impact, and incorporate adjustable hook-and-pile elastic leg straps.

   b. Known Source of Supply Blackhawk www.blackhawk.com - Advanced Tactical Knee Pads V.2

8. Headlamp

   a. Salient Characteristics The headlamp will be compact and waterproof with adjustable head strap. The bulb will be an LED with or without a red lens. Adjustable light settings are required.

b. Known Source of Supply REI www.rei.com

9. Accessory/Survival Equipment Bag

a. Salient Characteristics The RS survival bag will be black, constructed of Cordura® Ripstop® material with or without a hydration system. The volume shall be a minimum of 2,500 cubic inches with multiple internal and external pockets. MOLLE webbing attachment points are desirable for gear attachment and modular flexibility.

b. Known Source of Supply

(1) CamelBak® www.camelbak.com

(2) GSA Advantage www.gsaadvantage.com

CHAPTER 9. AIRCRAFT ALSE INSPECTIONS

A. INTRODUCTION Search and Rescue (SAR) mission abilities are located in Air Operations Manual, COMDINST M3710.1(series), Chapter 7. Minimum rescue equipment required to be fully mission capable for SAR is located in Aviation Life Support Equipment Systems Manual, COMDINST M13520.1 (series), Chapter 6. Due to the varying operational environment of each unit, supplemental SAR gear may be added as needed by the unit Commanding Officer (CO). Quantities of the ALSE equipment for each airframe listed below are at the discretion of the unit CO unless quantity is specified in the MPC.

B. C-130H ALSE EQUIPMENT (Refer to MPC 052000.0.)

1. 28-foot ADS - One per dewatering pump
2. 12-foot ADS - One per ADS can
3. Dewatering pump(s)
4. ADS can
5. LPU-26/P survival vests - At a minimum, shall have one for each person onboard trained in its use
6. Passenger life preserver - At a minimum, shall have one for each person onboard not trained to wear LPU-26 survival vest
7. EPOS - At a minimum, shall have one for each passenger onboard
8. Survival suits
9. ASRK-24 or ASRK-16
10. Message blocks
11. Strobe marker with float
12. Sea dye marker
13. MK-25 and MK-58 location markers

C. C-130J ALSE EQUIPMENT (Refer to MPC 051000.0.)

1. 28-foot ADS - One per dewatering pump
2. 12-foot ADS - One per ADS can
3. Dewatering pump(s)
4. ADS can
5. LPU-26/P survival vests - At a minimum, shall have one for each person onboard trained in its use
6. Passenger life preserver - At a minimum, shall have one for each person onboard not trained to wear LPU-26 survival vest
7. EPOS - At a minimum, shall have one for each passenger onboard
8. Survival suits
9. ASRK-24 or ASRK-16
10. Message blocks
11. Strobe marker with float
12. Sea dye marker
13. MK-25 and MK-58 location markers

D. C-27 ALSE EQUIPMENT (Refer to MPC 051000.0.)

1. 28-foot ADS - One per dewatering pump

2. 12-foot ADS - One per ADS can
3. Dewatering pump(s)
4. ADS can
5. Survival suits
6. ASRK-24 or ASRK-16

E. C-144 ALSE EQUIPMENT (Refer to MPC 132000.0.)

1. 28-foot ADS - One per dewatering pump
2. 12-foot ADS - One per ADS can
3. Dewatering pump(s)
4. ADS can
5. LPU-26/P survival vests - At a minimum, shall have one for each person onboard trained in its use
6. Passenger life preserver - At a minimum, shall have one for each person onboard not trained to wear LPU-26 survival vest
7. EPOS - At a minimum, shall have one for each passenger onboard
8. Survival suits
9. ASRK-24 or ASRK-16
10. Message blocks
11. Strobe marker with float

F. H-60 ALSE EQUIPMENT (Refer to MPC 13204.0.)

1. Survival suits
2. MD-1127-V22 passenger vests - Shall be worn by occupants not trained in the use of the aircrew survival vest
3. Chem lights
4. Chem light straps
5. Message blocks
6. Sea dye marker(s)
7. Strobe marker with float
8. Cargo straps
9. N95 masks

G. H-65 ALSE EQUIPMENT (Refer to MPC 05200.8.)

1. Survival suits
2. MD-1127-V22 passenger vests - Shall be worn by occupants not trained in the use of the aircrew survival vest
3. Chem lights
4. Chem light straps
5. Message blocks
6. Sea dye marker(s)
7. Strobe marker with float
8. Cargo straps
9. N95 masks
10. Space blanket(s)

GLOSSARY

ABRASION A fuzzy spot or area on cloth usually caused by rubbing against an object.

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

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

ARAMID A heat-resistant knit material with excellent stability to 700 °F (replaces polyamide material).

ASSEMBLY A grouping of parts fitted together to form a complete unit.

ATTENUATION Reduction or lessening. For example, sound attenuation is the reduction of ambient noise in an aircraft by use of a helmet equipped with sound-attenuating earphones, sonic cup.

BACKSTITCH A stitch made by inserting the needle a stitch length behind and bringing it up a stitch length ahead of the last stitch. Also, sewing back over a row of stitches.

BAR TACK A concentrated series of zigzag stitches used to reinforce points of stress. A bar tack shall have 28 stitches per half inch.

BEACON, EMERGENCY RADIO An automatically actuated transmitter mounted in the survival kit that emits an inaudible beacon signal to attract rescue aircraft.

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

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

BOLT A package or roll of cloth of varying widths. Also, a measuring term for 40 yards of material.

C Abbreviation for Celsius. A thermometric scale of which the interval between the freezing point and boiling point of water is divided into 100 degrees. 0 degrees C represents the freezing point and 100 degrees C represents the boiling point of water.

CALENDAR INSPECTION A detailed, searching inspection for material degradation that may have occurred during the preceding calendar interval which provides an opportunity to perform essential preventative maintenance. The inspections are programmed in multiple calendar weeks.

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

CARTRIDGE A cylindrical, nonrefillable container.

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

CAUTION Indicates danger to the equipment. The caution precedes the step or item to which it refers.

CLIP A device that fastens, holds together, or retains (e.g., the clip, which is tacked to a riser and holds the ripcord housing in place).

CO2 Abbreviation for carbon dioxide.

COMPONENT Item of equipment making up part of an assembly (e.g., a ripcord housing is a component part of a ripcord assembly).

CONFIGURATION The makeup, size, shape and relative location of parts in an item of equipment and its accessories. This includes the composition of the materials as well as marking details. Government drawings, military specifications, and modification instructions specify the configuration of each piece of equipment.

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

COVERALLS, ANTI-EXPOSURE A one-piece outer garment worn to provide protection in adverse, low temperature conditions.

D-RING A metal fitting shaped in the form of a letter D.

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

DISCONNECT, QUICK A method of attachment allowing separation of two components by a single, rapid motion or action.

DOFF To remove or take off an item of clothing or equipment.

DON To put on an item of clothing or equipment.

EGRESS Outlet or means of getting out.

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

F Abbreviation for Fahrenheit.

FABRICATE To make up or construct an item of equipment, accessory, or material.

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

FASTENER, SNAP A metal fastener containing essentially a ball and a socket attached to opposite parts of a material and used to hold mating surfaces together.

FLAMMABLE MATERIAL Any material capable of being easily ignited and burned with extreme rapidity.

FLOTATION CELL The inflatable compartments of a life preserver.

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

FUNCTIONAL TEST A test which puts an item to use to determine if it operates properly.

GAUGE An instrument for measuring pressure. A measurement of size or thickness.

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

GROMMET A metal eye and washer used to reinforce a hole in material (e.g., grommets on container side flaps).

GROSS WEIGHT The gross weight of a carbon dioxide cylinder includes the weight of the cylinder, the weight of the carbon dioxide contained by the cylinder, and the weight of the inflation valve attached to the cylinder.

HARDWARE Items made of metal such as tools, fittings, fasteners, and appliances.

HARNESS An arrangement of webbing straps used to support the rescue swimmer during hoist evolutions.

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

HYDROSTATIC TEST This is a permanent volumetric expansion of multiplace liferaft CO_2 cylinders. This test is conducted hydrostatically every 5 years at 5/3, the working pressure of the tested cylinder.

INFLATION ASSEMBLY Inflation valve and carbon dioxide cylinder as a unit.

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

INSPECTION A close examination for damage, wear, dirt, and serviceability.

KEEPER Small strip of tape or loop used to retain an object (e.g., riser and back pad keepers).

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

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

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

LOCKSTITCH A common sewing-machine stitch formed when the thread in the needle goes through the material and connects with the bobbin thread. The needle and bobbin thread should lock in the center of the material thickness.

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

MARGIN The space from the outer row of stitching to edge of fold of the cloth.

METHYL ETHYL KETONE (MEK) A colorless, flammable alcohol used in lacquers, paint removers, cements and adhesives, celluloid, and cleaning fluids.

MILDEW A damaging fungus or mold which forms on cloth and leather. Dampness and the absence of fresh air and sunlight cause it.

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

NRFI Not Ready For Issue.

OVERLAP To extend over and cover a piece of cloth.

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

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

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

PARACHUTE, CARGO A parachute used to airdrop materials such as food, water, explosives, clothing, weapons, and supplies.

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

PEAK The top center of the parachute canopy, the point at which all vent lines cross. Also called apex or crown.

PYROTECHNIC Any device which either burns or explodes or uses burning or exploding to operate a system. Examples of pyrotechnic devices are static line cutters, ballistic spreading guns and automatic actuators.

REPAIRS, MINOR Repairs that can be effected at intermediate or local levels of maintenance.

RFI Ready For Issue.

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

RISER The webbing which connects the rescue equipment harness to the cargo parachute assembly. The riser is composed of two lift-webs and there are two risers on each parachute assembly.

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

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

SCRAP To discard, with proper authorization, items, parts or materials that are obsolete or no longer usable.

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

SEAM DIAGONAL A French-fell seam of the canopy which joins two sections of a gore. Diagonal seams meet the center line of the gore at angles of 45 degrees and 135 degrees.

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

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

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

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

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

SEWING MACHINE A machine with a power-driven needle, used for sewing and stitching.

SHEARS, PINKING Shears with a saw-toothed inner edge on the blades for making zigzag cut.

SKIRT, CANOPY The lower edge of a canopy.

STITCH, BASEBALL A stitch used in repair and patching of fabrics.

STITCH, BOX Rectangular stitch used to attach and reinforce.

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

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

STRAP, CHEST The harness webbing which is secured across the chest with a snap and a V-ring to prevent the wearer from falling out of the harness.

SUIT, ANTI-EXPOSURE A garment worn to provide protection in adverse, low temperature conditions.

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

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

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

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

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

TPL Thermal Protective Lining.

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

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

TWIST OF THREAD OR CORD The direction (right or left) in which the strands of thread or cord are wound around one another. If the thread unwinds when turning it to the left, it is right twist and if it tightens, it is left twist. Right twist is also known as Z-twist. Left twist is also known as S-twist.

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

WARP Threads that run parallel to the selvage edge of cloth. Those that are crossed by the filling threads.

WEAVE To manufacture a web or cloth on a loom by interlacing the warp and filling yarns. Also, the particular pattern employed in weaving cloth. The cloth for parachute use is one up and one down (plain weave), two up and one down (twill weave), or ripstop.

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

WEB (WEBBING) A strong, narrow, closely woven tape of synthetic, cotton, or linen fiber designed for bearing weight (e.g., manufacture of the parachute harness).

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

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

AUF AUTHORIZED EQUIPMENT LIST FOR GUNNER UNITS

A. EQUIPMENT AND KNOWN SOURCE OF SUPPLY

1. This enclosure contains the authorized equipment and known source of supply list for gunner units.

Equipment	**Known Source of Supply**
Helicopter Flight Helmets HGU-56/P (Sage Green)	**GSA Advantage**
Part Number	**Size**
D7590-2	X-Small
D7590-3	Small
D7590-4	Medium
D7590-5	Large
D7590-6	X-Large

Equipment	**Known Source of Supply**
Tactical Ballistic Helmet, Black TBH II	**Gentex Corp.**
Part Number	**Size**
03C11787-1C06A	Small
03C11787-2C06A	Medium
03C11787-3C06A	Large
03C11787-4C06A	X-Large

Equipment	**Known Source of Supply**
GenCom III Headset GSA No.	**Gentex Corp.**
Part Number	**Application**
ND11829-2	5 ohm mic (H-65)
ND11829-1	150 ohm mic (H-60)

Equipment	**Known Source of Supply**
Electret Replacement Microphone (H-60 Application)	**Gentex Corp.**
NOTE For H-60 use, replace GenComm III microphone with Electret Replacement Microphone.	
Part Number	**Application**
Gentex P/N N100909-02	H-60

Equipment		Known Source of Supply
Headset Adapter Cord		**Gentex Corp.**
Part Number	**Application**	
B11046-1 (no inline amp)	H65, H-60	

Equipment		Known Source of Supply
ANVIS NVG Bracket Kit		**Gentex Corp.**
Part Number	**Item**	
05C12036-2	ANVIS NVG Bracket Kit	
5340-01-439-8992	NVG Battery Box Mount	

Equipment		Known Source of Supply
Eye Protection System, 3 Lens Interchangeable		**Gentex Corp.**
Part Number	**Item**	
C11870-AFNASNO	Eye Protection System	

Equipment		Known Source of Supply
ArmoRight Pro Vest System		**Tactical Solution Options**
757-961-3457 Email: info@TSOarmor.com GSA Contract No. GS-07F-9473G Supply Schedule 426-1B Cage Code/ CCR No. 1RT02 (Force One) DUNS No.: 844960174		
Part Number	**Item**	
CE-ARP-01	Vest and Plates	
TSAV-01	USCG Level IIIA concealable vest (M, L, XL, XXL)	
PSF-02	USCG Front Flared Level III Plate	
PSB-02	USCG Back Level III Plate	
PSS-02	USCG Side Level III Plate Qty 1 (Must Order Quantity of 2)	

Equipment		Known Source of Supply
SWITLIK UZIP-IT Anti-Exposure Suit, Olive Drab MFR/Vendor Part No. S-3320-2X		**GSA Advantage**
Part Number	**Size**	
S-3320-21	X-Small	
S-3320-22	Small	

S-3320-23	Medium
S-3320-24	Large
S-3320-25	X-Large
S-3320-26	XX-Large

Equipment	**Known Source of Supply**
LPU-27/P SAR Warrior Aircrew Vest	**ALC**
Part Number	**Item**
8415-01-HS1-7118	Vest
1095-01-HS1-7141	Holster
8415-01-HS1-7139	Collar

Equipment	**Known Source of Supply**
M-14 Magazine Pouch, Black, Bungee Retention	**Diamondback Tactical**
Part Number	**Item**
BLPM 18RG	M-14 Magazine Pouch

Equipment	**Known Source of Supply**
M-16 Magazine Pouch, Black, 30 rd. Single and Double	**Blackhawk**
Part Number	**Item**
37 CL68BK	Single M-16 Magazine Pouch, Velcro® closure, Bungee Retention. Holds one 30 round clip.
37CL09BK	Double M-16 Magazine Pouch, Velcro® closure, Bungee Retention. Holds two 30 round clip.

Equipment	**Known Source of Supply**
Pistol Bungee Retention Strap, Black	**Blackhawk**
Beretta M9 or Sig 229DAK	
Model Number	**Item**
40BR00BK	Bungee Retention Strap, Pistol

Equipment	**Known Source of Supply**
Pistol Magazine Pouch , Black, Single and Double	**Blackhawk**
Beretta M9 or Sig 229DAK	
Model Number	**Item**
37CL08BK	Pistol Magazine Pouch, Single
37CL09BK	Pistol Magazine Pouch, Double

Equipment		Known Source of Supply
MOLLE Drop Leg Platform, Black with Ret. Straps		**Blackhawk**
Model Number	**Item**	
37CL39B	MOLLE Drop Leg Platform	

Equipment		Known Source of Supply
H-Harness , Black, 3-point Attachment		**Blackhawk**
Model Number	**Item**	
37SS00BK	H-Harness	

Equipment		Known Source of Supply
Military Web Belt, Black -3 pt. Release		**Blackhawk**
Model Number	**Item**	
41WB02BK	Up to 43 inches	
41WB03BK	Up to 49 inches	

Equipment		Known Source of Supply
Storm Single-Point Sling		**Blackhawk**
Model Number	**Item**	
ZM-BS-600-SP-U	Q.D. Single-Point Sling, Black	

Equipment		Known Source of Supply
Tactical Thigh Holster, Black		**Safariland**
Beretta M9 or Sig 229DAK with Dual-Retention		
Model Number	**Item**	
6004	Tactical Thigh Holster	

Equipment		Known Source of Supply
Shooting Gloves (Tactical)		
Fury HD, Black, Nomex		**Blackhawk**
8156BK	Small-XXL	
TAG-1 Model #G215		**Wiley-X**
G-215 (foliage green)	Small-XXL	

Equipment		**Known Source of Supply**
Kneepads, Tactical		**ALTA (ADS)**
Model Number	**Item**	
50410	Superflex Kneepad with Velcro® Fastener	

Equipment		**Known Source of Supply**
Headset, Gun Range		**Peltor (GSA Advantage)**
Model Number	**Item**	
MT15H68FB-08SV	PELTOR SWATTAC Electronic Headset	

Equipment		**Known Source of Supply**
Eye Protection, Flight-Tactical		
Laser Eye Protection, Pilot		NSN 4240-01-458-5567
Eye Protection, ANZI Z87, Non-Polarized		
Nerve No. R-8051 NATO	NSN 4240-01544-4259	Wiley-X
SI Frame Ballistic M Frame 3.0 Strike Array	P/N 009146-03	Oakley
SI Frame Ballistic Helo Kit (Optical frame-mounted gasket to protect from wind and dust)	P/N 53-073	Oakley

Equipment		**Known Source of Supply**
Survival Kit		**Ultimate Survival Technologies**
Model Number	**Item**	
1WG0704 (hard case)	Soldiers Tactical Advantage Kit (STAK™)	

Equipment		**Known Source of Supply**
Flashlight w/lanyard, black, hard shell, blue/green lenses		**Pelican**
Model Number	**Item**	
1930CB	LED Flashlight	NSN 6230-01-502-6254

Equipment		**Known Source of Supply**
Gear Bag, Black, Assault Backpack		**Blackhawk (NSN)**
Model Number		**Item**
603D05BK	NSN 8465-01-517-6336	Assault Backpack

Equipment	Known Source of Supply
Knife, Survival, ASEK	**Ontario Knife Company (NSN)**
Model Number/NSN	**Item**
1400/NSN 1095-01-518-6832	Aircrew Survival Egress Knife (ASEK)

Wrist Watch, Black face, Self Luminous Dial, with Second Hand
(not to exceed $125.00)

Equipment	Known Source of Supply
Cover, Boonie Hat, Navy Blue	**True-Spec**
Part Number	**Item**
3210 (sizes 7, 7.25, 7.5, and 7.75)	Boonie Hat, Navy Blue, 100% cotton

Equipment	Known Source of Supply
ADC Undergarments	**Massif Mountain or Peckham Ind.**
Contact ALC ALSE Tech Services for ordering information of ADC undergarments.	

ADVANCED STROBE LIGHT AND BATTERY TEST SET, AIRCREW HELMET, AND HEADSET COMMUNICATIONS TEST SET

A. ADVANCED STROBE LIGHT AND BATTERY TEST SET, AIRCREW HELMET, AND HEADSET COMMUNICATIONS TEST SET

1. The Stratus Systems SLT-2000 Tester is a compact, portable, emergency strobe tester. The tester delivers an instantaneous PASS/FAIL reading on an LCD display based on performance value comparisons to preprogrammed acceptance parameters, indicating the strobe flash rate and strobe battery performance. (Refer to Figure 1.)

NOTE

Ensure that the technician is thoroughly familiar with the operation of each of these test sets to ensure accurate equipment evaluation.

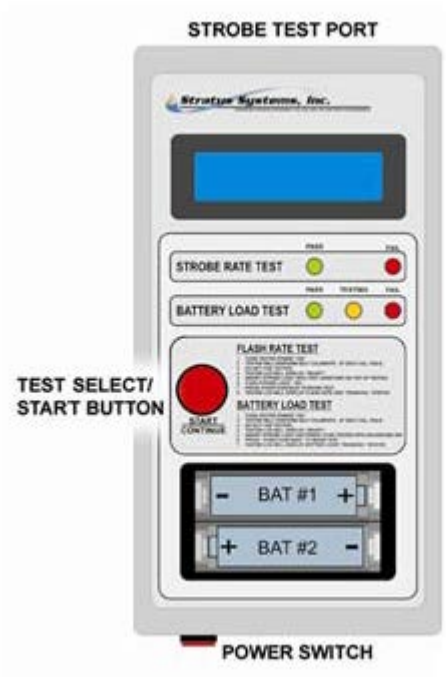


Figure 1. Strobe/Battery Tester

2. Advanced Strobe Light and Battery Test Set Instructions The following table provides operating instructions for the helmet/headset tester.

NOTE

This tester has an auto off function. After approximately 4 minutes of idle operation the unit will automatically turn off. To reactivate the unit, place the on/off rocker switch to the off position for 30 seconds and then back to the on position.

a. Programming Tester Flash Rate There are two flash rates available: 50±10 and 60±10. The tester default is 50±10. Instructions contained in the table below describe instructions for setting the flash rates. Ensure the strobe tester is set to the appropriate test rate in accordance with the current MSR MPC.

Step	Action
1	Ensure the power is turned off using the rocker switch located at the bottom of the tester.
2	a. Depress and hold the red START/CONTINUE button on the strobe tester and turn the power on, keeping the red START/CONTINUE button depressed. The tester will display SFRT: TO START PRESS BUTTON. b. Continue to keep the red START/CONTINUE button depressed for 4 seconds minimum.
3	a. After 4 seconds, the display will indicate SETTING STROBE RATE: XX ±10; where XX = 50 or 60. b. Release the red START/CONTINUE button and repetitively depress it to toggle between the 50 and the 60 setting.
4	To exit strobe rate programming, ensure that the correct strobe rate is displayed; then leave the red START/CONTINUE button undisturbed for 5 seconds. The Strobe Tester will exit and display SFRT: TO START PRESS BUTTON.

NOTE

The strobe tester will retain the flash rate setting in memory when power is secured or the test set batteries are removed or changed.

b. Strobe Flash Rate Test

STEP	ACTION
1	Turn the tester power on using the rocker switch located at the bottom of the tester.
2	The tester will perform an internal self-calibration.
	NOTE Do not use the tester if it fails the self-calibration test.
3	When ready to test, the tester will display SFRT: TO START PRESS BUTTON.
4	Insert the strobe light into aperture on the top of the tester.
5	Turn the strobe light ON.
6	Press the red START/CONTINUE button to begin the test. The tester will display STROBE RATE TESTING (XX), where XX = the rate that was previously programmed.
7	The tester will display the flash rate and the PASS/FAIL status.

c. Battery Load Test

STEP	ACTION
1	Turn the tester power on using the rocker switch at the bottom of the tester.
2	The tester will perform an internal self-calibration.
	NOTE Do not use the tester if it fails the self-calibration test.
3	The tester will display SFRT: TO START PRESS BUTTON.
4	Insert the strobe light batteries to be tested into the battery holder No. 1 and No. 2.
5	Depress the START/CONTINUE button two times.

STEP	ACTION
6	The tester will display 2000M BATTERY TEST and will start testing (the yellow testing light will be lit).
7	The tester will display PASS/FAIL status and the battery voltage for battery No. 1 and battery No. 2.

d. Battery Replacement in the Strobe Light and Battery Test Set

STEP	ACTION
1	Carefully remove the rubber isolation pads (if present) in each corner of the back cover that cover the retaining screws. (Refer to Figure 2.) The isolation pads may be relocated to a position adjacent to the retaining screws after battery replacement is complete. (Refer to Figure 2.)
	NOTE The retaining screws will be No. 2 Phillips head screws 2-mm Allen screws.
2	Remove the four retaining screws; carefully remove the rear cover.
3	Remove the three AA (double A) batteries by gently lifting one end of each battery from the battery holder. Replace each battery cell by inserting one end of the cell into the battery holder and then applying downward force to seat the other end of that cell.
	NOTE Observe correct polarity of batteries during insertion into battery holder.
4	Carefully replace the rear cover, replacing the four retaining screws.
5	Replace the four isolation pads, offset from the retaining screw holes.

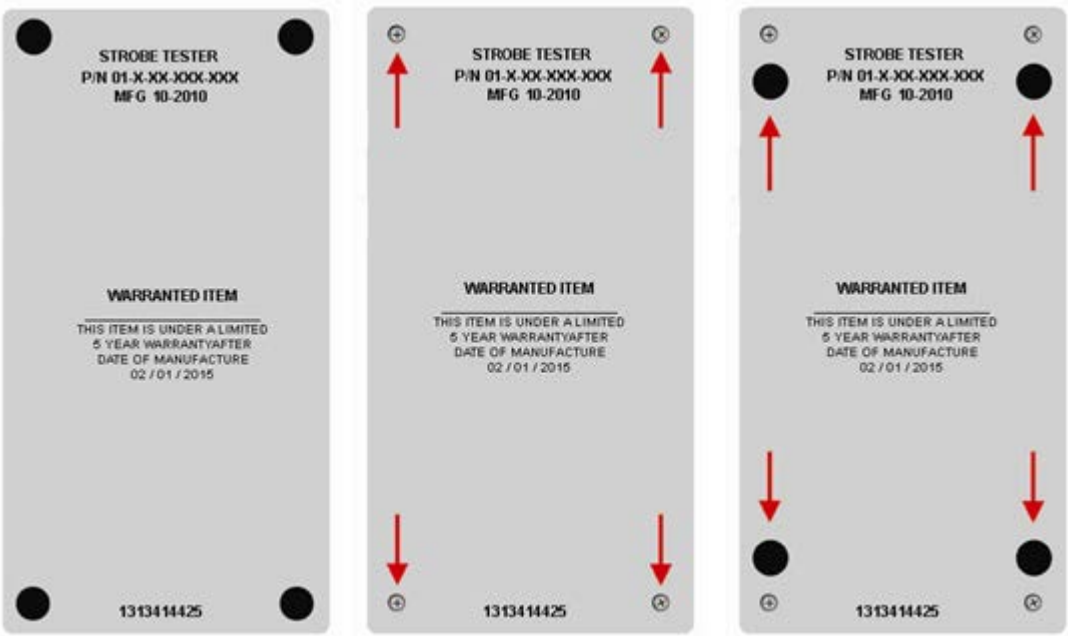


Figure 2. Strobe Tester Rear Cover, Retaining Screws, Isolation Pad Relocation

B. AIRCREW HELMET AND HEADSET COMMUNICATIONS TEST SET INTRODUCTION The Stratus Systems DMH-2000 Tester is a compact, hand-held, electronic communications equipment tester that delivers an instantaneous reading of the individual components of flight helmet and headset communications equipment. (Refer to Figure 3.)

NOTE

Ensure that the technician is thoroughly familiar with the operation of each of these test sets to ensure accurate equipment evaluation.

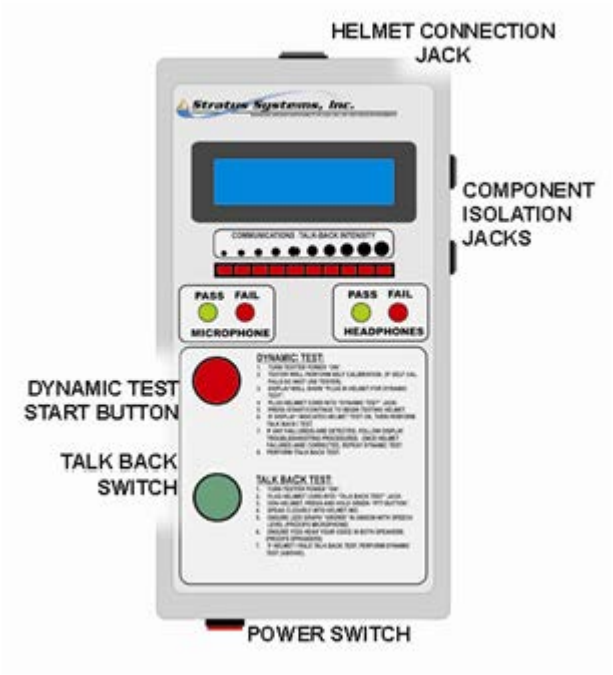


Figure 3. Aircrew Helmet and Headset Tester

1. Aircrew Helmet and Headset Communications Test Set Instructions

NOTE

This tester has an auto off function. After approximately 4 minutes of idle operation, the unit will automatically turn off. To reactivate the unit, place the on/off rocker switch to the off position for 30 seconds and then back to the on position.

a. Helmet and Headset Power-Up Instructions

STEP	ACTION
1	Turn the tester power ON using the rocker switch located at the bottom of the tester.
2	The tester will perform an internal self-calibration.
	NOTE Do not use the tester if it fails the self-calibration test.
3	Upon successful completion of the internal self-calibration, the tester will display SRT: TO START PRESS BUTTON.

b. Dynamic Test Instructions

STEP	ACTION
1	Plug the helmet cord into the DYNAMIC TEST jack located at the top of the tester.
2	Depress the red START/CONTINUE button to begin testing the helmet.
3	The tester will display DYNAMIC TEST STARTING followed by DYNAMIC TEST IN PROGRESS.
4	If a volume control is present, the tester will indicate TURN VOLUME ALL THE WAY DOWN alternately with PRESS BUTTON TO START. Turn the volume control of the helmet to the minimum setting and depress the red START/CONTINUE once again.
5	The tester will indicate MOVE MICROPHONE AND HEADPHONES. At this point the microphone and headphone cords and connection points should be moved about to test for poor contacts.
6	The tester will display the PASS/FAIL status and the ohms readings detected for the microphone and headphone circuits.
7	If failures are detected, the diagnostic test can be performed to further isolate the malfunction.

c. Diagnostic Test Instructions

STEP	ACTION
1	Depress the red START/CONTINUE button twice. The tester will display HEADSET DIAGNOSTIC START, followed by PUT CABLE INTO ISOLATION JACKS, alternately with PRESS BUTTON TO START.
2	The helmet cord will remain connected to the DYNAMIC TEST jack at the top of the tester.
3	If the helmet is equipped with a headphone connection point that can be inserted into one of the two 2-pin side diagnostic jacks (located on the right side of the tester), disconnect it at that point and connect it to one of the two 2-pin side diagnostic jacks. In this case, the earphone diagnostic chips will not be utilized and both 2-pin side diagnostic jacks will be used. If there is no headphone connection point, the individual earphones must be disconnected and the earphone diagnostic chips will be connected to the cord end pins. In this case, only one of the 2-pin side diagnostic jacks will be used. Disconnect the microphone and connect the microphone cord to the remaining 2-pin side diagnostic jack.
4	Depress the red START/CONTINUE button once again. The tester will display ISOLATION TEST IN PROGRESS.
5	The tester will display CABLE INTEGRITY H: M: with the appropriate good/bad, pass/fail indication for the respective circuit.

d. Battery Replacement in the Helmet/Headset Tester

STEP	ACTION
1	Carefully remove the rubber isolation pads (if present) in each corner of the back cover that cover the retaining screws. (Refer to Figure 4.) The isolation pads may be relocated to a position adjacent to the retaining screws after battery replacement is complete. (Refer to Figure 4.)
NOTE The retaining screws will be No. 2 Phillips head screws 2-mm Allen screws.	

STEP	ACTION
2	Remove the four retaining screws; carefully remove the rear cover.
3	Remove the three AA (double A) batteries by gently lifting one end of each battery from the battery holder. Replace each battery cell by inserting one end of the cell into the battery holder and then applying downward force to seat the other end of that cell.
	NOTE Observe correct polarity of batteries during insertion into battery holder.
4	Carefully replace the rear cover, replacing the four retaining screws.
5	Replace the four isolation pads, offset from the retaining screw holes.

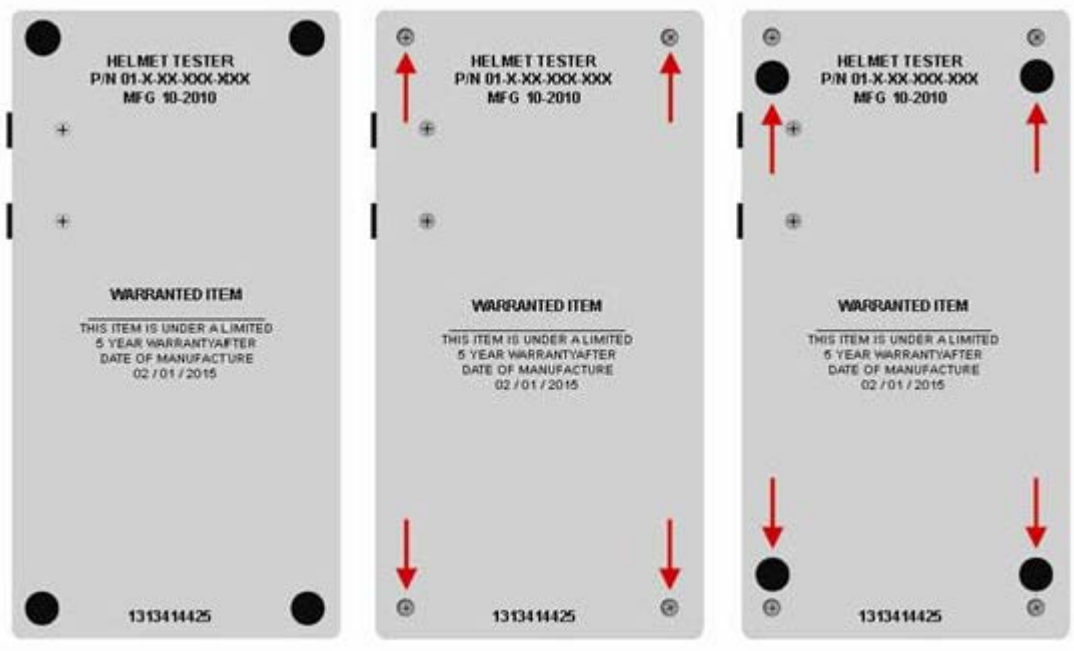


Figure 4. Helmet Tester Rear Cover, Retaining Screws, Isolation Pad Relocation

USCG AIRCRAFT TEMPEST-APPROVED HEADSET/HELMET LIST

NOTE

Any headset/helmet with an AUX input or Bluetooth input is not authorized for communication system interface on Coast Guard aircraft.

USCG AIRFRAME	APPROVED HEADSET/HELMET
C-37A (CG01 AND CG02) G-5	Telex Airman 750
HC-130H	• Bose Aviation X (A10) • Bose (A20) 324843-0130 (non-Bluetooth version) • David Clark H10-76 • David Clark H-78C/AIC • David Clark H-157A/AIC
HC-130J	Legacy MSS Missionization Suite Headsets • David Clark H10-76XL • Bose Aviation X (A10) 308100-0170 • Bose (A20) 324843-0130 (non-Bluetooth version) Minotaur MSS+ Missionization Suite Headsets • David Clark H10-76XL • David Clark 40696G-01 • Bose Aviation X (A10) 308100-0170 • Bose (A20) 324843-0130 (non-Bluetooth version) • Lightspeed ZULU 4603 (CU5NBTA)
HC-144A/B	• David Clark H10-56XL, P/N 40614G-02 • Bose Aviation X (A10) Model 308100-0210 with the High-Impedance Electret Microphone • Bose (A20), Model 324843-2030 (non-Bluetooth version)
C-27	• David Clark H10-76, H10-76XL, H-78C/AIC, H-157A/AIC • David Clark 40696G-01 and Adapter 40697G01 • Bose Aviation X (A10) 308100-0170 • Lightspeed ZULU 4603 (CU5NBTA) • Bose (A20), Model 324843-0130 (non-Bluetooth version)
MH-60T	Flight Helmets • HGU-56/P • SPH-5CG Headsets • David Clark H10-76/AIC • David Clark H10-157A/AIC • MILH83511-2
MH-65D	Flight Helmets • HGU-56/P • SPH-5CG Headset • David Clark H10-76