



OPERATOR'S MANUAL
4 AND 9 PERSON LIFE RAFTS
PART NUMBERS 1400-() AND 1900-()

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1. DESCRIPTION

A. GENERAL

These rafts are intended for use by aircraft and boat crew members/passengers during in water emergencies. Each raft is comprised of a square shaped buoyancy tube with a fabric deck cemented to it, life lines, boarding handles, CO2 inflation system, retaining lines, hand pump, bailing bucket, sea anchor, and valise. The raft valise is stenciled with the part number, serial number, weight, occupant capacity, and operating instructions. This valise also serves as a sea anchor after raft inflation.

Raft materials and components have been carefully selected to provide for reliability, extended life, and reduced service cost. Buoyancy tubes and decks are constructed of tough, heavy duty neoprene coated nylon conforming to stringent government specifications. Canopies are fabricated from high visibility orange compound coated nylon Velcro closures. The inflation gas release valve is of the most reliable design, puncture disc type, and the cylinder is manufactured of lightweight, corrosion resistant aluminum.

Survival equipment is fitted into its own valise, externally separate from the raft valise. The equipment and raft valises are externally attached to each other utilizing Velcro and a plastic cable tie. These separate valises provided the ultimate in flexibility for raft and equipment combinations. The basic raft and equipment can now be acquired separately to meet individual requirements or equipment can be easily revised without disturbing the basic raft. Optional signal flares, two cell flashlight with alkaline batteries, first aid kit, raft repair kit, sea dye marker, signal mirror, food/water rations, and signal whistle. More extensive survival equipment include: magnetic compass, 8 pint water desalter(s), fishing kit, utility knife, 75 foot retaining line, survival manual, paddles, radar reflector/thermal blanket, sponge and/or ELT/EPIRB.

The equipment valise is stenciled with the part number, serial number, and weight. This valise is attached to the raft valise with Velcro strips and a plastic cable tie. The equipment is easily obtained after raft inflation by pulling in the sea anchor (raft valise) and detaching the equipment valise.

B. INFLATION SYSTEM

Each raft has a carbon dioxide inflation system consisting of an aluminum cylinder and valve assembly. This assembly is connected to an inlet check valve which is cemented to the raft buoyancy tube. The gas is released by pulling on the inflation/retaining line handle until the gas release valve has been activated. The gas release cable pulls free of the valve and remains attached to the retaining line.

C. FLUSH TYPE MANUAL INFLATION/DEFLATION VALVE

A flush type manual inflation/deflation valve is cemented to the buoyancy tube and allows for topping-off the raft with the hand pump in the event of pressure loss during temperature changes or extended use. This valve is also used for raft over pressure relief caused by excessive temperatures.

D. SPECIFICATIONS

<u>ITEM</u>	<u>4 PERSON</u>	<u>9 PERSON</u>
Rated Capacity (Persons)	4	9
Overload Capacity (Persons)	6	13
Packaged Weight (W/O kit, Lbs.)	12.0	18.0
Packaged Size (W/O Kit, In.)	4 x 12 x 14	5 x 12 x 14



D. SPECIFICATIONS (CONT'D)

Packaged Weight (W/STD Kit, Lbs.)	19.0	29.0
Packaged Weight (W/STD+ Kit, Lbs.)	20.0	30.0
Packaged Weight (W/DLX Kit, Lbs.)	21.0	32.0
Packaged Size (W/ALL Kits, In.)	7 x 12 x 14	8 x 12 x 14
Inflated Raft Dim. (Inside/Outside, In.)	46/68	69/93
Tube Diameter (In.)	11.0	12.0
Deck Area (Sq. Ft.)	14.7	33.1
Buoyancy (Fresh Water, Lbs.)	762.0	2088.0
CO2 Cylinder Volume (Cu.In.)	61.0	103.0
CO2 Cylinder Charge (Lbs.)	1.5	2.5
Raft Min. Oper. Pres. (PSI)	1.0	1.0

2. OPERATION

NOTE: The following operational procedure illustrates one possible ditching method since individual operators may develop procedures tailored to their specific modes of operation.

A. RAFT

After the aircraft or boat has been ditched, come to a complete stop, and the exit has been opened, position the raft outside the exit with valise handle facing you. Take care to ensure that no sharp objects that could puncture the inflating raft are in the area. Peel the webbing handle (identified by valise stencil "TO INFLATE PULL HANDLE") from its Velcro retaining strip, grasp it firmly and pull out approximately 3 feet of slack lanyard until taught, then pull firmly until inflation occurs. The valise will open and the buoyancy tube will inflate in approximately 10 to 15 seconds. Hold onto the inflation handle since it is part of the retaining line which is utilized to prevent the raft from drifting away. In the unlikely event that the raft does not inflate upon pulling the lanyard and inflation cable free from the inflation cylinder valve, or for any other reason, unfold the raft and inflate utilizing the hand pump.

After the raft is inflated, utilize the retaining line to position the raft for boarding. After boarding, the survival equipment (if installed) can be retrieved by hauling in the sea anchor (raft valise) to which the equipment valise is attached. Remove the equipment valise and redeploy the sea anchor as required.

If the packaged raft is inadvertently launched before inflation, it will float and inflation can be initiated as described above after its retrieval.

Have a crew member take command of each raft and immediately accomplish the following: 1) Check for other survivors in the water and get them into the raft. 2) Administer urgent first aid. 3) Open up the survival equipment (if installed) and get the signaling equipment ready. 4) Check the raft condition. 5) Assign tasks to all raft occupants (lookout/signaling, first aid, raft maintenance and water making and/or collection, etc.).



A. RAFT (CONT'D)

Keep the raft balanced by distributing occupants evenly. No one should stand up in the raft. Keep life vests on (if available) in case of capsizing. In rough water, keep at least one occupant tied to the raft with a minimum of ten feet of line (if available) so that in the event of capsizing at least one person can easily retrieve and right the raft, then retrieve the other persons. Children should always be tied to an adult.

Use the bailing bucket and sponge (if available) to keep the raft dry and clean since sitting in water soon creates water sores that are painful and can infect easily. Dry your clothes off as best as possible by wringing and airing since wet clothing will detrimentally reduce body heat in cold weather. Be sure to restore and secure equipment immediately after use since items are easily lost overboard, especially in rough water. Be especially careful with items that could puncture or tear the raft. Do not throw anything away since you may find a need for used items somewhere down the line. For example, empty cans and plastic bags can hold rain water, and metal bands from opened cans may be utilized as fish hooks.

Maintain protection from the elements as much as possible. Keep your clothing on even if it's hot. Rest as much as you can, especially in the hot part of the day. Exercise daily in your limited space by isotonic ally flexing muscles and wiggling fingers and toes. Be optimistic and keep a sense of humor.

Water is the key to survival at sea. Body water loss through sweating, urinating, and vomiting is as important as drinking water. Therefore, do as little as possible during hot hours, work at a slow pace when necessary, and take immediate action against seasickness by stretching out on the raft deck and being as still as possible. **DO NOT RATION WATER.** Drink as much as you need when you're thirsty, then **RATION YOUR SWEAT.** You need enough water to remain at a good energy level to help yourself, and sipping water weakens you much faster through dehydration.

The pressure in the raft flotation tube will fluctuate with the temperature. In hot weather, extra pressure can be relieved by just barely opening the manual deflation valve and closing immediately upon obtaining the proper raft pressure (no tube wrinkles which would allow the raft to abrade against itself.) In cool weather and at night the raft pressure can be increased by utilizing the hand pump at the inflation valve. Normally, sharks may investigate your raft and go away without bothering you. Do not dangle hands and/or feet in the water or dispose of raw vomit or body wastes in the water since these may attract and excite sharks. Plastic bag (if possible) vomit and/or body wastes and throw them away from the raft.

Search and rescue teams are looking for you. Normally rescue teams will locate you within 12 to 24 hours. When they do arrive, do what they tell you and let them take care of you. They know what to do and will be more aware of your condition than you will.

B. EQUIPMENT

(1) SEA ANCHOR (W/BASIC RAFT)

The raft valise is designed to act as a sea anchor and is automatically deployed upon raft inflation. The sea anchor is attached to the lifeline on the raft opposite the boarding station which facilitates boarding and helps to keep an empty raft from being capsized by wind. Although you want to be far enough away from the aircraft or boat so that neither will damage the raft, you want to remain in the immediate area in order that rescue searchers can find you sooner. If you have to speed up drift to get to a survivor or an object in the water, pull in the sea anchor, then throw it back out after you have drifted the necessary distance.



B. EQUIPMENT (CONT'D)

(2) BAILING BUCKET (W/BASIC RAFT)

The bailing bucket is fabricated of neoprene/nylon material and is attached to the raft boarding handle with a tie-line. Use the bucket to remove water from the raft as required to keep it as dry as possible.

(3) CANOPY (W/ALL KITS)

Remove the canopy with attached mast(s) from the equipment kit. Spread the canopy over the floor of the raft with the Velcro opening adjacent to the "CLIMB IN HERE" stencil on the raft tube and the mast to-canopy-tie facing the raft floor. Tie the four canopy corners to the external life line at the raft corners and also at the four life line mid-points on the nine man raft. Orally inflate the mast(s) through the oral inflation tube with approximately five breaths of air. Inflation through the oral inflation tube requires that the metal safety nut be screwed down (clockwise) and the valve inlet be depressed. After inflation, unscrew (counter clockwise) the safety nut to the valve inlet to prevent inadvertent depression and consequent mast deflation. Tie the bottom of the mast to the raft floor tie loop. The canopy opening flap ends can then be tied to the raft life line mid-point and the Velcro seal closed as required.

(4) MAGNETIC COMPASS (W/DLX KIT)

The compass can be used to check your paddling course in the event you know your original position and where there is land, marine shipping lanes, or commercial aircraft flyover routes.

(5) SIGNAL FLAG (W/ALL KITS)

The bright orange signal flag can be used to help rescue searchers zero in on you after they have detected your flare, mirror, sea dye marker, or ELT/EPIRB signals.

(6) DAY/NIGHT SIGNAL FLARE (W/ALL KITS)

Three red aerial flares are not of the self contained/launcher type. Operation is accomplished as follows: 1) Unscrew cap which exposes pull chain. 2) Hold barrel in one hand with chain end down. 3) Keep fingers clear of both ends of barrel. 4) Hold unit vertically with muzzle above eye level. 5) Pull chain straight down with other hand. These flares are waterproof and provide a signal up to 600 feet high with visibility up to 20 miles.

(7) SIGNAL FLASHLIGHT (W/ALL KITS)

The flashlight can be seen about eight miles on an open sea. During the first night flash SOS (3 short, 3 long, 3 short), sweeping the sky. For nights after the first, use the flashlight signal only when you hear an aircraft or see a ship's lights.

(8) BOARDING HANDLE (W/BASIC RAFT)

The boarding handle is located on the raft deck opposite the cylinder/valve and sea anchor tie-down. Use the boarding handle by reaching over the raft buoyancy tube, grasping the boarding handle and pulling yourself into the raft.



B. EQUIPMENT (CONT'D)

(9) DESALTING KIT (W/DLX KIT)

The 8 pint desalting kit is used to desalinate and purify seawater for drinking when no water is available. The desalting kit is used as follows: 1) Unpack kit, remove and unroll mixing bag, and fill up to 16 oz. mark with seawater. 2) Drop in unwrapped briquette, fasten top of bag by rolling down and snapping shut. 3) Knead bag to break up and dissolved briquette. 4) Water will be drinkable in about one hour. Unscrew the drain at the bottom of the bag and drink by letting it drain into your mouth. 5) When treated water is completely used, rinse bag in seawater and use again as required.

Tape is in the can to repair any rips in the bag. If you lose the bag, you can use the can the kit is packed in. Fill the can with seawater to the black line painted inside, crush an unwrapped briquette in the water, and stir for about one hour. Stretch a handkerchief across the top to filter water for drinking.

(10) FIRST AID KIT (W/ALL KITS)

The first aid kit should be used to treat injuries as required and consists of the following

One inch adhesive bandage (16 each)

Two inch bandage compress (2 each)

Four inch bandage compress

Antiseptic swab (10 each - Povidone/Iodine)

Burn Compound (10 each)

Ammonia inhalant (10 each)

(11) FISHING KIT (W/DLX KIT)

This kit is USCG APPROVED, packaged in a tough waterproof flexible pouch and includes monofilament/Dacron/nylon/wire lines and leaders, and an assortment of spoons, lures, jigs, hooks, weights, swivels, snaps, pork rind baits, cloths, foil, razor blades, line holders, knot illustration card, and instructions.

(12) RAFT REPAIR KIT (W/ALL KITS)

Two 3 inch repair plugs are used to repair buoyancy tube leaks that may occur. Inspect your raft for damage as soon as your primary duties are accomplished. Look for leaks especially at seams and valve fittings and repair quickly as follows: 1) Loop plug cord around wrist to prevent loss. 2) Dig plug in water for insertion lubrication. 3) Push bottom plate (rubber edge seal) through pushed through. 4) Pull bottom plate up against inner fabric and slide top of plate over screw against outer fabric. 5) Locate plug to cover hole completely and screw down wing nut firmly.

(13) UTILITY KNIFE (w/STD+/DLX KITS)

This knife is a stainless steel/plastic outer casing, fifteen function SWISS ARMY TYPE KNIFE and will prove invaluable. It includes a bradawl, corkscrew, nail file, knife blade, giant needle, bottle opener, can opener, hook remover, fish scaler, saw blade, scissors, phillips screwdriver, slot screwdriver, toothpick, and tweezers.



B. EQUIPMENT (CONT'D)

(14) 75 FOOT RETAINING LINE (W/DLX KIT)

This retaining line can be used to tie occupants and equipment together or to the raft. It can also be used along with a weighted object as a heaving line to retrieve persons from the water.

(15) SURVIVAL MANUAL (W/STD+/DLX KIT)

The AIR FORCE SURVIVAL MANUAL is a guide to survival practices in all climates and terrain, including sea, with a section on first aid. Review this manual during your first spare moments.

(16) SEA DYE MARKER (W/ALL KITS)

The sea dye marker is used when you sight a rescue aircraft by removing the capsule cap and emptying the contents into the water. It will color the surrounding water a bright yellow/green which pilots will recognize as a distress signal.

(17) SIGNAL MIRROR (W/ALL KITS)

Use the signal mirror when you are in doubt about a craft's ability to see your signal flare. It can be used indefinitely. Mirror flashes can be seen about 20 miles, so the mirror should be in constant use during daylight, sunny hours. Sweep the horizon, flashing the mirror. Each person should take a turn at this. Keep the mirror surface as clean and fingerprint free as possible.

(18) HAND PADDLES (W/DLX KIT)

The hand paddles can be used to paddle the raft close to retrievable persons in the water or to paddle toward land or rescue craft.

(19) HAND PUMP (W/DLX KIT)

The hand pump is used for topping off the flotation tube in the event of pressure loss during temperature changes or extended use and is attached to the raft boarding handle with a tie-line. There is one inflation/deflation valve located on the upper-inside of the flotation tube. Screw the pump fitting into the inflation valve until it is firmly attached, then open the valve by turning the rubber wing nut clockwise. Pump until the tube is fully inflated (no wrinkles), close inflation valve counter clockwise before removing hand pump. Remove hand pump.

(20) FOOD RATIONS (W/ALL KITS)

Food rations consist of fortified, high calorie, compact, baked bars specifically formulated to provide a balanced diet with limited drinking water availability. The contents of each food packet are designed to feed four persons for one day or one person for four days.

(21) WATER RATIONS (W/STD/STD+ KITS)

Some survival equipment kits include water rations packaged in durable foil bags. Utilize this drinking water as specified in the OPERATIONS SECTION (2.A.) of this MANUAL.



B. EQUIPMENT (CONT'D)

(22) COMPRESSED SPONGE (W/STD+/DLX KITS)

This metalized 69"x72" blanket can be used as a radar reflector and thermal insulator by spreading it over the floor or as a thermal blanket which will retain up to 90% of radiated body heat. It can also be useful in collecting rain water.

(23) COMPRESSED SPONGE (W/STD+/DLX KITS)

The dehydrated/compressed sponge takes up very little space in the equipment kit and can be used along with the bailing bucket to keep the raft floor dry.

(24) EMERGENCY LOCATOR TRANSMITTER (OPTIONAL EXTRA)

The ELT/EPIRB is attached to the raft life line. It will automatically deploy upon raft inflation and can be manually turned on when desired. When turned on it will transmit simultaneously on 121.5 MHZ and 243.0 MHZ the civilian and military search and rescue homing frequencies respectively. It is waterproof and will transmit for approximately 48 hours.

(25) WATERMAKER (OPTIONAL EXTRA)

The SURVIVOR-06 WATERMAKER, installed in the equipment kit is a USCG APPROVED reserve osmosis hand pump type and can produce one pint of fresh water from seawater in about thirty minutes. It is compact (2.5"x5"x8"), lightweight (2.5 LBS), rugged in design, and easy to operate. Survivors at sea have been known to live over sixty days on water alone.

(26) SIGNAL WHISTLE (W/ALL KITS)

The whistle is used to signal other rafts, survivors, and assist rescue searchers in locating you at night or in the fog. Use it to signal SOS (3 short, 3 long, 3 short) when visibility is limited. Rotate this responsibility among the raft occupants.

C. LIMITATIONS

All rafts shall be stowed in a clean dry, contaminant free area away from any heat source. Contaminants such as petroleum solvents, fuel, grease, oil, or hydraulic fluids may have a detrimental effect on the fabrics and consequently on the life and performance of the raft. The stowage area should be at least equal in size to the complete raft assembly.

Following are storage and operational temperature limits for the rafts:

OPERATING and/or STORAGE	10 F to +130 F
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Under normal conditions, life rafts shall be removed from their valises and inspected in accordance with Survival Products, Inc.'s Maintenance Manual at regular intervals not to exceed 12 months. Inspection consists of removing the raft from its valise, conducting a 24 hour raft pressure test, weight checking the CO2 inflation system cylinder, visually checking the raft for tears, cuts, punctures, abrasions, and deterioration, and then repacking the raft into its own valise. Survival equipment (if included) shall be removed from its valise and inspected by pressure testing the inflatable mast and visually checking each item for condition and life limitation. Cylinder hydrotest is required every five years at which time the valve is overhauled and the cylinder then freshly charged.