



OCEAN SAFETY®

ISO Liferaft

Owner's Manual & Operating Handbook



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Introduction

This manual has been compiled as a guide to the general transport, storage, stowage, maintenance, servicing and usage of your liferaft. Keep this manual in a safe place on board, it is recommended that it is accessible to all on board and the content be read and thoroughly understood before any action is taken with the liferaft. Whilst the information provided is extensive it may not be complete as regulations do vary from country to country. Therefore it is advisable to obtain further guidance from your local authority regarding additional equipment to be carried or regulations to be met.

The position of the stowage, the access to and the ease of operation of the liferaft are important factors as are the actions to be taken if you should have to resort to using the liferaft. Further, good maintenance applied to the liferaft ensures that in the event that it has to be used it will quickly provide the emergency safe haven required. The information contained in this manual is intended for the majority of installations, if in doubt contact your dealer for more specific advice about your own installation.

Transport, Stowage, Maintenance, Storage and Servicing advice

Before handling the liferaft, an understanding of the inflation system is recommended. Inside the container or valise and attached to the liferaft as part of the inflation system is a pressurised gas cylinder, which needs to be handled with care.

The gas stored in the cylinder is a mixture of Carbon dioxide (CO₂) and Nitrogen (N₂). On activation of the valve fitted to the cylinder, the gas is released into the chambers of the liferaft, providing its shape and buoyancy. The cylinder valve is initiated by pulling sharply on the painter line.

- **WARNING:** Caution should be exercised when handling and transporting the liferaft not to inflate the liferaft accidentally.

Safety guidelines for transportation to avoid accidental inflation of the liferaft

- **WARNING:** At all times ensure that the painter line does not become snagged. If the painter line is allowed to be pulled to the end of its length (For length of painter line refer to the data label on the container or valise), the cylinder valve will be activated and the liferaft caused to inflate.
- **WARNING:** Ensure that the container or valise is not subjected to violent shocks or is allowed to roll.
- **WARNING:** If the liferaft is transported by car, it must be stowed in the boot of the car. Under no circumstances should it be transported in the main passenger compartment of the car.



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Stowage guidelines

When selecting the position of the liferaft onboard a vessel, there are a number of points that require consideration.

Warning: There are two bands positioned imbedded transversely towards each end of the container and a wide rubber seal around its periphery. These are an integral part of the container and must not be removed.

1. Firstly the liferaft must be positioned so it can easily be accessed and deployed in an emergency situation. Nothing must be stored on top of the liferaft
2. Any strapping down of the liferaft to the desired location must be easy to remove with no locking system, requiring a key. Where possible any securing arrangement should incorporate a hydrostatic release unit (HRU). The liferaft should be positioned clear of any overhangs, rigging or any other object that may hinder deployment (especially if the liferaft is fitted with a HRU).
3. The liferaft must not be positioned where it or its painter line are likely to become a trip hazard.
4. The liferaft has been satisfactorily drop tested to a height of 6m. The stowage point must not be above this height from the waterline.
5. On smaller vessels, the liferaft should be viewed as a fixed magnetic material and therefore should be positioned away from the ship's compass and other equipment which might be effected.
6. At no time should the liferaft be used as a seat or be stood on.
7. The liferaft must not be stowed in close proximity to any form of heat source.
8. Stowages/cradles for the liferaft must be the correct size for the container/valise and secured to a solid part of the vessel.
9. The container may be mounted on its side, end or preferably flat. Care must be taken not to block the drain holes in the bottom, side or end. Containers stored on end must have the painter line exit hole uppermost. Containers stowed on their side must be orientated with the cylinder close to the deck. i.e. Painter exit at deck level.
10. If connected to a HRU (advisable) then only withdraw sufficient painter line to reach and tie off to the link on the HRU.
11. For further advice or clarification refer to your Ocean Safety Liferaft dealer

Preventive Maintenance – On Board.

Containers and Valises must be kept clean.

- a. Cleaning must only be carried out using a solution of soap and water.
- b. Rinse off soap and water solution using clean fresh water.
- c. Rub down with a dry cloth.

Monthly Maintenance

- Ensure that the container is strapped firmly onto its cradle.
- Inspect the container for damage, cracks, chafing or weaknesses.
- Inspect the securing straps for cuts, abrasion or other damage of the webbing or stitching.
- Ensure that the painter line is not showing signs of abrasion and that it is still attached to the strong point on the deck. Preferably through a Hydrostatic Release Unit. (HRU)
- Ensure that the HRU is within its operational life – Refer to the HRU instruction leaflet.

Storing the liferaft – Off the vessel

- If the liferaft is to be stored for any length of time.
 - Choose a site that is clean, dry and away from direct sunlight and where the temperature is between 10°C and 30°C.
 - Ensure that rodents cannot access the liferaft. (Rodents can and will eat the fabrics used to manufacture the liferaft)
 - Storage must be away from potential contamination from oils, fuel and other chemicals.
- If the liferaft is to be stored for more than 3 months it is advisable to have it serviced at an Ocean Safety approved facility prior to reinstalling it back on board.

Servicing of the Liferaft.

- The Ocean ISO Liferaft must be serviced at an Ocean Safety Approved Service Facility.
- The Service data is shown on the label on the ISO Liferaft Valise or Canister.
- The Approved Service Facility will complete the Liferaft Service Record Card shown at Page 21 of this Manual.
- The Approved Liferaft Service Facility will issue a certificate of re-inspection which should be kept safely on board.
- No product Liability can be accepted by Ocean Safety for Liferafts serviced at an un-authorised Service Facility.



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Operating instructions

Launching the liferaft

In preparation for an emergency, ensure that all persons onboard the vessel are aware of the location and operation of the liferaft. Make a MAYDAY call. Ensure that everybody on board is wearing a lifejacket and that it is correctly fitted. Remember to locate a 'Grab Bag' and fill with survival equipment – see Page 12 and if time permits take sea sickness tablets.

To deploy the liferaft, follow the simple instructions:

1. Release any strapping securing the liferaft to the stowage point.

Warning. Do not open the container or the valise manually. The container and the valise are designed to open automatically when the liferaft is in the water and the painter line is pulled. Or, if not already fitted to a HRU – pull out sufficient painter line and secure it to a strong point on the deck.

NB: It is not necessary to pull out all the painter line as it will deploy as the container/valise descends to the water.

2. Throw the container/valise overboard.
3. To inflate the liferaft pull firmly on the painter line to its full extension and the liferaft will inflate.
 - a. During the inflation of the liferaft it is normal for there to be a hissing sound as the gas enters the chambers and the excess is exhausted through the relief valves. It is also normal to see the excess gas venting from the relief valves.
4. To avoid entering the water and aid boarding, secure the liferaft close to the vessel.

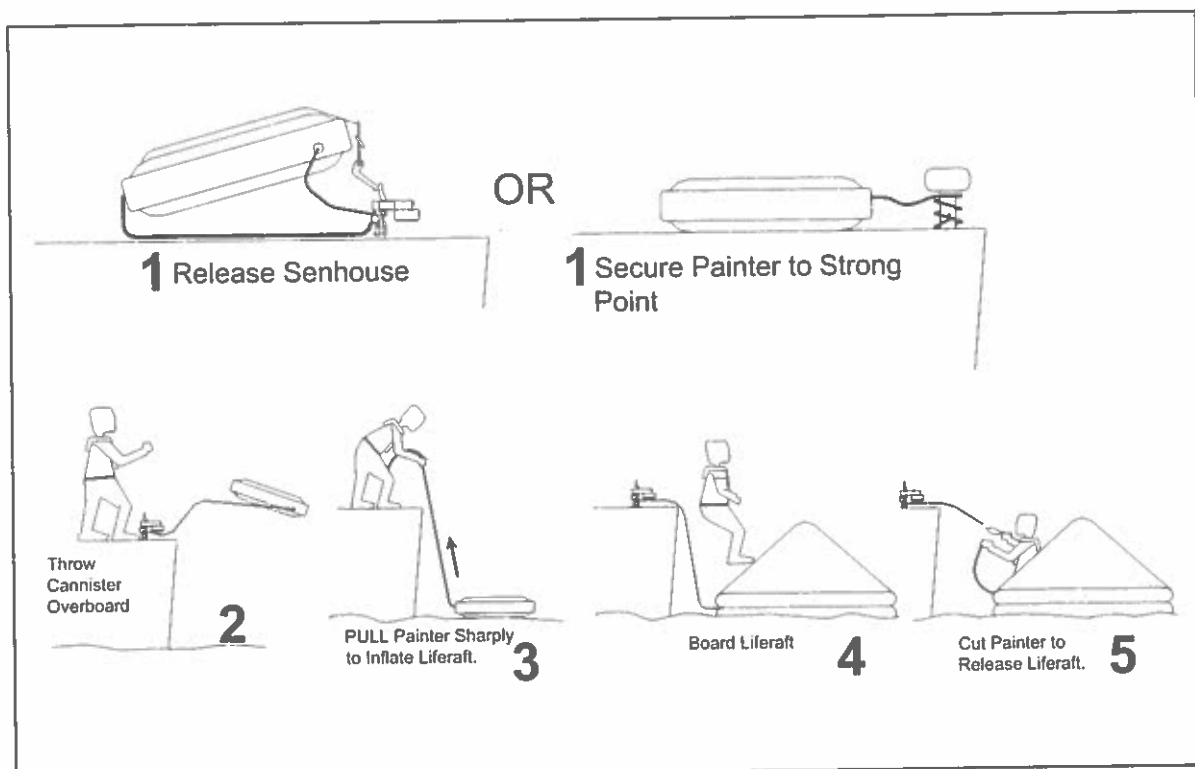


Figure 1 - Diagram of 4, 6 and 8 Person Liferaft.

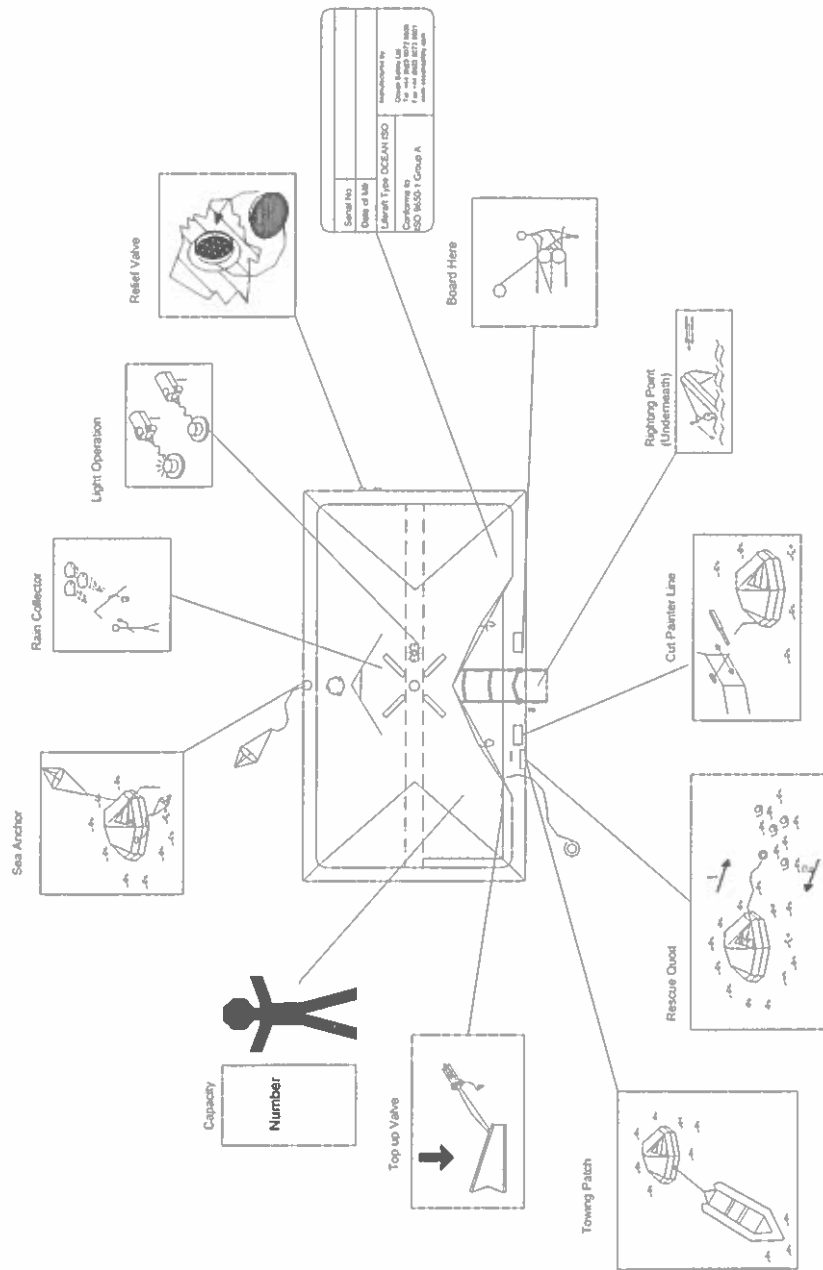
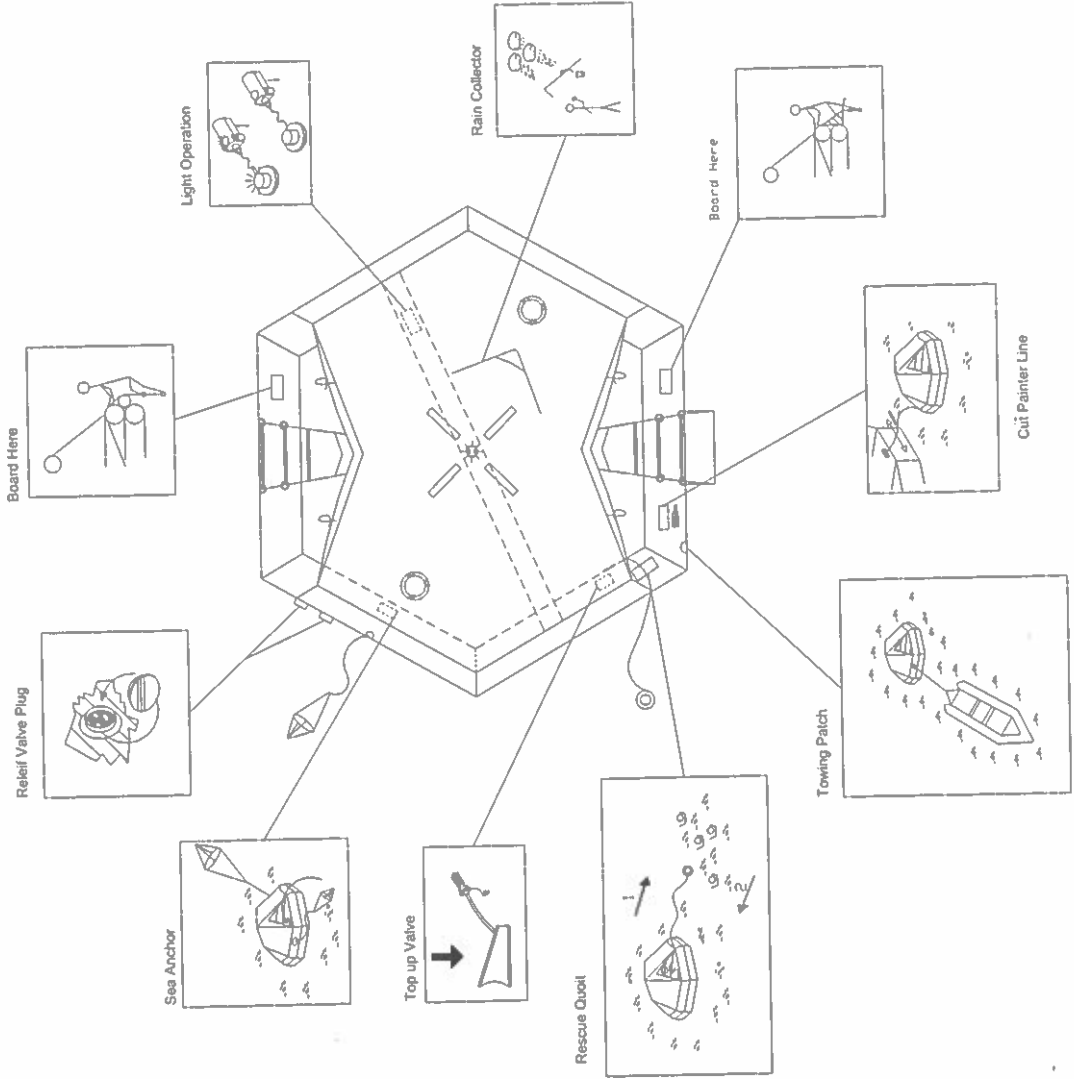


Figure 2 - Diagram of 10 and 12 Person Liferaft.





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Equipment contained in manufacturer's supplied equipment bag

Equipment	Pack 2 <24h	Pack 1 >24h
Portable Buoyant Bailer	1	1
Sponge	2	2
Pair of Buoyant Paddles	1	1
Pressure relief valve bungs	2	2
Whistle	1	1
Waterproof Torch with 6 hour duration and spare batteries and bulb	2	2
Signalling Mirror	1	1
Anti Seasickness Pills (per person)	6	6
Seasickness Bags with simple closure system (per person)	1	1
Red Hand Flares in accordance with SOLAS LSA code Chapter III 3.2	3	6
Red Parachute Flares in accordance with SOLAS LSA code Chapter III 3.1	1	2
Repair outfits to enable survivors to repair leaks in any or all of the inflatable compartments.	2	2
Air pump or bellows to be easily used (with all loose parts to be captive in a complete assembly). Must be possible to use by hand.	1	1
Drinking water	0	0.5L per person

Content of optional grab bag

The equipment detailed in the first column of the table above is mandatory for ISO 9650 requirements for pack 2, which is rated as the "less than 24 hour pack". In the second column of the table the minimum mandatory requirement for equipment packed inside the liferaft for pack 1, which is rated as "greater than 24h pack".

If the liferaft requires an ISO pack 1 (rated at greater than 24 hours), additional equipment is required above and beyond that detailed in the table above to comply with ISO 9650. The additional equipment can either stowed internally (in the emergency pack) or externally in the form of a grab bag. The additional equipment required to comply with ISO 9560 is, 1.0L of water per person and food amounting to no less than 10000kj per person the raft is rated to carry, first aid kit and 2 thermal protective aids. If a grab bag is used, it must be stowed in such a place that it is easily accessible in an emergency situation.

The emergency pack can also be made up to comply with the minimum mandatory equipment required inside the liferaft for the SOLAS B specification. Please note to fully comply with the SOLAS B specification the liferaft emergency pack requires additional equipment that must be made up with a grab bag.

In addition to the above mandatory items it is advisable to pack in the grab bag:

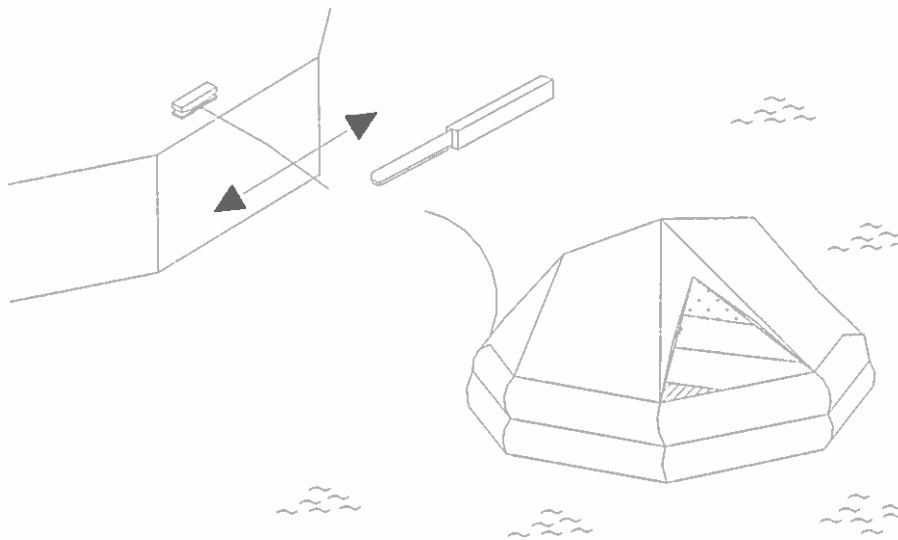
- ✓ Navigation Equipment.
- ✓ Communications Equipment
- ✓ Sunglasses.
- ✓ Extra Food and Water.
- ✓ Fishing Equipment

Immediate action

Immediate action to be taken on entering the liferaft,

1. Locate the paddles, emergency pack and the drogue inside the liferaft.
2. Cut the painter line with the liferaft's knife (located on the right hand side of the canopy opening) and paddle clear of the evacuated vessel.

Cut the Painter Line



3. Manoeuvre the liferaft away from the vessel – Paddles provided
4. Deploy the drogue.
5. Ensure that the liferaft is in good condition, bail water out of the liferaft and check that the side walls and arch are firm to the touch and there are no obvious leaks.
6. Look for and pick up other survivors. Throw quoit to survivors to aid recovery to the liferaft.
7. Close entrances in the canopy
8. Read the safety manual which is located inside the liferaft. During hours of darkness, use the torches supplied in the emergency pack as a source of illumination.

Immediate action to be taken once inside the liferaft.

1. Inspect the tubes of the liferaft including the arch. If necessary top up the pressure using the pump provided.
2. Distribute the weight in the liferaft evenly. Everyone should sit with their back to the buoyancy tubes, feet towards the centre.
3. As soon as possible issue one dose of sea sickness tablets to all occupants of the liferaft and make sure they are taken immediately.



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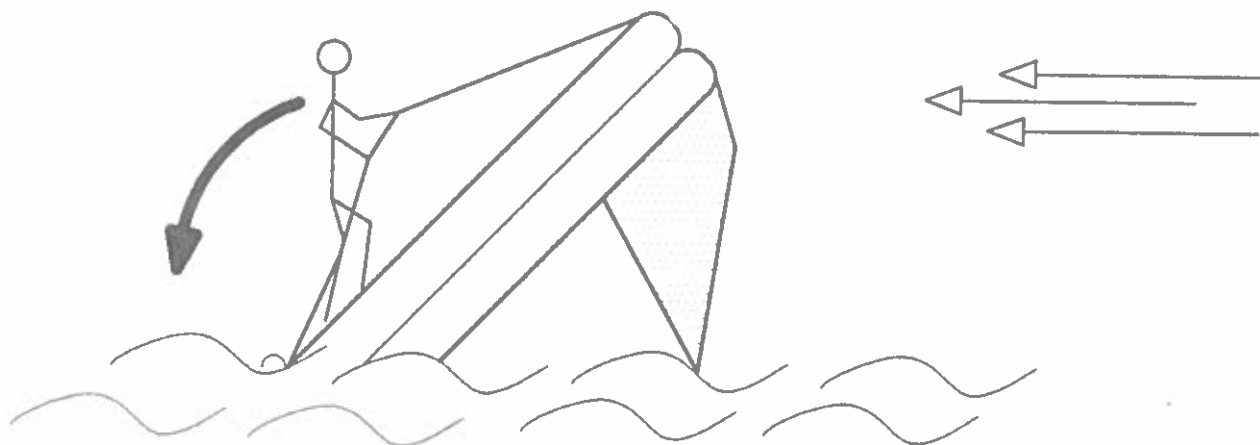
4. To recover survivors from the water, use the rescue quoit and line to haul in conscious persons
5. Elect a leader to take control of all procedures inside the liferaft while awaiting rescue.
6. Check that the drogue is correctly deployed, by ensuring that the line is securely fastened and then pull on the line. If the drogue has opened correctly you will feel resistance.
7. If there are other liferafts in the area, stay close together. Tether liferaft together if possible.
8. Take the radar reflector from the equipment bag (if fitted) and fit as instructed by the manufacture.
9. If beaching the liferaft use the paddles provided to steer clear of any sharp objects or rocks. If possible pick a beach with a gentle gradient. Pull the liferaft well clear of the rising water line and leave.
10. Ensure that the external light is turned off in the hours of daylight to preserve battery power.

Righting the liferaft

It is possible that the liferaft could inflate upside down. The correct righting procedure should then be followed.

1. Turn the liferaft canopy into the wind.
2. Locate the pictogram as shown in figure 3. This is the correct position for righting.
3. Hold the righting strap firmly,
4. Whilst retaining a firm grip on the righting strap, pull the liferaft over to a boardable position. Keep a firm grip on the righting strap throughout the procedure. Failure to do so could result in the liferaft righting on top of you, or given high winds, the liferaft may travel rapidly down wind after righting.

Figure 3 Righting the liferaft



Maintenance once in the liferaft and survival guidelines

General maintenance of liferaft

At all times ensure that the floor of the liferaft is as dry as possible. Use the bailer and sponges provided in the equipment bag to bail excess water out of the liferaft.

Puncturing the liferaft can have serious effects on its life span. Ensure that no sharp objects are allowed to be brought into the liferaft that are not essential. Those that are required must be stowed safely.

Maintenance of the liferaft: topping up pressure.

When entering the liferaft the tubes and arch should be firm to the touch. Over time the gas will permeate through the material of the liferaft. The result of this will be the loss of pressure and the feeling of the tubes and arch becoming softer. Maintain the pressure in the tubes of the liferaft by using the pump provided in the equipment bag.

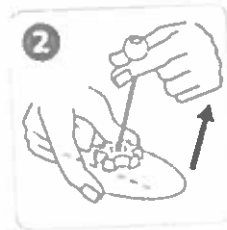
Locate the pump into the top up valves located near the entrance to the liferaft. Use the pump to top up the chambers. Ensure that the relief valves are not blocked when this is done. Once this has been completed remove the pump and replace the sealing cap securely.

Small repairs to the buoyancy tube material.

Contained within the emergency pack are means to repair tears or holes in the buoyancy tubes. The system supplied is a clamping unit that may be fitted whilst the fabric is wet. The clamps are supplied with instruction but familiarisation with the clamps operation is strongly advised before the liferaft is installed onboard a vessel. The clamps installation instructions are detailed below for your reference.



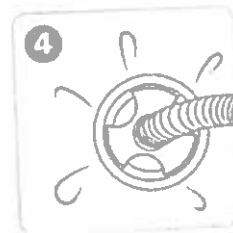
1 Open the ClamSeal™ and insert the base plate into the split.



2 Pull the plates of the ClamSeal™ together, across the split, using the lanyard.



3 With the 2 plates pulled together, simply hand-tighten the nut for a Clam-tight seal!



4 Reinflate and your safe to continue on your way!

Survival guidelines

On board a liferaft one person must take charge. This person's responsibilities include the maintenance of the liferaft and morale of the occupants, which is possibly the most difficult task they undertake. This can be done by organising tasks and other activities.

Responsibilities of the leader

- Keep the liferaft clean and dry. Use bailer supplied to bail out excess water as and when required.
- Check that equipment is securely stowed inside the liferaft.
- Ensure that there are no unnecessary sharp objects onboard the liferaft. If so dispose of them.
- Adjust the canopy to ensure good ventilation inside the liferaft
- In rough seas or bad weather move all weight inside the liferaft towards the wind.
- If necessary deploy the second drogue (if fitted) in rough weather.
- Delegate tasks such as watches keeping a diary to pass the time.
- Conserve the battery life of the internal and external lights by ensuring that they are only activated at night.

Survival instructions

Onboard the liferaft, the conditions will determine the level of danger to the survivors. In hot conditions the main danger is likely to be the heat and dehydration. In cold conditions exposure to the cold may be the biggest danger. An ongoing assessment of conditions must be made and proactive and reactive responses planned to ensure the well being of the survivors.

Dehydration prevention in tropical climates

To prevent the onset of dehydration in tropical conditions, it is preferable to conserve the body's supplies of water, rather than add water. Every effort must be made to conserve energy and stay out of the sun to prevent any type of sunburn or exposure.

Exposure to the cold

Exposure to the cold can be life threatening because of the reduction in the body's temperature. This can be in one localised area such as hands or feet, giving possible frostbite or throughout the body lowering the core temperature causing hypothermia.

In the manufacturer's equipment pack are thermal protective aids (TPA's, not fitted to pack 2). If a casualty is suffering from the effects of hypothermia, they should be placed inside a TPA.

Where possible another person should also be placed inside the TPA with them. In the case of frostbite, the area affected will require warming, which can be done by placing the area in a warm place, such as under the arm pits. If suffering from frostbite the area must not be rubbed to warm it up, this could cause further injury.

To keep warm inside the liferaft and prevent the possible onset of these conditions:



- Conserve body heat by huddling together.
- Ensure the liferaft is kept as dry as possible.
- Keep clothes as dry as possible. If someone has entered the water then their clothes should be wrung out and put back on. Damp clothes offer better protection than none. Where possible wet clothes should be replaced with dry clothes.
- Maintain the circulation around the body through massage four to five times a day unless you are suffering from the effects of frostbite or immersion foot.
- Survivors that are suffering from a low core temperature should be given a hot drink and be placed inside a TPA.
- Food and exercise increase the body's ability to protect itself against the cold. Where possible these activities should be encouraged

Water:

The liferaft is fitted with a rainwater collector in the canopy. This should be used when ever possible to supplement the water rations (if supplied in the equipment pack). Water should be sparingly consumed but often. Water can also be collected from condensation on the inside of the canopy, and dew on the outside of the canopy.

When using the rainwater collector first test the water for signs of salt. If the water tastes salty, then it should not be consumed. If the sample is clear of salt, use the plastic bag to collect further water or any other suitable receptacle. When it is rough, it may not be possible to collect drinkable water, so it is better to think ahead.

At no time should you:

- Drink alcohol.
- Drink sea water, even diluted.
- Drink urine, even diluted.

Food

- Do not consume any food for the first 24 hours.
- Avoid the consumption of sweet or salty foods.
- If food rations are supplied in the equipment pack (ISO Pack 2 only) they should be distributed at a rate of one per person every 6 - 8 hours.
- Fish and/or sea birds may be caught and eaten.
- Plankton found on the bottom of the liferaft is also edible.

Rescue

Signals Pyrotechnics

To be rescued, first you must be spotted. To do this use any means necessary. In the equipment bag supplied (depending on which specification of the pack type) there are a number of pyrotechnic signals. These can be used to attract attention but must be used sparingly and at the right time. The signals supplied in the equipment bag are as follows:

- Parachute signal
- Hand flares

- Smoke signals

With all three of the signals above, correct use of the signal is vital for operational efficiency and safety of the persons onboard the liferaft. The parachute signals and hand flares can be used to attract attention at night time. These signals have limits to an effective range reliant on correct use, weather and visibility. As a maximum figure in perfect calm clear conditions, the following applies:

Rocket parachute flares	25-35 miles
Hand flares	5-10 miles

The smoke signals must only be used during hours of daylight and the effective range of the signal is dependant on the weather conditions at the time. All signals must be operated as per the manufacturer's instructions. When operating the pyrotechnic signals, great care must be taken not to cause injury to any persons in the liferaft or damage to the fabric of the liferaft. Signals must be operated outside of the liferaft and downwind. At no time should a parachute signal be used in close proximity to a helicopter.

Only use pyrotechnics if you can see a means of rescue by line of sight. In addition to this, take into account the maximum range of the signals and weather conditions.

Rescue signals, signal mirror

Unlike pyrotechnics, the signal mirror can be used continually. In addition to this, the mirror can be used at night or day. If there is a means of rescue in sight, do not stop using the signal mirror. Only stop when the rescuer has clearly signalled that they have seen you.

Rescue by helicopter

Under no circumstances use a parachute signal in close proximity to a helicopter.

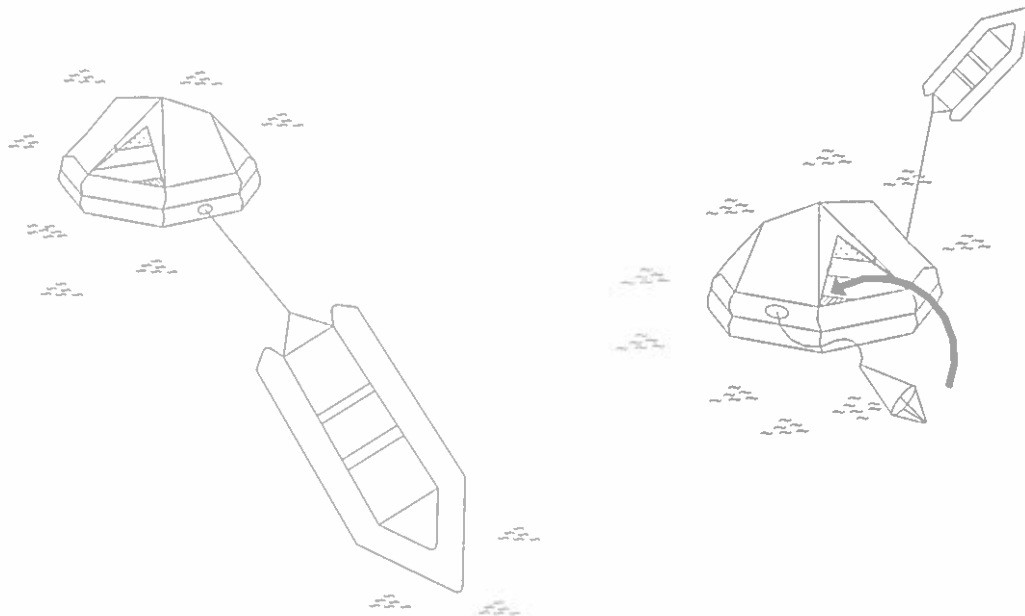
Any rescue involving a helicopter must be performed following the instructions from the crew of the helicopter. In addition to this the following must be observed:

- Remove any aerial or radar reflector that has been erected.
- Aid the pilot by indicating the direction of the wind. Do this by the use of a flag, strip of material or smoke signal.
- All persons onboard the liferaft should assist the recovery of persons from the liferaft by lying still while others are manoeuvring into position. Ensure that the liferaft is balanced at all times.
- Ensure that no part of the helicopter's lifting equipment can become entangled in the liferaft.
- At no time should any part of the helicopter's lifting equipment be attached to the liferaft. If a stretcher needs to be used for a casualty then the stretcher must be detached while the injured party is secured.

Towing the liferaft

Where possible this should be avoided. The liferaft has been tested up to a speed of 3 knots and this speed should never be exceeded. If towing is required then use the towing points on the liferaft which are labelled in the diagram detailed in figure 4

Figure 4





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Liferaft service record

Date of service	Location of service station	Modifications	Repairs/ replacements	Comments	Signature & Stamp



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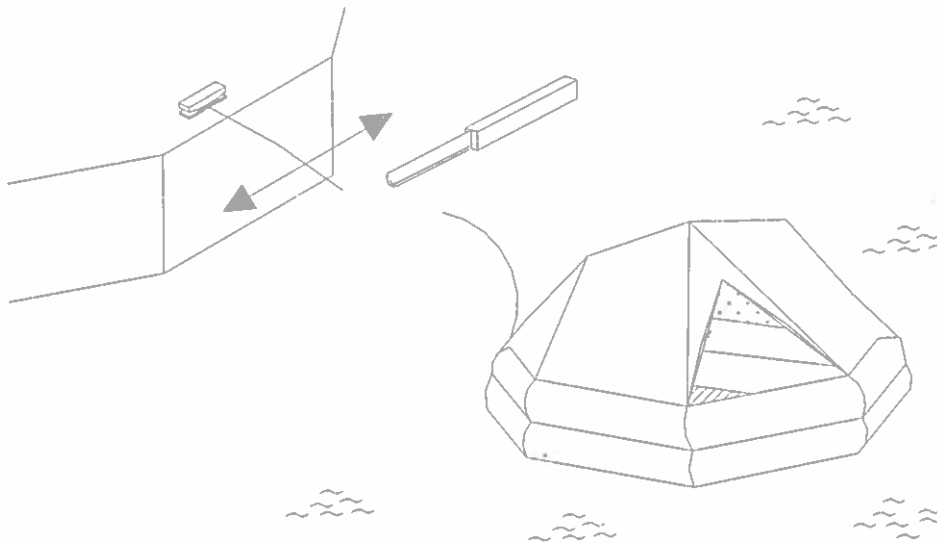
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Immediate Action

Immediate action to be taken on entering the liferaft,

1. Locate the paddles, emergency pack and the drogue inside the liferaft.
2. Cut the painter line with the liferaft's knife (located on the right hand side of the canopy opening above the diagram detailed below) and paddle clear of the evacuated vessel.

Diagram to show how to cut the painter line



3. Deploy the drogue
4. Issue one dose of sea sickness tablets to each person onboard the liferaft. Ensure these are taken immediately.
5. Ensure that the liferaft is in good condition, bail water out of the liferaft and check that the side walls and arch is firm to the touch and there are no obvious leaks.
6. Look for and pick up other survivors.
7. Close entrances in the canopy.
8. Read the owner's liferaft manual and handbook. In hours of darkness use the torches supplied in the emergency pack as a source of illumination.