

Emergency rescue boat (ERB) - Avon 380 – technical information

New policy number: **706**
 Old instruction number:
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 Owner: **Assistant Director, Property and TSS**
 Responsible work team: **Fleet Liaison Engineering and Equipment Team**

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1 Introduction

- 1.1 This policy describes the Avon 380 emergency rescue boat (ERB) and associated equipment carried on water rescue FRUs and explains its operation, maintenance and testing.



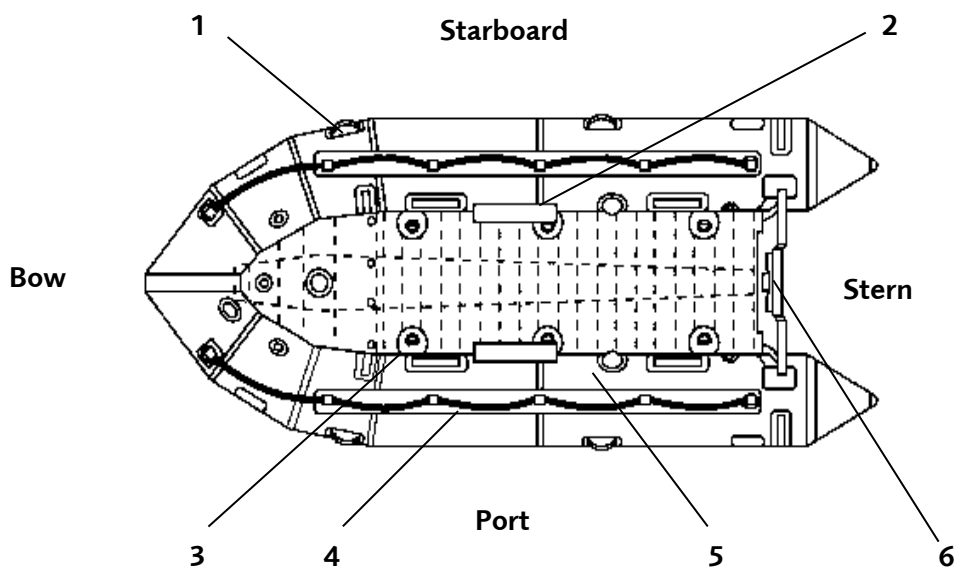
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2 Description

- 2.1 The Avon 380 ERB is provided as part of level 2 - water rescue capability.
- 2.2 It is lightweight and easily transported by four personnel.
- 2.3 It is an inflatable craft with a capacity of up to seven people.
- 2.4 It is inflated using an air cylinder pack or the supplied foot pump.
- 2.5 It has an integral aluminium slatted deck covered with fabric and fitted with load securing points to allow the fixing of the Dacon rescue cradle.
- 2.6 **Technical specifications:**

Length	Overall	3.78m
	Inside	2.69m
Beam	Overall	1.67m
	Inside	0.81m
Tube Diameter	Bow	0.38m
	Stern	0.43m
Operating pressure		0.28 bar (4 psi)
Total Weight		77 kg
Stowed Dimensions		1.2m x 0.66m x 0.5m
Displacement	Dry	1763 kg
Capacity	Weight	650 kg
	Persons	7
Number of Compartments		3 + Keel
Approximate Performance		19 knots
Engine power		15 hp

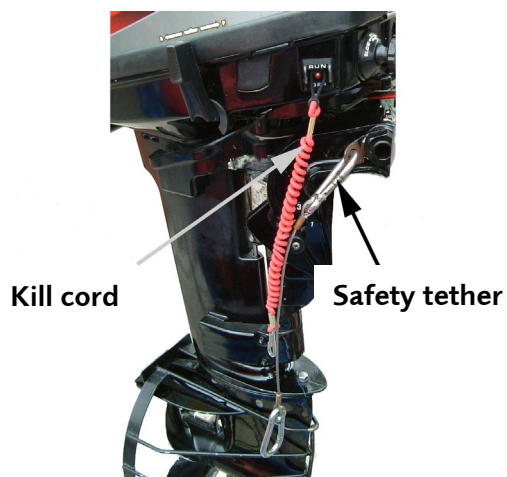
2.7 Main features of the Avon 380 ERB:



1	Carrying handle
2	Equipment pocket
3	"D" Ring for cargo restraint
4	Lifeline
5	Sponson
6	Transom

2.8 The Mariner 15hp outboard motor

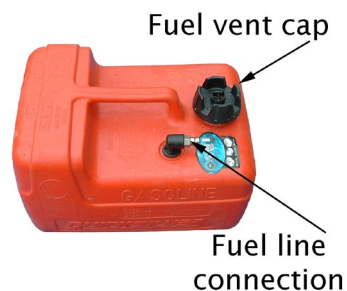
- The Mariner outboard motor is a 2 stroke, short shaft water cooled engine. It has a manual start and throttle control mounted on the steering tiller. A gear lever is fitted to the side of the motor for changing between forward and reverse.
- **Weight 34kg. - minimum 2 person lift.**
- The outboard motor is mounted on the ERB transom using screw clamps. This is supplemented by a wire safety tether and snaphook which must be clipped to the attachment point on the transom at all times.
- The outboard motor is fitted with a safety cut out switch which is operated by a 'kill cord' attached to the operator. This cord must be fitted to the cut out switch and attached to the boat operator at all times when the motor is in use.
- The outboard motor is fitted with a propeller guard, this is **not** to be removed or adjusted.



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2.9 Fuel tank

- The ready mixed 2 stroke fuel for the Mariner outboard is contained within a 12.5 litre plastic fuel tank with a 100% reserve in second 12.5 litre tank.
- The fuel tank is fitted with a filler cap with a manual vent valve which must be undone when being used.
- This must be screwed fully closed when the fuel can is not in use and when stowed.
- The fuel tank has a quick release connection fitted for the outboard fuel line.
- One 12.5 litre fuel tank holds enough fuel for 4 hours operating duration.
- The FRU/ERB 12.5 litre fuel tank is to be filled with unleaded fuel and two stroke marine oil (S9794). The oil is to be measured out in the dedicated filler jug (S9993)(see right) using the 2 % scale which is marked with the amount of fuel (in litres) the oil is being added to, giving a 50-1 fuel/oil mix for use with the ERB Mariner outboard motor only.



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2.10 Paddles

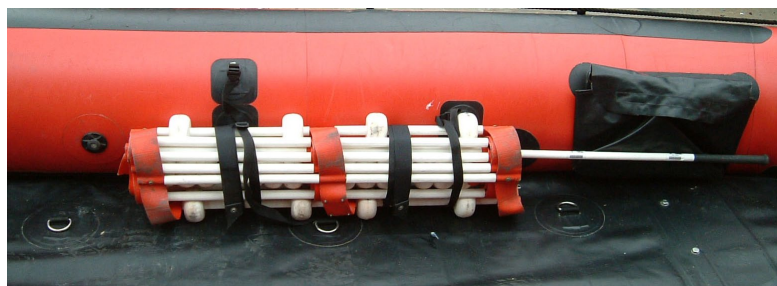
- Two paddles are supplied with each boat.
- These paddles **must** be stowed using the adjustable buckles (see below) prior to the boat being deployed.



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2.11 The Dacon rescue cradle

- The Dacon rescue cradle is provided to assist in the recovery of persons from the water.



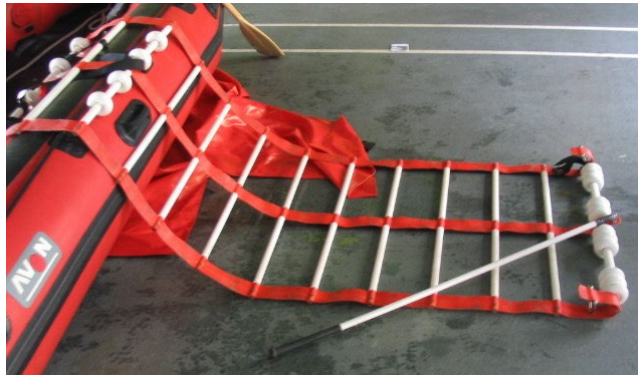
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- The cradle should be fastened to the attachment points on the sponson either side of the boat using the 2 karabiners provided (S9877).



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- The cradle is rated to 200kg and can be used as a cradle to recover casualties or as a ladder to enter the ERB from the water.



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2.12 Rapid inflation hose and reducer

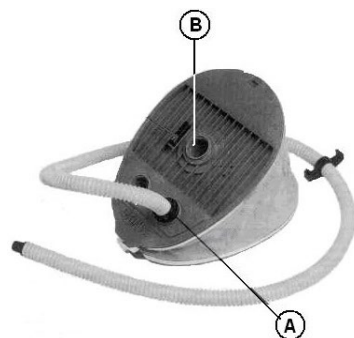


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- The ERB is supplied with a rapid inflation hose with a reducer for inflating the ERB from an Air cylinder pack.
- The rapid inflation hose reducer is screwed onto the Air cylinder pack once the Air cylinder pack reducer has been removed.

2.13 Bravo 10 foot pump

- The Bravo 10 foot pump has been supplied for use when an Air cylinder pack is unavailable, or to top up the pressure in the boat.



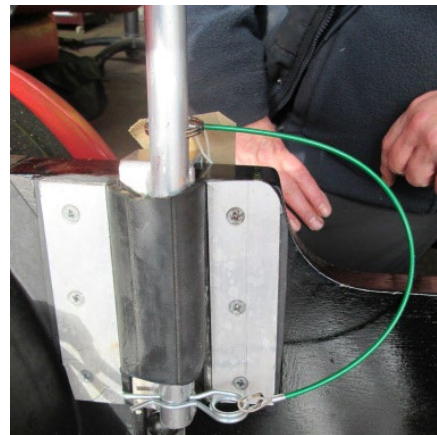
A – Volume chamber
B – Pressure chamber

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- Start the inflation process by using the volume chamber (A) until the fabric is tight (internal pressure of approximately 100 mbar).
- Move the hose to the pressure chamber (B) and continue inflation until air is felt escaping from the pressure relief valves.
- Note: the foot pump will only pressurise the chambers to 3.75psi.

2.14 White navigation light

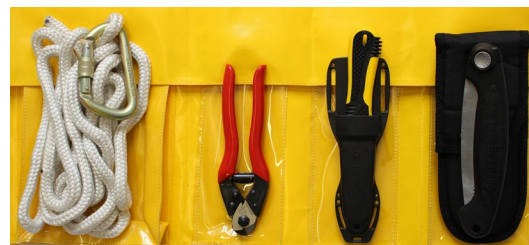
- The all round white navigation light (Aqua signal) is powered by either 4 x AA or AAA batteries depending on light model
- Operated using a push switch on the light housing.
- The light is fitted to a rigid pole.
- When required (when operating on the Thames, at night and/or in poor visibility) it is slotted into the fitting on the transom of the boat as shown right. Remove the 'R' clip from the mast, place the mast into the lighting mast bracket located on the starboard side of the transom. Once located, lock the mast in place with the 'R' clip as shown above.



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2.15 Tool kit

- The boat tool kit consists of:
 - Folding wood saw.
 - Hand wire cutters.
 - Boat knife.
 - 3m tether/capsize line.
- These tools are to remain tethered and stowed in the front starboard side equipment pocket.



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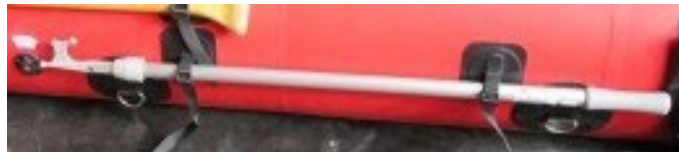
2.16 Thames kit

- To meet the requirements of the Port of London Authority (PLA) for vessels to be used on navigable rivers, the LFB must now carry a range of equipment known as the Thames kit.
- The Thames kit consists of the following:
 - Thames bag.
 - Anchor bag
 - Cargo net x2
 - Extinguisher - Dry powder 1kg
 - Air horn.
 - Air horn refill
 - Kill cord
 - Anchor folding
 - Anchor warp leaded 30m
 - Anchor warp 'D' shackle
 - Anchor bridle 2.4m
 - Boat hook (telescopic)
 - Airwave radio
 - Waterproof pouch



LFB image id 610244

- The boat hook is stowed using the lower port side securing straps below the paddle stowage (as shown below).



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3 Safety precautions

- 3.1 Full water operations level 2 or Fireboat issue PPE must be worn when deploying this equipment.
- 3.2 Water rescue equipment should only be operated by personnel who have received training in its specific use and have studied the relevant policies.
- 3.3 Once deployed, other operational personnel may use this equipment under the guidance of trained personnel. Full structural firefighting PPE (possibly without helmet, in accordance with Policy number 581 - Water rescue and safety when working in, on or near water (which should be read in conjunction with this policy)) with life jacket must be worn for this operation.
- 3.4 The appropriate manual handling lifting techniques are to be used, in accordance with manual handling guidance notes. The ERB requires a 4 person lift. The outboard motor requires a 2 person lift.
- 3.5 The ERB is only to be inflated from an Air cylinder pack via the rapid inflation hose, or the foot pump. Under no circumstances should it be inflated from a SDBA cylinder.
- 3.6 The wire safety tether and snap hook must be clipped to the attachment point on the transom at all times when the outboard motor is mounted on the ERB transom.
- 3.7 The outboard motor is fitted with a safety cut out switch which is operated by a cord attached to the operator. This cord must be fitted to the cut out switch and attached to the boat operator at all times when the outboard motor is in use.
- 3.8 The outboard motor is fitted with a propeller guard. This is not to be removed or adjusted.

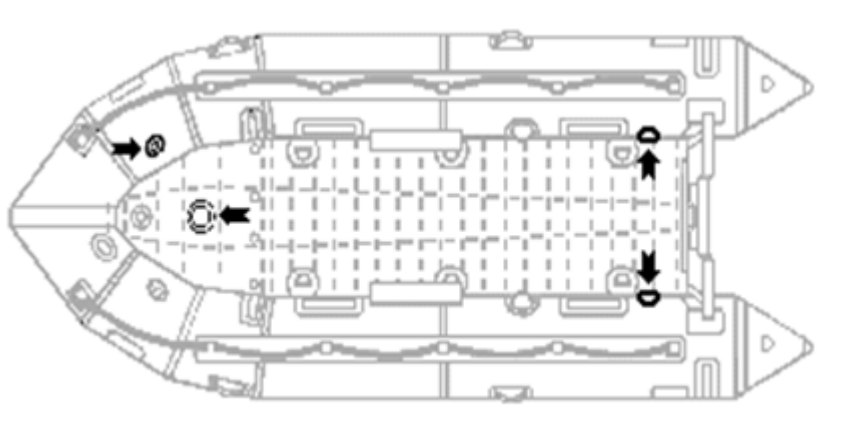
- 3.9 The outboard motor should not be started unless the propeller is in water.
- 3.10 Do not exceed maximum load capacity or person capacity. Make sure that weight/load is evenly distributed about the boat.
- 3.11 Nitrile gloves (POMS-V2481/2/3) are to be worn when topping up the fuel tank.
- 3.12 When topping up the fuel tank, ensure appropriate spill equipment is readily available nearby, in accordance with Policy number 747 - polluting material storage and spillage procedure.

4 Operating instructions

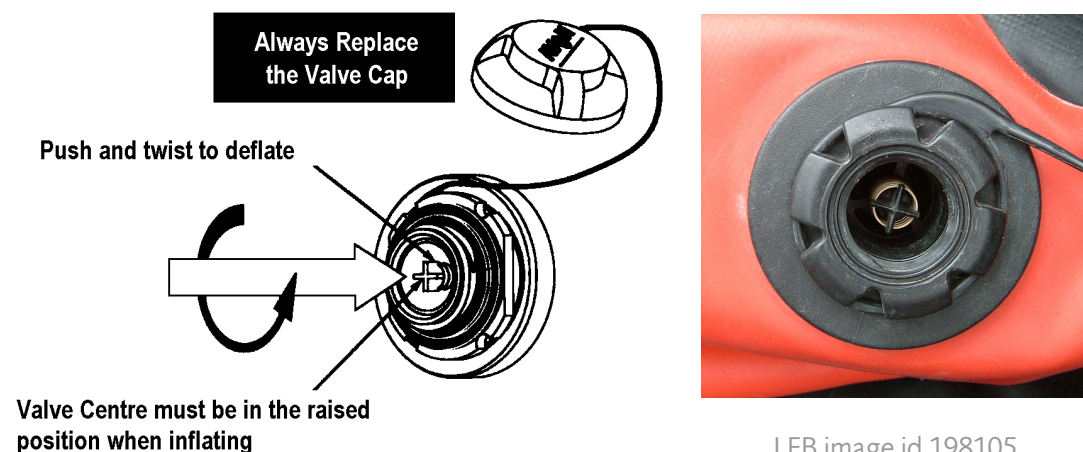
- 4.1 This equipment should only be deployed by personnel who have received specific training in its use.

To inflate:

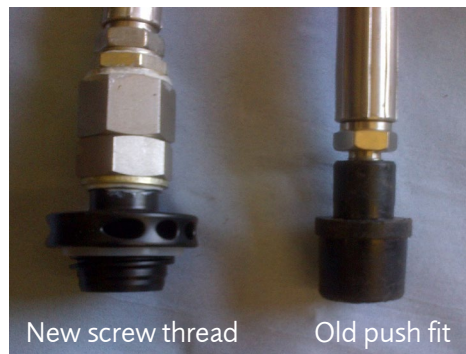
- 4.2 Remove boat from its bag.
- 4.3 The boat should be unfolded on the ground ensuring that there are no sharp objects below, preferably on soft protection if available.
- 4.4 There are 4 inflation valves on the boat as indicated below (not to be confused with the pressure relief valves) these are the only valves to be used to inflate the boat.



- 4.5 The boat is inflated through the inflation valves by compressed air from the air cylinder pack via the rapid inflation hose with reducer or manually by the Bravo 10 foot pump.
- 4.6 To use the Air cylinder pack; remove the Air cylinder pack reducer and screw in the reducer on the rapid inflation hose.
- 4.7 Ensure the spring plunger in the centre of the valve is in the raised position.



- 4.8 The rapid inflation hose now has a new screw thread connection (as pictured below) which has replaced the standard push fit connection.



LFB image id 463321

- 4.9 Connect the rapid inflation hose via the screw thread connection ensuring that it is turned clockwise until it is hand tight (see below).



LFB image id 463319



LFB image id 463320

- 4.10 The foot pump inflation hose is connected by push fit connection.

- 4.11 Continue to inflate each chamber until the working pressure has been reached. This can be recognised when air is heard/felt escaping from the relief valves fitted to each chamber.

- 4.12 **Note:** It must be remembered that the keel requires less air than the main chambers of the buoyancy tube. The cylinder valve on the air cylinder pack should only be partially opened when inflating the keel and should be shut promptly when air is heard to be venting from the keels pressure relief valve. Failure to follow the above advice could result in damage being caused either to the keels pressure relief valve, or to the seams of the keel itself, which would result in the failure of the keel.



Pressure relief valve

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- 4.13 Once each chamber is fully inflated ensure the inflation valve cap is replaced.

- 4.14 The operating pressure for the ERB 380 is: 0.28bar (4.0psi), although only 3.75psi may be achieved if inflating using the foot pump.

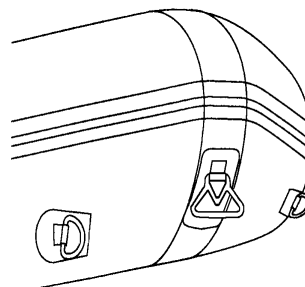
4.15 The boat is fitted with a drain plug which must be in place before it is placed in the water.



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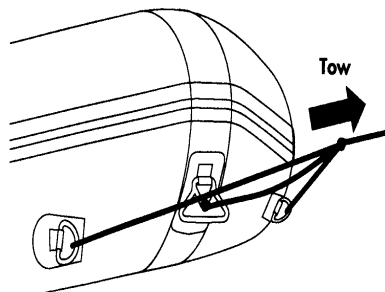
4.16 Deploy the boat and fit outboard motor if required. Make sure when fitting the motor that it is fitted centrally on the transom about the motor clamp plate. When positioned correctly tighten clamp screws securely by hand only. Attach the wire safety tether and snaphook to the attachment point on the transom.

4.17 The primary anchor points are located at the front (bow) of the boat (see right). The 'D' ring bow handle has a painter line permanently attached through the 'V' this is primarily for handling the boat and mooring (this line is not to be used for towing).

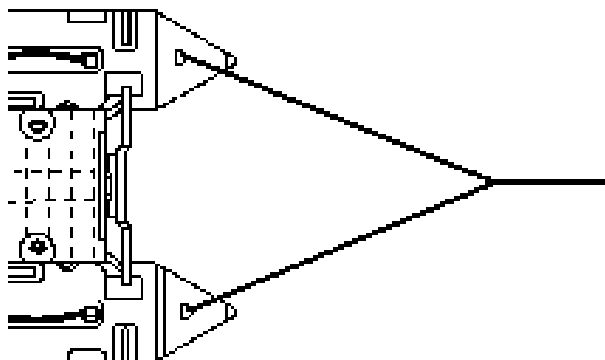


4.18 These anchor points are rated to 3 tonnes in a straight pull and should be used in conjunction with the rope pack and floating safety lines for any tethering operations.

4.19 Should it be required to tow the boat, the primary tow line should be attached to both the towing "D" links, with a safety back-up line rigged through the "D" ring on the bow handle (see right).

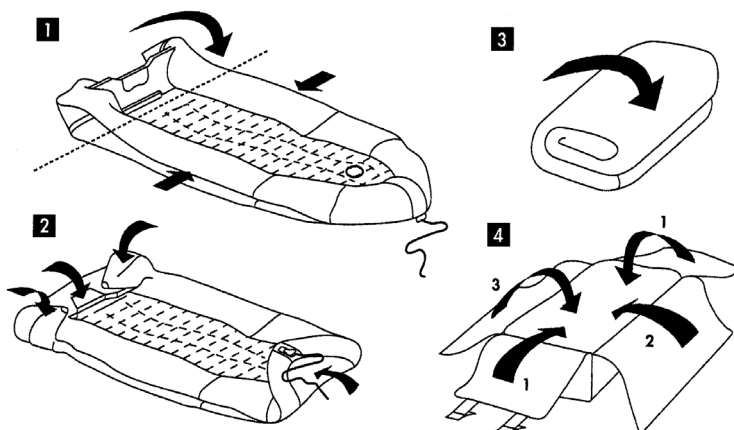


4.20 Additional anchor points are located at the rear of the sponsons for towing other craft (see below).



After use:

- 4.21 Remove outboard motor, fuel tank if and all loose items.
- 4.22 The boat should be washed down with clean water if possible whilst inflated.
- 4.23 Invert the boat whilst inflated to allow any water to drain out of the void under the floor. Failure to do this may result in the thrust boards in the keel being damaged.
- 4.24 Deflate the buoyancy chambers and keel. Open inflation valve by pressing in the spring plunger, allowing air to escape.
- 4.25 When each chamber has deflated the remainder of the air can be removed by attaching the foot pump to the inflation valves with the foot pump set to exhaust, then operate foot pump, until all residual air is removed from each chamber. Reset the valves to the closed position and replace the valve caps.
- 4.26 Once completed the boat may be folded and placed in its stowage/carrying valise.



- 4.27 Once returned to station the boat and ancillary equipment must be removed from the appliance and inflated, inspected and tested as described below.
- 4.28 Ensure the equipment is not stowed wet.

5 Maintenance and testing

- On acceptance.
- After use.
- Monthly.
- 6 Monthly - Training ERBs only (by the Vehicle and Equipment (V&E) contractor).
- Annually (by the V&E contractor).

5.1 ERB

- Remove and inflate boat as per above.
- If required wash boat with a diluted soapy solution and rinse well.
- Carry out a visual inspection of entire boat.
- Check condition of all items.
- Check that all webbing straps are in good order and that clips work correctly.
- Check operation of inflation and pressure relief valves.
- Ensure screw caps are attached to inflation valves and are in good condition.
- The boat **must** be allowed to dry fully before being made up.
- Make up boat as described above and stow on appliance.

5.2 **Mariner outboard motor**

Check:

- Security and condition of the propeller guard.
- Condition of the propeller blades and condition of the centre shear coupling.
- Condition of the motor leg and cavitation plate looking for cracks or damage.
- Operation of the motor tilt lock mechanism.
- Condition and security of the fuel line connection. Fuel should not be pumped to the carburettor unless the engine can be started.
- Condition and operation of the choke control.
- Condition and security of the tiller arm pivot.
- Condition and operation of the throttle control.
- Condition and operation of the gear selector lever.
- Condition and operation of the recoil start handle, cord and mechanism. Recoil start should be tested with the engine kill switch off.
- Condition and operation of the transom clamp screws.
- Security and condition of the manual handling bars.
- Security and condition of safety wire and fixings.
- Condition of the kill cord. The relaxed length of the cord should be 400mm. Anything over 600mm should be taken off the run as defective.
- Operation of kill cord and kill switch. The engine should not be started unless the propeller is in water.

Note:

- The outboard motors would normally be utilised in fresh water and would not therefore require flushing and so there has been no issue of a test tank which would be required for the Mariner motor.
- The limited operational usage that may occur in the tidal Thames is not considered to be sufficient to cause salt build up within the waterways and so flushing of the motor has been considered unnecessary.

5.3 **Dacon cradle**

- If required wash down with a diluted soapy solution and rinse well fresh water.
- Policy number 707 - The control of infection and infectious diseases policy should be referred to if casualties have been rescued.
- Visually inspect entire cradle.
- Ensure free movement of all moving components.
- All of the cradles components are free from damage.
- All cradle straps are in good condition, not frayed and stitching in good order.
- Attachment karabiner's operate freely and correctly.
- Raising handle in good condition and securely attached.

5.4 **Paddles**

- Carry out a visual inspection of each paddle, checking its condition and ensuring there is no splitting or distortion.

5.5 **Foot pump**

- Check pumps operation.
- Ensure the pump is in good condition.
- Check that the hose has no splits or damage.
- Check that the hose fits snugly both into the pump and the inflation valves on the ERB.

5.6 Fuel tank

- Check general condition of the fuel tank.
- Ensure the filler/vent cap is in place and working correctly.
- Check condition of fuel line and that connections work correctly.

5.7 Navigation light

- Check condition of the pole and ensure that the 'R' clip is attached securely.
- Ensure the light is fitted securely to the pole.
- Check the operation of the light and change batteries if required. Recycle batteries as per latest LFB guidance.

5.8 Tool kit and Thames kit

- Ensure the contents are listed as above.
- Check the general condition of tool kit ensuring they are dry, clean and free of rust.

5.9 Tests are to be recorded on appropriate standard test card.

6 Defects

6.1 The ERB and ancillary equipment are CAT B items under the V&E contract. Defects should be reported on POMS. Id's as follows:

• Emergency rescue boat (ERB)	-	S9829
• ERB carrying bag/valise	-	S9875
• Mariner outboard motor	-	S9795
• Kill cord	-	S9874
• Dacon cradle	-	S9827
• Dacon cradle karabiner	-	S9877
• Paddle	-	S9830
• Rapid inflation hose with reducer	-	S9873
• Foot pump	-	S9831
• Foot pump hose	-	S9922
• Fuel tank	-	S9793
• Rubber fuel hose	-	S9876
• White navigation light on mast		S9828
• Thames kit		
○ Thames bag		S8400
○ Anchor bag		HL135
○ Cargo net x2		S9036
○ Extinguisher - Dry powder1kg		S8410
○ Air horn.		S8407
○ Air horn refill		S8408
○ Kill cord		S9874
○ Folding anchor		S8405
○ Anchor warp leaded 30m		S8414
○ Anchor warp 'D' shackle		S8417
○ Anchor bridle 2.4m		S8416
○ Boat hook (telescopic)		S8401
○ Airwave radio		tba
○ Waterproof pouch		tba

- Tool kit (supplied by H&L containing the following) - HLW1005
 - Folding wood saw
 - Hand wire cutters
 - Knife, river rescue
 - 3m tether/capsize line
- When ordering any one of the tool kit items the POMS code HLW1005 should be used and the specific item named in the additional information box.

7 Associated material

7.1 To be read in conjunction with the following policies:

- Policy number 174 – Control of substances hazardous to health regulations.
- Policy number 206 – Environment agency – incorporating the grab pack and large spill kit.
- Policy number 540 – Manual handling.
- Policy number 581 – Water rescue and safety when working in, on or near water.
- Policy number 598 – Provision and use of work equipment.
- Policy number 617 – Personal protective equipment at work procedure.
- Policy number 643 – Hazardous waste disposal procedure.
- Policy number 707 – Control of infection and infectious diseases policy.
- Policy number 724 – Appliance inventories and operational readiness.
- Policy number 747 – Polluting material storage and spillage procedure.
- Policy number 817 – Fuel cans – technical information.
- Policy number 862 – Waste management.
- Policy number 985 - Operational safety management - knowledge skills and competence – NOG.

Document history

Assessments

An equality, sustainability or health, safety and welfare impact assessment and/or a risk assessment was last completed on:

EIA	16/10/2019	SDIA	H - 16/10/2019	HSWIA		RA	
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Audit trail

Listed below is a brief audit trail, detailing amendments made to this policy/procedure.

Page/para nos.	Brief description of change	Date
Throughout	This policy has been reviewed, please read to familiarise yourself with the changes.	29/05/2012
Page 7, para 3.8	A new paragraph 3.8 has been added.	20/07/2012
Page 1	Responsible work team changed from Engineering Fleet and Equipment Team to Fleet Liaison Engineering and Equipment Team, the company AssetCo updated to Premier FireServe..	29/10/2012
Throughout	Premier FireServe has been updated to 'the service provider'. Minor changes made throughout whole of policy.	20/11/2012
Page 9	Reference to cancelled PN324 has been removed.	22/03/2013
Throughout	Road traffic accidents/RTAs updated to road traffic collisions/RTCs as requested by Andy Roe.	11/09/2013
Para 3.7 & 3.8 Section 4 & 7	Additional information added relating to the new screw thread connection on the rapid inflation hose. Additional information added to both sections.	18/12/2013
Section 3 & 4 Para 3.9 to 3.10 Para 4.14	These sections have ben swapped around so that Safety precautions is now before Operating instructions. Additional safety information added. Additional operating instructions added.	19/03/2014
Page 14	'Subjects list' table - template updated.	06/01/2015
Throughout	This policy has additional material added as part of its review, please read to familiarise yourself with the changes.	22/05/2017
Throughout	This policy has been reviwed as current with minor changes made. Information updated on the navigation light including batteries.	21/10/2019
Last page	SDIA updated.	30/10/2019
Throughout	Cross references updated.	23/06/2022

Subject list

You can find this policy under the following subjects.

Equipment - Operational	Equipment - Rescue
Technical information	Water rescue
Boat	

Freedom of Information Act exemptions

This policy/procedure has been securely marked due to:

Considered by: (responsible work team)	FOIA exemption	Security marking classification