Maritime & Coastguard Agency

MARINE GUIDANCE NOTE

MGN 553 (M+F)

Life-Saving Appliances - Inflatable Non-SOLAS Liferafts, Lifejackets, Marine Evacuation Systems, Danbuoys and Lifebuoys - Technical Standards and Servicing Requirements

Notice to all Owners and Operators of Fishing Vessels, Small Commercial Vessels and Domestic Passenger ships with non-SOLAS MES; Manufacturers, Suppliers, and Service Station Personnel for all Products within the Scope of this Note.

This Note replaces MGN 499 (M+F) for non-SOLAS inflatable LSA on UK commercial vessels where these are permitted.

Summary

This Note provides guidance on the MCA policy with regards to the acceptable standards of non-SOLAS inflatable Life-Saving Appliances (LSA) for use on certain UK registered commercial vessels. It also sets the process for the servicing requirements of such LSA.

The key points within this Note for non-SOLAS inflatable LSA are that:

- Non-SOLAS inflatable LSA fitted to commercial vessels should be serviced in accordance with the original equipment manufacturer's (manufacturer) instructions;
- Non-SOLAS liferafts marketed as compliant with ISO 9650 are not to be marked for a capacity other than 4 to 12 persons. Surveyors of UK commercial vessels will not accept ISO liferaft if labelled and/or marketed as being for a number of persons outside of 4 to 12;
- Non-SOLAS liferafts built to comply with the ORC standard previously accepted on UK commercial vessels are formally being phased out of service in accordance with the arrangements detailed in this MGN; this note supersedes paragraph 13.2.3.5 of MGN 280;
- The MCA will accept inflatable lifebuoys and danbuoys on certain Small Commercial Vessels and Fishing Vessels as detailed in this Note.

1. Background

1.1 MGN 499 previously set out the requirements for both SOLAS (meeting the requirements of Chapter III of the Safety of Life at Sea Convention) and non-SOLAS (not meeting the requirements of Chapter III of the Safety of Life at Sea Convention but otherwise accepted by the MCA) inflatable LSA with regards servicing and other technical requirements for use on board UK ships. In recent years, the MCA's policy for each category has changed as the LSA technology has developed.

1.2 Accordingly, MGN 499 has been split to consider in isolation the differing issues observed for SOLAS and non-SOLAS equipment, and to give greater transparency and clarity to operators of ships, fishing vessels and small commercial vessels and those involved in the manufacture and maintenance of such equipment. **This note concerns non-SOLAS LSA**.

2. General

2.1 Owners and operators of UK commercial vessels are responsible for making sure that the service station that services their product is capable of undertaking such work for inflatable non-SOLAS liferafts, this means a Service Station authorised or approved by the manufacturer of the product.

2.2 Service stations are responsible for the correct servicing of liferafts and as such, should only be conducting servicing on liferafts for which they are accredited by the manufacturer, and for which they hold the necessary training, information, equipment, spare parts etc. Service Stations are reminded that they are also responsible for any work conducted by their sub-contractors, which may include the servicing of pressurised gas cylinders.

2.3 It is recommended that when carrying out the service of gas cylinders, the marking label should be provided and updated with all the relevant information (e.g. time of the next service, tare weight of cylinder plus valve, gross weight of the cylinder, charge weight and unit of weight (percentages of the gases), charge date) and the Service Station should keep historical records available for inspection. Requirements are set out in Statutory Instrument 2001 No 1426 when placing on the market or using at work any transportable pressure vessel. This may be applicable to activities relating to the servicing of gas cylinders for specific use in liferaft inflation. It is the responsibility of the Service Stations to assess whether the work they perform is within the remit of this regulation, and therefore there is a need to be in compliance. As per paragraph 2.2 of this note the Service Station is responsible for making sure that all work conducted on the servicing of the liferaft and gas cylinders it is in accordance with the applicable regulations, even if the service of the cylinder is subcontracted.

2.4 It is a requirement for the vessel owner/managing agent to ensure that the vessel (including any non-SOLAS inflatable liferafts, lifejackets, MES, danbuoys and lifebuoys) are maintained and operated in accordance with the requirements of the applicable instruments, inclusive of the interpretations explained in this MGN. It is also a requirement for owner/managing agent to ensure that such equipment has been serviced at the intervals prescribed by the applicable instruments. It is an offence for a small commercial vessel or fishing vessel to proceed, or attempt to proceed, to sea unless the vessel complies with the requirements of the applicable instruments (including any requirements as to operation, manning and maintenance).

3. Non-SOLAS Inflatable Liferaft Standards – ORC Liferafts

3.1 Within the Codes of Practice for the Safety of Small Commercial Vessels and Fishing Vessels, and MGN 280 Small Vessel in Commercial use for Sport or Pleasure, Workboats and Pilot Boats, Offshore Racing Council (ORC) liferafts (as detailed in 2014 and 2015 edition of the ISAF Offshore Special Regulations Appendix A Part I) are currently accepted for certain areas of vessel operation. With the further development of liferafts since the introduction of the ORC standard, the International Organisation for Standardisation developed ISO 9650 and products compliant with this standard are widely available in the UK and EU market. With the introduction of this ISO small vessel liferaft standard, ORC standard liferafts installed on board UK vessels (regulated to carry such a liferaft) were intended to be naturally phased out at the end of their serviceable life (in accordance with 13.2.3.5 of MGN 280) and are now to be formally phased out of use for UK vessels, due to the lesser level of safety provided when compared with liferafts built to the ISO or SOLAS standards. Accordingly, ORC liferafts will

continue to be accepted on UK vessels, where the relevant UK instrument permits their carriage, until the phase out period elapses (see below).

3.2 The MCA will accept all ORC liferafts installed on board UK vessels, which are determined by the manufacturer to still be within their serviceable life, including liferafts on a hired basis. ORC liferafts are to be formally phased out in accordance with Table 1 of this Note. Table 1 supersedes the provision of paragraph 13.2.3.5 of MGN 280. Table 1 also applies to vessels certificated against the Codes of Practice for the safety of small commercial vessels and fishing vessels[+].

[+]Code of practice for the safety of small vessel in commercial use for sport or pleasure operating from a nominated departure point (NPD) under paragraph 13.3.3, the Code of practice for the safety of small commercial motor vessels under Annex 2 paragraph 1.5, the Code of practice for small commercial sailing vessels under Annex 2 paragraph 1.5, the fishing vessels Code of practice for the safety of small fishing vessels MSN 1813 (F) and the Code of practice for the safety of small fishing vessel MGN 502 (F).

Table 1: Phase out Periods for the carriage of ORC liferafts on board UK vessels:

Category of Operation^	Phase out period
2 - (up to 60 nautical miles from a safe haven)	**3 years or 3 service intervals***
3 - (up to 20 nautical miles from a safe haven)	**4 years or 4 service intervals***
4 - (up to 20 nautical miles from a safe haven, in favourable weather and in daylight)	**5 years 5 or service intervals***
5 - (to sea, within 20 nautical miles from a nominated departure point name in the certificate in favourable weather and daylight)	**5 years 5 or service intervals***
6 - (to sea, within 3 nautical miles from a nominated departure point(s) named in the certificate and never more than 3 nautical miles from land, in favourable weather and daylight)	**5 years or 5 service intervals***

*Whichever is sooner. The start of this phase out period being taken from the date this Note is published.
^ As defined in the Codes of Practice for Vessels in Commercial use for Sport or Pleasure, Workboats and Pilot Boats, and MGN 280.

4. Non-SOLAS Inflatable Liferafts – ISO 9650

4.1 Clarification has been sought from UK industry on the use of liferafts marked as compliant with the ISO 9650 standard, and the associated MCA acceptance of such liferafts on board UK commercial vessels. Within the Codes of Practice for the Safety of Small Commercial Vessels and fishing vessels operating 60 nautical miles from a safe haven, the ISO 9650 Part 1, Type 1, Group A standard is accepted if the liferaft is provided with a SOLAS B pack and boarding ramp. Furthermore, the MCA will also accept such liferafts on small commercial vessels proceeding further than 60 nautical miles but less than 150 nautical miles from a safe haven providing such liferafts are independently certificated as compliant with the ISO 9650, Part 1, Type 1, Group A standard, fitted with a SOLAS A pack and stowed in a hard canister. Compliance certification issued by one of the EC Notified Bodies responsible for approval of life-saving appliances described in the Marine Equipment Directive (MED) (see www.mared.org) will be recognised as full third party verification of compliance. In both cases, provisions integral to the liferaft may be supplemented by a “grab bag” to form a SOLAS A/ B pack, as applicable. Such a grab bag should be appropriately stored to ensure it is easily accessible in the event of an emergency to afford prompt boarding of the inflated liferaft with the grab bag.

4.2 Further, the ISO 9650 standard specifies that the scope of that standard is specifically to cover liferafts in the range for 4 to 12 persons only. Manufacturers and suppliers of liferafts

are reminded of this point and that any liferafts manufactured for a number of persons outside of 4 to 12 is accordingly not in compliance with the ISO standard. Liferafts marked as ISO compliant but for a number of persons other than 4 to 12 will not be accepted on board a UK commercial vessel. However, if such a liferaft is re-marked as an ORC liferaft by the manufacturer (and the manufacturer confirms compliance with the ORC standard) the MCA will accept such liferafts (where the instrument relevant to the vessel permits the use of ORC liferafts). Attention is drawn to the formal phase out of ORC liferafts as stated in 2.2 above, additionally, that ORC liferafts must be serviced annually for acceptance on UK commercial vessels.

4.3 Subsequently, ISO 9650 liferafts marked for a number of persons outside of 4 to 12 cannot be accepted by Certifying Authorities as meeting section 13 of MGN 280 or any of the Codes of Practice for the safety of small commercial vessels and fishing vessels. Any operators of commercial vessels who find themselves in the position that they have purchased an ISO 9650 liferaft marked as anything other than 4 to 12 person should contact their Certifying Authority (CA) and the relevant manufacturer or supplier of the liferaft as soon as is possible to request one of the following actions:-

4.3.1 Recertification (and, where needed, re-testing) of the liferaft as a 14 man ORC liferaft (noting the phase out regime in 2.2 above);

4.3.2 Recertification (and, where needed, re-testing) of the liferaft as a 12 man ISO 9650 liferaft, noting the number of persons the vessel is certificated to carry; or

4.3.3 Replacement of the unit with a liferaft accepted by the MCA in accordance with the appropriate codes/regulations.

5. Non-SOLAS Inflatable Lifejackets

5.1 It should be noted that the BS EN 396 and 399 standards have been superseded by ISO 12402-3 and ISO 12402-2 respectively but lifejackets of BS EN 396 and 399 are still acceptable on UK commercial vessels, where permitted by the relevant Code of Practice.
For servicing requirements for non-SOLAS inflatable lifejackets fitted to commercial vessels refer to relevant Codes/Regulation. The manufacturer's recommendations/instructions should be applied.

6. Non-SOLAS Inflatable Marine Evacuation Systems (MES)

6.1 The MCA has accepted non-SOLAS marine evacuation systems (MES) on certain domestic passenger ships. Any proposals for inflatable slides or chutes to form part of such a non-SOLAS MES on a domestic passenger ship shall be in compliance with the requirements in MSN 1676 (M) The Merchant Shipping (Life-Saving Appliances for Passenger Ships of Classes III to VI (A)) Regulations 1999 as described under Schedule 5, as far as applicable. Any technical deviations from the technical performance standard should be notified to the MCA prior to installation and any modifications to the method of installation on the ship from the manufacturer's recommendations should be notified to the MCA. A fully SOLAS compliant MES installed on ships within the scope of the Merchant Shipping (Life-Saving Appliances for Passenger Ships of Classes III to VI (A)) Regulation 1999 should be MED approved. Acceptance of all such arrangements should be carried out by the attending MCA surveyor in consultation with the ship operator, the product manufacturer and Marine Technology Branch.

7. Servicing of Non-SOLAS Inflatable Liferafts and Non SOLAS Inflatable MES

7.1 Except where MCA requirements require more frequent servicing, non-SOLAS inflatable liferafts and MES accepted on board UK commercial vessels are required to be serviced in

accordance with the manufacturer's instructions by a Service Station authorised or approved by the manufacturer of the product. It is recommended that manufacturers and Service Stations follow the standard in Annex 1 of this MGN for conditions of Service Stations and conduct of servicing for non-SOLAS inflatable liferaft. The exception to this is where a vessel carries an ORC liferaft ahead of the formal phase out described in 3.2 above, or carries a valise packed liferaft (where the relevant UK instrument permits their carriage), the liferafts must be serviced annually.

7.2 Before submitting non-SOLAS inflatable liferafts or MES to a Service Station, vessel owners and operators, should check that the station is capable of servicing the particular make and model of equipment by requesting sight of manufacturer accreditation/certification, if necessary to verify the capability of the station to service the raft.

7.3 It is recommended that owners, masters, or skippers of UK registered ships, fishing vessels, and small commercial vessels should check that the Service Station has been approved/ accredited (as applicable) by the manufacturer. If in any doubt, owners or masters or skippers should contact the manufacturer to be certain that the authorisation is in place.

7.4 During re-installation of liferafts or MES after servicing, Service Stations and operators should be mindful of specially configured liferafts or MES eg. 'handed', where painter and bowsing lines are customised and may vary in length for the specific stowage location on the vessel. Correct re-installation on the vessel is paramount for the safe operation in an emergency. Reference should be made to the equipment manufacturer's installation plans for the MES.

8. Non-SOLAS Inflatable Lifebuoys and non-SOLAS inflatable Danbuoys for Small Commercial Vessels

8.1 The MCA has recently been approached by Certifying Authorities (CAs) with regards the MCA policy for accepting inflatable lifebuoys and danbuoys on board small commercial vessels.

8.2 The MCA will accept such inflatable buoys on board UK small commercial vessels and pleasure vessels (where the relevant instrument permits the use of 'lightweight' horseshoe type lifebuoys or danbuoys on sailing yachts, and does not specifically preclude the use of such inflatable buoys), providing the following is met:

8.2.1 The buoy is constructed with materials and components in compliance with the relevant parts of the ISO 12402-7 "Personal flotation devices. Materials and components. Safety requirements and test methods" and tested in accordance with the relevant parts of ISO 12402-9 "Personal flotation devices. Test methods";

8.2.2 The buoy provides equal or higher performance to the non-inflatable equivalent that would otherwise be accepted by the MCA; and

8.2.3 The buoy is serviced in accordance with the manufacturer's requirements and a service history is maintained on board the vessel. (Where it is not practicable to hold the service information on board, it should be readily available for inspection by the CAs).

8.3 The MCA will only accept such inflatable buoys meeting 8.2 above on board small commercial vessels where the vessel/managing agent has proven to the relevant CA that it is not practicable to use a non-inflatable buoy, however this will only be accepted for small commercial vessels certificated to operate in area categories 5 and 6 as defined in the Small Commercial Vessel Codes of Practice and MGN 280.

More Information

Marine Technology Branch
Maritime and Coastguard Agency
Bay 2/27
Spring Place
105 Commercial Road
Southampton
SO15 1EG

Tel : +44 (0) 23 8032 9100
Fax : +44 (0) 23 8032 9104
e-mail: marinetechnology@mcga.gov.uk

Website Address: www.gov.uk/government/organisations/maritime-and-coastguard-agency

General Inquiries: infoline@mcga.gov.uk

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ANNEX 1

RECOMMENDED STANDARD FOR THE CONDITIONS OF SERVICE STATIONS AND CONDUCT OF SERVICING FOR NON-SOLAS INFLATABLE LIFERAFTS

1. General

1.1 Scope

This standard aims to define best practice for the service of small craft inflatable liferafts. It is intended to be compatible with all small craft inflatable liferafts – past, present and future; however, it has been drafted with particular reference to liferafts compliant with ISO 9650 Parts 1, 2 and 3 and/or the International Sailing Federation (ISAF) Offshore Special Regulations, Appendix A Part II (and Part I).

1.2 Definitions

• *Manufacturer*
The manufacturer is any natural or legal person who is responsible for designing or manufacturing a product and places it on the market under his own name or trademark. So, if the product is marked under another person's name or trademark, this person will be considered as the manufacturer.

• *Service Stations*
Companies offering small craft inflatable liferaft servicing under this standard.

• *Small craft*
Any water borne vessel <24 metres in length.

1.3 Responsibilities

In order to ensure that the service of inflatable liferafts is effectively conducted to provide a reliable survival craft in an emergency, Manufacturers and liferaft owners have parallel and overlapping responsibilities; these include, but are not limited to, the following:

1.3.1 ***Manufacturers*** are responsible for:

1.3.1.1 ensuring that their liferafts can be adequately serviced in accordance with this standard or with any additional requirements necessary for that particular product;

1.3.1.2 accrediting a sufficient number of service stations;

1.3.1.3 ensuring that each service station accredited by them for service and repair of their liferafts has qualified persons whom they have adequately trained and certificated to perform such work; the training procedure should also ensure that servicing personnel are made aware of changes and new techniques.

1.3.1.4 making available to accredited service stations:
- changes to any Manufacturers service manuals, service bulletins and instructions;
- the correct materials and replacement parts;
- up to date copies of this standard.

1.3.1.5 keeping maritime Administrations fully informed of any casualties known to them and involving their liferafts and also of any failures of liferafts;

1.3.1.6 informing liferaft owners whenever possible of any deficiency or danger known to them and related to the use of their liferafts and taking whatever remedial measures they deem necessary.

1.3.2 ***Liferaft owners*** are responsible for:

1.3.2.1 ensuring that liferafts are serviced at the appropriate intervals at an accredited service station. Liferaft owners should check that station can complete the servicing of raft by checking for certification from the product manufacturer, if in doubt call the product manufacturer.

1.3.2.2 Whenever practicable owner should be in attendance during service inflation tests to see the raft in its inflated condition.

2. Requirements for Service Stations

2.1 Service stations should demonstrate competence to service and repack liferafts, maintain an adequate facility and use only qualified persons who have been adequately trained and certificated. In particular they should:

2.1.1 only conducting servicing on liferaft for which they are accredited by the manufacturer and for which they hold the necessary training, information, equipment, spares etc;

2.1.2 only carry out the service of inflatable liferafts in fully enclosed spaces. There should be ample room for the number of inflatable liferafts expected to be serviced at any one time; the ceiling should be sufficiently high to allow the largest liferafts to be serviced to be turned over when inflated, or an equally efficient means to facilitate inspection of bottom seams should be provided;

2.1.3 provide a service space floor that is sufficiently clean and smooth to ensure that no damage will occur to the liferaft fabric;

2.1.4 provide a well-lit service space that the direct rays of sunlight do not enter;

2.1.5 ensure the temperature and, when necessary, the relative humidity in the service space is sufficiently controlled to ensure that service and repairs can be effectively carried out;

2.1.6 ensure the service space is efficiently ventilated, but be free from draughts;

2.1.7 ensure separate areas or rooms are provided for:

2.1.7.1 liferafts awaiting service, repair or delivery;

2.1.7.2 the repair of glass-fibre containers and the refurbishment of compressed gas cylinders;

2.1.7.3 materials and spare parts;

2.1.7.4 unused and expired pyrotechnics;

2.1.7.5 administrative purposes;

2.1.8 provide means, in the liferaft storage space, to ensure that liferafts in containers or valises are neither stored on top of each other in more than two tiers unless supported by shelving nor that they are subjected to excessive loads;

2.1.9 ensure that spare and obsolete pyrotechnics or other hazardous materials such as Li-ion batteries from position indicating lights are stored in separate, safe and secure magazines well away from the service and storage spaces and that they meet any local authority requirements including the disposal of such items. All such items should be stored in accordance with the equipment manufacturer's instructions;

2.1.10 make available sufficient facilities, tools and equipment for the service of liferafts in accordance with the requirements of the Manufacturer, including:

2.1.10.1 suitable and accurate manometers or pressure gauges, thermometers and barometers which can be easily read;

2.1.10.2 one or more air pumps for inflating and deflating liferafts, together with a means of cleaning and drying the air and including the necessary high-pressure hoses and adapters;

2.1.10.3 a scale for weighing inflation gas cylinders with sufficient accuracy;

2.1.10.4 sufficient dry compressed gas for blowing through the inlet system of the liferafts and for liferaft inflation;

2.1.10.5 all measurement tools and equipment should be calibrated and certificated as recommended by the Manufacturers;

2.1.11 establish procedures to ensure that each gas cylinder is properly filled and gastight before fitting to a liferaft;

2.1.12 ensure sufficient materials and accessories are available for repairing liferafts, together with replacements of the emergency equipment to the satisfaction of the Manufacturer;

2.1.13 ensure service and repair work is carried out only by qualified persons who have been adequately trained and certificated by the liferaft Manufacturer. Service stations should have procedures to ensure that service personnel are made aware of changes and new techniques;

2.1.14 make arrangements for the Manufacturer to make available to the service station:

2.1.14.1 changes to service manuals, service bulletins and instructions;

2.1.14.2 the correct replacement materials and replacement parts;

2.1.14.3 training for service technicians;

2.1.15 ensure any persons conducting work on behalf of the service station, including the use of sub-contractors for the servicing of gas cylinder, operate to the same requirements and standards. This is likely to involve Quality Assurance activities.

3. Information to Liferaft Owners

Manufacturers should provide information for liferaft owners regarding service facilities for inflatable liferafts; where possible the manufacturer should include the contact details with all the relevant information in the operating and maintenance manual;

4. Service of inflatable liferafts

The following tests and procedures should be carried out, except where noted otherwise, at every service of an inflatable liferaft.

Inflatable liferaft service should be carried out in accordance with the appropriate Manufacturer's service manual. Necessary procedures should include, but not be limited to, the following:

4.1 inspection of the container / valise for damage;

4.2 inspection of the folded liferaft and the interior of the container for signs of dampness;

4.3 inspection of the valise packed folded liferaft and interior of valise for signs of damage;

4.4 a gas inflation (GI) test should be carried out at intervals as per Appendix 3. When undertaking a gas inflation test, special attention should be paid to the effectiveness of the relief valves. The folded liferaft should be removed from its container before activating the fitted gas inflation system. After gas inflation has been initiated, sufficient time should be allowed to enable the pressure in the buoyancy tubes to become stabilized and the solid particles of the inflation gas to evaporate. After this period the buoyancy tubes should, if necessary, be topped up with air, and the liferaft subjected to a pressure holding test; each liferaft should be subjected to the necessary additional pressure (NAP) test as described in Appendix 1 at intervals as per Appendix 3 at yearly intervals after the tenth year of the liferaft's life unless earlier service is deemed necessary as a result of visual inspection. After allowing sufficient time for the liferaft to regain fabric tension at working pressure, the liferaft shall be subjected to a pressure holding test over a period of not less than one hour during which the pressure drop should not exceed 5% of the working pressure;

4.5 when a Necessary Additional Pressure (NAP) or Gas Inflation (GI) test is not required, a working pressure (WP) test should be carried out at intervals as per Appendix 3, by inflation of the liferaft with dry compressed air, after removing it from the container shell or valise and from its retaining straps, if fitted, to at least the working pressure, or to the pressure required by the Manufacturer's service manual if higher. The liferaft should be subjected to a pressure holding test over a period of not less than one hour, during which the pressure drop will not exceed 5% of the working pressure;

4.6 while inflated, the liferaft should be subjected to a thorough inspection inside and out in accordance with the Manufacturer's instructions;

4.7 the floor, if of an inflatable type, should be inflated, checked for broken reeds and tested in accordance with the Manufacturer's instructions;

4.8 the floor seam strength (FSS), that is the strength of the seams between floor and buoyancy tube, should be checked for slippage or edge lifting at intervals as per Appendix 3. With the buoyancy tubes supported by a system which leaves the floor seams unsupported, at a suitable height above the service floor as shown in Appendix 3, a person weighing not less than 75kg should walk/crawl round the perimeter of the floor for the entire circumference and the floor seams should be checked again. Manufacturers may substitute this test with another test which will determine the integrity of the floor seam until the next inspection is due.

4.9 after deflation, any arch roots and/or inflatable boarding system should be checked in accordance with the Manufacturer's instructions;

4.10 all items of equipment should be checked to ensure that they are in good condition and that dated items are replaced at the time of service if their expiry dates occur before the date of the next service as per Appendix 3;

4.11 a check should be made to ensure that the liferaft and the atmosphere are dry when the liferaft is being repacked;

4.12 the required markings should be updated and checked with particular attention paid to lists of fitted or enclosed life-saving equipment and their service expiry dates and the markings an compressed gas cylinder;

4.13 a record of service, recording all test, inspections, and including digital photographs of any defects, etc. and actions undertaken, should be maintained for at least 5 years after the date of service. Such records, should be available to the Manufacturer;

4.14 Records should be kept on all liferafts serviced, indicating, in particular, defects found, repairs carried out and units condemned and withdrawn from service. A copy of such records should be passed to the owner and Manufacturer;

4.15 Cylinder refurbishment should be carried out as per manufacturer instructions. The servicing of compressed gas cylinder should be carried out at intervals as per Appendix 3. All compressed gas cylinders should be weighed and checked against the gross mass which has been marked on the filled cylinder. To allow for difference of scales when check-weighing, a tolerance of +/-14 g is permitted. No gas cylinder should be fitted to a liferaft unless it has passed one of the following two tests:

- For gases other than CO2. Storage for a period of at least 30 days after filling. Weighing should take place before and after storage using the same scales. There shall be no loss of weight.

- For CO2 gas only. As above or the leak test as specified in Appendix 2

5. Service intervals

Small craft inflatable liferaft service intervals should be as Appendix 3 except when the Manufacturer recommends lesser intervals in which case the Manufacturer's Recommendations should be used.

Appendix 1

Necessary additional pressure (NAP) test

1. Plug the pressure relief valves.

• Gradually raise the pressure to the lesser of 2.0 times the working pressure or impose a tensile load on the inflatable tube fabric of at least 20% of the minimum required tensile strength.

• After 5 minutes, there should be no seam slippage, cracking, or other defects (IMO resolution A.521 (13)), part 1, paragraph 5.18.4.1), or significant pressure drop. If cracking in the buoyancy tubes is audible, the liferaft should be condemned; if no cracking is heard, the pressure in all buoyancy chambers should be reduced simultaneously by removing the plugs from the pressure relief valves.

2. Liferaft Manufacturers should include tables in their service manuals of exact NAP test pressures corresponding to their particular tube sizes and fabric tensile strength requirements, calculated according to the equation:

$$pressure\,(kg/cm^2) = \frac{2 \times tensile\ strength\ (kg\ \ per\ 5cm)}{25 \times diameter\ (cm)}$$

Appendix 2

Cylinder leak test – CO2 only

1. Required Materials

   i) Polythene bags of a suitable size to fit over the head of the cylinder, e.g. a. for

   a. 125mm diameter cylinder the bag size is approximately 230mm open width x 300mm length

   b. for a 100mm diameter cylinder the bag size is approximately 165mm open width x 300mm length

   c. for a 90mm diameter cylinder the bag size is approximately 150mm open width x 300mm length

   ii) Elastic bands of a suitable size.

   iii) A measuring glass, capacity 25 ml.

2. Test solution

   i) The test solution should be as recommended by the Manufacturer used to indicate small amounts of CO2 gas.

   ii) The solution should be stored as recommended by the Manufacturer.

3. Test Method

   i) Lay the cylinder to be tested on its side in a rack such that the valve end is protruding. Make sure the valve and shoulder of the cylinder are free from dust and other contaminants by carefully wiping with a clean, dry cloth. Remove the dust cap and clean the valve. Replace the cap loosely.

   ii) Using the measuring glass transfer 25ml of the test solution into a polythene bag.

   iii) Pass the open end of the bag over the valve head and seal this to the cylinder body using one or more elastic bands. Make sure there are no air gaps in the seal.

   iv) The polythene bag should hang 200mm off the valve end of the cylinder with the test solution in one corner.

   v) Maintain the test for a period of not less than one hour.

   vi) After the test period shake the solution gently and the observations detailed in paragraph 4.

A control sample is necessary to detect any contamination. The sample is made by pouring 25ml of test solution into a bag which is not fitted to a cylinder but is sealed at the open end with adhesive tape to exclude atmospheric contamination. This bag should be placed on the rack in the vicinity of the cylinders being tested.

4. Tests Observations

i) If no colour change is observed there is no leak of gas from the cylinder.

ii) A leak of CO2 from the cylinder will cause the pink colour of the test solution to fade.
The test solution will become clear as water.

iii) The control sample should not change colour during the test. If a colour change takes place, this indicates that the atmosphere in the test area is contaminated with carbon dioxide and tests carried out together with this control sample are invalid. Tests should be repeated after corrective action has been taken on the atmosphere.

Appendix 3

Small craft inflatable liferaft service intervals should be as follows except when the Manufacturer recommends shorter intervals in which case the Manufacturer's recommendations shall be used.

Valise packed liferafts service intervals are less than those for canister packed liferafts owing to their being more vulnerable to damage.

Frequency of tests for:-
• working pressure (WP)
• gas inflation (GI)
• floor seam strength (FSS)
• necessary additional pressure (NAP)
• cylinder refurbishment (CR)

Canister packed liferafts

Service intervals	Required Test(s)
End of third year	WP
End of fifth year*	GI
End of six year and annually onwards when no other test undertaken	WP
End of tenth year	GI + FSS + CR
End of thirteenth year	NAP + FSS
End of fifteenth year	GI + NAP + FSS
End of eighteenth year	NAP + FSS
End of twentieth year	GI + NAP + FSS + CR
Twenty-second year and annually onwards	GI + NAP + FSS + CR**

*may be at end of the sixth year if so recommended by the Manufacturer
** Unless the cylinder is replaced and then at five year intervals

Valise packed liferafts

Service intervals	Required Test(s)
End of each year when no other test undertaken	WP
End of fifth year*	GI
End of tenth year	GI t + FSS + CR
End of thirteenth year	NAP + FSS
End of fifteenth year	GI + NAP + FSS
End of eighteenth year	NAP + FSS
End of twentieth year	GI + NAP + FSS + CR
Twenty-second year and annually onwards	GI + NAP + FSS + CR**

*may be at end of the sixth year if so recommended by the Manufacturer
** Unless the cylinder is replaced and then at five year intervals

Appendix 4

Guidelines for floor seam test supports (Ref. paragraph 5.8)