



Gibraltar Maritime Administration

HM Government of Gibraltar

Watergate House
2/8 Casemates Square
Gibraltar

Tel: (+350)200 46862 / 200 47771 /200 50424
Fax (+350) 200 47770
e-mail: maritime.survey@gibraltar.gov.gi
maritime.registry@gibraltar.gov.gi

Shipping Guidance Notice 115(a) Periodic Inspection, Testing and Maintenance of Compressed Gas Cylinders, Fire Extinguishers, and Fixed Fire-fighting Systems.

This SGN Supersedes SGN 115

To: Ship Owners, Operators, Master's, Classification Societies and Recognised Organisations

1. This Shipping Guidance Notice sets out the Gibraltar Maritime Administration's requirements for periodic servicing and testing of fire extinguishers, compressed gas cylinders, and fixed fire-extinguishing systems on board Gibraltar registered vessels.
2. **Fire Extinguishers** (*Extinguisher includes portable and semi-portable units of all types*).
 - 2.1. Inspection
 - 2.1.1. All extinguishers should be examined annually by a **competent person**.
 - 2.1.2. Each extinguisher should be marked clearly to indicate the date upon which it has been examined.
 - 2.2. Testing
 - 2.2.1. The hydraulic test period for all types of portable fire extinguishers should be conducted at intervals not exceeding 10 years unless the extinguisher is found to be defective during an inspection.
 - 2.2.2. The hydraulic test period for semi portable fire extinguishers should be conducted as per the manufacturer's guidelines.
 - 2.2.3. Hydraulic testing must be carried out by an accredited service agent or test facility.
 - 2.2.4. All portable extinguishers should be discharged on a rotation basis at intervals not exceeding 5 years preferably during a training exercise with the competent person being present during the test.
 - 2.2.5. Prior to recharging an extinguisher, a thorough inspection and internal examination must be carried out.

2.2.6. The test pressure and test date must be marked clearly on each extinguisher.

Note: 'hard-stamping' is only acceptable for CO2 extinguishers and propellant bottles.

2.2.7. Test certificates or test records must be provided and retained on board for inspection.

Note: Propellant bottles for fire extinguishers (e.g. CO2 cartridges) with a capacity not exceeding 600ml, do not require hydraulic testing. The shelf life is 20 years although it is recommended they are not refilled after 15 years. The cartridges should be inspected annually and weight-checked. Any bottles showing signs of wastage, deterioration or weight loss in excess of 10% should be replaced.

2.2.8. Propellant bottles in excess of 600ml for semi portable fire extinguishers should be hydraulically tested every 10 years as stated in IMO Res A.951(23) (as amended)

2.3. Composite Cylinders for firefighting appliances

2.3.1. Some portable fire extinguishers, previously commonly steel, are now produced with a composite cylinder. These extinguishers are of the primary sealed pressure type and operate with both dry powder and Aqueous Film Forming Foams (AFFF) mediums.

2.3.2. Due to composite nature of the cylinder material corrosion is not of the same concern (further the valve and mechanism are made of brass coated with nickel and the handle is stainless steel) and as the BS 5306-3 standard concerns checks on both internal and external corrosion the recommended service intervals are not appropriate. The AFFF foam used in these extinguishers has a guaranteed 10-year life, as does the powder.

2.3.3. A composite cylinder shall be returned to the manufacturer for inspection on the 10-year interval of its date of construction.

2.3.4. Note: Composite cylinders require a permanent marking or tag.

3. Cylinders for SCBA , Medical Oxygen and Compressed Air Cylinders for survival craft air systems.

3.1. SCBA cylinders includes compressed air cylinders for all breathing apparatus, escape sets and rescue equipment

3.2. Inspection

3.2.1. All cylinders, high pressure fittings and hoses should be externally examined **annually** by a competent person.

3.2.2. Medical oxygen has a limited shelf life of 3 years and should be landed ashore for re- charging at the expiry date.

3.2.3. Breathing apparatus air-recharging systems should be checked annually to ensure the air quality is to a recognised national standard. (e.g. BS EN 12021, or USCGA grade D or better.)

3.2.4. SCBA cylinders should be used on a rotation basis in drills and should have their air charge used or blown-off and re-filled as per the manufacturer's guidelines.

4. Testing

- 4.1. Oxygen pressure regulators should be serviced at least every **5 years**.
- 4.2. The maximum interval between hydraulic tests for solid drawn steel cylinders for SCBA (as defined above) and for survival craft self-contained air support cylinders is **5 years**. Composite cylinders may require more frequent testing - stipulated by manufacturer's instructions.
- 4.3. Medical oxygen cylinders have a maximum interval between hydraulic tests of **5 years**.
- 4.4. Hydraulic testing must be carried out by an accredited service agent or test facility
- 4.5. Following the hydraulic test, a thorough inspection and internal examination must be carried out prior to recharging.
- 4.6. The test pressure and test date must be stamped clearly on each steel cylinder.
- 4.7. Test certificates must be provided and retained on board for inspection.

5. Fixed carbon dioxide fire-extinguishing systems

- 5.1. *Inspection and testing of fixed carbon dioxide fire-extinguishing systems are to be undertaken in accordance with the revised guidelines of MSC.1/Circ.1318/Rev.1 (as amended).*

6. Cylinders containing refrigerant gases, nitrogen and gases for burning equipment

- 6.1. Acetylene cylinders differ from all other cylinders transporting compressed or liquefied gases because they contain a porous mass and normally a solvent in which the acetylene stored is dissolved.
- 6.2. Due to the presence of this porous mass in the cylinder, neither a pressure test (hydraulic or pneumatic) nor a visual inspection of the internal surface of the shell is normally required.
- 6.3. These cylinders are not normally considered to be part of the ship's safety equipment. They are generally supplied full and exchanged or returned when empty. Ship's staff should, prior to accepting the cylinder on board, check the date stamp on the cylinders and ensure that no more than 5 years have elapsed since the last hydraulic pressure test.
- 6.4. For cylinders remaining on board, arrangements should be made for an exchange cylinder from ashore if more than 5 years have elapsed since the last hydrostatic test.

7. Foam Systems, to include all foam types: FP; AFFF; FFFP; ARFFF

7.1. Foam sampling - Fixed systems:

7.1.1. An analysis of foam samples must be undertaken **after 3 years** from date of manufacture and **annually thereafter**.

7.1.2. Samples should be:

7.1.2.1. As representative as practical, e.g. taken from top, middle and bottom of tanks where arrangement permits, and placed in an uncontaminated container.

7.1.2.2. Analyzed by an independent or manufacturer's laboratory and the results of analyses must be kept on board and readily available for inspection.

7.2. Foam sampling - Portable Systems:

7.2.1. Check the batch numbers and establish the age of the compound. If within the manufacturers' recommended shelf life, then the compound does not need to be tested provided the drums remain sealed with no visible signs of degradation.

7.2.2. If the drum has been opened or records of manufacture are not available then the ship's staff can complete on-board testing on an annual basis per batch, in accordance with manufacturer's instructions to ensure the foam compound remains effective. The drums should be replaced when they exceed the manufacturers recommended shelf life.

7.3. Inspection and testing of Fixed Foam installations:

7.3.1. Routine planned maintenance in accordance with the manufacturer's recommendations should be supplemented with a thorough inspection of the system and check of its full functionality once **every 2 years** by an accredited service agent.

7.3.2. In addition to the regular shipboard inspections and where practicable, an occasional system test to produce foam in a drill scenario should be considered subject to any local restrictions relating to pollution. Where possible, the mixing ratio of the foam should be verified.

7.3.3. Any concentrate used should be replenished as required with the same manufacturer's foam type to ensure compatibility.

7.3.4. Care should be taken to ensure that the system is correctly flushed on completion to prevent blockage of small bore pipe work and internal corrosion. In addition great care should be taken to ensure that system valves are left in the correct operational position to prevent contamination of the foam tank.

7.4. Fixed Dry Powder Systems

7.4.1. Annually, the system should be inspected, and the dry powder charge should be agitated with nitrogen, using “bubbling” connections where provided.

Note: due to the powder’s affinity for moisture, any nitrogen gas introduced for agitation must be moisture free.

7.4.2. In addition to the regular shipboard inspections, the systems should be inspected at least once every two years by an accredited service agent.

7.4.3. Inspection

7.4.3.1. Blow-through with nitrogen to ensure associated pipes and nozzles are clear.

7.4.3.2. Operation test of local and remote controls and section valves.

7.4.3.3. Contents verification of propellant gas cylinders containing nitrogen (including remote operating stations).

7.4.3.4. Sample of dry powder should be tested for moisture absorption

7.4.4. Testing

7.4.4.1. Powder containment vessels and associated piping should be subject to hydraulic testing carried out by an accredited service agent at intervals not exceeding **10 years**. The powder containment vessels safety valves and discharge hoses should be subjected to a full working pressure test every **2 years**.

Note: Annual on board inspection or test, with the exception of pressure testing, may be carried out by a senior member of the ship’s staff who has been successfully trained to carry out this work. In all cases, calibrated equipment must be used and all procedures and documentation must be in accordance with shipboard safety management systems.

Note: The replenishment and test regime for these high-pressure nitrogen cylinders is identical to that for CO2 cylinders for fixed-gas fire extinguishing systems.

8. Automatic Sprinkler and Fixed Pressure Water Spray Systems

8.1. These systems should be inspected and tested by a **competent person** as per the manufactures instructions, and as a minimum should include the following:

8.2. Inspection

8.2.1. The system should be regularly inspected to ensure that all valves are in the correct position for operation. Levels and pressures should be maintained in pressurized storage tanks and there should be no obvious leakage.

8.3. Testing

8.3.1. Monthly: auto start function of sprinkler system pumps should be tested to ensure they automatically operate on system pressure loss.

8.3.2. Quarterly: all automatic alarms and control gear for the sprinkler systems should be tested using the test valves and procedures for each section.

8.3.3. Annually: the following should be carried out:

8.3.3.1. Water spray fixed fire-fighting systems should be tested for correct operation.

8.3.3.2. Sprinkler pumps should be flow tested to ensure design pressures and flows.

8.3.3.3. Alarms, pressure switches and control gear settings should be verified

8.3.3.4. The sprinkler system connections from the ship's fire main should be tested

8.3.3.5. All associated relief valves should be tested.

8.3.4. Yearly, in addition to the annual tests indicated above, the pressure tank and all check and control valves should be internally inspected. Also checks to be carried out to confirm that distribution pipe work is free from corrosion and blockage. In the case of sprinkler systems protecting passenger accommodation, our surveyors will inspect and test the system as necessary during Passenger Ship Safety Certificate Renewal surveys.

9. Hydraulic Pressure Testing

9.1. The test pressure applied for all cylinders and extinguishers should be **1.5 x maximum working pressure**, which should be held for at least one minute. The test pressure should be clearly stamped on each compressed gas cylinder and clearly marked on each extinguisher.

9.2. Where cylinders are sent ashore for re-charging, the pressure test requirements for the Local Authority may override, but should not be less stringent, than the above requirements.

10. Rejection

10.1. Extinguishers or cylinders failing any inspection or test shall be rendered unserviceable and disposed of accordingly. An entry in the records must be made to show when any extinguisher or cylinder has been rejected and for what reason.

11. Records

11.1. Records of inspection, maintenance and testing of all extinguishers and cylinders must be maintained and readily available on board for inspection. These records should clearly identify each individual extinguisher or cylinder and its inspection status.

12. Competent Person

12.1. For the purposes of this Shipping Guidance Notice, a **competent person** is defined as:

12.1.1. A member of the ship's crew who has the necessary training and who carries out the work onboard under direct supervision of a senior officer holding an advanced firefighting certificate (experienced person holding a Merchant Shipping STCW II/2 or III/2 certificate of competency and an Advanced Fire Fighting certificate).

12.1.2. All work should be carried out as part of a planned maintenance system with all necessary procedures, work instructions, manuals, tools, spares and calibrated test equipment readily available, or;

12.1.3. By an accredited service agent.

Steve Gomez – Chief Surveyor (Ag)
For & on behalf of the Maritime Administrator

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