

Isle of Man Ship Registry Manx Shipping Notice



<p style="text-align: center;">SOLAS II-2 The Maintenance and inspection of fire protection systems and appliances</p>	<p>Ref. MSN 057 Issued: March 2016</p>
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Introduction

This Notice sets out the minimum level of maintenance and inspection for fire protection systems and appliances onboard Isle of Man registered ships. This information may be used as the basis for the ship's onboard maintenance plan required by SOLAS regulation II-2/14.

This Notice has been developed taking into account various guidelines published by the International Maritime Organisation which are intended to ensure that fire systems are kept in good working order as specified in SOLAS Regulation II-2/14.2.1.2. These guidelines should be followed, although where particular arrangements create practical difficulties approval must be sought from the Ship Registry for an alternative testing and maintenance procedures. These guidelines do not preclude the shipowner from demonstrating an equivalent or higher standard as an "alternative method" of compliance.

For ease of reference a testing and inspection schedule has been set out in Appendix 1 of this Notice.

1. Operational readiness

All fire protection systems and appliances must be in good order at all times and be readily available for immediate use while the ship is in service. If a fire protection system is undergoing maintenance, testing or repair, then suitable arrangements must be made to ensure safety is not diminished through the provision of alternate fixed or portable fire protection equipment or other measures. The onboard maintenance plan should include provisions for this purpose.

2. Maintenance and testing

Onboard maintenance and inspections must be carried out in accordance with the ship's maintenance plan, which must include as a minimum the requirements stated in this Notice.

Certain maintenance procedures and inspections may be performed by competent crew members as described in Section 14, while others should be performed by persons specially trained in the maintenance of such systems. The onboard maintenance plan should indicate which parts of the inspections and maintenance are to be completed by trained personnel.

Inspections should be carried out by the crew to ensure that the indicated weekly, monthly, quarterly, annual, two-year, five-year and ten-year actions are taken for the specified equipment, if required. Records of the inspection must be carried on board the ship and may be computer-based. In cases where the inspections and maintenance are carried out by



trained service technicians other than the ship's crew, inspection reports must be provided at the completion of the testing.

In addition to the onboard maintenance and inspections stated in this Notice, manufacturer's maintenance and inspection guidelines must be followed. The quality of water in automatic sprinkler systems is of particular importance and must be maintained, tested and recorded on board. All such procedures should be in accordance with manufacturer guidelines.

3. Weekly testing and inspections

1. Fixed fire detection and alarm systems
 - verify all fire detection and fire alarm control panel indicators are functional by operating the lamp/indicator test switch.
2. Fixed gas fire-extinguishing systems
 - verify all fixed fire-extinguishing system control panel indicators are functional by operating the lamp/indicator test switch; and
 - verify all control/section valves are in the correct position.
3. Fire doors
 - verify all fire door control panel indicators, if provided, are functional by operating the lamp/indicator switch.
4. Public address and general alarm systems
 - verify all public address systems and general alarm systems are functioning properly.
5. Breathing apparatus
 - examine all breathing apparatus and EEBD cylinder gauges to confirm they are in the correct pressure range.
6. Low-location lighting
 - verify low-location lighting systems are functional by switching off normal lighting in selected locations.
7. Water mist, water spray and sprinkler systems
 - verify all control panel indicators and alarms are functional;
 - visually inspect pump unit and its fittings; and
 - check the pump unit valve positions, if valves are not locked, as applicable.

4. Monthly testing and inspections

Monthly inspections must be carried out to ensure that the indicated actions are taken for the specified equipment.

1. Fire mains, fire pumps, hydrants, hoses and nozzles
 - verify all fire hydrants, hose and nozzles are in place, properly arranged and are in serviceable condition;
 - operate all fire pumps to confirm that they continue to supply adequate pressure; and
 - emergency fire pump fuel supply adequate, and heating system in satisfactory condition, if applicable.
2. Fixed gas fire-extinguishing systems
 - verify containers/cylinders fitted with pressure gauges are in the proper range and the installation free from leakage.



3. Foam fire-extinguishing systems
 - verify all control and section valves are in the proper open or closed position, and all pressure gauges are in the proper range.
4. Water mist, water spray and sprinkler systems
 - verify all control, pump unit and section valves are in the proper open or closed position;
 - verify sprinkler pressure tanks or other means have correct levels of water;
 - test automatic starting arrangements on all system pumps so designed;
 - verify all standby pressure and air/gas pressure gauges are within the proper pressure ranges; and
 - test a selected sample of system section valves for flow and proper initiation of alarms. (Note – The valves selected for testing should be chosen to ensure that all valves are tested within a one-year period.)
5. Firefighter's outfits
 - verify lockers providing storage for fire-fighting equipment contain their full inventory and equipment is in serviceable condition.
6. Fixed dry chemical powder systems
 - verify all control and section valves are in the proper open or closed position, and all pressure gauges are in the proper range.
7. Fixed aerosol extinguishing systems
 - verify all electrical connections and/or manual operating stations are properly arranged, and are in proper condition; and
 - verify the actuation system/control panel circuits are within manufacturer's specifications.
8. Portable foam applicators
 - verify all portable foam applicators are in place, properly arranged, and are in proper condition.
9. Wheeled (mobile) fire extinguishers
 - verify all extinguishers are in place, properly arranged, and are in proper condition.
10. Fixed fire detection and alarm systems
 - test a sample of detectors and manual call points so that all devices have been tested within five years. For very large systems the sample size should be determined by the Ship Registry.

5. Quarterly testing and inspections

Quarterly inspections must be carried out to ensure that the indicated actions are taken for the specified equipment:

1. Fire mains, fire pumps, hydrants, hoses and nozzles
 - verify international shore connection(s) is in serviceable condition.
2. Foam fire-extinguishing systems
 - verify the proper quantity of foam concentrate is provided in the foam system storage tank.
3. Ventilation systems and fire dampers
 - test all fire dampers for local operation.
4. Fire doors
 - test all fire doors located in main vertical zone bulkheads for local operation.



6. Annual testing and inspections

Annual inspections must be carried out to ensure that the indicated actions are taken for the specified equipment:

1. Fire mains, fire pumps, hydrants, hoses and nozzles

- visually inspect all accessible components for proper condition;
- flow test all fire pumps for proper pressure and capacity. Test emergency fire pump with isolation valves closed;
- test all hydrant valves for proper operation;
- pressure test a sample of fire hoses at the maximum fire main pressure, so that all fire hoses are tested within five years;
- verify all fire pump relief valves, if provided, are properly set;
- examine all filters/strainers to verify they are free of debris and contamination; and
- confirm nozzle size/type correct, maintained and working.

2. Fixed fire detection and fire alarm systems

- test all fire detection systems and fire detection systems used to automatically release fire-extinguishing systems for proper operation, as appropriate;
- visually inspect all accessible detectors for evidence of tampering obstruction, etc., so that all detectors are inspected within one year; and
- test emergency power supply switchover.

3. Fixed gas fire-extinguishing systems

- visually inspect all accessible components for proper condition;
- externally examine all high pressure cylinders for evidence of damage or corrosion;
- check the hydrostatic test date of all storage containers;
- functionally test all fixed system audible and visual alarms;
- verify all control/section valves are in the correct position;
- check the connections of all pilot release piping and tubing for tightness;
- examine all flexible hoses in accordance with manufacturer's recommendations;
- test all fuel shut-off controls connected to fire-protection systems for proper operation;
- the boundaries of the protected space should be visually inspected to confirm that no modifications have been made to the enclosure that have created uncloseable openings that would render the system ineffective; and
- if cylinders are installed inside the protected space, verify the integrity of the double release lines inside the protected space, and check low pressure or circuit integrity monitors on release cabinet, as applicable.

4. Foam fire-extinguishing systems

- visually inspect all accessible components for proper condition;
- functionally test all fixed system audible alarms;
- flow test all water supply and foam pumps for proper pressure and capacity, and confirm flow at the required pressure in each section (Ensure all piping is thoroughly flushed with fresh water after service.);
- test all system cross connections to other sources of water supply for proper operation;
- verify all pump relief valves, if provided, are properly set;



- examine all filters/strainers to verify they are free of debris and contamination;
- verify all control/section valves are in the correct position;
- blow dry compressed air or nitrogen through the discharge piping or otherwise confirm the pipework and nozzles of high expansion foam systems are clear of any obstructions, debris and contamination. This may require the removal of nozzles, if applicable;
- take samples from all foam concentrates carried on board and subject them to the periodical control tests in MSC.1Circ.1312, for low expansion foam, or MSC/Circ. 670 for high expansion foam.
(Note: Except for non-alcohol resistant foam, the first test need not be conducted until 3 years after being supplied to the ship.); and
- test all fuel shut-off controls connected to fire-protection systems for proper operation.

5. Water mist, water spray and sprinkler systems

- verify proper operation of all water mist, water-spray and sprinkler systems using the test valves for each section;
- visually inspect all accessible components for proper condition;
- externally examine all high pressure cylinders for evidence of damage or corrosion;
- check the hydrostatic test date of all high pressure cylinders;
- functionally test all fixed system audible and visual alarms;
- flow test all pumps for proper pressure and capacity;
- test all antifreeze systems for adequate freeze protection;
- test all system cross connections to other sources of water supply for proper operation;
- verify all pump relief valves, if provided, are properly set;
- examine all filters/strainers to verify they are free of debris and contamination;
- verify all control/section valves are in the correct position;
- blow dry compressed air or nitrogen through the discharge piping of dry pipe systems, or otherwise confirm the pipework and nozzles are clear of any obstructions. This may require the removal of nozzles, if applicable;
- test emergency power supply switchover, where applicable;
- visually inspect all sprinklers focusing in areas where sprinklers are subject to aggressive atmosphere (like saunas, spas, kitchen areas) and subject to physical (like luggage handling areas, gyms, play rooms, etc.) so that all sprinklers are inspected within one year. Sprinklers with obvious external damage, including paint, must be replaced;
- check for any changes that may affect the system such as obstructions by ventilation ducts, pipes, etc.;
- test a minimum of one section in each open head water mist system by flowing water through the nozzles. The sections tested should be chosen so that all sections are tested within a five-year period; and
- test automatic and automatic water mist nozzles in accordance with the flow chart included in MSC.1/Circ. 1516.

6. Ventilation systems and fire dampers

- test all fire dampers for remote operation;
- verify galley exhaust ducts and filters are free of grease build-up; and



- test all ventilation controls interconnected with fire-protection systems for proper operation.
7. Fire doors
- test all remotely controlled fire doors for proper release.
8. Breathing apparatus
- check breathing apparatus air recharging systems, if fitted, to ensure the air quality is to a recognised national standard (e.g. BS EN 12021, or USCGA grade D or better);
 - check all breathing apparatus face masks and air demand valves are in serviceable condition;
 - check EEBDs according to manufacturer's instruction; and
 - SCBA cylinders should be used on a rotation basis in drills and should have their air charge used or blown-off and refilled as per the manufacturer's guidelines.
9. Fixed dry chemical powder systems
- visually inspect all accessible components for proper condition;
 - verify the pressure regulators are in proper order and within calibration limits; and
 - agitate the dry chemical powder charge with nitrogen in accordance with system manufacturer's instructions (note: Due to the powder's affinity for moisture, any nitrogen gas introduced for agitation must be moisture free).
10. Fixed aerosol extinguishing systems
- verify condensed or dispersed aerosol generators have not exceeded their mandatory replacement date. Pneumatic or electric actuators should be demonstrated working, as far as practicable.
11. Portable foam applicators
- verify all portable foam applicators are set to the correct proportioning ratio for the foam concentrate supplied and the equipment is in proper order;
 - verify all portable containers or portable tanks containing foam concentrate, that remain factory sealed, and the manufacturer's recommended service life interval has not been exceeded;
 - portable containers or portable tanks containing foam concentrate, excluding protein based concentrates, less than 10 years old, that remain factory sealed can normally be accepted without the periodical foam control tests required in MSC.1/Circ.1312 being carried out;
 - protein based foam concentrate portable containers and portable tanks must be thoroughly checked and, if more than five years old, the foam concentrate must be subjected to the periodical foam control tests required in MSC.1/Circ.1312, or renewed; and
 - the foam concentrates of any non-sealed portable containers and portable tanks, and portable containers and portable tanks where production data is not documented, should be subjected to the periodical foam control tests required in MSC.1/Circ.1312.
12. Wheeled (mobile) fire extinguishers
- perform periodical inspections in accordance with the manufacturer's instructions;



- visually inspect all accessible components for proper condition;
- check the hydrostatic test date of each cylinder; and
- for dry powder extinguishers, invert extinguisher to ensure powder is agitated.

13. Galley and deep fat cooking fire-extinguishing systems

- check galley and deep fat cooking fire-extinguishing systems in accordance with the manufacturer's instructions.

7. Two-year testing and inspections

Two-year inspections must be carried out to ensure that the indicated actions are taken for the specified equipment.

1. Fixed gas fire-extinguishing systems

The system should be inspected by a competent person and must include:

- all high pressure extinguishing agents cylinders and pilot cylinders must be weighed or have their contents verified by other reliable means to confirm that the available charge in each is above 95% of the nominal charge. Cylinders containing less than 95% of the nominal charge should be refilled; and
- blow dry compressed air or nitrogen through the discharge piping or otherwise confirm the pipe work and nozzles are clear of any obstructions. This may require the removal of nozzles, if applicable.

2. Fixed dry chemical powder systems

The systems must be inspected by an accredited service agent and must include:

- blow dry nitrogen through the discharge piping to confirm that the pipe work and nozzles are clear of any obstructions;
- operationally test local and remote controls and section valves;
- verify the contents of propellant gas cylinders (including remote operating stations);
- test a sample of dry chemical powder for moisture content; and
- subject the powder containment vessel, safety valve and discharge hoses to full working pressure test.

8. Five-year service

At least once every five years, the following inspections should be carried out for the specified equipment.

1. Fixed gas fire-extinguishing systems

- perform internal inspection of all control valves (this should also apply to CO2 systems).

2. Foam fire-extinguishing systems

- perform internal inspection of all control valves;
- flush all high expansion foam system piping with fresh water, drain and purge with air;
- check all nozzles to prove they are clear of debris; and
- test all foam proportioners or other foam mixing devices to confirm that the mixing ratio tolerance is within +30 to -10% of the nominal mixing ratio defined by the system approval.



3. Water mist, water spray and sprinkler systems

- flush all ro-ro deluge system piping with water, drain and purge with air;
- perform internal inspection of all control/section valves; and
- check condition of any batteries, or renew in accordance with manufacturer's recommendations.

4. Breathing apparatus

- perform hydrostatic testing of all steel self-contained breathing apparatus cylinders;
- aluminium and composite cylinders may require more frequent testing as stipulated by manufacturer's instructions;
- hydraulic testing must be carried out by an accredited service agent or test facility;
- following the hydraulic test, a thorough inspection and internal examination must be carried out prior to recharging;
- the test pressure and test date must be stamped clearly on each steel cylinder. Aluminium or composite cylinders will require a permanent marking or tag; and
- test certificates must be provided and retained on-board for inspection.

5. Low-location lighting

- test the luminance of all systems in accordance with the procedures in IMO resolution A.752(18).

6. Wheeled (mobile) fire extinguishers

- visually examine at least one extinguisher of each type manufactured in the same year and kept on board.

9. **Ten-year service**

At least once every 10 years, the following inspections should be carried out for the specified equipment:

1. Fixed gas fire-extinguishing systems (for CO2 systems refer to Section 11)

- perform a hydrostatic test and internal examination of 10% of the system's extinguishing agent and pilot cylinders. If one or more cylinders fail, a total of 50% of the onboard cylinders should be tested. If further cylinders fail, all cylinders should be tested;
- flexible hoses should be replaced at the intervals recommended by the manufacturer and not exceeding every 10 years; and

2. Water mist, water spray and sprinkler systems

- these systems should be inspected and tested by a **competent person** as per the manufacturer's instructions, and as a minimum should include the following;
- perform a hydrostatic test and internal examination for gas and water pressure cylinders according to EN 1968:2002.

3. Fixed dry chemical powder systems

- subject all powder containment vessels to hydrostatic or non-destructive testing carried out by an accredited service agent.



4. Fixed aerosol extinguishing systems

- condensed or dispersed aerosol generators to be renewed in accordance with manufacturer's recommendation.

5. Wheeled (mobile) fire extinguishers

- all extinguishers together with propellant cartridges should be hydrostatically tested by specially trained persons in accordance with recognized standards or the manufacturer's instructions.

10. Fire Extinguishers

Fire extinguishers must be classified, constructed and marked in accordance with IMO Resolution A.951 (23) and the construction, performance and fire-extinguishing test specifications must be in accordance with ISO 7165:2009.

The maintenance and inspection requirements required for portable fire extinguishers are as follows:

1. Inspection and maintenance

- all extinguishers must be inspected monthly to check for proper location, charging pressure and condition;
- each extinguisher must be marked clearly to indicate the date upon which it has been inspected;
- all extinguishers must be subject to periodical inspections in accordance with the manufacturer's instructions and serviced at intervals not exceeding one year by a competent person;
- at least one portable extinguisher of each type manufactured in the same year and kept on-board a ship must be test discharged at five yearly intervals (as part of a fire drill);
- all types of portable extinguishers are to be hydraulically tested in accordance with a recognised standard or the manufacturer's instruction at intervals not exceeding 10 years, or if the extinguisher is found to be defective during an inspection;
- the hydraulic test period for semi-portable fire extinguishers should be conducted as per the manufacturer's guidelines;
- hydraulic testing must be carried out by an accredited service agent or test facility;
- instructions for recharging extinguishers should be supplied by the manufacturer and be available for use on-board;
- prior to recharging an extinguisher a thorough inspection and internal examination must be carried out;
- the test pressure and test date must be marked clearly on each extinguisher. Note: 'hard-stamping' is only acceptable for CO₂ extinguishers and propellant cartridges; and
- test certificates or test records must be provided and retained on-board for inspection.

2. Notes

- Propellant cartridges 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 cartridges showing signs of wastage, deterioration or weight loss in excess of 10% should be replaced.

- Propellant cartridges in excess of 600ml for semi-portable fire extinguishers should be hydraulically tested every 10 years.

11. Fixed carbon dioxide fire-extinguishing systems

The Ship Registry has adopted the IMO Guidelines for the Maintenance and Inspections of Fixed Carbon Dioxide Fire-extinguishing Systems (MSC.1/Circ.1318).

Please note there are two significant changes in MSC.1/Circ.1318 compared to the existing Ship Registry's requirements which are:

- 1 At the 10 yearly inspection, at least 10% of the total number of CO2 cylinders provided must be subjected to an internal inspection and hydrostatic test. If one or more cylinders fail, a total of 50% of the onboard cylinders must be tested. If further cylinders fail, all cylinders must be tested; and
- 2 Flexible hoses must be replaced at the intervals recommended by the manufacturer and not exceeding every 10 years.

The ship's operator must ensure that any Manx registered ships they operate who have not completed the two requirements stated above must ensure they have been completed as soon as possible and at the latest during the ship's next planned dry-dock.

12. Hydraulic pressure testing

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.

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.

13. Rejection

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.

14. Competent Person

For the purposes of this MSN a **competent person** is defined as:

1. A member of the ship's crew who has the necessary training and who carries out the work on-board under direct supervision of a senior officer holding an advanced fire fighting certificate (experienced person holding a Merchant Shipping STCW II/2 or III/2 certificate of competency and an Advanced Fire Fighting certificate). 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
2. An accredited service agent.



Minimum requirements for spare charges required to be carried on-board

<p>Portable Fire Extinguishers</p>	<p>For ships constructed before 01 July 2002 50% for each type of fire extinguisher required to be provided. If they cannot be recharged on-board* an additional portable fire extinguisher of the same type, or its equivalent, shall be provided.</p> <p>For ships constructed on or after 01 July 2002 100% for the first 10 then 50% of the remaining extinguishers. Not more than 60 total spare charges are required. If they cannot be recharged onboard* an additional portable fire extinguisher of the same quantity, type and capacity shall be provided. *For example portable CO2 extinguishers.</p>
<p>Portable Foam Applicator Unit</p>	<p>1 spare tank of 20 litres foam concentrate.</p>
<p>Semi Portable Foam, Dry Powder and CO2 Extinguishers</p>	<p>Nil</p>
<p>SCBA Air bottles</p>	<p>Ships constructed before 01 July 2002 Every breathing apparatus shall be provided with fully charged spare cylinders having a spare storage capacity of at least 2,400 litres of free air except that- i) if the ship is carrying five sets or more the total spare free air shall not be required to exceed 9,600 litres; or ii) if the ship is equipped with means for re-charging the air cylinders on-board this spare air may be reduced to 1,200 litres per cylinder and the total storage of free air need not exceed 4,800 litres.</p> <p>Ships constructed on or after 01 July 2002 Two spare charges shall be provided for each required breathing apparatus. Passenger ships carrying not more than 36 passengers and cargo ships that are equipped with suitably located means for fully recharging the air cylinders free from contamination need carry only one spare charge for each required apparatus. In passenger ships carrying more than 36 passengers, at least two spare charges for each breathing apparatus shall be provided.</p>
<p>EEBD</p>	<p>Ships constructed before 01 July 2002 No spares required.</p> <p>Ships constructed after 01 July 2002 50% spares of the number of EEBDs required to be carried up to a maximum of four. Spare EEBDs can be carried ready for use, but must be marked as spare.</p>



Reference material

Documents referred to in this MSN:

- MSC/Circ. 670 Guidelines for the Performance and Testing Criteria and Surveys of High-expansion Foam Concentrates for Fixed Fire-extinguishing Systems;
- MSC.1/Circ.1312 Revised Guidelines for the Performance and Testing Criteria and Surveys of Foam Concentrates for Fixed Fire-Extinguishing Systems;
- MSC.1/Circ.1318 Guidelines for the Maintenance & inspections of fixed Carbon Dioxide Fire-extinguishing Systems;
- MSC.1/Circ.1432 Revised Guidelines for the Maintenance and Inspection of Fire Protection Systems and Appliances;
- MSC.1/Circ.1516 Amendments to the Revised Guidelines for the Maintenance and Inspection of Fire Protection Systems and Appliances;
- Resolution A.951(23) Improved Guidelines for Marine Portable Fire Extinguishers;
- ISO 7165:2009 Fire Fighting – Portable Fire Extinguishers, Performance and Construction;
- BS EN 12021 Respiratory equipment. Compressed gases for breathing Apparatus;
- ISO 7165:2009 Fire fighting - Portable Fire Extinguishers – Performance and Construction; and
- BS EN 1968:2002 Transportable Gas Cylinders. Periodic Inspection and Testing of Seamless Steel Gas Cylinders.

Most Regulations and notices are available on the Isle of Man Government website: www.iomshipregistry.com or by contacting marine.survey@gov.im

Please note - The Isle of Man Ship Registry cannot give legal advice. Where this document provides guidance on the law it should not be regarded as definitive. The way the law applies to any particular case can vary according to circumstances - for example, from ship to ship. You should consider seeking independent legal advice if you are unsure of your own legal position.



Appendix 1 Testing & inspection schedule

System or appliance	Shipboard inspection	Periodic inspection and service	Hydrostatic pressure test
Portable & semi portable fire extinguishers	Monthly to check for proper location, charging pressure and condition.	Annually by a competent person 5 yearly test discharge (see Note 2)	Portable extinguishers every 10 years . Semi-portable refer to manufacturer's guidelines.
CO₂ High pressure cylinders - fixed installations	Monthly in accordance with MSC.1/Circ.1318 by a competent person. Annual inspection in accordance with MSC.1/Circ.1318 by a competent person.	Biennially (intervals of 2 years ± 3 months) in passenger ships or at each intermediate, periodical or renewal survey in cargo ships in accordance with MSC.1/Circ.1318 by an accredited service agent.	At intervals not exceeding 10 years at least 10% of the total number provided must be subjected to an internal inspection and hydrostatic test in accordance with MSC.1/Circ 1318 by an accredited service agent. (See Note 3)
Fixed gas fire-extinguishing systems (for CO₂ see requirements stated above)	Monthly in accordance with MSC.1/Circ.1432 by a competent person. Annual inspection in accordance with MSC.1/Circ.1432 by a competent person.	2 year & 5 year testing and inspection in accordance with MSC.1/Circ.1432 (see Section 7.1).	At intervals not exceeding 10 years at least 10% of the total number provided must be subjected to an internal inspection and hydrostatic test in accordance with MSC.1/Circ.1432 by an accredited service agent. (See Note 3).
Foam Systems (fixed and portable)	Fixed systems – Quarterly – verify the proper quantity of foam concentrate in the storage tank. Yearly - A full test and inspection of the system and verify portable applicators are set correctly by a competent person (see Section 6.4).	Annual system inspection (see Section 6.4) and foam test in accordance with MSC.1/Circ.1312 for low expansion foam, or MSC/Circ.670 for high expansion foam. Except for non-alcohol resistant foam, the first test need not be conducted until 3 years after being supplied to the ship. 5 year service (see Section 8.2)	-
Fixed dry chemical powder systems	Monthly verify control and section valves are in the correct position and pressure gauges are in the proper range. Annually (by a competent person) – inspect the system and agitate the dry chemical powder charge - N ₂ blow-through (see Section 6.9)	Every 2 years inspected by an accredited service agent + sample of dry powder tested for moisture absorption (see Section 7.2)	Subject all powder containment vessels to hydrostatic or non-destructive testing carried out by an accredited service agent.
Water mist, water spray and sprinkler systems	Weekly, monthly and annual checks by a competent person in accordance with Section 3.7 and 4.4 and 6.5.	5 yearly inspection by a competent person (See section 8.3).	10 yearly hydrostatic test and internal examination for gas and water pressure cylinders in accordance with MSC.1/Circ.1432.
Breathing apparatus	Check pressure weekly	Every year check the air quality of BA air recharging systems to a recognised national standard. Check EEBDs according to the maker's instructions	Every 5 years perform hydrostatic testing of all steel self-contained BA cylinders. Aluminium and composite cylinders to be tested as per the manufacturer's instructions.



Notes:

- 1 The 'competent person' may be:
 - a) A member of the ship's crew who has the necessary training and who carries out the work on-board under direct supervision of a senior officer holding an advanced fire fighting certificate (experienced person holding a Merchant Shipping STCW II/2 or III/2 certificate of competency and an Advanced Fire Fighting certificate). 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
 - b) An accredited service agent.
- 2 At least one portable extinguisher of each type manufactured in the same year and kept on board a ship should be test discharged at five yearly intervals (as part of a fire drill).
- 3 The ship's operator must ensure that if the 10 yearly hydrostatic inspection has not been carried out on the date when this MSN was published, it must be carried out as soon as possible and at the latest during the ship's next planned dry-dock.

