

Subject

Periodical Maintenance, Inspection and Testing for Fire Protection Systems, and Appliances and Compressed Gas Cylinders onboard Maltese Flagged Vessels (Partly Amended)

ClassNK

Technical Information

No. TEC-0764

Date 19 January 2009

To whom it may concern

Malta Maritime Authority has notified ClassNK of the Administration Requirements, Item 1.17.1 for periodical maintenance, inspection and testing for fire protection systems, and appliances and compressed gas cylinders onboard Maltese flagged vessels as per attached. The requirements of portable fire extinguishers are amended in accordance with IMO Resolution A.951(23), however, test pressures of hydrostatic test are not changed. Further, the requirements of cylinders for refrigerant gases and gases for burning equipment are deleted.

This ClassNK Technical Information supersedes the previous ClassNK Technical Information No.TEC-0548 dated 1 October 2003.

For any questions about the above, please contact:

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Attachment:

1. Administration Requirements, Item 1.17.1
2. IMO MSC/Circ.850

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Fire Protection Systems and Appliances and Compressed Gas Cylinders Periodic Maintenance, Inspection and Testing			
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This Administration Requirement supersedes Administration Requirement Item 1.17 dated 23 June 2003 titled 'Fire Protection Systems and Appliances, and Compressed Gas Cylinders - Periodic Maintenance, Inspection and Testing'

This Administration Requirement, developed in line with the applicable IMO Circulars and Guidelines, is intended to establish the interval and extent of maintenance, inspection and testing required by the International Convention for the Safety of Life at Sea, 1974, as amended.

Application

These requirements shall apply to all Maltese registered ships engaged on international voyages.

Definitions

<i>Administration</i>	Malta Maritime Authority
<i>Approved</i>	Approved by the Administration and/or Recognized Organization.
<i>Recognized Organization</i>	A Classification Society recognized by the Administration.
<i>Organization</i>	International Maritime Organization (IMO)

Operational readiness

All fire protection systems and appliances shall at all times be in good order and available for immediate use while the ship is in service. If a fire protection system is under repair, then suitable arrangements to the satisfaction of the Recognized Organization and Administration shall be made to ensure that safety is not diminished.



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Maintenance, Testing and Inspection

The maintenance, testing and inspection shall conform to the requirements as laid down herein and, unless expressly stipulated otherwise, the inspection schedule as provided in IMO MSC/Circ.850.

PORTABLE FIRE EXTINGUISHERS

Service and Inspection

Extinguishers shall be subjected to periodical inspections in accordance with the manufacturer's instructions and serviced at intervals not exceeding one year.

At least one 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.

Annual service and inspections may be carried out by a ship's officer, appointed by the Company, in accordance with the established and dedicated maintenance schedule of the Safety Management System taking into account the guidance contained in the Inspection Guide Table and manufacturer's instructions. Annual service and inspection on board is restricted to portable fire extinguishers of the non-permanently pressurized type.

The five (5) and ten (10) yearly service and inspections should be carried out by a shore-based servicing facility taking into account the guidance contained in the Inspection Guide Table.



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INSPECTION GUIDE TABLE

ANNUAL INSPECTION	
Safety clip and indicating devices	Check to see if the extinguisher may have been operated.
Pressure indicating device	Where fitted, check to see that the pressure is within limits. Check that dust covers on pressure indicating devices and relief valves are in place.
External examination	Inspect for corrosion, dents or damage that may effect the safe operation of the extinguisher.
Weight	Weigh the extinguisher and check the mass compared to the fully charged extinguisher.
Hose and nozzle	Check that hoses and nozzles are clear and undamaged.
Operating instructions	Check that they are in place and legible.
INSPECTION AT RECHARGE	
Water and foam charges	Remove the charge to a clean container if to be reused and check if it is still suitable for further use. Check any charge container.
Powder charges	Examine the powder for reuse. Ensure that it is free flowing and that there is no evidence of caking lumps or foreign bodies.
Gas cartridge	Examine for damage and corrosion.

INSPECTION AT 5 AND 10 YEAR INTERVALS INSPECTION AFTER DISCHARGE TEST	
Air passages and operating mechanism	Prove clear passage by blowing through vent holes and vent devices in the cap. Check hose, nozzle strainer, discharge tube and breather valve, as applicable. Check the operating and discharge control. Clean and lubricate as required.
Operating mechanism	Check that the safety pin is removable and that the lever is undamaged.
Gas cartridge	Examine for damage and corrosion. Weigh the cartridge to ascertain that it is within prescribed limits.
O-rings, washers and hose diaphragms	Check o-rings and replace hose diaphragms if fitted.
Water and foam bodies	Inspect the interior, check for corrosion and lining deterioration. Check separate containers for leakage or damage.
Powder body	Examine the body and check internally for corrosion and lining deterioration.

INSPECTION AFTER RECHARGE	
Water and foam	Replace the charge in accordance with the manufacturer's instructions.
Reassemble	Reassemble the extinguisher in accordance with the manufacturer's instructions.
Maintenance label	Fill in entry on maintenance label, including full weight.
Mounting of extinguishers	Check the mounting bracket or stand.
Report	Complete a report on the state of maintenance of the extinguishers.



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Spare Charges

For portable fire extinguishers of the same type that are capable of being recharged on board, spare charges shall be provided for 100% of the first 10 portable fire extinguishers and for 50% of the remaining portable fire extinguishers. Not more than a total of 60 spare charges need to be provided.

For portable fire extinguishers that cannot be recharged on board, additional portable fire extinguishers of the same quantity, type and capacity shall be provided for 100% of the first 10 portable fire extinguishers and for 50% of the remaining portable fire extinguishers. Not more than a total of 60 additional portable fire extinguishers need to be provided.

Hydraulic Pressure Test and Test Pressure

All portable fire extinguishers and propellant cartridges should be hydraulically tested in accordance with the recognized standard or the manufacturer's instructions at intervals not exceeding 10 years.

Notwithstanding the above, whenever the loss in pressure of a permanently pressurized portable fire extinguisher exceeds 10% of the nominal pressure, then the portable fire extinguisher shall be hydraulically pressure tested before being recharged.

During statutory safety equipment surveys the attending surveyor of the recognized organization may request hydraulic pressure testing if it is determined that the condition of the portable fire extinguisher/s so warrants.

The hydraulic test should be carried out at the test pressures indicated in the following table:

Portable Fire Extinguishers and Propellant Cartridges	Test Pressure
Water	At least 1.5 times w.p. (or 2 N/mm ² if the w.p. is unknown)
Foam	
Dry Chemical	
Halon and Powder (permanently pressurized)	
Powder (non-permanently pressurized)	
Carbon Dioxide	At least 25 N/mm ²
Propellant Cartridges	At least 2 times w.p. or 25 N/mm ² or 35 N/mm ²
CO ₂ type with safety devices	
CO ₂ type without safety devices	

w.p. – working pressure



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Instructions and Record Keeping

Instructions for recharging extinguishers should be supplied by the manufacturer and be available for use on board.

Records of inspections, maintenance and pressure tests should be maintained. The records should show the date of inspection, the type of maintenance carried out and whether or not a pressure test was performed.

FIXED HIGH PRESSURE CO₂ FIRE-EXTINGUISHING SYSTEMS

Inspection

Every 3 months, the ship's crew shall check the CO₂ cylinders for proper stowage, alignment of activating levers on each of the cylinders and tightness of securing/clamping arrangements. Prior to entry into the CO₂ cylinder bank room all safety procedures shall be adhered to.

Hydrostatic Pressure Testing

Over a maximum period of 10 years at least 50% of the CO₂ bottles shall be tested by hydraulic pressure at an approved shore-based servicing station.

Notwithstanding the aforementioned, occasional hydrostatic pressure testing may be requested at the discretion of the Surveyor from the Recognized Organization conducting the statutory surveys if there exists evidence to cause concern on the condition of the cylinders.

FIXED LOW PRESSURE CO₂ FIRE-EXTINGUISHING SYSTEMS

Inspection

Annual examination of the bulk CO₂ containment tank during statutory safety equipment surveys shall include:

- close examination of all pipe connections to the tank. Selected areas of insulation are to be removed as necessary;
- where extensive corrosion or other evidence of deterioration exists, connecting pipes or delivery pipes are to be removed for examination and testing, as necessary, to determine actual wall thickness.



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- examination of selected areas of the tank shell under insulation to determine shell condition, and if necessary, make use of appropriate means to ascertain wall thickness;
- removal of insulation and examination of underlying steelwork in any area where there is evidence of corrosion through staining or other signs;

The annual inspections detailed above shall be programmed to examine, in so far as it is possible, different areas of the system at each annual examination.

If the examination reveals evidence of deterioration in the pipework or tank shell this shall be followed up to determine extent of deterioration and if necessary an internal examination shall be conducted. Any repair or replacement shall be carried out to specifications of the Recognized Organization.

Provided that the above inspections are carried out annually and that records confirming satisfactory condition are readily available, then bulk CO₂ systems need only be inspected internally after a maximum period of 20 years.

FIXED HALON FIRE-EXTINGUISHING SYSTEMS

Hydrostatic Pressure Test or Thickness Measurement

Subject to the ready availability of Halon Banking Facilities for the purpose of containment and recharging, over a maximum period of 10 years at least 50% of the Halon bottles shall be tested by hydraulic pressure at an approved shore-based servicing station.

However, when Halon Banking Facilities are not available, Halon cylinders shall be subjected to thickness measurement in lieu of the hydrostatic pressure test as required above. At least 50% of the cylinders shall be thickness measured over a maximum period of 10 years.

Notwithstanding the aforementioned, occasional hydrostatic pressure testing or thickness measurement, as applicable, may be requested at the discretion of the attending Class Surveyor conducting the statutory surveys if there exist evidence to cause concern on the condition of the cylinders.



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FIXED DRY POWDER FIRE-EXTINGUISHING SYSTEMS

Servicing

Servicing shall be carried out every 2 years by an approved shore-based servicing station in accordance with manufacturer's instructions. Testing of dry powder sample for moisture absorption shall be carried out at the same interval.

SPRINKLER, FIXED PRESSURE WATER-SPRAY AND WATER-MIST SYSTEMS

Servicing

Servicing shall conform to instructions of the manufacturer and the Recognized Organization.

FIXED FOAM FIRE-EXTINGUISHING SYSTEMS

Foam Sample Analysis

Foam sample analysis shall be carried out after a period of 3 years and thereafter every year at an approved independent/manufacturer's laboratory. Notwithstanding the aforementioned, occasional foam sample analysis may be requested at the discretion of the attending Surveyor from the Recognized Organization during statutory surveys if there is cause to question the suitability of the foam.

CYLINDERS FOR SELF-CONTAINED BREATHING APPARATUS (SCBA)

Inspection

The ship's crew shall carry out a general examination of the Self Contained Breathing Apparatus, including check for air cylinder pressure/leakage, at fortnightly intervals. On ships provided with a recharging system for air cylinders, a check for air quality shall be carried out every 12 months at an approved independent/manufacturer's laboratory.



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Maintenance

Maintenance by the ship's crew shall be carried out in accordance with the manufacturer's instructions.

Hydrostatic Pressure Testing and Test Pressure

Hydrostatic pressure testing of cylinders of lightweight type shall be carried out at an approved shore-based servicing station at intervals and test pressure stipulated by the manufacturer and Recognized Organization.

Hydrostatic pressure testing of cylinders other than of lightweight type shall be carried out every 5 years at an approved shore-based servicing station at a test pressure of 1.5 times the working pressure.

Spare Charges

The following number of spare charges is to be provided for each breathing apparatus:

Ship Type	Spare Charges
Cargo Ships without dedicated cylinder recharging facility	2
Cargo Ships with dedicated cylinder recharging facility	1
Passenger Ships carrying less than 36 passengers	1
Passenger Ships carrying more than 36 passengers	At least 2

CYLINDERS FOR EMERGENCY ESCAPE BREATHING DEVICE (EEBD)

Inspection

The ship's crew shall carry out a general examination and check of cylinder pressure, as applicable, every 3 months and records of checks are to be maintained.

Maintenance

Maintenance by the ship's crew shall be carried out in accordance with the manufacturer's instructions.

Spare Devices

All ships shall carry at least two spare Emergency Escape Breathing Devices.



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CYLINDERS FOR SURVIVAL CRAFT SELF-CONTAINED AIR SUPPORT SYSTEM

Inspection

A general examination and check of cylinder pressure is to be carried out at fortnightly intervals by the ship's crew and records of checks are to be maintained.

Hydrostatic Pressure Testing and Test Pressure

Hydrostatic pressure testing of cylinders of lightweight type shall be carried out at an approved shore-based servicing station at the intervals and test pressure stipulated by the manufacturer and Recognized Organization.

Hydrostatic pressure testing of cylinders other than of lightweight type shall be carried out every 5 years by an approved shore-based servicing station at a test pressure of 1.5 times the working pressure.

MEDICAL OXYGEN CYLINDERS

Inspection

A general examination and check of cylinder pressure shall be carried out every month by the ship's crew and records of checks are to be maintained.

Hydrostatic Pressure Testing

Hydrostatic pressure testing of cylinders shall be carried out at an approved shore-based servicing station at the intervals and test pressure stipulated by the manufacturer and/or Recognized Organization.



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PORTABLE FIRE EXTINGUISHERS				
Appliance	Inspections		Hydrostatic Pressure Test	Spare Charges/Devices
	Ship board	Shore		
Water	Annually as per Administration Requirement and MSC/Circ 850	Every 5 years	Every 10 years or when the pressure loss (for permanently pressurized type) is greater than 10%	Rechargeable type 100% spare charges for first ten 50% spare charges for remainder Non-rechargeable type 100% additional extinguishers for first ten 50% additional extinguishers for remainder
Foam				
Dry Chemical				
Halon				
CO ₂				
Propellant Cartridges				

FIXED FIRE-EXTINGUISHING SYSTEMS		
System	Inspections	Hydrostatic Pressure Test
High Pressure CO ₂	Every 3 months check of stowage, alignment of activating levers and proper stowage	50% of cylinders every 10 years
Bulk CO ₂	Annual external inspections or internal inspection at 20 years	
Halon		When banking facilities available – 50% of cylinders to hydro test every 10 years When banking facilities not available 50% of cylinders thickness measured every 10 years
Dry Powder	2 years (including moisture absorption test)	
Sprinkler Water-Spray Water-Mist	As per manufacturer's instructions	
Foam	Analysis after 3 years and annually thereafter	

SELF-CONTAINED BREATHING APPARATUS			
Inspections		Hydrostatic Pressure Test	Spare Charges
Shipboard	Shore		
Every 15 days General examination and cylinder pressure check	Every 12 months air quality check	Cylinders of lightweight type - As per manufacturer's requirements Cylinders of non-lightweight type - Every 5 years at 1.5 times w.p.	2 spare charges for each SCBA on cargo ships without charging facility 1 spare charge for each SCBA on cargo ships with charging facility 1 spare charge for each SCBA on passenger ships carrying less than 36 passengers At least 2 spare charges for each SCBA on passenger ships carrying more than 36 passengers

EMERGENCY ESCAPE BREATHING DEVICES	
Shipboard Inspections	Spare Devices
Every 3 months a general examination and cylinder pressure check	All ships to carry 2 spare devices

CYLINDERS FOR SURVIVAL CRAFT AIR SUPPORT SYSTEM	
Shipboard Inspections	Hydrostatic Pressure Test
Every 15 days a general examination and cylinder pressure check	Cylinders of lightweight type – As per manufacturer's requirements Cylinders of non-lightweight type – Every 5 years at 1.5 times w.p.

MEDICAL OXYGEN CYLINDER	
Shipboard Inspections	Hydrostatic Pressure Test
Every month a general examination and cylinder pressure check	As per manufacturer's requirements

ANNEX

GUIDELINES FOR THE MAINTENANCE AND INSPECTION OF FIRE-PROTECTION SYSTEMS AND APPLIANCES

1 Application

These Guidelines apply to all ships, however it does not contain an exhaustive list of maintenance items and should be used as a recommendation only.

2 Operational readiness

All fire protection systems and appliances should at all times be in good order and available for immediate use while the ship is in service. If a fire protection system is under repair, then suitable arrangements should be made to ensure safety is not diminished.

3 Maintenance and testing

Instructions for on-board maintenance, not necessarily by the ship's crew, and testing of active and passive fire protection systems and appliances should be easily understood, illustrated wherever possible, and, as appropriate, should include the following for each system or appliance:

- .1 maintenance and repair instructions;
- .2 schedule of periodic maintenance;
- .3 list of replaceable parts; and
- .4 log for records of inspections and maintenance, listing identified non-conformities and their targeted completion dates.

4 Weekly testing and inspections

Weekly inspections should be carried out to ensure that:

- .1 all public address systems and general alarm systems are functioning properly; and
- .2 breathing apparatus cylinders do not present leakages.

5 Monthly testing and inspections

Monthly inspections should be carried out to ensure that:

- .1 all fireman's outfits, fire extinguishers, fire hydrants, hose and nozzles are in place, properly arranged, and are in proper condition;
- .2 all fixed fire-fighting system stop valves are in the proper open or closed position, dry pipe sprinkler systems have appropriate pressures as indicated by gauges;
- .3 sprinkler system pressure tanks have correct levels of water as indicated by glass gauges;
- .4 all sprinkler system pumps automatically operate on reduction of pressure in the systems;

- .5 all fire pumps are operated; and
- .6 all fixed fire-extinguishing installation using extinguishing gas are free from leakage.

6 Quarterly testing and inspections

Quarterly inspections should be carried out to ensure that:

- .1 all automatic alarms for the sprinkler systems are tested using the test valves for each section;
- .2 the international shore connection is in proper condition;
- .3 lockers providing storage for fire-fighting equipment contain proper inventory and equipment is in proper condition;
- .4 all fire doors and fire dampers are tested for local operation; and
- .5 all CO₂ bottle connections for cable operating system clips should be checked for tightness on fixed fire-extinguishing installations.

7 Annual testing and inspections

Annual inspections should be carried out to ensure that:

- .1 all fire extinguishers are checked for proper location, charging pressure, and condition;
- .2 fire detection systems are tested for proper operation, as appropriate;
- .3 all fire doors and dampers are tested for remote operation;
- .4 all foam-water and water-spray fixed fire-fighting systems are tested for operation;
- .5 all accessible components of fixed fire-fighting systems are visually inspected for proper condition;
- .6 all fire pumps, including sprinkler system pumps, are flow tested for proper pressures and flows;
- .7 all hydrants are tested for operation;
- .8 all antifreeze systems are tested for proper solutions;
- .9 sprinkler system connections from the ship's fire main are tested for operation;
- .10 all fire hoses are hydrostatically tested;
- .11 breathing apparatus air recharging systems checked for air quality;
- .12 control valves of fixed fire-fighting systems should be inspected; and
- .13 air should be blown through the piping of extinguishing gas systems.

8 Five-year service

At least once every five years, the following inspections and tests should be carried out:

- .1 hydrostatic testing for all SCBA's cylinders; and
- .2 control valves of fixed fire-fighting systems should be internally inspected.

