Guidelines For Classification And Construction

Part 6 Statutory

Volume 10

GUIDELINES FOR MAINTENANCE OF SAFETY EQUIPMENT

2020

Biro Klasifikasi Indonesia

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Jl. Yos Sudarso No. 38-40, Tanjung Priok
Jakarta 14320 - Indonesia
rules@bki.co.id
www.bki.co.id

Foreword

The "Guidelines for Maintenance for Safety Equipment" contain methods, technical requirements, and acceptance criteria related to safety equipment as referred from SOLAS and other statutory instruments which are requiring inspections and maintenance. These Guidelines divided into two sections and one annex as follows:

Section 1. General

Section 2. The list of safety Equipment and their maintenance requirements

Annex A. Explanation according to MSC.1/Circ.1432, .par.7.5.17 (as amended by MSC.1/ Circ.1516)

These Guidelines are available to be downloaded at www.bki.co.id. Once downloaded, these Guidelines will be uncontrolled copy. Please check the latest version on the website.

Further queries or comments concerning these Guidelines are welcomed through communication to BKI Head Office.

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Section 1 General

A General

1. Introduction

The requirements for inspection and maintenance of vessels' safety equipment can be found in a large number of statutory instruments. Establishing an easy, user-friendly and practical overview of such requirements has proven to be challenging. This overview can now be found in the present document.

2. Objective

The objective of this guideline is to provide a compact and practical tool that gives ship owners and operators an overview of all applicable requirements for the inspection and maintenance of vessels' safety equipment.

3. Scope

The guideline is written in a table format, see Section 2, listing all equipment and systems for which SOLAS and other statutory instruments require periodical inspections and maintenance. The tables in Section 2 also includes the ship type which the requirements are applicable to, the intervals between subsequent inspections and maintenance and indicate which parts of the inspections and maintenance shall be completed by competent crew members or specially trained persons or attended by surveyor. The guideline includes also requirements and recommendations by BKI and IACS.

The document does not replace the original equipment manufacturer’s instructions and maintenance requirements and does not address additional or more stringent requirements from flag administrations. Users shall take these requirements into account.

The document does not replace or overrule any existing rules, regulations, statutory requirements or technical standards.

Finally, the document does not replace users’ individual responsibility to know the applicable requirements and ensure compliance at all points in time.

4. Application

Inspection and maintenance requirements apply to all vessels for which SOLAS apply.

Users may use this document to establish or validate inspection and maintenance routines in their planned maintenance systems. When establishing the maintenance and inspection procedures it should be noted that certain jobs may be performed by competent crew members, while others shall be performed by specially trained persons. It should also be noted that certain jobs shall be scheduled to coincide with a relevant safety equipment survey.

5. Precaution

All inspections shall be carried out in accordance with the system manufacturer’s instructions and safety precautions. If equipment is undergoing maintenance or testing, then suitable arrangements shall be made to ensure safety is not diminished through the provision of alternate equipment or other measures.

It should be stated in the ship's quality system who is considered competent to carry out service/ maintenance of certain equipment.

BKI reserves the right to amend the content of the document at any time.

6. Records

Records of the inspections shall be carried on board of the ship, or be accessible in digital format on board. In cases where the inspections and maintenance are carried out by specially trained persons other than the ship's crew, inspection reports shall be provided upon the completion of the inspections. Some inspections required by SOLAS shall be entered in the logbook.

7. Definition

Term/ Abbreviation	Definition
Crew	Crew members and/or senior ship's officers qualified and competent in accordance with relevant circulars (See also 5).
By BKI	In presence of or by BKI surveyor.
Maker	Manufacturer of the equipment or service company approved by the manufacturer.
Service Supplier	Service supplier for the type of equipment/service approved by BKI or flag state administration, accredited laboratory/service company, shore-based maintenance provider.

Section 2 List of Safety Equipment and Their Maintenance Requirements

A. Life-saving appliances

These list of safety Equipment and their maintenance requirements apply for all ship unless otherwise specified in the table.

Table 2.1 Life Saving Appliances

No	Equipment	Requirement	Regulation	By	Interval	Remark
1.1	Means of embarkation on and disembarkation from ships (gangways, accommodation ladders, incl. winch and fittings, as well as use for pilot transfer)	1.1.1 Maintenance and inspection	SOLAS II-1/3-9.3 SOLAS III/20.4 SOLAS III/20.7.2 MSC.1/Circ.1331, Annex, par. 4	Crew	Monthly	In accordance with manufacturer's instructions.
						Maintenance of wires acc. to SOLAS III/20.4
		1.1.2 Examination	SOLAS II-1/3-9.3 MSC.1/Circ.1331, Annex, par. 5	Crew + BKI	Annually	Concurrently with annual/periodical/ renewal surveys required by SOLAS I/7 and I/8
		1.1.3 Examination and operational test with specified max. operational load	SOLAS II-1/3-9.3 MSC.1/Circ.1331, Annex, par. 5	Crew + BKI	5-yearly	
1.2	Emergency escape breathing devices (EEBDs)	1.2.1 Examine cylinder gauges to confirm they are in the correct pressure range	MSC.1/Circ.1432, par. 4.5	Crew	Weekly	
		1.2.2 Check according to maker's instructions	MSC.1/Circ.1432, par. 7.8.3	Crew	Annually	
		1.2.3 Hydrostatic test and internal inspection of cylinders	IACS Rec. No.88	Service supplier	As specified by the manufacturer (or every 5 years if not specified)	Intervals specified in recognized international standards (e.g. ISO, EN) are to be observed.
1.3	Emergency lighting	1.3.1 Testing	SOLAS III/19.3.4.9	Crew	At each abandon ship drill	

Table 2.1 Life Saving Appliances (continued)

No	Equipment	Requirement	Regulation	By	Interval	Remark
1.4	Falls used in launching appliances	1.4.1 Maintenance	SOLAS III/20.6	Crew	Weekly	Inspections according to maker's maintenance guidelines. Special concern for hidden areas and areas of end terminations. Concurrently with annual/periodical/ renewal surveys required by SOLAS I/7 and I/8
			SOLAS III/ 20.7	Crew	Monthly	
			Res. MSC.402(96) Annex par. 6.2.9	Service supplier	Annually	
		1.4.2 Renewal	SOLAS III/20.4	Service supplier or Crew	renewed when necessary due to deterioration of the falls or at intervals of not more than 5 years, whichever is the earlier	
1.5	First-aid outfit and anti-seasickness medicine of lifeboat equipment	1.5.1 Replacement	LSA Code, par. 1.2.3	Crew	Maker's expiry date	
1.6	Food rations of lifeboat equipment	1.6.1 Replacement	LSA Code, par. 1.2.3	Crew	Maker's expiry date	
1.7	Hydrostatic release units (non- disposable)	1.7.1 Maintenance	SOLAS III/20.9.1	Service supplier	Annually	Every 12 months. May be extended to 17 months. Some flag administrations require to be consulted for acceptance.
1.8	Immersion suits and anti- exposure suits	1.8.1 Inspection	SOLAS III/20.7.2 SOLAS III/36.1 MSC/Circ.1047	Crew	Monthly	
		1.8.2 Air pressure test (seams and closures)	MSC/Circ.1114	Service supplier or Crew	3-yearly	By crew provided suitable equipment is available on board.
1.9	Inflatable liferafts, lifejackets	1.9.1 Maintenance	SOLAS III/20.8.1.1 RES. A.761(18) (inflatable liferafts)	Service supplier	Annually	Every 12 months. May be extended to 17 months. Some flag administrations require to be consulted for acceptance. Inflatable liferafts: Administration can accept specific liferafts for extended service intervals acc. to SOLAS

Table 2.1 Life Saving Appliances (continued)

No	Equipment	Requirement	Regulation	By	Interval	Remark
						III/20.8.3 and MSC.1/ Circ.1328.
1.10	Launching appliances and release gears	1.10.1 Annual thorough examination	SOLAS III/20.11.1.1 Res. MSC.402(96) Annex par. 6.2.9	Service supplier	Annually	Concurrently with annual/periodical/renewal surveys required by SOLAS I/7 and I/8
		1.10.2 Dynamic test of the winch brake	SOLAS III/20.11.1.2 Res. MSC.402(96) Annex par. 6.2.10			
		1.10.3 Release gear/ automatic release hooks thorough examination and operational test incl. free-fall lifeboat release system.	SOLAS III/20.11.2.1 + 20.11.3.1 Res. MSC.402(96) Annex par.6.2.4 - 6.2.8			
		1.10.4 Dynamic test of the winch brake	SOLAS III/20.11.1.2 Res. MSC.402(96) Annex par. 6.3.1 and 6.3.2 Guidance for Code and Convention Interpretations (Pt.1, Vol.Y) Sec.11. SC144	Service supplier + BKI	5-yearly	Concurrently with annual/periodical/ renewal surveys required by SOLAS I/7 and I/8
		1.10..5 Release gear/automatic release hooks five yearly overhaul and operational test incl. free-fall lifeboat release system	SOLAS III/20.11.2.2, 20.11.2.3 + 20.11.3.2 Res. MSC.402(96) Annex par. 6.3.3 Guidance for Code and Convention Interpretations (Pt.1, Vol.Y) Sec.11. SC144	Service supplier + BKI	5-yearly	The 10 % overload test is required in connection with 5-yearly overload also for free-fall lifeboats with simulated launching
1.11	Lifeboats	1.11.1 Thoroughly examined and checked for satisfactory condition and operation	Res. MSC.402(96) - Annex par.6.2.3	Service supplier	Annually	Engine, propulsion, maneuvering and power supply system.

Table 2.1 Life Saving Appliances (continued)

No	Equipment	Requirement	Regulation	By	Interval	Remark
1.12	Lifeboats (except free-fall lifeboats)	1.12.1 Moving from stowed position	SOLAS III/20.6.3	Crew	Weekly	
		1.12.2 Turning out from stowed position	SOLAS III/20.7.1	Crew	Monthly	
		1.12.3 Launched and maneuvered in the water (abandon ship drill)	SOL4AS III/19.3.4.3	Crew	3-Monthly	
1.13	Free-fall lifeboats	1.13.1 Abandon ship drill	SOLAS III/19.3.4.4	Crew	3-Monthly	Free-fall or simulated launching every 6 months.
1.14	Lifeboat equipment	1.14.1 Inspection	SOLAS III/20.7.2	Crew	Monthly	
1.15	Lifeboat and rescue boat engines	1.15.1 Test run	SOLAS III/20.6.2	Crew	Weekly	
1.16	Lifeboats with self-contained air support system (only for chem. tanker and gas carrier)	1.16.1 Examination (incl. external inspection of air cylinders)	Res. MSC.402(96) Annex par. 6.2.3	Service supplier	Annually	Incl. external inspection of air cylinders
		1.16.2 Hydrostatic test of air cylinders	IACS Rec. No.88	Service supplier	5-yearly	
1.17	Lifeboats with water spray system (only for oil/chem. tanker and gas carrier)	1.17.1 Examination	Res. MSC.402(96) Annex par. 6.2.3	Service supplier	Annually	
1.18	Rescue boat	1.18.1 Launching and maneuverings in the water	SOLAS III/19.3.4.6	Crew	3-monthly (as far as practical monthly)	
1.19	Lifebuoy lights	1.19.1 Battery replacement	LSA Code, par. 1.2.3	Crew	Maker's expiry date	Annually, if not marked with expiry date.
1.20	Marine evacuation systems (MES) (All ships(where applicable))	1.20.1 Service	SOLAS III/20.8.1	Service supplier	Annually (12 months)	Administration may extend this period to 17 months.
		1.20.2 Test	SOLAS III/20.8.2	Service supplier	6-yearly	Deployment on rotational basis at intervals to be agreed by flag administration, however each system to be deployed at least once every six years.
1.21	Public address systems and general alarm systems	1.21.1 Testing	SOLAS III/20.6.4 MSC.1/Circ.1432, par. 4.4	Crew	Weekly	

Table 2.1 Life Saving Appliances (continued)

No	Equipment	Requirement	Regulation	By	Interval	Remark
1.22	Rocket parachute flares and rocket line- throwing appliances	1.22.1 Replacement	LSA Code, par. 1.2.3	Crew	Maker's expiry date	
1.23	Smoke signals	1.23.1 Replacement	LSA Code, par.1.2.3	Crew	Maker's expiry date	
1.24	Survival craft, rescue boats and launching appliances	1.24.1 Visual inspection	SOLAS III/20.6.1	Crew	Weekly	

B. Fire protection and fire-fighting equipment

These list of safety equipment and their maintenance requirements apply for all ships unless otherwise specified in the table.

Table 2.2 Fire protection and fire-fighting equipment

No.	Equipment	Requirement	Regulation	By	Interval	Remark
2.1	Air-recharging system for SCBAs	2.1.1 The compressed-air equipment shall be inspected (only for Tanker (chemical/gas))	BCH Code, par. 3.16.8 IBC Code, par. 14.2.6 IGC Code, par. 14.2.6	Crew	Monthly	
		2.1.2 The equipment shall be inspected and tested (only for Tanker (chemical/gas))		Service supplier or Maker	Annually	
		2.1.3 Check breathing apparatus air recharging systems, if fitted, for air quality	MSC.1/Circ.1432, par. 7.8.1	Service supplier or Maker or Crew	Annually	By crew provided a suitable measurement device is available on board. The test device is to be agreed with the maker of the air recharging system.
2.2	Self-contained breathing apparatuses (SCBAs)	2.2.1 Examine cylinder gauges to confirm they are in the correct pressure range	MSC.1/Circ.1432, par. 4.5	Crew	Weekly	
		2.2.2 The breathing apparatus shall be inspected (only for tanker (chemical /gas))	BCH Code, par. 3.16.8 IBC Code, par. 14.2.6 IGC Code, par. 14.2.6	Crew	Monthly	
		2.2.3 The equipment shall be inspected and tested (only for tanker (chemical /gas))		Service Supplier or Maker	Annually	
		2.2.4 Check that all breathing apparatus face masks and air demand valves are in serviceable condition	MSC.1/Circ.1432, par. 7.8.2	Crew	Annually	
		2.2.5 Perform hydrostatic testing of all self-contained breathing apparatus cylinders	MSC.1/Circ.1432, par. 9.4	Service Supplier	5-yearly	Aluminium and composite cylinders shall be tested to the satisfaction of the Administration.

Table 2.2 Fire protection and fire-fighting equipment (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
2.3	Fixed fire detection and alarm systems	2.3.1 Verify that all fire detection and fire alarm control panel indicators are functional by operating the lamp/indicator test switch	MSC.1/Circ.1432, par. 4.1	Crew	Weekly	
		2.3.2 Test a sample of detectors and manual call points so that all devices have been tested within five years	MSC.1/Circ.1432, par. 5.10	Crew	Monthly	For very large systems the sample size should be determined by the Administration
		2.3.3 Test all fire detection systems and fire detection systems used to automatically release fire extinguishing systems for proper operation, as appropriate	MSC.1/Circ.1432, par. 7.2.1	Crew	Annually	
		2.3.4 Visually inspect all accessible detectors for evidence of tampering, obstruction, etc., so that all detectors are inspected within one year	MSC.1/Circ.1432, par. 7.2.2			
		2.3.5 Test emergency power supply switchover	MSC.1/Circ.1432, par. 7.2.3			
2.4	Fire dampers	2.4.1 Test all fire dampers for local operation	MSC.1/Circ.1432, par. 6.3	Crew	Quarterly	
		2.4.2 Test all fire dampers for remote operation	MSC.1/Circ.1432, par. 7.6		Annually	
2.5	Fire doors	2.5.1 Verify that all fire door control panel indicators, if provided, are functional by operating the lamp/indicator switch	MSC.1/Circ.1432, par. 4.3	Crew	Weekly	
		2.5.2 Test all fire doors located in main vertical zone bulkheads for local operation (only for passenger ships)	MSC.1/Circ.1432, par. 6.4		Quarterly	
		2.5.3 Test all remotely controlled fire doors for proper release	MSC.1/Circ.1432, par. 7.7		Annually	
2.6	Portable fire extinguishers	2.6.1 Inspection in accordance with the manufacturer's instructions and based on inspection guide in Res.A.951 (23), Table 9.1.3	Res.A.951 (23), par. 9.1	Crew	Annually	

Table 2.2 Fire protection and fire-fighting equipment (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		2.6.2 At least one fire extinguisher of each type manufactured in the same year and kept on board a ship shall be test discharged as part of a fire drill	Res.A.951 (23), par. 9.1.1	Crew	5-yearly	
		2.6.3 All fire extinguishers together with propellant cartridges shall be hydraulically tested in accordance with the recognized standard or the manufacturer's instructions	Res.A.951 (23), par. 9.1.2	Service Supplier	10-yearly	
2.7	Wheeled (mobile) fire extinguishers	2.7.1 Verify that all are in place, properly arranged, and are in proper condition	MSC.1/Circ.1432, par. 5.9	Crew	Monthly	
		2.7.2 Inspection in accordance with the manufacturer's instructions	MSC.1/Circ.1432, par. 7.12.1	Crew	Annually	
		2.7.3 Wheeled (mobile) fire extinguishers shall be visually inspected to check that all accessible components are in proper condition	MSC.1/Circ.1432, par. 7.12.2			
		2.7.4 The hydrostatic test date of each cylinder is to be checked	MSC.1/Circ.1432, par. 7.12.3			
		2.7.5 Dry powder wheeled (mobile) fire extinguishers are to be inverted to ensure that the powder is agitated	MSC.1/Circ.1432, par. 7.12.4			
		2.7.6 Visual examination of at least one wheeled (mobile) extinguisher of each type manufactured in the same year and kept on board	MSC.1/Circ.1432, par. 9.6	Crew	5-yearly	
		2.7.7 All fire extinguishers together with propellant cartridges shall be hydraulically tested in accordance with the recognized standard or the manufacturer's instructions	MSC.1/Circ.1432, par. 10.5	Service Supplier	10-yearly	

Table 2.2 Fire protection and fire-fighting equipment (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
2.8	Firefighter's outfits	2.8.1 Verify that lockers providing storage for fire-fighting equipment contain their full inventory and that equipment is in serviceable condition	MSC.1/Circ.1432, par. 5.5	Crew	Monthly	
2.9	Fire mains, fire pumps, hydrants, hoses and nozzles	2.9.1 Verify that all fire hydrants, hoses and nozzles are in place, properly arranged, and are in serviceable condition	MSC.1/Circ.1432, par. 5.1.1	Crew	Monthly	
		2.9.2 Operate all fire pumps to confirm that they continue to supply adequate pressure	MSC.1/Circ.1432, par. 5.1.2			
		2.9.3 Verify that emergency fire pump fuel supply is adequate and heating system is in satisfactory condition, if applicable	MSC.1/Circ.1432, par. 5.1.3			
		2.9.4 Verify that international shore connection(s) is/are in serviceable condition.	MSC.1/Circ.1432, par. 6.1	Crew	Quarterly	
		2.9.5 Visually inspect all accessible components for proper condition	MSC.1/Circ.1432, par. 7.1.1	Crew	Annually	
		2.9.6 Flow test all fire pumps for proper pressure and capacity. Test emergency fire pump with isolation valves closed	MSC.1/Circ.1432, par. 7.1.2			
		2.9.7 Test all hydrant valves for proper operation	MSC.1/Circ.1432, par. 7.1.3			
		2.9.8 Pressure test a sample of fire hoses at the maximum fire main pressure, so that all fire hoses are tested within five years	MSC.1/Circ.1432, par. 7.1.4			
		2.9.9 Verify that all fire pump relief valves, if provided, are properly set	MSC.1/Circ.1432, par. 7.1.5			
		2.9.10 Examine all filters /strainers to verify that they are free of debris and contamination.	MSC.1/Circ.1432, par. 7.1.6			

Table 2.2 Fire protection and fire-fighting equipment (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		2.9.11 Verify that the nozzle size/ type is correct, maintained and working.	MSC.1/Circ.1432, par. 7.1.7			
2.10	Galley exhaust ducts	2.10.1 Verify that galley exhaust ducts and filters are free of grease build-up	MSC.1/Circ.1432, par. 7.6.2	Crew	Annually	
2.11	Portable foam applicator units	2.11.1 Verify that all portable foam applicators are in place, properly arranged, and are in proper condition.	MSC.1/Circ.1432, par. 5.8	Crew	Monthly	
		2.11.2 Verify that all portable foam applicators are set to the correct proportioning ratio for the foam concentrate supplied and that the equipment is in proper order.	MSC.1/Circ.1432, par. 7.11.1	Crew	Annually	
		2.11.3 Verify that all portable containers or portable tanks containing foam concentrate remain factory sealed, and that the manufacturer's recommended service life interval has not been exceeded.	MSC.1/Circ.1432, par. 7.11.2			
		2.11.4 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.	MSC.1/Circ.1432, par. 7.11.3			The foam control tests are to be conducted by Service Supplier or maker.
		2.11.5 Protein-based foam concentrate portable containers and portable tanks shall be thoroughly checked and, if more than five years old, the foam concentrate shall be subjected to the periodical foam control tests required in MSC.1/Circ.1312, or renewed.	MSC.1/Circ.1432, par. 7.11.4			

Table 2.2 Fire protection and fire-fighting equipment (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		2.11.6 The foam concentrates of any non-sealed portable containers and portable tanks, and portable containers and portable tanks for which production data is not documented, shall be subjected to the periodical foam control tests required in MSC.1/Circ.1312.	MSC.1/Circ.1432, par. 7.11.5	Crew	Annually	
2.12	Ventilation systems	2.12.1 Test all ventilation controls interconnected with fire protection systems for proper operation	MSC.1/Circ.1432, par. 7.6.3	Crew	Annually	

C. Fixed fire-fighting systems

These list of safety equipment and their maintenance requirements apply for all ship unless otherwise specified in the table.

Table 2.3 Fixed fire-fighting systems

No.	Equipment	Requirement	Regulation	By	Interval	Remark
3.1	Aerosol fire-extinguishing systems	3.1.1 Verify that all electrical connections and/or manual operating stations are properly arranged, and are in proper condition.	MSC.1/Circ.1432, par. 5.7	Crew	Monthly	
		3.1.2 Verify that the actuation system/control panel circuits are within manufacturer's specifications.				
		3.1.3 Verify that condensed or dispersed aerosol generators have not exceeded their mandatory replacement date. Pneumatic or electric actuators shall be demonstrated working, as far as practicable.	MSC.1/Circ.1432, par. 7.10	Crew	Annually	
		3.1.4 Maintenance by approved Service Supplier.	Maker's recommendations	Service Supplier	As per maker's recommendation	
		3.1.5 Condensed or dispersed aerosol generators are to be renewed in accordance with manufacturer's recommendations	MSC.1/Circ.1432, par. 10.4	Service Supplier	At least 10 yearly	
3.2	Equivalent gas fire- extinguishing systems (e.g. FM 200, NOVEC 1230 or Halon)	3.2.1 Verify that all fixed fire- extinguishing system control panel indicators are functional by operating the lamp/indicator test switch	MSC.1/Circ.1432, par. 4.2.1	Crew	Weekly	
		3.2.2 Verify that all control/section valves are in the correct position	MSC.1/Circ.1432, par. 4.2.2			
		3.2.3 Verify that containers/ cylinders fitted with pressure gauges are in the proper range and that the installation is free from leakage.	MSC.1/Circ.1432, par. 5.2	Crew	Monthly	

Table 2.3 Fixed fire-fighting systems (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		3.2.4 Visually inspect all accessible components for proper condition.	MSC.1/Circ.1432, par. 7.3.1	Crew	Annually	
		3.2.5 Externally examine all high pressure cylinders for evidence of damage or corrosion.	MSC.1/Circ.1432, par. 7.3.2			
		3.2.6 Check the hydrostatic test date of all storage containers	MSC.1/Circ.1432, par. 7.3.3			
		3.2.7 Functionally test all fixed system audible and visual alarms.	MSC.1/Circ.1432, par. 7.3.4			
		3.2.8 Verify that all control/section valves are in the correct position.	MSC.1/Circ.1432, par. 7.3.5			
		3.2.9 Check the connections of all pilot release piping and tubing for tightness.	MSC.1/Circ.1432, par. 7.3.6			
		3.2.10 Examine all flexible hoses in accordance with manufacturer's recommendations	MSC.1/Circ.1432, par. 7.3.7			
		3.2.11 Test all fuel shut-off controls connected to fire-protection systems for proper operation.	MSC.1/Circ.1432, par. 7.3.8			
		3.2.12 The boundaries of the protected space shall be visually inspected to confirm that no modifications have been made to the enclosures that have created unclose able openings that would render the system ineffective.	MSC.1/Circ.1432, par. 7.3.9			

Table 2.3 Fixed fire-fighting systems (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		3.2.13 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.	MSC.1/Circ.1432, par. 7.3.10	Crew	Annually	
		3.2.14 Maintenance by approved Service Supplier.	MSC.1/Circ.1318, par.3 and 6	Service Supplier + BKI	2-yearly (for passenger ships)	
					2,5-yearly (for cargo ships)	On each intermediate /periodical and renewal survey.
		3.2.15 All high pressure extinguishing agent cylinders and pilot cylinders shall 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 shall be refilled.	MSC.1/Circ.1432, par. 8.1.1	Crew or Service Supplier	2-yearly	
		3.2.16 Blow dry compressed air or nitrogen through the discharge piping or otherwise confirm that the pipework and nozzles are clear of any obstructions. This may require the removal of nozzles, if applicable.	MSC.1/Circ.1432, par. 8.1.2			
		3.2.17 Perform internal inspection of all control valves.	MSC.1/Circ.1432, par. 9.1	Service Supplier + BKI	5-yearly	For cargo spaces, every 5 years all manifold pipes shall be pressure tested up to the section valves with dry air at 5 bar. Test or record of the test shall be presented to the attending surveyor.

Table 2.3 Fixed fire-fighting systems (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		3.2.18 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 shall be tested. If further cylinders fail, all cylinders shall be tested.	MSC.1/Circ.1432, par. 10.1	Service Supplier	10-yearly	If permitted by the flag administration, visual inspection and non - destructive testing (NDT) of halon cylinders may be performed in lieu of hydrostatic testing. BKI is to be contacted prior to the NDT.
		3.2.19 Flexible hoses (replacement)	MSC.1/Circ.1432, par. 10.1.2	Crew	To be replaced at the intervals recommended by the manufacturer and not exceeding every 10 years	Hose assemblies are to be delivered on board with a Recognized Organisation certificate.
3.3	CO_2 fire- extinguishing systems	3.3.1 General visual inspection of the overall system condition for obvious signs of damage.	MSC.1/Circ.1318, par. 4.1	Crew	Monthly	
		3.3.2 Verify that all stop valves are in the closed position.	MSC.1/Circ.1318, par. 4.1.1			
		3.3.3 Verify that all releasing controls are in the proper position and readily accessible for immediate use.	MSC.1/Circ.1318, par. 4.1.2			
		3.3.4 Verify that all discharge piping and pneumatic tubing is intact and has not been damaged.	MSC.1/Circ.1318, par. 4.1.3			
		3.3.5 Verify that all high pressure cylinders are in place and properly secured.	MSC.1/Circ.1318, par. 4.1.4			
		3.3.6 Verify that the alarm devices are in place and do not appear damaged.	MSC.1/Circ.1318, par. 4.1.5			
		3.3.7 Verify that the pressure gauge is reading in the normal range.	MSC.1/Circ.1318, par. 4.2.1	Crew	Monthly	For low pressure systems only.

Table 2.3 Fixed fire-fighting systems (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		3.3.8 Verify that the liquid level indicator is reading at the proper level.	MSC.1/Circ.1318, par. 4.2.2	Crew	Monthly	
		3.3.9 Verify that the manually operated storage tank main service valve is secured in the open position.	MSC.1/Circ.1318, par. 4.2.3			
		3.3.10 Verify that the vapour supply line valve is secured in the open position	MSC.1/Circ.1318, par. 4.2.4			
		3.3.11 The boundaries of the protected space shall be visually inspected to confirm that no modifications have been made to the enclosures that have created unclose able openings that would render the system ineffective	MSC.1/Circ.1318, par. 5.1	Crew	Annually	
		3.3.12 All storage containers shall be visually inspected for any signs of damage, rust or loose mounting hardware. Cylinders that are leaking, corroded, dented or bulging shall be hydrostatically retested or replaced	MSC.1/Circ.1318, par. 5.2			
		3.3.13 System piping shall be visually inspected to check for damage, loose supports and corrosion. Nozzles shall be inspected to ensure they have not been obstructed by the storage of spare parts or a new installation of structures or machinery	MSC.1/Circ.1318, par. 5.3			
		3.3.14 The manifold shall be inspected to verify that all flexible discharge hoses and fittings are properly tightened	MSC.1/Circ.1318, par. 5.4			

Table 2.3 Fixed fire-fighting systems (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		3.3.15 All entrance doors to the protected space shall close properly and shall have warning signs, which indicate that the space is protected by a fixed carbon dioxide system and that personnel shall evacuate immediately if the alarms sound. All remote releasing controls shall be checked for clear operating instructions and indication as to the space served	MSC.1/Circ.1318, par. 5.5	Crew	Annually	
		3.3.16 The discharge piping and nozzles shall be tested to verify that they are not blocked. The test shall be performed by isolating the discharge piping from the system and blowing dry air or nitrogen from test cylinders or suitable means through the piping	MSC.1/Circ.1318, par. 6.1.3			
		3.3.17 Maintenance by approved service supplier	MSC.1/Circ.1318	Service Supplier or Maker	As per manufacturer's instructions	Only if requirements from the manufacturer are available in addition to those in this table
		3.3.18 All high pressure cylinders and pilot cylinders shall be weighed or have their contents verified by other reliable means to confirm that the available charge in each is above 90% of the nominal charge. Cylinders containing less than 90% of the nominal charge shall be refilled. The liquid level of low pressure storage tanks shall be checked to verify that the required amount of carbon dioxide for protection against the largest hazard is available	MSC.1/Circ.1318, par. 6.1.1	Crew	2-yearly (for passenger ships)	
					2,5-yearly (for cargo ships)	On each intermediate/ periodical and renewal survey

Table 2.3 Fixed fire-fighting systems (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		3.3.19 The hydrostatic test date of all storage containers shall be checked	MSC.1/Circ.1318, par. 6.1.2	Crew	2-yearly (for passenger ships)	
					2,5-yearly (for cargo ships)	On each intermediate/ periodical and renewal survey
		3.3.20 Where possible, all activating heads shall be removed from the cylinder valves and tested for correct functioning by applying full working pressure through the pilot lines. In cases where this is not possible, pilot lines shall be disconnected from the cylinder valves and blanked off or connected together and tested with full working pressure from the release station and checked for leakage. In both cases, this shall be carried out from one or more release stations when installed. If manual pull cables operate the remote release controls, they shall be checked to verify that the cables and corner pulleys are in good condition and freely move and do not require an excessive amount of travel to activate the system	MSC.1/Circ.1318, par. 6.2.1	Crew	2-yearly (for passenger ships)	
					5-yearly (for cargo ships)	At each renewal survey
		3.3.21 All cable components should be cleaned and adjusted as necessary, and the cable connectors shall be properly tightened. If the remote release controls are operated by pneumatic pressure, the tubing shall be checked for leakage, and the proper charge of the remote releasing station's pilot gas cylinders shall be verified. All controls and warning devices shall function normally,	MSC.1/Circ.1318, par. 6.2.2	Service Supplier	2-yearly (for passenger ships)	
					5-yearly (for cargo ships)	At each renewal survey

Table 2.3 Fixed fire-fighting systems (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		and the time delay, if fitted, shall prevent the discharge of gas for the required time period				
		3.3.22 After completion of the work, the system shall be returned to service. All releasing controls shall be verified as being in the proper position and connected to the correct control valves. All pressure switch interlocks shall be reset and returned to service. All stop valves shall be in the closed position	MSC.1/Circ.1318,par. 6.2.3	Service Supplier	2-yearly (for passenger ships)	
					5-yearly (for cargo ships)	At each renewal survey
		3.3.23 Perform internal inspection of all control valves	MSC.1/Circ.1432,par. 9.1	Service Supplier	5-yearly	For cargo spaces, every 5 years all manifold pipes shall be pressure tested up to the section valves with dry air at 5 bar. Test or record of the test shall be presented to the attending surveyor
		3.3.24 High pressure cylinders shall be subjected to periodical tests at intervals not exceeding 10 years. At the 10-year inspection, at least 10% of the total number provided shall be subjected to an internal inspection and hydrostatic test. If one or more cylinders fail, a total of 50% of the on-board cylinders shall be tested. If further cylinders fail, all cylinders shall be tested	MSC.1/Circ.1318,par. 6.1.2	Service Supplier	10-yearly	
		3.3.25 Flexible hoses shall be replaced at the intervals recommended by the manufacturer and not exceeding every 10 years	MSC.1/Circ.1318,par. 6.1.2	Crew	At least 10-yearly	Hose assemblies are to be delivered on board with a Recognized Organisation test certificate

Table 2.3 Fixed fire-fighting systems (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		3.3.26 Low pressure CO_2 bulk storage containers are subject to internal survey if the content has been released and the container is more than 5 years old	Rules for Classification and Surveys (Pt.1, Vol.I) Sec. 3.B.1.5.5.4)	Service Supplier + BKI	If content has been released and is more than 5 years old	
3.4	Deep fat cooking fire-extinguishing systems	3.4.1 Check in accordance with the manufacturer's instructions	MSC.1/Circ.1432, par. 7.13	Crew	Annually	
		3.4.2 Overhaul and hydrostatic testing	Rules for Classification and Surveys (Pt.1, Vol.I) Sec. 3.B.1.5.5.3)	Service Supplier or Maker	10-yearly (from date of manufacture of pressure vessels) unless stated otherwise in the manufacturer's instructions	
3.5	Dry chemical powder systems (for propellant gas see also 3.2)	3.5.1 Verify that all control and section valves are in the proper open or closed position, and that all pressure gauges are in the proper range	MSC.1/Circ.1432, par. 5.6	Crew	Monthly	
		3.5.2 Visually inspect all accessible components for proper condition	MSC.1/Circ.1432, par. 7.9.1	Crew	Annually	
		3.5.3 Verify that the pressure regulators are in proper order and within calibration	MSC.1/Circ.1432, par. 7.9.2			
		3.5.4 Agitate the dry chemical powder charge with nitrogen in accordance with system manufacturer's instructions	MSC.1/Circ.1432, par. 7.9.3			Due to the powder's affinity for moisture, any nitrogen gas introduced for agitation shall be moisture-free
		3.5.5 Maintenance by approved service supplier	MSC.1/Circ.1432, par. 3.4	Service Supplier or Maker	As per manufacturer's instructions	Only if requirements from the manufacturer are available in addition to those in this table

Table 2.3 Fixed fire-fighting systems (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		3.5.6 Blow dry nitrogen through the discharge piping to confirm that the pipework and nozzles are clear of any obstructions	MSC.1/Circ.1432, par. 8.2.1	Service Supplier	2-yearly	If permitted by the flag state administration, the interval can be extended to/harmonized with every intermediate/ periodical and renewal survey
		3.5.7 Operationally test local and remote controls and section valves	MSC.1/Circ.1432, par. 8.2.2			
		3.5.8 Verify the contents of propellant gas cylinders (including remote operating stations)	MSC.1/Circ.1432, par. 8.2.3			
		3.5.9 Test a sample of dry chemical powder for moisture content	MSC.1/Circ.1432, par. 8.2.4			
		3.5.10 Subject the powder containment vessel, safety valve and discharge hoses to a full working pressure test	MSC.1/Circ.1432, par. 8.2.5			
		3.5.11 Subject all powder containment vessels to hydrostatic or non-destructive testing (NDT) carried out by an accredited service agent	MSC.1/Circ.1432, par. 10.3	Service Supplier	10-yearly	In case of NDT, contact BKI prior to the testing
3.6	Foam fire-extinguishing systems	3.6.1 Verify that all control and section valves are in the proper open or closed position, and that all pressure gauges are in the proper range.	MSC.1/Circ.1432, par. 5.3	Crew	Monthly	
		3.6.2 Verify that the proper quantity of foam concentrate is provided in the foam system storage tank.	MSC.1/Circ.1432, par. 6.2	Crew	Quarterly	
		3.6.3 Visually inspect all accessible components for proper condition.	MSC.1/Circ.1432, par. 7.4.1	Crew	Annually	
		3.6.4 Functionally test all fixed system audible alarms.	MSC.1/Circ.1432, par. 7.4.2			

Table 2.3 Fixed fire-fighting systems (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		3.6.5 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).	MSC.1/Circ.1432, par. 7.4.3	Crew	Annually	
		3.6.6 Test all system cross connections to other sources of water supply for proper operation.	MSC.1/Circ.1432, par. 7.4.4			
		3.6.7 Verify that all pump relief valves, if provided, are properly set.	MSC.1/Circ.1432, par. 7.4.5			
		3.6.8 Examine all filters/ strainers to verify that they are free of debris and contamination.	MSC.1/Circ.1432, par. 7.4.6			
		3.6.9 Verify that all control/section valves are in the correct position.	MSC.1/Circ.1432, par. 7.4.7			
		3.6.10 Blow dry compressed air or nitrogen through the discharge piping or otherwise confirm that the pipework and nozzles of high expansion foam systems are clear of any obstructions, debris and contamination.	MSC.1/Circ.1432, par. 7.4.8			This may require the removal of nozzles, if applicable.
		3.6.11 Test all fuel shut-off controls connected to fire-protection systems for proper operation.	MSC.1/Circ.1432, par. 7.4.10			

Table 2.3 Fixed fire-fighting systems (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		3.6.12 Take samples from all foam concentrates carried on board (including the foam in sealed transport containers more than 10 years old) and subject them to the periodical control tests in MSC.1/Circ.1312, for low expansion foam, or MSC/Circ.670 for high expansion foam.	MSC.1/Circ.1432, par. 7.4.9 MSC.1/Circ.1312 MSC/Circ.670	Service Supplier + BKI	Annually	Protein-based alcoholresistant foam concentrates subjected to a chemical stability test at delivery and then annually. Other foam concentrates subjected to a periodical control within 3 years after supplied to the ship and then annually.
		3.6.13 Alcohol-resistant fluorine protein-based foam concentrates are subjected to a chemical stability test with acetone before being poured into foam tank, and a new chemical stability test is performed after installation on board (not less than 14 days after installation on board). (only for Chemical Tanker)	Rules for Ships Carrying Dangerous Chemical in Bulk (Pt.1, Vol.X) Sec.11 MSC.1/Circ.1312			
		3.6.14 Perform internal inspection of all control valves.	MSC.1/Circ.1432, par. 9.2.1	Crew	5-yearly	
		3.6.15 Flush all high expansion foam system piping with fresh water, drain and purge with air.	MSC.1/Circ.1432, par. 9.2.2			
		3.6.16 Check all nozzles to prove they are clear of debris.	MSC.1/Circ.1432, par. 9.2.3			
		3.6.17 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.	MSC.1/Circ.1432, par. 9.2.4			
3.7	Water mist, water spray and sprinkler systems	3.7.1 Verify that all control panel indicators and alarms are functional.	MSC.1/Circ.1432, par. 4.7.1	Crew	Weekly	

Table 2.3 Fixed fire-fighting systems (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		3.7.2 Visually inspect pump unit and its fittings.	MSC.1/Circ.1432, par. 4.7.2	Crew	Weekly	
		3.7.3 Check the pump unit's valve positions if valves are not locked, as applicable.	MSC.1/Circ.1432, par. 4.7.3			
		3.7.4 Verify that all control, pump unit and section valves are in the proper open or closed position.	MSC.1/Circ.1432, par. 5.4.1	Crew	Monthly	
		3.7.5 Verify that sprinkler pressure tanks or other means have correct levels of water.	MSC.1/Circ.1432, par. 5.4.2			
		3.7.6 Test automatic starting arrangements on all system pumps so designed.	MSC.1/Circ.1432, par. 5.4.3			
		3.7.7 Verify that all standby pressure and air/gas pressure gauges are within the proper pressure ranges.	MSC.1/Circ.1432, par. 5.4.4			
		3.7.8 Test a selected sample of system section valves for flow and proper initiation of alarms.	MSC.1/Circ.1432, par. 5.4.5			The valves selected for testing shall be chosen to ensure that all valves are tested within a one-year period.
		3.7.9 Assess system water quality in the header tank and pump unit against the manufacturer's water quality guidelines.	MSC.1/Circ.1432, par. 6.5 (as amended by MSC.1/ Circ.1516)	Crew	Quarterly	
		3.7.10 Verify proper operation of all water mist, water-spray and sprinkler systems using the test valves for each section	MSC.1/Circ.1432, par. 7.5.1	Crew	Annually	
		3.7.11 Visually inspect all accessible components for proper condition.	MSC.1/Circ.1432, par. 7.5.2			

Table 2.3 Fixed fire-fighting systems (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		3.7.12 Externally examine all high pressure cylinders for evidence of damage or corrosion.	MSC.1/Circ.1432, par. 7.5.3	Crew	Annually	
		3.7.13 Check the hydro-static test date of all high pressure cylinders.	MSC.1/Circ.1432, par. 7.5.4			
		3.7.14 Functionally test all fixed system audible and visual alarms.	MSC.1/Circ.1432, par. 7.5.5			
		3.7.15 Flow test all pumps for proper pressure and capacity.	MSC.1/Circ.1432, par. 7.5.6			
		3.7.16 Test all antifreeze systems for adequate freeze protection.	MSC.1/Circ.1432, par. 7.5.7			
		3.7.17 Test all system cross connections to other sources of water supply for proper operation.	MSC.1/Circ.1432, par. 7.5.8	Crew + BKI (for blow test in roro spaces)	Annually	
		3.7.18 Verify that all pump relief valves, if provided, are properly set.	MSC.1/Circ.1432, par. 7.5.9			
		3.7.19 Examine all filters/ strainers to verify that they are free of debris and contamination.	MSC.1/Circ.1432, par. 7.5.10			
		3.7.20 Verify that all control/section valves are in the correct position.	MSC.1/Circ.1432, par. 7.5.11			
		3.7.21 Blow dry compressed air or nitrogen through the discharge piping of dry pipe systems, or otherwise confirm that the pipework and nozzles are clear of any obstructions.	MSC.1/Circ.1432, par. 7.5.12			This may require the removal of nozzles, if applicable. In ro-ro spaces blow test in the presence of BKI surveyor. Alternatively the record of the test by an approved service supplier shall be presented.

Table 2.3 Fixed fire-fighting systems (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		3.7.22 Test emergency power supply switchover, where applicable.	MSC.1/Circ.1432, par. 7.5.13	Crew	Annually	
		3.7.23 Visually inspect all sprinklers focusing in areas where sprinklers are subject to aggressive atmosphere (like saunas, spas, kitchen areas) and subject to physical damage (like luggage handling areas, gyms, play rooms, etc.) so that all sprinklers are inspected within one year. Sprinklers with obvious external damage, including paint, should be replaced.	MSC.1/Circ.1432, par.7.5.14 (as amended by MSC.1/Circ.1516)			Sprinklers with obvious external damage, including paint should not be included in the number of sprinklers tested
		3.7.24 Check for any changes that may affect the system, such as obstructions by ventilation ducts, pipes, etc.	MSC.1/Circ.1432, par. 7.5.15			
		3.7.25 Test a minimum of one section in each open head water mist system by flowing water through the nozzles.	MSC.1/Circ.1432, par. 7.5.16			The sections tested shall be chosen so that all sections are tested within a five-year period. Other test and inspections as per maker's recommendations and type approval certificate. Test or record of the test shall be presented to the attending surveyor.
		3.7.26 For automatic sprinkler systems of less than 5 years, test a minimum of two randomly selected sprinkler heads/nozzles of each type. If five years or more, test a minimum of 20 heads/nozzles (2 × 10 sections) for each type.	MSC.1/Circ.1432, .par. 7.5.17 (as amended by MSC.1/ Circ.1516)			Test in accordance with the basic and extended testing (when applicable) in MSC.1/Circ.1516 (see also annex A)

Table 2.3 Fixed fire-fighting systems (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
		3.7.27 During basic testing, and extended testing when applicable, of automatic sprinkler heads/nozzles as outlined in MSC.1/Circ.1432 par. 7.5.17 (as amended by MSC.1/ Circ.1516), water quality testing should be conducted in each corresponding piping section.	MSC.1/Circ.1432 par. 7.5.18 (as amended by MSC.1/ Circ.1516),			Should a tested sprinkler fail, assessing the corresponding water quality at that time would assist in determining the cause of failure.
		3.7.28 Flush all ro-ro deck deluge system piping with water, drain and purge with air.	MSC.1/Circ.1432, par. 9.3.1	Crew or Service supplier	5-yearly	For ro-ro spaces in passenger ships, flushing of distribution pipes shall be carried out concurrently with class renewal.
		3.7.29 Perform internal inspection of all control/section valves. Water quality testing should be conducted in all corresponding piping sections, if not previously tested as outlined in MSC.1/Circ.1432 par. 7.5.18 (as amended by MSC.1/ Circ.1516) within the last five years.	MSC.1/Circ.1432, par. 9.3.2 (as amended by MSC.1/ Circ.1516)			
		3.7.30 Check condition of any batteries, or renew in accordance with manufacturer's recommendations.	MSC.1/Circ.1432, par. 9.3.3			
		3.7.31 For each section where the water is refilled after being drained or flushed, water quality should meet manufacturer's guidelines. Testing of the renewed water quality should be conducted and recorded as a new baseline reference to assist future water quality monitoring for each corresponding section.	MSC.1/Circ.1432 par. 9.3.4 (as amended by MSC.1/ Circ.1516)	Service supplier	5-yearly	
		3.7.32 Perform hydrostatic test and internal examination for gas and water pressure cylinders.	MSC.1/Circ.1432, par. 10.2	Service supplier	10-yearly	

Table 2.3 Fixed fire-fighting systems (continued)

No.	Equipment	Requirement	Regulation	By	Interval	Remark
3.8	Fixed local- application fire-extinguishing system	3.8.1 Fixed local-application fire- extinguishing system for engine rooms Tests and inspections as per maker's recommendation.	SOLAS II-2/10.5.6	Crew	As per maker's instructions	Competent crew member (with an advanced fire-fighting training course) or person trained in the maintenance of such system or as per maker's instructions
		3.8.2 Fixed local-application fire- extinguishing system for engine rooms full flow test of minimum one section and spot check of fire detection/automatic release system shall be carried out.	SOLAS II-2/10.5.6	(Crew or Service supplier) + BKI	Annually (For Passenger ships) 5-yearly (for Cargo ships)	Automatic release is not applicable for continuously manned engine rooms

D. Radio and navigational equipment

These list of safety Equipment and their maintenance requirements apply for all ship unless otherwise specified in the table.

Table 2.4 Radio and navigational equipment

No	Equipment	Requirement	Regulation	By	Interval	Remark
4.1	The automatic identification system (AIS)	4.1.1 Testing	SOLAS V/18.9 Guidance for Code and Convention Interpretation (Pt.1, Vol.Y) Sec.11, SC279	Service supplier	Annually	Test report shall be retained on board the ship. The test shall be carried out within the time window for annual/ periodical/renewal survey (before or during the survey).
4.2	Radio battery	4.2.1 Checking	SOLAS IV/13.6.2	Service supplier	Annually	
4.3	Satellite emergency position-indicating radio beacons (EPIRBs)	4.3.1 Testing according to MSC.1/ Circ.1040/Rev.1.	SOLAS IV/15.9.1 Guidance for Code and Convention Interpretation (Pt.1, Vol.Y) Sec.11, SC279	Service supplier	Annually	The test shall be carried out within the time window for annual/ periodical/renewal survey (before or during the survey).
		4.3.2 Testing according to MSC/ Circ.1039.	SOLAS IV/15.9.2 Guidance for Code and Convention Interpretation (Pt.1, Vol.V) Sec.11. SC279	Service supplier (Shore-based maintenance)	5-yearly	Certificate of compliance or test report shall be issued. The test shall be carried out within the time window for annual/ periodical/renewal survey (before or during the survey).
4.4	Standard magnetic compass	4.4.1 Determination of magnetic compass error	STCW Code/Sec. A-VIII/2.34.2	Crew	Once a watch	
		4.4.2 Adjustment, incl. curve of residual deviation	Flag state requirements	Individual flag state requirements	Individual flag state requirements	Table or curve of residual deviation to be available at all times and compass deviation book to be properly maintained, will be checked annually during safety equipment surveys. Res.A. 1140 (31), item (EA) 1.2.1.33

Table 2.4 Radio and navigational equipment (continued)

No	Equipment	Requirement	Regulation	By	Interval	Remark
4.5	Steering gear	4.5.1 Testing	SOLAS V/26.1	Crew	12 hours before departure	
4.6	Voyage data recorder (VDR)	4.6.1 Testing	SOLAS V/18.8 Guidance for Code and Convention Interpretation (Pt.1, Vol.Y) Sec.11. SC279	Service supplier	Annually	Certificate of compliance and maintenance report shall be retained on board the ship. The test shall be carried out within the time window for annual/ periodical/ renewal survey (before or during the survey).

E. Other

These list of safety equipment and their maintenance requirements apply for all ship unless otherwise specified in the table.

Table 2.5 Other

No.	Equipment	Requirement	Regulation	By	Interval	Remark
5.1	Lightweight	5.1.1 Survey (for passenger ships)	SOLAS II-1/5.5 IS Code VIII/8.1.5	Crew + BKI	5-yearly	
5.2	Low-location lighting systems	5.2.1 Verify that the low-location lighting systems are functional by switching off normal lighting in selected locations (for passenger ships)	MSC.1/Circ.1432, par. 4.6	Crew	Weekly	
		5.2.2 Test the luminance in accordance with the procedures in resolution A.752(18) (for passenger ships)	MSC.1/Circ.1432, par. 9.5 Res.A.752(18)	Service supplier	5-yearly	
5.3	Medical oxygen	5.3.1 Replacement of oxygen.	National pharmaceutical regulations, if applicable	Maker	According to national pharmaceutical regulations or maker's expiry date	BKI Recommendation
		5.3.2 Hydrostatic test and internal inspection of cylinders.	Flag state, if applicable	Service supplier	As per maker's instructions and/or international standards (e.g. ISO, EN) and/or flag's requirements	Scope of inspection as specified by the flag administration and/or recognized international standards (e.g. ISO, EN) are to be observed.
5.4	Portable atmosphere testing instrument for enclosed space	5.4.1 Calibration	SOLAS XI-1/7 MSC.1/Circ. 1561	Crew Service supplier	As per manufacturer's instructions	Calibrated on board or ashore in accordance with the manufacturer's instructions. The preoperational accuracy tests are not regarded as calibration.

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Annex A Explanation according to MSC.1/Circ.1432, .par. 7.5.17 (as amended by MSC.1/ Circ.1516)

For basic testing of automatic sprinklers and automatic water mist nozzles, see Fig. A.1 below:

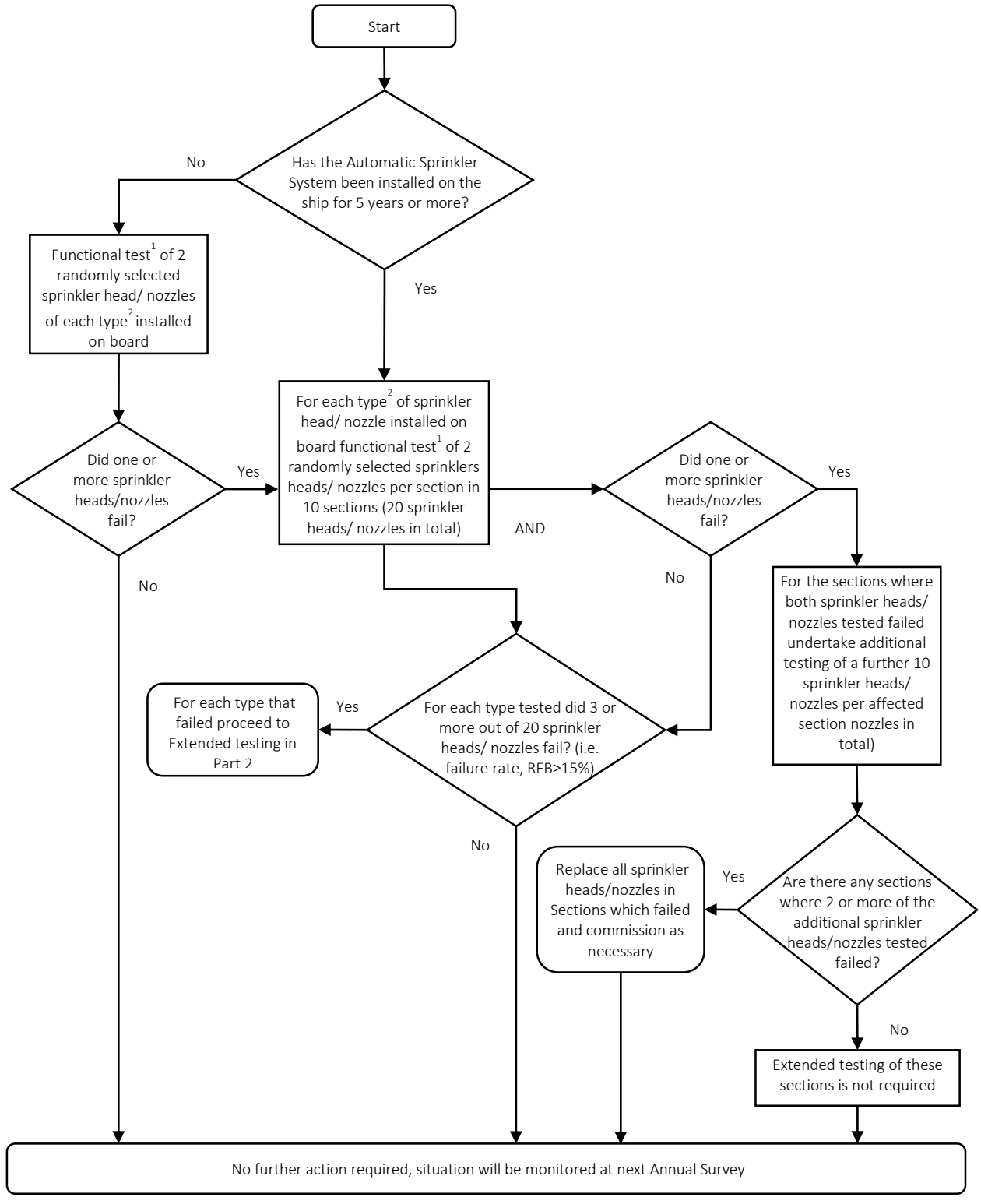

Fig.A.1 Flowchart of basic testing

For extended testing of automatic sprinklers and automatic water mist nozzles, see Fig. A.2 below:

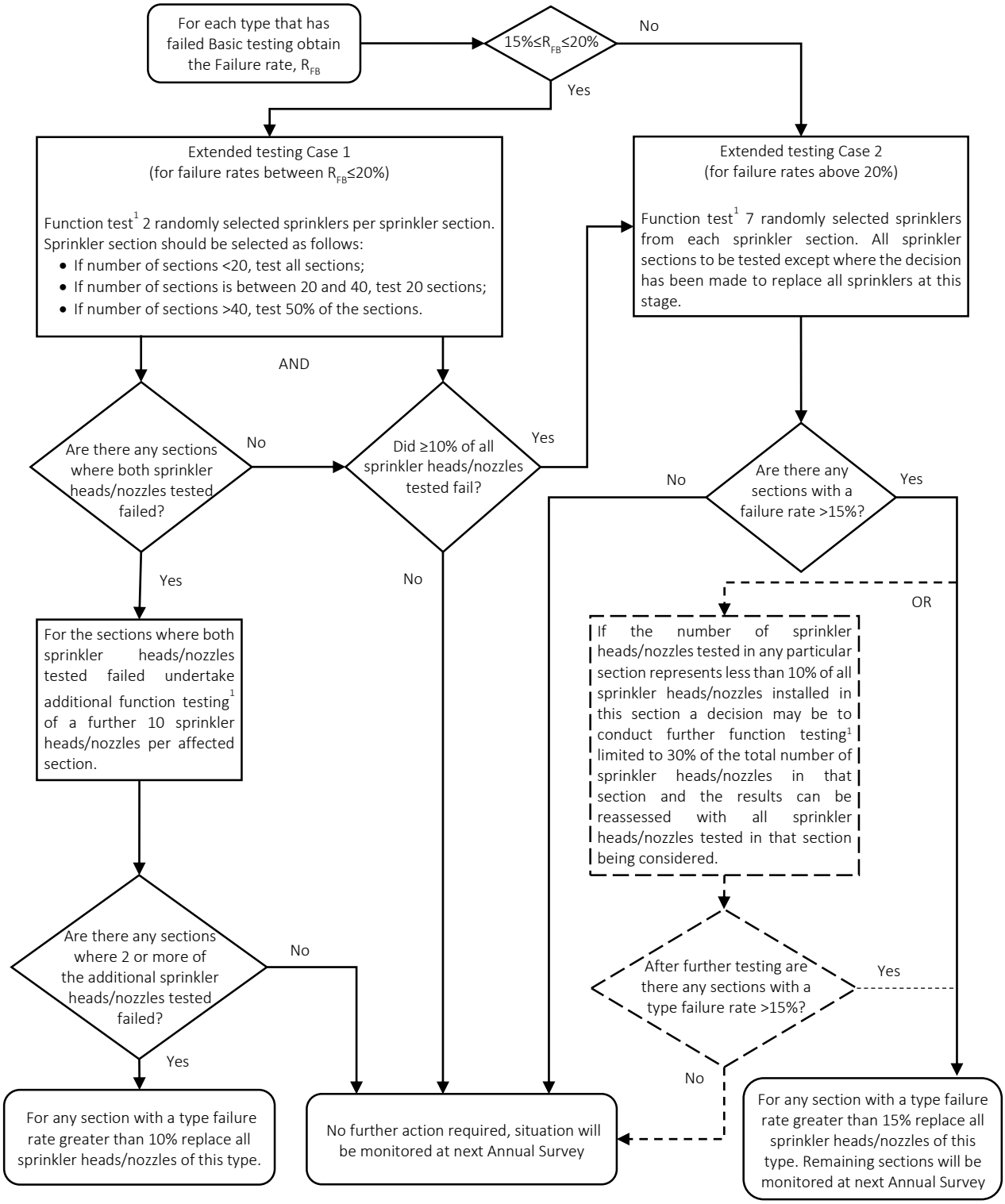

Fig.A.2 Flowchart of extended testing

Notes to Figs. A.1 and. A.2:

1. *Functional test* is defined as a test that demonstrates the operation and flow of water from sprinkler head/nozzle.
2. *Type* is defined as each different manufacturer model of sprinkler head/nozzle.
3. *Static/standby pressure* is defined as the constant pressure maintained in the system at all times prior to activation.
4. All testing should be carried out at static/standby pressure.
5. *Failure rate* (R_{FB}) is the number of sprinkler heads/nozzles to fail testing divided by test sample size multiplied by 100.