

Dolski Rejestr Statków

RULES FOR STATUTORY SURVEY OF SEA-GOING SHIPS

PART VIII FIRE-FIGHTING EQUIPMENT AND ESCAPE EQUIPMENT

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Part VIII – Fire-fighting Equipment and Escape Equipment – January 2017, of the *Statutory Rules for Sea-going Ships* was approved by PRS Executive Board on 7 December 2016 and enters into force on 1 January 2017.

The requirements of *Part VIII – Fire-fighting Equipment and Escape Equipment* apply to all sea-going ships flying the Polish flag on which PRS performs survey and statutory services as recognised organisation on behalf of Flag Administrations.

With regard to sea-going ships flying other flag than Polish on which PRS performs survey and statutory services, this *Part VIII* may be used as recommendations and guidelines unless the Flag state Administration gives it the status of the rules.

This *Part VIII* replaces the *Rules for Construction and Testing of Portable Fire-fighting Equipment, 2009*.

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1 GENERAL

1.1 Application

1.1.1 This *Part VIII – Fire-fighting Equipment and Escape Equipment*, of the *Statutory Rules for Seagoing Ships* (hereinafter referred to as the *Rules*) applies to fire-fighting equipment, listed below, used in ships flying the Polish Flag:

- portable and mobile fire extinguishers;
- portable foam applicators;
- fire-fighter’s outfit;
- chemicals resisting clothing;
- emergency escape breathing devices;
- instruments for measuring oxygen and flammable vapour concentration;
- fire hoses;
- fire hose nozzles and air-foam nozzles;
- fire blankets;
- crowbars and fire axes;
- international shore connections.

1.1.2 With regard to ships flying other flag than Polish on which PRS performs survey and statutory services, this *Part VIII* may be used as recommendations and guidelines.

1.1.3 The requirements for fire-fighting equipment and escape equipment specified in this *Part VIII* reflect the requirements of *SOLAS 74*, as further amended, and the requirements of *International Code for Fire Safety Systems (FSS Code)*.

1.2 Definitions

Definitions of general terminology used in the *Rules* are included in *Part I – Survey Regulations*.

For the purpose of *Part VIII* the following definitions are introduced additionally:

Carbon dioxide – extinguishing medium in the form of liquefied CO₂.

Escape equipment – equipment used only for escape from a compartment that has a hazardous atmosphere.

Extinguisher service duration – period of time when an extinguishing medium is continuously released through the wide open valve, exclusive of the time of releasing the remaining propellant gas.

Extinguishing effectiveness – capability of the extinguisher to put out the test fire within a certain time limit.

Extinguishing medium – substance, mixture or chemical compounds in the form of gas, liquid or solid designed for fire extinguishing.

Extinguishing powder – extinguishing medium consisting of very fine solid particles of chemicals.

Fire extinguisher – device containing an extinguishing medium which – as a result of the internal pressure – may be discharged and directed at the fire. The internal pressure may be the permanent pressure inside the body containing the extinguishing medium or the pressure obtained as a result of the propellant gas release.

Fire extinguisher charge – mass or volume of the extinguishing medium contained in the extinguisher. Quantity of the water of foam extinguishers’ charge is usually given in litres whereas for other types of extinguishers – in kilograms.

Fire extinguishing equipment – extinguishing appliances for supplying an extinguishing medium to the fire scenes.

Fire fighting equipment – portable or mobile equipment for fire extinguishing or rescue operation and also special personal safety equipment.

Fire fighting kit – portable fire fighting device operated manually used to nip the fire in the bud.

Gas propellant – pressurised or liquefied gas of the pressure enabling the extinguishing medium discharge from the extinguisher.

Gas propellant cartridge – bottle containing pressurised gas propellant provided together with or installed inside some types of fire extinguishers.

Group of fires – definition of fire in respect of type of burning materials. Fires are divided into the following groups:

- group A – fires of solids, mainly organic ones, followed by glowing – besides other phenomena;
- group B – fires of inflammable liquids or fusible materials;
- group C – gas fires;
- group D – fires of metals and their alloys (e.g. magnesium, sodium, aluminium, etc.).

Mobile fire extinguisher – fire extinguisher so designed as to be transported and operated manually, of the total weight more than 20 kg. Mobile fire extinguisher is usually installed on wheels.

Personal safety equipment – equipment designed for personal protection and safeguarding the persons participating in the fire-fighting action.

Portable fire extinguisher – fire extinguisher designed to be carried and operated manually, of the total weight – when ready to be used – not more than 20 kg.

Test fire – fire started for the research purposes for which the following conditions have been set: type, quantity of a combustible material, its positioning on the test stand, ambient conditions and the ignition method.

1.3 Scope of Survey

1.3.1 General principles for the survey, types and scope of surveys are specified in *Part I – Survey Regulations*.

1.3.2 For ships of gross tonnage 500 and above and for all passenger ships engaged on international voyages which are flying an EU member state flag, fire-fighting equipment as well as escape equipment specified in this paragraph is subject to the conformity assessment/certification procedure for compliance with *Directive of European Parliament and Council 2014/90/EU of 23 July 2014 on Marine Equipment*, as further amended, also referred to as *MED*:

- portable and mobile fire extinguishers;
- fire-fighter’s outfit: protective clothing;
- fire-fighter’s outfit: gloves;
- fire-fighter’s outfit: boots;
- fire-fighter’s outfit: helmet;
- fire-fighter’s outfit: lifeline;
- self-contained compressed-air-operated breathing apparatus;
- liquid chemicals resisting clothing;
- oxygen content gauges and inflammable gases’ detectors;
- emergency escape breathing devices;
- fire hoses.

Conformity with *MED* requirements is confirmed by the certificate of compliance issued by a notified body.

1.3.3 For ships of gross tonnage less than 500 and for all passenger ships engaged on international voyages which are flying the flag of other state than an EU member, fire-fighting equipment and escape equipment specified in paragraph 1.3.2 shall be type-approved by PRS (shall have a type approval certificate issued by PRS).

Instead of a type approval certificate, the above mentioned fire-fighting equipment and escape equipment may have the certificate of compliance with *MED*.

1.3.4 Portable foam applicator unit as well as fire hose nozzles and air-foam nozzles shall have a type approval certificate issued by PRS.

1.4 Technical Documentation for Fire-fighting Equipment and Escape Equipment

Technical documentation provided by the manufacturer to obtain a certificate of compliance with *MED* or type approval certificate shall include particulars concerning the construction, production and operation of the product enabling an assessment of its conformity with the requirements of the relevant documents and standards. In particular, it shall include:

- technical characteristics including operating parameters;
- list of materials used;
- design (workshop) drawings of the product;
- results of the design calculations;
- installation, operation and maintenance instructions;
- report on tests performed by an independent laboratory.

Where applicable, the documentation shall also include:

- test certificates for materials and components of the particular product, and for fire extinguishers – additionally extinguishing medium type approval certificate;
- quality assurance certificates concerning production, control and monitoring of the product;
- other documents facilitating product assessment.

2 REQUIREMENTS FOR CONSTRUCTION AND TESTS OF FIRE-FIGHTING EQUIPMENT AND ESCAPE EQUIPMENT

2.1 General Requirements

2.1.1 In fire-fighting equipment, the use of a fire-extinguishing medium which either itself or under expected conditions of use releases toxic gases, liquids or other substances in such quantities as to endanger persons or environment is not permitted.

2.1.2 Fire-fighting equipment as well as escape equipment shall be permanently and clearly marked. The marking shall include: manufacturer's name and serial number, date of manufacture as well as technical characteristics. Additionally, marking of the equipment certified for conformity with *MED* shall include the conformity symbol, the so called "wheelmark" and the identification number of the notified certification body as well as the last two figures of the year when the marking was placed.

2.1.3 Fire-fighting equipment as well as escape equipment whose directions for use may be confusing, such as fire extinguishers and emergency escape breathing devices, shall be provided with brief instructions or diagrams clearly illustrating their use printed or stuck on such equipment.

2.2 Portable and Mobile Fire Extinguishers

2.2.1 The requirements concerning construction, marking and tests of portable fire extinguishers are specified in the following standards:

PN-EN 3-7 – Portable fire extinguishers. Characteristics, performance requirements and test methods.

PN-EN 3-10 – Portable fire extinguishers. Provisions for attestation of conformity of portable fire extinguishers in accordance with EN 3 part 1 to part 5.

2.2.2 Mobile fire extinguishers shall fulfil the requirements of standard PN-EN 1866-1.

2.2.3 Construction of a fire extinguisher shall enable its immediate activation and convenient operability.

2.2.4 Portable fire extinguishers shall be provided with devices or lead-sealed cotter pin to indicate that they have been used and is likely to be empty.

2.2.5 In the design of fire extinguisher components, selection of materials and determination of maximum filling ratios, consideration shall be given to the temperature extremes to which extinguishers may be exposed on board ships and the required operating temperature ranges.

2.2.6 Materials used for external parts of fire extinguisher exposed to weather shall be corrosion-resistant or appropriately protected from corrosion, particularly that of electrochemical nature.

2.2.7 The body and all other parts of fire extinguishers subjected to internal pressure shall be pressure tested. The minimum test pressure shall be as follows:

- .1** 5.5 MPa or 2.7 times the normal working pressure, whichever is higher, for extinguishers with a service pressure not exceeding 2.5 MPa;
- .2** 1.5 times the normal working pressure for extinguishers with a service pressure exceeding 2.5 MPa.

2.2.8 During the type-approval tests, fire extinguishers shall be subjected to inspection and fire-extinguishing capability tests in accordance with the requirements specified in relevant standards,

2.2.9 Fire extinguishers resistant to low temperatures shall be cooled down to the temperature specified by the manufacturer, before the fire-extinguishing capability test.

Performance test shall be conducted at sub-zero ambient temperatures.

2.2.10 The test report shall contain the following information:

- body capacity;
- type and quantity of extinguishing medium;
- technical characteristics;
- other data, such as date of manufacture, serial number, etc.

2.3 Portable Foam Applicator Unit

2.3.1 Portable foam applicator unit shall consist of a foam nozzle, either of an inductor type or in combination with a separate inductor, capable of being connected to the fire main by a fire hose, together with a portable tank containing at least 20 l of foam-making liquid and one spare tank of foam concentrate of the same capacity.

2.3.2 Air-foam nozzle and inductor shall be capable of producing effective foam suitable for extinguishing an oil fire, at a foam solution flow rate of at least 200 l/min at the nominal pressure in the fire main.

2.3.3 Portable foam applicator unit shall be designed to withstand clogging, ambient temperature changes, vibration, humidity, shock, impact and corrosion normally encountered on ships.

2.3.4 Foam concentrate in the portable foam applicator unit and in the spare charge shall be type-approved. The concentrate is subject to testing in accordance with the guidelines specified by IMO circular [MSC.1/Circ.1312](#).

2.3.5 Nozzle attachment shall be provided with a proper connection for a shipborne fire hose in accordance with standard PN-M-51038 or other equivalent international standards.

2.3.6 Type tests of portable foam applicator units shall include:

- tightness tests of the tank, pipes and connections;
- performance test including the check of operating parameters, i.e. foam production/supply capacity.

2.4 Fire-fighter's Outfit

Fire-fighter's outfit shall consist of personal equipment and self-contained compressed-air-operated breathing apparatus.

Personal equipment shall comprise:

- protective clothing;
- gloves and boots;
- fire-fighter's helmet;
- lifeline;

- fireman's belt with snap fastener and fireman's axe in a sheath;
- electric safety lamp (torch).

2.4.1 Protective Clothing

2.4.1.1 Protective clothing shall be made of material to protect the fire-fighter's/rescuer's skin from the heat radiating from the fire and from burns and scalding by steam. The outer surface of the protective clothing shall be water-resistant and non-absorbable. The clothing shall be so designed and made as to make its donning quick and easy and not to excessively restrict movements of the person wearing such clothing.

2.4.1.2 Design, quality, tests and marking of protective clothing shall be in accordance with the following standards: PN-EN 469, [PN-EN ISO 11612](#), PN-EN 1486 and ISO 15538.

2.4.2 Gloves and Boots

2.4.2.1 Gloves and boots shall be made of rubber or other electrically non-conducting material providing effective protection against fire.

2.4.2.2 Design, quality, and tests of gloves shall be in accordance with the following standards:

- PN-EN 659 – for gloves;
- [PN-EN-ISO 20344](#), PN-EN-ISO 20345, and PN-EN 60903 – for boots.

2.4.3 Fire-fighter's Helmet

2.4.3.1 Fire-fighter's helmet so designed and made as to provide effective protection of the head and neck against impact and fire during fire-fighting.

2.4.3.2 Design, quality, tests and marking of the helmet shall be in accordance with standard PN-EN 443 or other equivalent international standards

2.4.4 Lifeline

Lifeline shall be fireproof and at least 30 m in length. It shall successfully pass an approval test by static load of 3.5 kN for 5 min without failure. The lifeline shall be capable of being attached by means of a snap-hook to the harness of the breathing apparatus or to a separate belt in order to prevent the breathing apparatus becoming detached when the lifeline is operated.

2.4.5 Fire-man's Belt

Design, quality, tests and marking of the fire-man's belt shall be in accordance with the relevant national standard or other equivalent international standards.

2.4.6 Snap Fastener

Snap fasteners shall be made and tested in accordance with standard PN-87/M-51503 or other equivalent international standards.

2.4.7 Fire-fighter's Axe

Fire-fighter's axe shall have a handle provided with adequate high-voltage insulation.

2.4.8 Electric Safety Lamp

Electric safety lamp shall be capable of functioning for at least 3 hours.

2.4.9 Breathing Apparatus

2.4.9.1 Breathing apparatus shall be a self-contained compressed-air-operated breathing apparatus, the volume of air in the cylinders being at least 1200 l or other self-contained breathing apparatus capable of functioning for at least 30 min.

2.4.9.2 Design, quality, tests and marking of apparatus shall be in accordance with the following standards: PN-EN 137, PN-EN 136.

2.5 Chemicals Resisting Clothing

2.5.1 Chemicals resisting clothing is intended for usage on ships carrying dangerous goods.

2.5.2 Chemicals resisting clothing shall be capable of protecting the rescuer's skin against liquids' chemical attack. The outer surface of the clothing shall be non-absorbable. The clothing shall be so designed and made so as to make its donning quick and easy and not to excessively restrict movements of the person wearing such clothing.

2.5.3 Design, quality, tests and marking of the clothing shall be in accordance with the following standards: PN-EN-ISO 6530, [PN-EN ISO 17491-3](#), [PN-EN 14605](#) and PN-EN 943.

2.6 Instruments for Measuring Oxygen and Flammable Vapour Concentration

Design, quality, tests and marking of instruments for measuring oxygen and flammable vapour concentration shall be in accordance with the following standards:

- PN-EN 50104 – for instruments for measuring oxygen concentration;
- PN-EN [60079-29-1](#) – for instruments for measuring flammable vapour concentration.

2.7 Fire Blanket

2.7.1 Design, quality, tests and marking of fire blankets shall be in accordance with standard PN-EN 1869 or other equivalent international standards.

2.7.2 Fire-extinguishing capability test of a fire blanket shall be performed by extinguishing a test fire twice. The test fire shall be arranged as follows: a steel vessel of the dimensions 1×1 m and the height of 0.3 m shall be filled with about 40 l of water and a mixture of 5 l of petrol and 5 l of oil fuel. After 60 seconds from ignition, the fire blanket shall be thrown onto the vessel. The fire shall stop within 40 seconds.

After the first extinguishing trial, the blanket shall show no cracks, visible crumbling of the fabric or other damage precluding its re-use.

2.8 Crowbar and Fire Axe

2.8.1 Design, quality, tests and marking of fire axes shall be in accordance with standard PN-85/M-51501 or other equivalent international standards.

2.8.2 Crowbar shall be made with of a steel bar with 25÷35 mm in diameter and its length shall not be less than 600 mm. The crowbar shall be painted red.

One end of a crowbar shall be sharpened and the other – flattened and bent.

2.9 Emergency Escape Breathing Device

2.9.1 Emergency escape breathing device shall be only used for escape from a compartment that has a hazardous atmosphere, dangerous to life and health.

2.9.2 Emergency escape breathing device shall consist of a full face piece or a hood and oxygen or air cylinder.

2.9.3 Full face piece shall form a complete seal around the eyes, nose and mouth.

2.9.4 Hood shall completely cover the head, neck and may cover portions of the shoulders.

2.9.5 Hood and a full face piece shall be made of flame-resistant materials and include a clear window for viewing.

2.9.6 Emergency escape breathing device shall have a service duration of at least 10 min.

2.9.7 Emergency escape breathing device shall be capable of being carried hands-free.

2.9.8 Design, quality, tests and marking of emergency escape breathing devices shall be in accordance with the following standards: PN-EN 13794, PN-EN 402:, PN-EN 1146.

Additionally, emergency escape breathing devices shall fulfil the requirements specified by IMO circular MSC/Circ.849.

2.10 Fire Hoses

2.10.1 Design, quality, tests and marking of fire hoses shall be in accordance with standard: PN-EN 14540.

2.10.2 Hose couplings shall be designed in accordance with standard PN-M-51031. The material for fire hose couplings shall be resistant to corrosion by marine atmosphere.

2.10.3 Fire hoses shall be of an approved non-perishable material under natural storage conditions.

2.11 Fire-hose Nozzles and Air-foam Nozzles

2.11.1 Nozzles shall be made of materials either resistant to the corrosion by marine atmosphere and an extinguishing medium or properly protected against corrosion.

2.11.2 Fire hose nozzles shall be of dual-purpose type, i.e. producing solid and dispersed water jet incorporating a shut-off.

2.11.3 Design, quality, tests and marking of the nozzles shall be in accordance with standard [PN-EN 13565-1](#) or other equivalent international standards.

2.11.4 Type tests of nozzles shall include:

- checking the conformity with the relevant standards;
- strength test (test pressure equal to 1.5 times the maximum, however not less than 1.6 MPa);
- tightness test of the shut-off at the working pressure (however not less than 1.0 MPa),
- performance test.

2.12 International Shore Connection

2.12.1 International shore connection is designed for the supply of water to the ship water fire main system when the ship is in port.

2.12.2 International shore connection shall have a flange with flat face on one side and – on the other side – the flange shall be permanently attached to a coupling that will fit the ship's hydrant and hose.

2.12.3 Dimensions of flanges for the international shore connection shall be in accordance with the following:

- outside diameter of flange – 178 mm;
- inside diameter of flange – 64 mm;
- bolt circle diameter – 132 mm;
- slots in flange: 4 holes 19 mm in diameter spaced equistantly on a bolt circle of the above diameter, slotted to the flange periphery;
- flange thickness: not less than 14.5 mm;
- bolts and nuts: 4 bolts, each of 16 mm in diameter and 50 mm in length, 4 nuts with washers.

2.12.4 International shore connection shall be made of steel or other equivalent material and shall be designed for 1.0 MPa service pressure.

3 PRINCIPLES FOR SELECTION OF FIRE-FIGHTING EQUIPMENT AND ESCAPE EQUIPMENT AND THEIR ARRANGEMENT ON BOARD

Ships – depending on their purpose, operating area and gross tonnage – shall be provided with fire-fighting equipment and escape equipment selected and arranged in accordance with the requirements specified in the *Rules for Classification and Construction of Sea-going Ships, Part V – Fire Protection* or in the *Rules for Classification and Construction of Small Sea-going Ships, Part V – Fire Protection*.

Arrangement of fire-fighting equipment and escape equipment on board the ship shall be indicated in the *Fire Control Plan*. The requirements concerning the *Fire Control Plan* are specified in the *Rules for Classification and Construction of Sea-going Ships, Part V – Fire Protection*, Chapter 1 or in the *Rules for Classification and Construction of Small Sea-going Ships, Part V – Fire Protection*.

4 PERIODICAL INSPECTIONS AND OVERHAULING OF FIRE-FIGHTING EQUIPMENT AND ESCAPE EQUIPMENT DURING SHIP'S SERVICE

4.1 General Requirements

4.1.1 During the ship's service, fire-fighting equipment and escape equipment are subject to inspections, overhauling and certification in the scope specified in Chapter 5 of *Part V – Fire Protection* of the *Rules for Classification and Construction of Sea-going Ships*.

4.1.2 Inspection and overhauling of the equipment shall be confirmed by an adhesive label / inscription/ stamp stating such particulars as overhauling company name, overhauling date and due date of the next overhauling as well as a signature of the person responsible.

4.2 Portable and Mobile Fire Extinguishers

4.2.1 The scope of periodical inspection and overhauling of fire extinguishers is specified in Table 4.2.1.

Table 4.2.1

ANNUAL INSPECTION	
1	2
Safety clips 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 the dust cover on the pressure indicating devices and relief valves are in place.
External examination	Inspect for corrosion, dents or damage which may affect 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 suitable for further use. Check any charge of the container. Check the charge expiry date and (if it has elapsed) replace the charge with a new one in accordance with the manufacturer's instructions.
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. Check the powder expiry date and (if it has elapsed) replace the powder with a new portion in accordance with the manufacturer's instructions.
Gas cartridge	Examine for damage and corrosion.
5-YEAR and 10-YEAR INSPECTION	
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 vent, as applicable. Check

	the operating and discharge control. Clean and lubricate as required.
1	2
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 the 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, foam and powder extinguishers	Replacement of charges in accordance with the manufacturer's instructions.
Re-assembly	Re-assemble the extinguisher in accordance with the manufacturer's instructions.
Maintenance label	Filling 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 extinguisher.

4.2.2 After an inspection and overhauling has been complete, the fire extinguisher shall be provided with a lead-sealed cotter pin to indicate whether it has been used and is likely to be empty.

List of amendments effective as of 1 January 2017

<i>Item</i>	<i>Title/Subject</i>	<i>Source</i>
1.3.2	EU MED Directive on Marine Equipment" updated	Dir. 2014/90/EU
2.2.1	PN-EN 3-3: deleted	Polish standard
2.3.4	IMO Circular updated	MSC.1/Circ.1312
2.4.2.1	PN-EN 531: deleted; superseded by PN-EN ISO 11612	Polish standard
2.4.2.2	PN-EN 344: deleted; superseded by PN-EN ISO 20344	Polish standard
2.5.3	PN-EN 463: deleted; superseded by PN-EN ISO 17491-3 PN-EN 466: deleted; superseded by PN EN 14605	Polish standard
2.6	PN-EN 463: deleted; superseded by PN-EN ISO 17491-3 PN-EN 466: deleted; superseded by PN EN 14605	Polish standard
2.11.3	PN-93/M-51068 deleted; superseded by PN-EN 13565-1.	Polish standard