

RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

Part R

Fire Protection, Detection and Extinction

Rules for the Survey and Construction of Steel Ships

Part R

2009

AMENDMENT NO.1

Guidance for the Survey and Construction of Steel Ships

Part R

2009

AMENDMENT NO.1

Rule No.19 / Notice No.18 15th April 2009

Resolved by Technical Committee on 4th February 2009

Approved by Board of Directors on 24th February 2009

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RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

RULES

Part R

**Fire Protection, Detection and
Extinction**

2009 AMENDMENT NO.1

Rule No.19 15th April 2009

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Rule No.19 15th April 2009

AMENDMENT TO THE RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

“Rules for the survey and construction of steel ships” has been partly amended as follows:

Part R FIRE PROTECTION, DETECTION AND EXTINCTION

Amendment 1-1

Chapter 10 FIRE FIGHTING

10.3 Portable Fire Extinguishers

10.3.2 Arrangement of Fire Extinguishers

Sub-paragraph 10.3.2-5 has been added as follows.

1 Accommodation spaces, service spaces and control stations are to be provided with portable fire extinguishers of appropriate types and in sufficient number to the satisfaction of the Society. Ships of 1,000 *gross tonnage* and upwards are to carry at least five portable fire extinguishers. Ships of less than 1,000 *gross tonnage* are to carry at least four portable fire extinguishers.

2 One of the portable fire extinguishers intended for use in any space is to be stowed near the entrance to that space.

3 Carbon dioxide fire extinguishers are not to be placed in accommodation spaces. In control stations and other spaces containing electrical or electronic equipment or appliances necessary for the safety of the ship, fire extinguishers are to be provided whose extinguishing media are neither electrically conductive nor harmful to the equipment and appliances.

4 Fire extinguishers are to be situated ready for use at easily visible places, which can be reached quickly and easily at any time in the event of a fire, and in such a way that their serviceability is not impaired by the weather, vibration or other external factors. Portable fire extinguishers are to be indicated whether they have been used or not used.

5 Two portable fire extinguishers which are to be as deemed appropriate by the Society are to be provided on weather deck within the cargo area for tankers.

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 15 April 2009.
2. Notwithstanding the amendments to the Rules, the current requirements may apply to ships for which the date of contract for construction is before the effective date.

Chapter 26 FIXED FOAM FIRE-EXTINGUISHING SYSTEMS

26.2 Engineering Specifications

Paragraph 26.2.2 has been amended as follows.

26.2.2 Fixed High-expansion Foam Fire-extinguishing Systems

1 Fixed high expansion foam fire-extinguishing systems provided with foam generators installed outside protected spaces are to comply with the following (1) and (2):

~~1~~(1) Quantity and performance of foam concentrates

- (~~a~~) The foam concentrates of high-expansion foam fire-extinguishing systems is to be approved by the Society.
- (~~b~~) Any required fixed high-expansion foam system in machinery spaces is to be capable of rapidly discharging through fixed discharge outlets a quantity of foam sufficient to fill the greatest space to be protected at a rate of at least 1 *m* in depth per minute. The quantity of foam-forming liquid available is to be sufficient to produce a volume of foam equal to five times the volume of the largest space to be protected. The expansion ratio of the foam is not to exceed 1,000 to 1.
- (~~c~~) The Society may permit alternative arrangements and discharge rates provided that it is satisfied that equivalent protection is achieved.

~~2~~(2) Installation requirements

- (~~a~~) Supply ducts for delivering foam, air intakes to the foam generator and the number of foam-producing units are to in the opinion of the Society be such as will provide effective foam production and distribution.
- (~~b~~) The arrangement of the foam generator delivery ducting is to be such that a fire in the protected space will not affect the foam generating equipment. If the foam generators are located adjacent to the protected space, foam delivery ducts are to be installed to allow at least 450 *mm* of separation between the generators and the protected space. The foam delivery ducts are to be constructed of steel having a thickness of not less than 5 *mm*. In addition, stainless steel dampers (single or multi-bladed) with a thickness of not less than 3 *mm* are to be installed at the openings in the boundary bulkheads or decks between the foam generators and the protected space. The dampers are to be automatically operated (electrically, pneumatically or hydraulically) by means of remote control of the foam generator related to them.
- (~~c~~) The foam generator, its sources of power supply, foam-forming liquid and means of controlling the system is to be readily accessible and simple to operate and is to be grouped in as few locations as possible at positions not likely to be cut off by a fire in the protected space.

2 Fixed high expansion foam fire-extinguishing systems provided with foam generators installed inside protected spaces are to be to the satisfaction of the Society.

EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 1 July 2009
2. Notwithstanding the amendments to the Rules, the current requirements may apply to ships for which the date of contract for construction is before the effective date.

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

Part R

**Fire Protection, Detection and
Extinction**

GUIDANCE

2008 AMENDMENT NO.1

Notice No.18 15th April 2009

Resolved by Technical Committee on 4th February 2009

AMENDMENT TO THE GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

“Guidance for the survey and construction of steel ships” has been partly amended as follows:

Part R FIRE PROTECTION, DETECTION AND EXTINCTION

Amendment 1-1

R9 CONTAINMENT OF FIRE

R9.2 Thermal and Structural Boundaries

R9.2.3 Bulkheads within Accommodation Area

Sub-paragraphs 7 to 13 have been renumbered to Sub-paragraphs 8 to 14 respectively, and Sub-paragraph 7 has been added as follows.

7 With respect to the requirements specified in Table R9.1, Part R of the Rules, “A” class bulkheads approved under the condition that the insulated side of such bulkheads are to be exposed spaces identified as fire hazards, may be used only for the following bulkheads (1) to (3). In such cases, insulation shall be fitted on the fire hazard side. However, such “A” class bulkheads may be used for bulkheads other than those given in (1) to (3) in cases where deemed appropriate by the Society.

- (1) “A-60” class bulkheads
 - (a) Accommodation spaces [Fire hazard side] and Control stations
 - (b) Machinery spaces of category A [Fire hazard side] and Control stations
 - (c) Machinery spaces of category A [Fire hazard side] and Corridors
 - (d) Machinery spaces of category A [Fire hazard side] and Stairways
 - (e) Machinery spaces of category A [Fire hazard side] and Service spaces (low risk)
 - (f) Service spaces (high risk) [Fire hazard side] and Control stations
- (2) “A-30” class bulkheads
 - Ro-ro and vehicle spaces [Fire hazard side] and Stairways
- (3) “A-15” class bulkheads
 - (a) Service spaces (low risk) [Fire hazard side] and Control stations
 - (b) Other machinery spaces [Fire hazard side] and Control stations

Paragraph R9.2.4 has been amended as follows.

R9.2.4 Tankers

1 With respect to the requirements of 9.2.4-2, Part R of the Rules, the provisions of -1 to -134 of R9.2.3 are to be referred to.

2 With respect to the requirements specified in Table R9.3, Part R of the Rules, “A” class bulkheads approved under the condition that the insulated side of such bulkheads are to be exposed spaces identified as fire hazards, may be used only for the following bulkheads (1) to (2). In such

cases, insulation shall be fitted on the fire hazard side. However, such “A” class bulkheads may be used for bulkheads other than those given in (1) to (2) in cases where deemed appropriate by the Society.

(1) “A-60” class bulkheads

- (a) Accommodation spaces [Fire hazard side] and Control stations
- (b) Machinery spaces of category A [Fire hazard side] and Control stations
- (c) Machinery spaces of category A [Fire hazard side] and Corridors
- (d) Machinery spaces of category A [Fire hazard side] and Stairways
- (e) Machinery spaces of category A [Fire hazard side] and Service spaces (low risk)
- (f) Service spaces (high risk) [Fire hazard side] and Control stations

(2) “A-15” class bulkheads

- (a) Service spaces (low risk) [Fire hazard side] and Control stations
- (b) Other machinery spaces [Fire hazard side] and Control stations

23 With respect to the requirements specified in **9.2.4-3, Part R of the Rules**, thermal insulation of superstructures and deckhouses facing the cargo oil tanks are to be in accordance with the following requirements **(1) to (6)**:

- (1) The wording “whole of the portions facing cargo oil tanks and for 3 *m* aft of the front bulkhead” means the areas for 3 *m* as measured from the forward end of side walls of superstructures or deckhouses (See **Fig. R9.2.4-1**)
- (2) In the case of the arrangement as shown in **Fig. R9.2.4-2**, “A-60” class insulation is to be applied to the aft end bulkhead of deck store rooms and side walls of accommodation spaces and service spaces of 3 *m* from the fore end thereof where they form the external boundaries of accommodation spaces and service spaces.
- (3) “A-60” class insulation is to be in accordance with the requirements specified in **R9.7.2** of this Guidance.
- (4) Insulation for the front bulkhead is to be carried up to the underside of the deck of the navigation bridge.
- (5) The side walls of a wheelhouse having a structural arrangement unlikely to be exposed to flames in case of fire in way of cargo area (*e.g.*, the structural arrangement of a wheelhouse provided on the sponson deck) may not be provided with the insulation.
- (6) Penetrations of pipes, cable, etc. made at the exterior boundaries being required to be insulated to “A-60” class standard, are to comply with the provisions of **9.3.1, Part R of the Rules**.

R9.4 Protection of Openings in Fire Resisting Divisions

R9.4.1 Doors in Fire-resisting Divisions

Sub-paragraph -3 has been amended as follows.

3 With respect to the requirements of **9.4.1, Part R of the Rules**, access hatches to under deck spaces (for example, cargo spaces) from deckhouses, boatswain’s stores, etc. which are independently arranged away from a group of accommodation spaces may be weathertight. Access hatches to the under deck spaces from “other machinery spaces having little fire risk (See **R9.2.3-910**)” which are independently arranged away from a group of accommodation spaces, may also be weathertight.

R9.4.4 Fire Integrity for Watertight Doors

Sub-paragraph -2 has been amended as follows.

2 Notwithstanding the provisions of -1(2) above, for watertight doors which are independently arranged away from a group of accommodation spaces, packing for such doors need not be of non-combustible materials subject that spaces on both side of such doors are classified in the categories of “service spaces (low risk)” or “other machinery spaces having little fire risk (See R9.2.3-910)”.

R10 FIRE FIGHTING

R10.3 Portable Fire Extinguishers

R10.3.2 Arrangement of Fire Extinguishers

Sub-paragraph R10.3.2-3 has been amended as follows.

1 Portable fire extinguishers for accommodation spaces, service spaces and control stations required in 10.3.2-1, Part R of the Rules are to be, generally, arranged in accordance with Table R10.3.2-1.

2 In case where the central control station is arranged as shown in Fig. R7.5.1-1, at the entrance of the spaces which can be regarded as the service spaces (including the boundary between the space and a space which can be regarded as the navigation bridge), portable fire extinguishers are to be provided.

3 ~~The types and specific uses of fire extinguishers required in 10.3.2, Part R of the Rules are to be as given in Table R10.3.2-2.~~ These wording “portable fire extinguishers which are to be as deemed appropriate by the Society” specified in the provisions of 10.3.2-5, Part R of the Rules, refers to those extinguishers that correspond to the Class B ones specified in note (2) of Table R10.3.2-1 and are of sufficient capacity.

Table R10.3.2-1 has been amended as follows.

~~Table R10.3.2-1~~ Number of Portable Fire Extinguishers

Spaces	Number required
Corridors	1 for each 50 m of the corridor length or part thereof (in principle, at least 1 for each deck)
Radio room	1
Galley	1
Outside of the entrances to locker rooms or store rooms	1
Carpenter's shop	1

Table R10.3.2-1 Minimum Numbers and Distribution of Portable Fire Extinguishers in the Various Types of Spaces Onboard Ships

<u>Type of space⁽¹⁾</u>		<u>Minimum number of extinguishers</u>	<u>Class(es) of extinguisher(s)⁽²⁾</u>
<u>Accommodation spaces</u>	<u>Public spaces⁽³⁾</u>	<u>1 per 250m² of deck area or fraction thereof</u>	<u>A</u>
	<u>Corridors</u>	<u>Travel distance to extinguishers should not exceed 25m within each deck</u>	<u>A</u>
	<u>Stairway</u>	<u>0</u>	
	<u>Lavatories, cabins, offices, pantries, containing no cooking appliances</u>	<u>0</u>	
	<u>Hospital</u>	<u>1</u>	<u>A</u>
<u>Service spaces</u>	<u>Laundry drying rooms, pantries containing cooking appliances</u>	<u>1⁽⁴⁾</u>	<u>A or B</u>
	<u>Lockers and store rooms (having a deck area of 4m² or more), baggage rooms and workshops⁽³⁾ (not part of machinery spaces, galleys)</u>	<u>1⁽⁴⁾</u>	<u>B</u>
	<u>Galleys</u>	<u>1 class B and 1 Additional class F or K for galleys with deep fat fryers</u>	<u>B, F or K</u>
	<u>Lockers and store rooms(deck area is less than 4m²)</u>	<u>0</u>	
	<u>Other spaces in which flammable liquids are stowed</u>	<u>In accordance with 10.6.2, Part R of the Rules</u>	
<u>Control stations</u>	<u>Control stations (other than wheelhouse)</u>	<u>1⁽⁵⁾</u>	<u>A or C</u>
	<u>Wheelhouse</u>	<u>2, if the wheelhouse is less than 50m² only 1 extinguisher is required</u>	<u>A or C</u>

Notes:

- (1) Unless otherwise specified, one of portable fire extinguishers required is to be located at or near entrance and exits in the space. If a space is locked when unmanned, portable fire extinguishers required for that space may be kept inside or outside the space.
- (2) The types of portable fire extinguishers are classified below. However, with respect to the application of the requirements specified in R24.1.2, such classifications need not apply to extinguishers which have been deemed appropriate for use at certain locations in accordance with standards approved by the relevant Administration or organizations deemed appropriate by the Society.

Fire classifications

<u>International Organization for Standardization (ISO standard 3941)</u>	<u>National Fire Protection Association (NFPA 10)</u>
<u>Class A: Fire involving solid materials, usually of an organic nature, in which combustion normally takes places with the formation of glowing embers.</u>	<u>Class A: Fires in ordinary combustible materials such as wood, cloth, paper, rubber and many plastics.</u>
<u>Class B: Fires involving liquids or liquefiable solids</u>	<u>Class B: Fires in flammable liquids, oils, greases, tars, oil base paints, lacquers and flammable gases.</u>
<u>Class C: Fires involving gases.</u>	<u>Class C: Fires, which involve energized electrical equipment where the electrical non-conductivity of the extinguishing medium is of importance. (When</u>

	<u>electrical equipment is de-energized, extinguishers for class A or B fires may be used safely.)</u>
<u>Class D: Fires involving materials.</u>	<u>Class D: Fires in combustible metals such as magnesium, titanium, zirconium, sodium, lithium and potassium.</u>
<u>Class F: Fires involving cooking oils.</u>	<u>Class K: Fires involving cooking grease, fats and oils.</u>

- (3) It is recommended that the portable fire extinguishers except (1) above in public spaces and workshop be located at or near the main entrances and exits.
- (4) A portable fire extinguisher required for that small space placed outside or near the entrance to that space may also be considered as part of the requirement for the space in which it is located.
- (5) If the wheelhouse is adjacent with the chartroom and has a door giving direct access to chartroom, no additional fire extinguisher is required in the chart room.

Table R10.3.2-2 has been deleted as follows.

~~Table R10.3.2-2 Type and Specific Uses of Fire Extinguishers~~

Type of fire extinguisher		Specification		
		Ordinary fire	Oil fire	Electrical fire
Liquid fire extinguisher		*	-	-
Foam fire extinguisher		*	*	-
Carbon dioxide gas fire extinguisher		-	*	*
Dry powder fire extinguisher	Phosphate	*	*	*
	Others	-	*	*

R10.5 Fire-extinguishing Arrangements in Machinery Spaces

Paragraph R10.5.1 has been amended as follows.

R10.5.1 Machinery Spaces containing Oil-fired Boilers or Oil Fuel Units

1 With respect to the requirements specified in **10.5.1, Part R of the Rules**, the requirements of fire-extinguishing systems required for machinery spaces containing oil-fired boilers, oil fuel units or internal combustion engines are to be as given in **Table R10.5.1-1**. However, for the use of this table, oil-fired machinery other than boilers such as fired inert gas generators, incinerators and waste disposal units are to be considered the same as oil-fired boilers.

2 With respect to the requirements specified in **10.5.1-2, Part R of the Rules**, in addition to -1 above, portable fire extinguishers for machinery spaces of category A are, in general, to be arranged in accordance with **Table R10.5.1-2**.

~~3~~**3** In case where the rate of steam evaporation of a boilers converted into *kW*, the following formula may be applied:

$$F = 2.778 \times 10^{-4} G(i_1 - i_2)$$

F : output (*kW*)

G : actual rate of steam evaporation at designed pressure (*kg/hour*)

*i*₁ : specific enthalpy of dry saturated steam at designed pressure (*kJ/kg*)

*i*₂ : specific enthalpy of saturated water at feed water

~~3~~**4** The wording “approved foam fire extinguishers” and the wording “approved portable fire extinguishers” specified in **10.5.1, Part R of the Rules**, mean the fire extinguishers complying with

the requirements **Chapter 24, Part R of the Rules**. Types of fire extinguishers not specified in these provisions are to be in accordance with the provisions of **note (2) of Table R10.3.2-31** of this ~~Guidance~~ with respect to their purpose of use on a case-by-case basis.

45 With respect to the requirements specified in **10.5.1-2(2), Part R of the Rules**, a carbon dioxide gas fire extinguisher with a mass of 45 kg may be deemed equivalent to a foam fire extinguisher with a capacity of 135 litres in fire extinguishing efficiency. A carbon dioxide fire extinguisher with a mass of 16 kg or a powder fire extinguisher with a mass of 23 kg may be deemed equivalent to a foam fire extinguisher with a capacity of 45 litres in fire-extinguishing efficiency. In case where the carbon dioxide gas fire extinguishers provided in ships which are capable of discharging the carbon dioxide gas to all areas within the spaces of boiler rooms, etc. and the quantity of the carbon dioxide gas used exclusively for such purpose is not less than 16 kg, such fire-extinguishing arrangement may be deemed equivalent to a foam fire extinguisher with a capacity of 45 litres in fire-extinguishing efficiency.

56 The wording “each space in which a part of the oil fuel installation is situated” specified in **10.5.1-2(2), Part R of the Rules** means the space in which fuel oil transfer pumps or oil purifiers are provided or the space where an aggregate of valves of the fuel oil transfer line are provided among the spaces provided with the oil fuel installations.

67 With respect to the requirements of **10.5.1-2(2), Part R of the Rules**, in the room for domestic boilers of less than 175 kW, at least one approved foam type extinguisher of at least 45 litres capacity is to be provided.

Table R10.5.1-2 has been added as follows.

Table R10.5.1-2 Minimum Numbers and Distribution of Portable Fire Extinguishers in the Various Types of Spaces Onboard Ships

<u>Type of space⁽¹⁾</u>	<u>Minimum number of extinguishers</u>	<u>Class(es) of extinguisher(s)⁽²⁾</u>
<u>Central control station for propulsion machinery</u>	<u>1, and 1 additional extinguisher suitable for electrical fires when main switchboards are arranged in central control station</u>	<u>A and/or C</u>
<u>Vicinity of the main switchboards</u>	<u>2</u>	<u>C</u>
<u>Workshops⁽³⁾</u>	<u>1</u>	<u>A or B</u>
<u>Enclosed space with oil-fired inert gas generators, incinerators and waste disposal units</u>	<u>2</u>	<u>B</u>
<u>Separately enclosed room with fuel oil purifiers</u>	<u>0</u>	
<u>Periodically unattended Machinery spaces of category A</u>	<u>1 at each entrance⁽⁴⁾</u>	<u>B</u>

Notes:

- (1) Unless otherwise specified, one of portable fire extinguishers required is to be located at or near entrance and exits in the space. If a space is locked when unmanned, portable fire extinguishers required for that space may be kept inside or outside the space.
- (2) The types of portable fire extinguishers are to be in accordance with **notes (2) of table R10.3.2-1**.
- (3) It is recommended that the portable fire extinguishers except (1) above in workshop be located at or near the main entrances and exits.
- (4) A portable fire extinguisher required for that small space placed outside or near the entrance to that space may also be considered as part of the requirement for the space in which it is located.

R10.5.2 Machinery Spaces containing Internal Combustion Machinery

Sub-paragraph R10.5.2-1 has been amended as follows.

- 1** With respect to the requirements of **10.5.2, Part R of the Rules**, the provisions of **-1** to **-45** of **R10.5.1** of this Guidance are to be applied.
- 2** For “each such space” specified in **10.5.2-2(2), Part R of the Rules**, spaces to which persons normally have no access may be excluded.
- 3** The wording “the fuel and lubricating oil pressure systems” specified in **10.5.2-2(2), Part R of the Rules** means, for example, valves, strainers, etc. of the internal combustion engines, fuel oil transfer pumps, oil burning pumps, lubricating oil coolers, oil purifiers, reversing gears, reduction gears and hydraulic piping.

R10.5.3 Machinery Spaces containing Steam Turbines or Enclosed Steam Engines

Sub-paragraph R10.5.3-1 has been amended as follows.

- 1** With respect to the requirements of **10.5.3, Part R of the Rules**, the provisions of **-1** to **-45** of **R10.5.1** and **R10.5.2-2** of this Guidance are to be applied.
- 2** The wording “total output” specified in **10.5.3-1, Part R of the Rules** means the total aggregate of the maximum continuous power output of each engine.

Paragraph R10.5.4 has been amended as follows.

R10.5.4 Other Machinery Spaces

- 1** In the following spaces, where are deemed as spaces “where a fire hazard exists” specified in **10.5.4, Part R of the Rules** by the Society, at least one approved portable fire extinguisher is to be provided. And, the type of portable fire extinguisher has to correspond to the Class B or C ones specified in note (2) of Table R10.3.2-1.
- (1) Spaces containing forced lubricating oil systems or hydraulic oil systems, fuel oil stations and other spaces where an oil-fire hazard may exist (except the spaces specified in (2) below).
- (2) Spaces containing refrigerating machinery, ventilation machinery (except those of small capacity and dedicated for a single duct), air conditioning machinery or other spaces where an electrical fire hazard may exist.
- (3) Workshops forming part of machinery spaces
- 2** For the fire extinguishers specified in **-1** above, the provisions of **R10.5.1-34** of this Guidance is to be applied.
- 3** With respect to the requirements of -1 above, Part R of the Rules, the portable fire extinguishers required is to be located at or near entrance and exits in the space. If a space is locked when unmanned, portable fire extinguishers required for that space may be kept inside or outside the space.

R10.9 Protection of Cargo Pump Room

Paragraph R10.9.3 has been added as follows.

R10.9.3 Portable Fire Extinguishers

With respect to the requirements given in 10.9.3, Part R of the Rules, the type of portable fire extinguisher has to correspond to the Class B ones specified in note (2) of Table R10.3.2-1.

R13 MEANS OF ESCAPE

R13.4 Means of Escape from Machinery Spaces

Sub-paragraph -1 has been amended as follows.

R13.4.3 Escape from Machinery Spaces other than those of Category A

1 With respect to the requirements of **13.4.3, Part R of the Rules**, only one set of means of escape may be provided for the spaces which are regarded as those having little or no fire risk specified in **R9.2.3-910**. In this case, the escape route is not to pass through machinery spaces of category A and is to be independent of watertight doors. Where a shaft tunnel is provided, an escape route is to be provided at the aft end of the shaft tunnel. (See **Fig. R13.4.3-1**)

R18 HELICOPTER FACILITIES

R18.5 Fire-fighting

Paragraph R18.5.1 has been amended as follows.

R18.5.1 Fire-fighting Appliances

1 With respect to the requirements of **18.5.1(1) and (2), Part R of the Rules**, in cases where a portable fire extinguisher is provided, its type has to correspond to the Class B ones specified in **note (2) of Table R10.3.2-1.**

~~**2**~~ Foam application systems specified in **18.5.1(3), Part R of the Rules** are to be stored to a safe space free from a fire of the helicopter deck.

~~**3**~~ In the requirements of **18.3.1(3)(a), Part R of the Rules**, the maximum distance of delivering foam from a monitor of a foam application system is, under the worst helicopter operable condition in which the ability of the monitor throw-in regarded as that of 75% in still air condition, to be capable of protecting area in all spaces of clear zone shown in **Fig. R18.2.1-1 to Fig. R18.2.1-3.**

~~**4**~~ For the principal agent of a type deemed as appropriate by the Society specified in **18.5.1(4), Part R of the Rules**, reference is to be made to “The International Civil Aviation Organization Airport Service Manual, part 1-Rescue and Fire fighting, Chapter 8-Extinguishing Agent Characteristics, Paragraph 8.15-Foam Specifications Table 8-1, Level B”.

R19 CARRIAGE OF DANGEROUS GOODS

R19.3 Special Requirements

Paragraph R19.3.7 has been amended as follows.

R19.3.7 Portable Fire Extinguishers

1 With respect to the requirements of 19.3.7, Part R of the Rules, Two portable fire extinguishers, each having a capacity of not less than 6 kg of dry powder or equivalent, are to be provided when dangerous goods are carried on the weather deck, in open ro-ro spaces and vehicle spaces, and in cargo spaces as appropriate. And, the type has to correspond to the Class B ones specified in note (2) of Table R10.3.2-1.

2 A portable carbon dioxide fire extinguisher having at least total capacity of 8.5 kg may be regarded as the equivalent portable fire extinguisher specified in 19.3.7, Part R of the Rules.

R20 PROTECTION OF VEHICLE AND RO-RO SPACES

R20.5 Fire-extinction

Paragraph R20.5.2 has been amended as follows.

R20.5.2 Portable Fire Extinguishers

1 With respect to the requirements of 20.5.2-1, Part R of the Rules, portable extinguishers need not be provided at ro-ro spaces etc. on weather decks, except the one positioned at each entrance to the spaces. Portable foam applicators also need not to be provided on weather decks.

2 With respect to the requirements of 20.5.2, Part R of the Rules, cargo holds, loaded with vehicles with fuel in their tanks and stowed in open or closed containers need not to be provided with the portable extinguishers, water-fog applicators and foam applicator unit.

3 With respect to the requirements given in 20.5.2, Part R of the Rules, the type of portable fire extinguisher has to correspond to the Class B ones specified in note (2) of Table R10.3.2-1.

~~**34**~~ Water fog applicators deemed as appropriate by the Society specified in 20.5.2-2(1), Part R of the Rules are to be in accordance with R10.2.3-1.

~~**45**~~ In the count of at least two portable foam applicator units required in 20.5.2-2(2), Part R of the Rules, the portable foam applicator units provided under other requirements may be included.

Annex R9.3.1 DETAILS OF PENETRATIONS

2 DETAILS

2.2 Penetration of Ducts

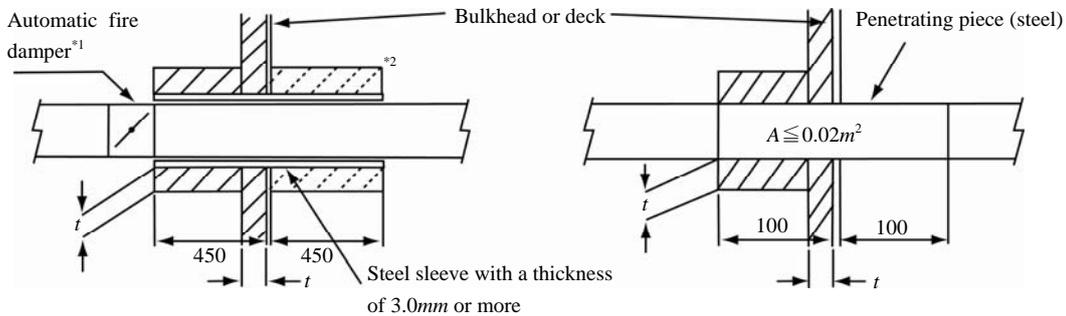
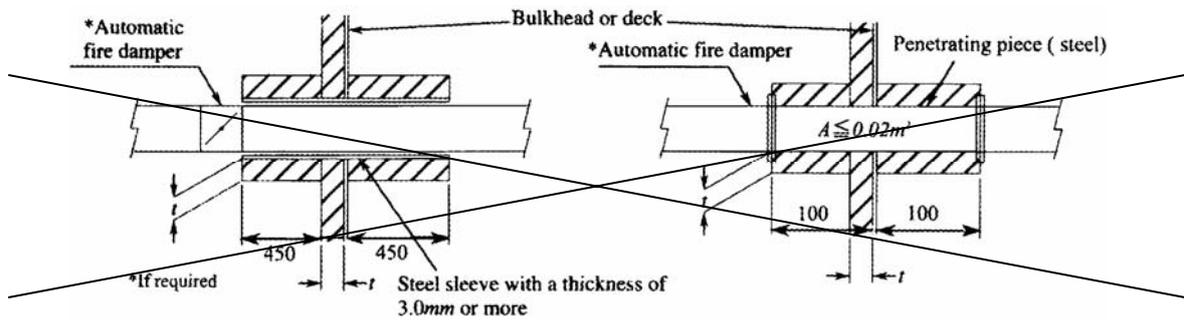
2.2.3 Prevention of Heat Transmission

1 Where a duct penetrates in a deck or a bulkhead which is required to be insulated, the insulation is to be carried past the penetration for a distance at least 450 mm. (See Fig. 2.2.3)

2 Notwithstanding -1 above, for a penetration of a duct made of material having low-heat conductivity character and with a free cross-sectional area not greater than 0.02 m^2 , the insulation may be terminated at the end of penetration piece or sleeve as required. (See Fig. 2.2.3)

Fig.2.2.3 has been amended as follows.

Fig. 2.2.3



*1 If required

*2 May be omitted except in cases where fire

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 15 April 2009.
2. Notwithstanding the amendments to the Guidance, the current requirements may apply to ships for which the date of contract for construction is before the effective date.

R26 FIXED FOAM FIRE-EXTINGUISHING SYSTEMS

R26.2 Engineering Specifications

Paragraph R26.2.2 has been amended as follows.

R26.2.2 Fixed High-expansion Foam Fire-extinguishing Systems

1 The wording “approved foam concentrates” specified in **26.2.2-1(1)(a), Part R of the Rules** means the one approved by organizations authorized by the Administration or deemed appropriate by the Society with reference to the “*Guidance for performance and testing criteria and surveys of high expansion foam concentrates for fire-extinguishing systems*” (MSC/Circ.670).

2 The foam generators required in **26.2.2-1(2), Part R of the Rules** are to comply with the following requirements:

- (1) To be of corrosion-resistant materials.
- (2) To be driven by an independent power. In case where the source of power is an internal combustion machinery, it is to be of a compression ignition type.
- (3) To be capable of generating foam within two minutes after starting.

3 Two or more foam-producing units specified in **-2** above which are distant from each other are, in principle, to be provided in case where the area of the protected space is not less than 400 m².

4 The means of remote control specified in **26.2.2-~~1~~(2)(b), Part R of the Rules** are also to be manually operated.

5 For the purpose of **26.2.2-2, Part R of the Rules**, fixed high-expansion foam fire-extinguishing systems using the air inside protected spaces are to comply with the “*GUIDELINES FOR HIGH EXPANSION FORM USING INSIDE AIR FOR THE PROTECTION OF MACHINERY SPACES AND CARGO PUMP- ROOMS*” (MSC.1/Circ.1271).

EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 1 July 2009
2. Notwithstanding the amendments to the Guidance, the current requirements may apply to ships for which the date of contract for construction is before the effective date.