

[^{F1}ANNEX I

SAFETY REQUIREMENTS FOR NEW AND EXISTING PASSENGER SHIPS ENGAGED ON DOMESTIC VOYAGES

Textual Amendments

- F1** Substituted by [Commission Directive 2010/36/EU of 1 June 2010 amending Directive 2009/45/EC of the European Parliament and of the Council on safety rules and standards for passenger ships \(Text with EEA relevance\)](#).

CHAPTER II-2

FIRE PROTECTION, FIRE DETECTION AND FIRE EXTINCTION

PART B

FIRE SAFETY MEASURES

[^{F29a} **Ventilation systems in ships**

CLASS B, C AND D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2018

- .1 *General*
- .1 Ventilation ducts, including single and double wall ducts, shall be of steel or an equivalent material, except for flexible bellows of short length not exceeding 600 mm used for connecting fans to the ducting in air-conditioning rooms. Unless expressly provided otherwise in paragraph .1.6, any other material used in the construction of ducts, including insulation, shall also be non-combustible. However, short ducts, not exceeding 2 m in length and with a free cross-sectional area (The term free cross-sectional area means, even in the case of a pre-insulated duct, the area calculated on the basis of the inner dimensions of the duct itself and not the insulation) not exceeding 0,02 m², need not be of steel or equivalent material, subject to the following conditions:
- .1 the ducts shall be made of non-combustible material which may be faced internally and externally with membranes having low flame-spread characteristics and, in each case, a calorific value not exceeding 45 MJ/m² of their surface area for the thickness used. The calorific value shall be calculated in accordance with the recommendations published by the International Organization for Standardization, in particular publication ISO 1716:2002, 'Reaction to the fire tests for building products — Determination of the heat of combustion'.;
- .2 the ducts are only used at the end of the ventilation device; and
- .3 the ducts are not situated less than 600 mm, measured along the duct, from an opening in an 'A' or 'B' class division, including continuous 'B' class ceiling.
- .2 The following arrangements shall be tested in accordance with the Fire Test Procedures Code:

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- .1 fire dampers, including their relevant means of operation, although the testing is not required for dampers located at the lower end of the duct in exhaust ducts for galley ranges, which must be of steel and capable of stopping the draught in the duct; and
- .2 duct penetrations through 'A' class divisions, although the testing is not required where steel sleeves are directly joined to ventilation ducts by means of riveted or screwed connections or by welding.
- .3 Fire dampers shall be easily accessible. Where they are placed behind ceilings or linings, those ceilings or linings shall be provided with an inspection hatch on which the identification number of the fire damper is marked. The fire damper identification number shall also be marked on any remote controls provided.
- .4 Ventilation ducts shall be provided with hatches for inspection and cleaning. The hatches shall be located near the fire dampers.
- .5 The main inlets and outlets of ventilation systems shall be capable of being closed from outside the spaces being ventilated. The means of closing shall be easily accessible as well as prominently and permanently marked and shall indicate the operating position of the closing device.
- .6 Combustible gaskets in flanged ventilation duct connections are not permitted within 600 mm of openings in 'A' or 'B' class divisions and in ducts required to be of 'A' class construction.
- .7 Ventilation openings or air balance ducts between two enclosed spaces shall not be provided except as permitted by Regulation II-2/B/7.7.

.2 *Arrangement of ducts*

- .1 The ventilation systems for machinery spaces of category A, vehicle spaces, Ro-Ro spaces, galleys, special category spaces and cargo spaces shall be separated from each other and from the ventilation systems serving other spaces. However, the galley ventilation systems in passenger ships carrying not more than 36 passengers need not be completely separated from other ventilation systems, but may be served by separate ducts from a ventilation unit serving other spaces. In such a case, an automatic fire damper shall be fitted in the galley ventilation duct near the ventilation unit.
- .2 Ducts provided for the ventilation of machinery spaces of category A, galleys, vehicle spaces, Ro-Ro spaces or special category spaces shall not pass through accommodation spaces, service spaces, or control stations unless they comply with paragraph .2.4.
- .3 Ducts provided for the ventilation of accommodation spaces, service spaces or control stations shall not pass through machinery spaces of category A, galleys, vehicle spaces, Ro-Ro spaces or special category spaces unless they comply with paragraph .2.4.
- .4 As permitted by paragraphs .2.2 and .2.3 ducts shall be either:
 - .1.1 constructed of steel having a thickness of at least 3 mm for ducts with a free cross-sectional area of less than 0,075 m², at least 4 mm for ducts with a free cross-sectional area of between 0,075 m² and 0,45 m², and at least 5 mm for ducts with a free cross-sectional area of over 0,45 m²;
 - .1.2 suitably supported and stiffened;
 - .1.3 fitted with automatic fire dampers close to the boundaries penetrated; and

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- .1.4 insulated to 'A-60' class standard from the boundaries of the spaces they serve to a point at least 5 m beyond each fire damper;
- or
- .2.1 constructed of steel in accordance with paragraphs .2.4.1.1 and .2.4.1.2; and
- .2.2 insulated to 'A-60' class standard throughout the spaces they pass through, except for ducts that pass through spaces of category (9) or (10) as defined in Regulation II-2/B/4.2.2.
- .5 For the purposes of paragraphs .2.4.1.4 and .2.4.2.2, ducts shall be insulated over their entire cross-sectional external surface. Ducts that are outside but adjacent to the specified space, and share one or more surfaces with it, shall be considered to pass through the specified space and shall be insulated over the surface they share with the space for a distance of 450 mm past the duct (Sketches of such arrangements are contained in the Unified Interpretations of SOLAS chapter II-2 (MSC.1/Circ.1276)).
- .6 Where it is necessary that a ventilation duct passes through a main vertical zone division, an automatic fire damper shall be fitted adjacent to the division. The damper shall also be capable of being manually closed from each side of the division. The control location shall be readily accessible and be clearly and prominently marked. The duct between the division and the damper shall be constructed of steel in accordance with paragraphs .2.4.1.1 and .2.4.1.2 and insulated to at least the same fire integrity as the division penetrated. The damper shall be fitted on at least one side of the division with a visible indicator showing the operating position of the damper.
- .3 *Details of fire dampers and duct penetrations*
 - .1 Ducts passing through 'A' class divisions shall meet the following requirements:
 - .1 where a thin plated duct with a free cross sectional area equal to, or less than, 0,02 m² passes through 'A' class divisions, the opening shall be fitted with a steel sheet sleeve having a thickness of at least 3 mm and a length of at least 200 mm, divided preferably into 100 mm on each side of a bulkhead or, in the case of a deck, wholly laid on the lower side of the decks penetrated;
 - .2 where ventilation ducts with a free cross-sectional area exceeding 0,02 m², but not more than 0,075 m², pass through 'A' class divisions, the openings shall be lined with steel sheet sleeves. The ducts and sleeves shall have a thickness of at least 3 mm and a length of at least 900 mm. When passing through bulkheads, this length shall be divided preferably into 450 mm on each side of the bulkhead. These ducts, or sleeves lining such ducts, shall be provided with fire insulation. The insulation shall have at least the same fire integrity as the division through which the duct passes; and
 - .3 automatic fire dampers shall be fitted in all ducts with a free cross-sectional area exceeding 0,075 m² that pass through 'A' class divisions. Each damper shall be fitted close to the division penetrated and the duct between the damper and the division penetrated shall be constructed of steel in accordance with paragraphs .2.4.2.1 and .2.4.2.2. The fire damper shall operate automatically, but shall also be capable of being closed manually from both sides of the division. The damper shall be fitted with a visible indicator which shows the operating position of the damper. Fire dampers are not required, however, where ducts pass through spaces surrounded by 'A' class divisions, without serving those spaces, provided those ducts have the same fire integrity as the divisions which they penetrate. A duct of cross-sectional area

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exceeding 0,075 m² shall not be divided into smaller ducts at the penetration of an 'A' class division and then recombined into the original duct once through the division to avoid installing the damper required by this provision.

.2 Ventilation ducts with a free cross-sectional area exceeding 0,02 m² passing through 'B' class bulkheads shall be lined with steel sheet sleeves of 900 mm in length, divided preferably into 450 mm on each side of the bulkheads unless the duct is of steel for this length.

.3 All fire dampers shall be capable of manual operation. The dampers shall have a direct mechanical means of release or, alternatively, be closed by electrical, hydraulic, or pneumatic operation. All dampers shall be manually operable from both sides of the division. Automatic fire dampers, including those capable of remote operation, shall have a failsafe mechanism that will close the damper in a fire even upon loss of electrical power or hydraulic or pneumatic pressure loss. Remotely operated fire dampers shall be capable of being reopened manually at the damper.

.4 *Ventilation systems for passenger ships carrying more than 36 passengers*

.1 In addition to the requirements in sections .1, .2 and .3, the ventilation system of a passenger ship carrying more than 36 passengers shall also meet the following requirements:

.1 In general, the ventilation fans shall be so arranged that the ducts reaching the various spaces remain within a main vertical zone.

.2 Stairway enclosures shall be served by an independent ventilation fan and duct system (exhaust and supply) which shall not serve any other spaces in the ventilation systems.

.3 A duct, irrespective of its cross-section, serving more than one 'tween-deck' accommodation space, service space or control station, shall be fitted, near the penetration of each deck of such spaces, with an automatic smoke damper that shall also be capable of being closed manually from the protected deck above the damper. Where a fan serves more than one 'tween-deck' space through separate ducts within a main vertical zone, whereby each one is dedicated to a single 'tween-deck' space, each duct shall be provided with a manually operated smoke damper fitted close to the fan.

.4 Vertical ducts shall, where necessary, be insulated as required by tables 4.1 and 4.2. Ducts shall be insulated as required for decks between the space they serve and the space being considered, as applicable.

.5 *Exhaust ducts from galley ranges*

.1 Requirements for passenger ships carrying more than 36 passengers

.1 In addition to the requirements in sections .1, .2 and .3, exhaust ducts from galley ranges shall be constructed in accordance with paragraphs .2.4.2.1 and .2.4.2.2 and insulated to 'A-60' class standard throughout accommodation spaces, service spaces, or control stations they pass through. They shall also be fitted with:

.1 a grease trap readily removable for cleaning unless an alternative approved grease removal system is fitted;

.2 a fire damper located in the lower end of the duct at the junction between the duct and the galley range hood which is automatically and remotely operated and, in addition, a remotely operated fire damper located in the upper end of the duct close to the outlet of the duct;

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- .3 a fixed means for extinguishing a fire within the duct. The fire extinguishing systems shall comply with the recommendations published by the International Organization for Standardization, in particular publication ISO 15371:2009 ‘Ships and marine technology — Fire-extinguishing systems for protection of galley cooking equipment’;
- .4 remote-control arrangements for shutting off the exhaust fans and supply fans, for operating the fire dampers mentioned in paragraph .5.1.1.2 and for operating the fire-extinguishing system, which shall be placed in a position outside the galley close to the entrance to the galley. Where a multi-branch system is installed, a remote means located with the above controls shall be provided to close all branches exhausting through the same main duct before an extinguishing medium is released into the system; and
- .5 suitably located hatches for inspection and cleaning, including one provided close to the exhaust fan and one fitted in the lower end where grease accumulates.
- .2 Exhaust ducts from ranges for cooking equipment installed on open decks shall conform to paragraph .5.1.1, as applicable, when passing through accommodation spaces or spaces containing combustible materials.
- .2 Requirements for passenger ships carrying not more than 36 passengers

When passing through accommodation spaces or spaces containing combustible materials, the exhaust ducts from galley ranges shall be constructed in accordance with paragraphs .2.4.1.1 and .2.4.1.2. Each exhaust duct shall be fitted with:

- .1 a grease trap readily removable for cleaning;
- .2 an automatically and remotely operated fire damper located in the lower end of the duct at the junction between the duct and the galley range hood and, in addition, a remotely operated fire damper in the upper end of the duct close to the outlet of the duct;
- .3 arrangements, operable from within the galley, for shutting off the exhaust and supply fans; and
- .4 fixed means for extinguishing a fire within the duct.
- .6 *Ventilation rooms serving machinery spaces of category A containing internal combustion machinery*
 - .1 Where a ventilation room serves only such an adjacent machinery space and there is no fire division between the ventilation room and the machinery space, the means for closing the ventilation duct or ducts serving the machinery space shall be located outside of the ventilation room and machinery space.
 - .2 Where a ventilation room serves such a machinery space as well as other spaces and is separated from the machinery space by a ‘A-0’ class division, including penetrations, the means for closing the ventilation duct or ducts for the machinery space can be located in the ventilation room.

[^{X1}.7 *Ventilation systems for laundries in passenger ships carrying more than 36 passengers*

Exhaust ducts from laundries and drying rooms of category (13) spaces as defined in Regulation II-2/B/4.2.2 shall be fitted with:]

- .1 filters readily removable for cleaning purposes;

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- .2 a fire damper located in the lower end of the duct which is automatically and remotely operated;
- .3 remote-control arrangements for shutting off the exhaust fans and supply fans from within the space and for operating the fire damper mentioned in paragraph .7.2; and
- .4 suitably located hatches for inspection and cleaning.]]

Editorial Information

- X1** Substituted by [Corrigendum to Commission Directive \(EU\) 2016/844 of 27 May 2016 amending Directive 2009/45/EC of the European Parliament and of the Council on safety rules and standards for passenger ships \(Official Journal of the European Union L 141 of 28 May 2016\)](#).

Textual Amendments

- F2** Inserted by [Commission Directive \(EU\) 2016/844 of 27 May 2016 amending Directive 2009/45/EC of the European Parliament and of the Council on safety rules and standards for passenger ships \(Text with EEA relevance\)](#).