Note verbale 027 and Fire Protection for the Ventilation Duct Penetrations

Amended Rules and Guidance

Rules for the Survey and Construction of Steel Ships Part R
Guidance for the Survey and Construction of Steel Ships Part R

Reason for Amendment

Requirements related to the fire protection for the ventilation duct penetrations are specified in SOLAS and various IMO circulars and these requirements have already been incorporated into Chapter 9 of Part R of the NK Rules as well as Part R of the Guidance.

When inquiries or requests from relevant industry members about the clarity (or lack thereof) of its requirements and their application are received, the Society, in principle, reviews the requirements in question to determine if any action need be taken. The Society will also submit a request for clarification to IACS or the relevant IMO sub-committee if it deems such a thing to be necessary.

At the 7th Session of Sub-Committee on Ship System and Equipment sub-committee (SSE7) held in March 2020, IACS proposed to clarify the fire protection required for the ventilation duct between automatic fire dumper and the “A” class division for ventilation ducts with free cross-sectional areas of over 0.075 m^2. As a result of the discussion, SOLAS was revised as Note verbale 027.

In addition, at the SSE8 held in March 2022, an unified interpretation about the fire protection required for ventilation ducts passing through “A” class divisions and “B” class divisions was agreed upon and approved at the 106th Session of the IMO’s Maritime Safety Committee (MSC106) as MSC.1/Circ.1655.

Accordingly, all relevant requirements were amended based on Note verbale 027 and the unified interpretation approved at MSC.1/Circ.1655.

Outline of Amendment

Amended the requirements for the arrangement of insulation at duct penetrations.

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

Part R FIRE PROTECTION, DETECTION AND EXTINCTION

Chapter 9 CONTAINMENT OF FIRE

9.7 Ventilation Systems

9.7.2 Arrangement of Ducts*

(-1 to -3 are omitted.)

4 As permitted by **-2** and **-3** above, ducts are to comply with the conditions specified in **(1)** or **(2)** below:

(1) In the case of fire dampers installed
  (a) the ducts are constructed of steel having a thickness of at least 3 *mm* for ducts with a free cross-sectional area of less than 0.075 m^2, at least 4 *mm* for ducts with a free cross-sectional area of between 0.075 m^2 and 0.45 m^2, and at least 5 *mm* for ducts with a free cross-sectional area of over 0.45 m^2;
  (b) the ducts are suitably supported and stiffened;
  (c) the ducts are fitted with automatic fire dampers close to the boundaries penetrated; and
  (d) the ducts are 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.

(2) In the case of fire dampers not installed
  (a) the ducts are constructed of steel in accordance with **(a)** and **(b)** of **(1)** above; and
  (b) the ducts are insulated to "*A*-60" class standard throughout the spaces they pass through.

(-5 and -6 are omitted.)

9.7.3 Details of Fire Dampers and Duct Penetrations*

Sub-paragraph -1 has been amended as follows.

1 Ducts passing through "*A*" class divisions are to meet the following requirements:

(1) Where a thin plated duct with a free sectional area equal to, or less than, 0.02 m^2 passes through "*A*" class divisions, the opening is to 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 the bulkhead or, in the case of the deck, wholly laid on the lower side of the decks pierced;

(2) Where ventilation ducts with a free-sectional area exceeding 0.02 m^2, but not more than 0.075 m^2, pass through "*A*" class divisions, the openings are to be lined with a steel sheet sleeves. The ducts and sleeves are to have a thickness of at least 3 *mm* and a length of at least 900 *mm*. When passing through bulkheads, this length is to be divided preferably into 450 *mm* on each side of the bulkhead. These ducts, or sleeves lining such ducts, are to be provided with fire insulation. The insulation is to have at least the same fire integrity as the divisions through which the duct passes; and

(3) Automatic fire dampers are to be fitted in all ducts with a free cross-sectional area exceeding 0.075 m^2 that pass through "*A*" class divisions. Each damper is to be fitted close to the division penetrated and the duct between the damper and the division penetrated is to be constructed of steel in accordance with **9.7.2-4(~~2~~1)(a)** and **9.7.2-4(~~2~~1)(b)**. The fire damper is to operate automatically, but is also to be capable of being closed manually from both sides of

the division. The damper is to 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 exceeding 0.075 m^2 is not to 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 paragraph.

(-2 to -3 are omitted.)

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

Part R FIRE PROTECTION, DETECTION AND EXTINCTION

R9 CONTAINMENT OF FIRE

R9.7 Ventilation System

R9.7.3 Details of Fire Dampers and Duct Penetrations

Sub-paragraph -4 has been added as follows.

1 With respect to the requirements of **9.7, Part R of the Rules**, in case where ducts penetrate either “*A*” class or “*B*” class divisions, the requirements specified in **R9.3** of this Guidance are to be complied with.

2 With respect to the provisions of **9.7.3, Part R of the Rules**, when the equipment for operating automatic fire dampers penetrates the divisions, such penetrations are to be properly constructed as required by **9.3.1, Part R of the Rules**. Where it is impracticable to comply with the above provisions, automatic fire dampers are to be provided at each side of the divisions.

3 Ventilation inlets and outlets located at outside boundaries which are fitted with closing appliances as required by **5.2.1-1, Part R of the Rules**, need not comply with the requirements of **9.7.3, Part R of the Rules**.

4 With respect to the provisions of **9.7.3-1(3), Part R of the Rules**, it is recommended that the insulation for duct between the damper and the penetrated bulkhead or deck be at least of the same fire integrity as the division through which the duct passes.

ANNEX R9.3.1 DETAILS OF PENETRATIONS

2 DETAILS

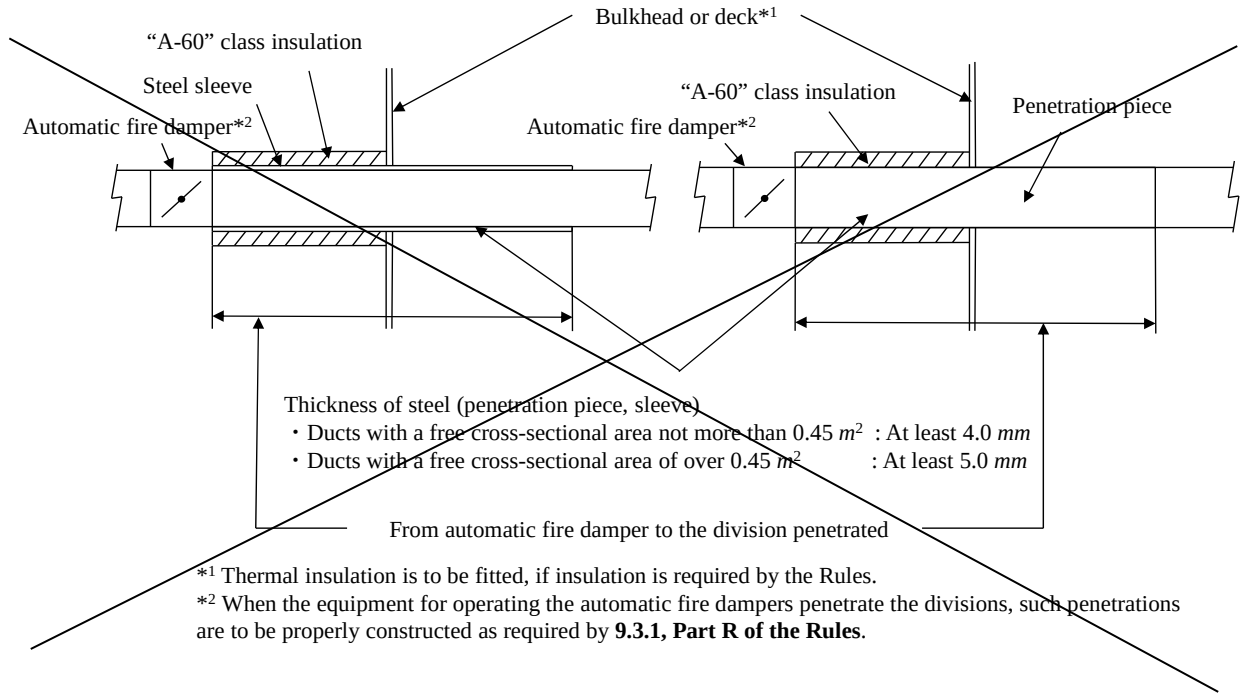
2.2.3 Prevention of Heat Transmission and Fire Dampers

1 The details of prevention of heat transmission at penetrations specified in **(1)** and **(2)** of **9.7.3-1, Part R of the Rules** are to be as shown in **Fig. 2.2.3-1** as a standard.

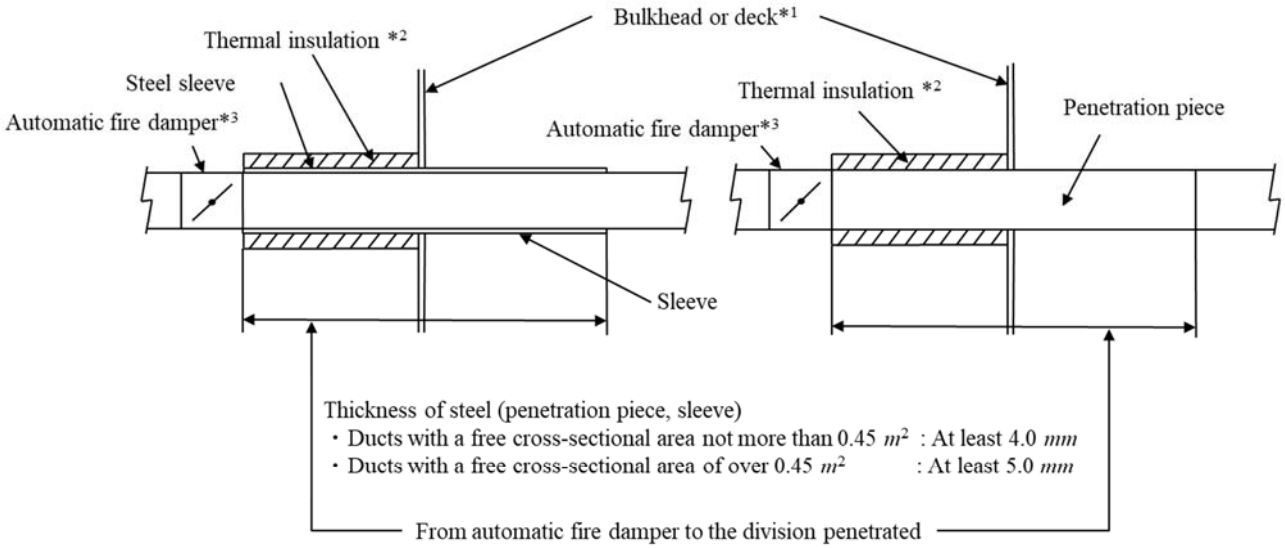
2 The details of prevention of heat transmission between automatic fire dampers and the divisions penetrated specified in **9.7.3-1(3), Part R of the Rules** are to be as shown in **Fig. 2.2.3-2** and **Fig. 2.2.3-3** as a standard.

Fig.2.2.3-2 and Fig.2.2.3-3 have been amended as follows.

Fig. 2.2.3-2 A Duct Penetration with a Free Cross-sectional Area of over 0.075 m^2
(Damper Provided on One Side of the Division.)

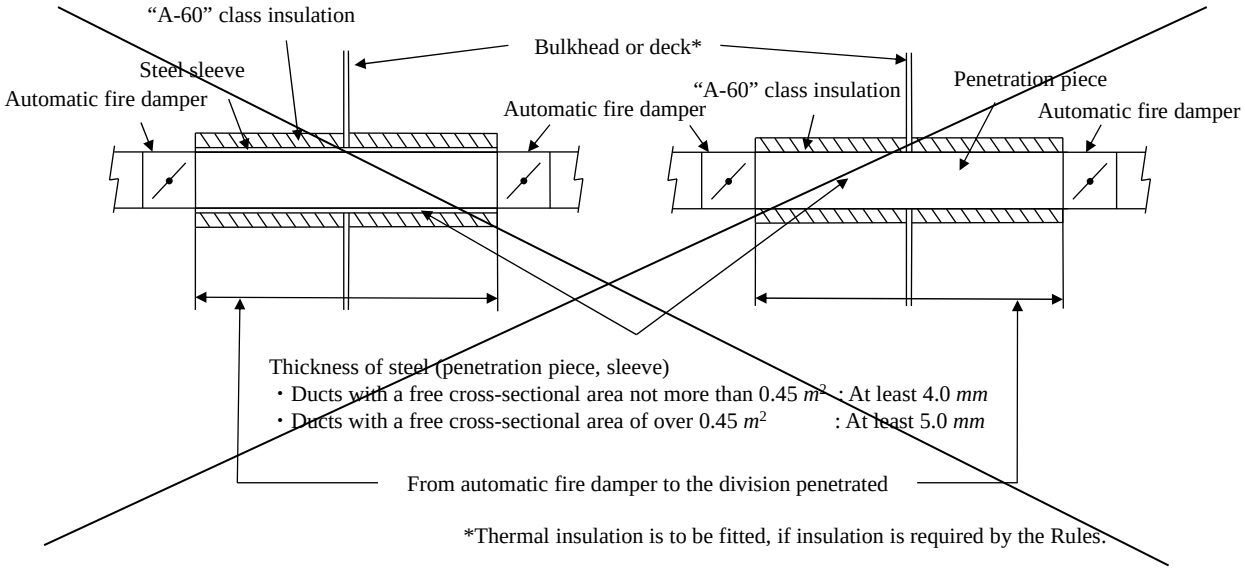


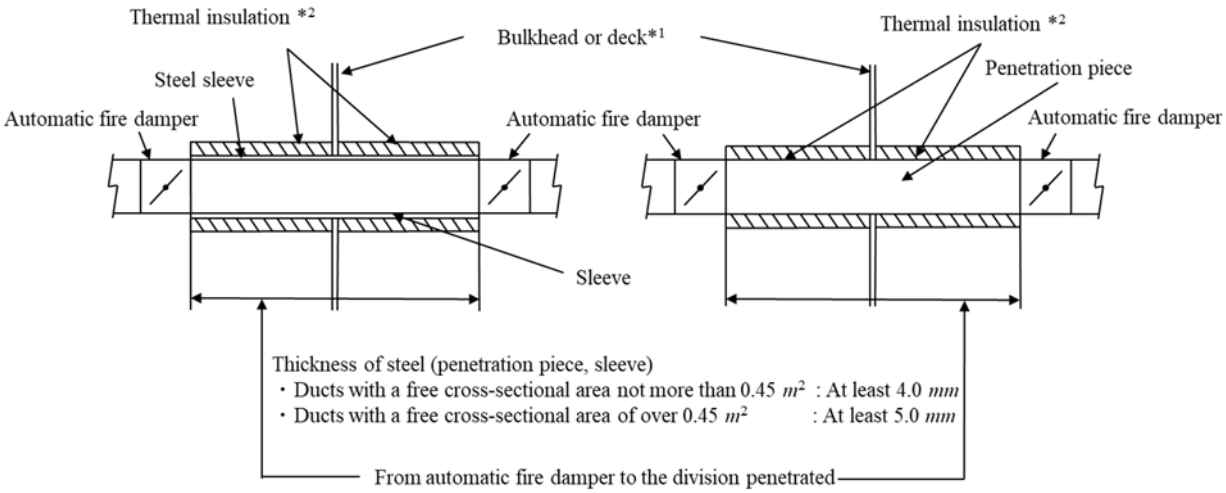
*1 Thermal insulation is to be fitted, if insulation is required by the Rules.
*2 When the equipment for operating the automatic fire dampers penetrate the divisions, such penetrations are to be properly constructed as required by **9.3.1, Part R of the Rules**.



*1 Thermal insulation is to be fitted, if insulation is required by the Rules.
*2 Thermal insulation same level of fire integrity of the penetrated bulkhead or deck to be fitted.
*3 When the equipment for operating the automatic fire dampers penetrate the divisions, such penetrations are to be properly constructed as required by **9.3.1, Part R of the Rules**.

Fig. 2.2.3-3 A Duct Penetration with a Free Cross-sectional Area of over 0.075 m^2
(Dampers Provided on Both Sides of the Division.)





*1 Thermal insulation is to be fitted, if insulation is required by the Rules.
*2 Thermal insulation same level of fire integrity of the penetrated bulkhead or deck is to be fitted.

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

Part R FIRE PROTECTION, DETECTION AND EXTINCTION

R9 CONTAINMENT OF FIRE

R9.2 Thermal and Structural Boundaries

R9.2.3 Bulkheads and Decks

Sub-paragraph -8 has been deleted as follows.

~~**8** “Bulkheads and decks separating ro-ro and/or vehicle spaces” referred to in footnote h of **Tables R9.1** and **R9.2, Part R of the Rules** are to have “*A*-0” class fire integrity. Doors (including shutters) fitted to the bulkheads and decks are also, in principle, to have “*A*-0” class fire integrity. The standard fire test may be required where deemed necessary by the Society. The materials of door packing are to be non-combustible. Bulkheads and decks separating car deck spaces are to be dealt with in the same way.~~

ANNEX R9.3.1 DETAILS OF PENETRATIONS

2 DETAILS

2.2 Penetration of Ducts

Paragraph 2.2.2 has been amended as follows.

2.2.2 Penetration in "*B*" Class Divisions

1 A duct penetration is to be made of steel or equivalent material having thickness of at least 1.8 *mm* and a length defined as **Table 2.2.1**, preferably equally divided to each side of the bulkhead (see **Fig. 2.2.2-1** and **Fig. 2.2.2-2**) or, in the case of the deck, totally laid on the lower side of the deck as practicable.

2 No clearance is to be allowed between ducts and divisions.

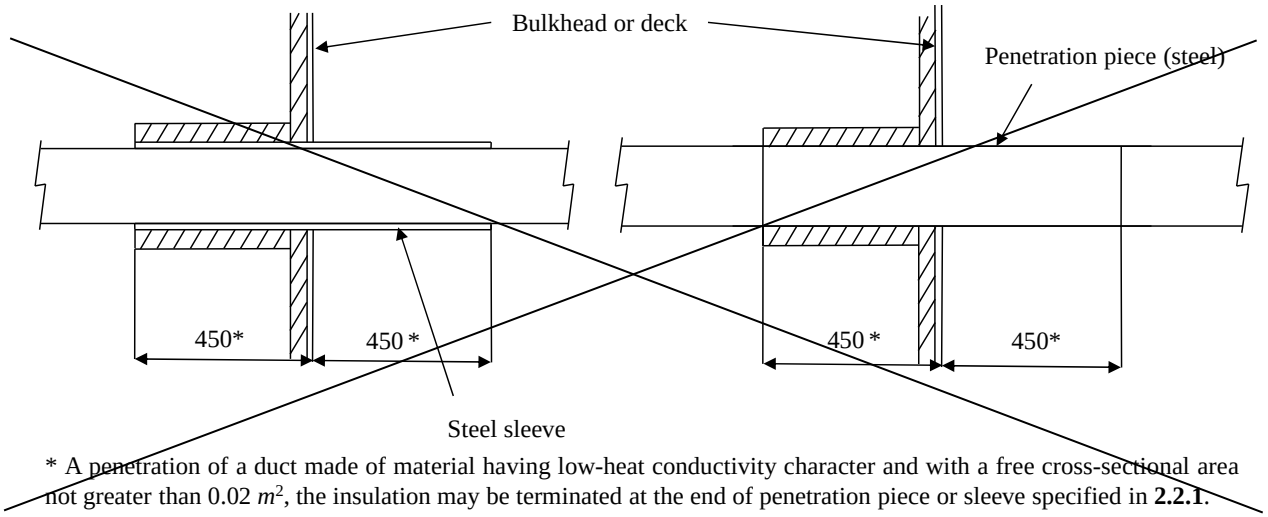
2.2.3 Prevention of Heat Transmission and Fire Dampers

1 The details of prevention of heat transmission at penetrations specified in **(1)** and **(2)** of **9.7.3-1, Part R of the Rules** are to be as shown in **Fig. 2.2.3-1** as a standard.

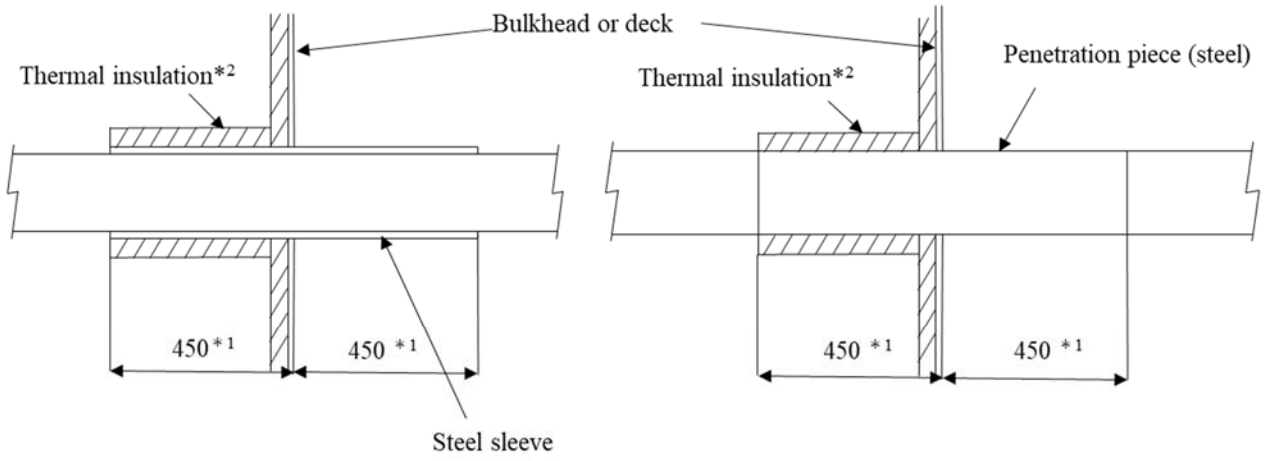
2 The details of prevention of heat transmission between automatic fire dampers and the divisions penetrated specified in **9.7.3-1(3), Part R of the Rules** are to be as shown in **Fig. 2.2.3-2** and **Fig. 2.2.3-3** as a standard.

Fig.2.2.3-1 has been amended as follows.

Fig. 2.2.3-1 A duct penetration with a free cross-sectional area equal to, or less than, 0.075 m^2



* 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 specified in **2.2.1**.



*1 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 specified in **2.2.1**.

*2 Thermal insulation is to be provided only to the part of the duct and/or sleeve that is on the same side of the division being fire insulated, and be extended for a minimum of 450mm along the duct and/or sleeve.