

Draft Amendment of the Guidance related to the Arrangement of Cargo Piping and Gas-freeing Piping for Tankers

Amended Guidance

Guidance for the Survey and Construction of Steel Ships Parts D, S, and R

Reason for Amendment

Regulation II-2/4.5.6.1 of SOLAS specifies that hazards related to the dispersal of flammable vapours for purging or gas-freeing are to be minimised. This regulation as well as corresponding IMO circulars and IACS unified interpretations have already incorporated into the NK Rules.

In response to various tanker fire accidents that occurred between 2004 and 2014, the IMO and IACS began considering the establishment of additional safety measures. At the 7th session of the IMO Sub-Committee on Ship Systems and Equipment (SSE7) in March 2020, IACS was asked by the sub-committee to prepare a unified interpretation (UI) related to cargo and gas-freeing piping arrangements. In response, IACS submitted a draft UI clarifying the piping requirements for the installation of gas-freeing pipe systems and blowers located outside cargo areas at SSE8 in March 2022, but the sub-committee decided to postpone any further discussion of the draft until its next session.

It is anticipated that the IACS draft UI will be agreed upon by the SSE as a draft MSC circular at SSE9 in January 2023, and that this draft circular will then be subsequently approved at the 107th session of the IMO Maritime Safety Committee (MSC107) held in May 2023.

Accordingly, relevant requirements are amended in accordance with the draft MSC circular.

Outline of Amendment

Amends piping requirements related to the installation of gas-freeing pipe systems and blowers installed outside of tanker cargo areas.

Effective Date and Application

This draft amendment applies to ships for which the date of contract for construction is on or after 1 July 2023.

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

Part D MACHINERY INSTALLATIONS

D14 PIPING SYSTEMS FOR TANKERS

D14.2 Cargo Oil Pumps, Cargo Oil Piping Systems, Piping in Cargo Oil Tanks, etc.

Paragraph D 14.2.4 has been amended as follows.

D14.2.4 Separation of Cargo Oil Pumps and Cargo Oil Pipes

Piping systems to be connected to cargo oil piping are to be dealt with under the following requirements:

- (1) (Omitted)
- (2) In cases where cargo oil piping systems are connected to the following piping systems:

~~(a) Tank vent pipes~~

~~The requirements in 35.2.2-3(2)(g) and (h), Part R of the Rules are to be complied with. In addition, ventilating fans, except for inert gas blowers, are to be installed within hazardous area (as for the definition of “hazardous area,” see 4.2.3-1, Part H of the Rules).~~

(a) Inert gas piping systems (including cases when such systems are also being used as gas-freeing pipe systems)

The requirements in 35.2.2-3(2)(g) and (h), Part R of the Rules are to be complied with.

(b) Gas-freeing piping systems other than the ones specified in (a) above

The following (i) or (ii).

(i) The requirements in 35.2.2-3(2)(g) and (h), Part R of the Rules are to be complied with in cases where gas-freeing piping systems and blowers are installed in cargo areas.

(ii) The requirements in R4.5.6-2 to 4.5.6-10 are to be complied with in cases where gas-freeing piping systems and blowers are installed outside cargo areas.

~~(c)~~ Pressure gauge pipes for cargo oil piping systems (including pumps)

Pressure gauges to which cargo oil is directly led are to be installed in pump rooms or on weather decks. However, in cases where stop valves are provided at joints between pressure gauge piping systems and cargo oil piping systems, and in cases where bulkhead valves are provided at locations where such pipes penetrate bulkhead between engine rooms and pump rooms, pressure gauges may be installed in engine rooms.

~~(d)~~ Pipes for measuring oil content

Sampling pipes for measuring oil content may be led to spaces other than hazardous areas, in cases where such pipes have nominal diameters of 25 A or less and in cases where two or more stop valves are provided between cargo oil piping and the penetrations of the casings of non-hazardous areas.

Part S SHIPS CARRYING DANGEROUS CHEMICALS IN BULK

S3 SHIP ARRANGEMENTS

S3.1 Cargo Segregation

Paragraph S3.1.3 has been amended as follows.

S3.1.3 Cargo Piping

1 Cargo piping is not to pass through the spaces specified in **3.1.3, Part S of the Rules** ~~and~~, in addition, spaces such as fuel oil tanks, freshwater tanks and control stations.

2 Gas-freeing piping systems and blowers may be arranged outside cargo areas in accordance with R4.5.6-2 to R4.5.6-10.

Part R FIRE PROTECTION, DETECTION AND EXTINCTION

R4 PROBABILITY OF IGNITION

R4.5 Cargo Areas of Tankers

Paragraph R4.5.6 has been amended as follows.

R4.5.6 Inerting, Purging and Gas-freeing

1 “Gas-free” specified in 4.5.6-1, Part R of the Rules means a condition in a tank where the content of hydrocarbon or other flammable vapour is less than 1 % of the lower flammable limit (LFL), the oxygen content is at least 21 %, and no toxic gases are present.

2 All cargo piping systems (including cargo oil piping, cargo tank venting piping, pressure relief piping and gas-freeing piping, etc.), except for the cargo piping systems for bows and stern loading, are to be arranged in the cargo area as specified in 3.2.6, Part R of the Rules. However, gas-freeing pipe systems and blowers may be arranged outside the cargo area in accordance with the following -3 to -10 (See Fig.R4.5.6).

3 Gas-freeing piping systems are not to be permanently connected to cargo piping or cargo tank venting piping. In addition, such systems are to satisfy the following (1) to (5) requirements.

(1) The connections between cargo oil piping and gas-freeing piping are to be of a detachable type consisting of spool pieces, ducts or hoses, etc., and are also to be provided with two shut-off valves fitted as specified in (2) below. Such detachable connections are to be arranged in the cargo area.

(2) A non-return valve is to be provided in the cargo area on the cargo side (between the detachable connection and the cargo tank). Shut-off valves are to be provided on the cargo side and on the blower side (between the detachable connection and the blower). The combination of a shut-off valve and a non-return valve on the cargo side may be replaced by a single non-return valve with a positive means of closure.

(3) The shut-off valve on the blower side is to open after the air-supply blower is started; this is to be triggered by fan discharge pressure.

(4) The shut-off valve on the blower side is to automatically close when the air-supply blower is stopped or in the event of a loss of gas-freeing air pressure.

(5) When the gas-freeing piping system is arranged to penetrate through a bulkhead facing the cargo area, the shut-off valve on the blower side is to be fitted directly to said bulkhead. This shut-off valve, however, need not be located inside the blower room. Alternatively, the shut-off valve on the blower side may be fitted on an open deck located away from the bulkhead. In all cases, the electrical parts of this shut-off valve are to be certified as safe type for use in concerned hazardous areas.

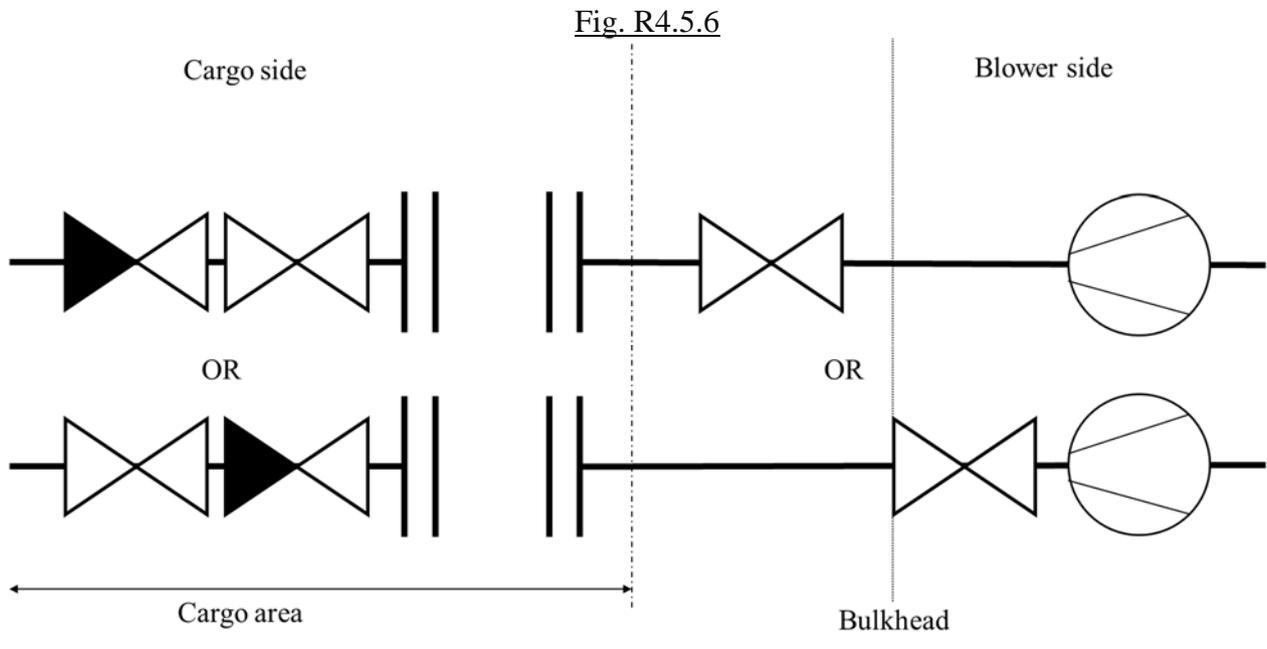
4 The gas-freeing piping system from the blower air intakes till the shut-off valve on the blower side is to be arranged in a non-hazardous area. However, when the shut-off valve is arranged outside the blower room as specified in -3(5) above, gas-freeing piping systems from blower air intakes to blower room bulkheads facing cargo areas may be arranged in non-hazardous areas.

5 The air intakes for gas-freeing blowers are to be located in non-hazardous areas on open decks.

6 When not being used in gas-freeing operations, detachable connections are to be dismantled and all the openings closed with blank flanges. A warning plate is to be provided in the vicinity of each opening, stating “This opening is to be closed with a blank flange when not being used during gas-freeing operations”.

- 7 Gas-freeing piping systems and blowers are not to be used for any other purpose.
- 8 Blowers are to be of a non-sparking type, and the non-sparking type is to be in accordance with R4.5.4-1(2).
- 9 When electrical motors driving blowers are fitted in gas-freeing piping systems or located in cargo areas, they are to be of an explosion-proof type. However, the requirements for electric motors on ships carrying dangerous chemical in bulk are to be in accordance with 12.2.8, Part S of the Rules.
- 10 Information related to the operational procedures for gas-freeing specified in (1) and (2) below is to be provided to the ship master.
- (1) Detachable connections are to only be connected and fixed to the piping no more than 10 minutes prior to gas-freeing operations.
- (2) Shut-off valves on the blower side are to only be opened after the operation of the blower has started, and such valves are to be interlocked with fan discharge pressure.

Fig. R4.5.6 has been added as follows.



Notes:

- (1) The shut-off valve at the blower side may be fitted in a hazardous area provided that electrical parts of this valve are of certified safe type for use in the concerned hazardous area (Zone 1 or Zone 2).
- (2) The line indicating "Cargo area" in this figure means that the detachable connection needs to be arranged inside of the cargo area, but it does not mean that the shut-off valve at the blower side is necessarily arranged outside of the cargo area.