Venting Systems for Cargo Tanks in Tankers

Object of Amendment

Guidance for the Approval of Materials and Equipment for Marine Use

Reason for Amendment

Regulation II-2/4.5.3.3 of SOLAS requires that devices preventing the passage of flame into cargo tanks be installed in the venting systems for cargo tanks in tankers and refers to MSC.1/Circ.677 as the standard for the design, testing, and locating of such devices. The Society has already incorporated these requirements into Part R of its Rules for the Survey and Construction of Steel Ships and relevant guidances.

ISO 15364:2000, the standard referenced by MSC.1/Circ.677 concerning the performance and testing of PV valves and devices to prevent the passage of flame, has been revised to ISO 15364:2021, which specifies requirements such as the maximum allowable gas leakage rates of PV valves.

At the 109th session of the IMO Maritime Safety Committee (MSC 109) in December 2024, amendments to update the referenced standard to ISO 15364:2021 was approved as MSC.1/Circ.677/Rev.1.

Accordingly, relevant requirements are amended based on MSC.1/Circ.677/Rev.1.

Outline of the Amendment

The main details of this amendment are as follows:

(1) Specifies the maximum allowable gas leakage rates for PV valves and associated leakage test requirements.
(2) Specifies requirements related to the installation of manual opening/closing means such as check-lifts for PV valves.
(3) Specifies requirements related to ice tests of check-lifts.

Effective Date and application

This amendment applies to the venting systems for cargo tanks in tankers that fall under the following:

(a) those systems intended for ships for which the building contract is placed on or after 4 December 2026, or in the absence of such a contract, the keels of which are laid or which are at a similar stage of construction on or after 4 December 2026; or
(b) those systems intended for ships other than those specified in (a) above for which the contractual delivery date to the ship on or after 4 December 2026 or, in the absence of a contractual delivery date to the ship, the actual delivery date to the ship is on or after 4 December 2026.

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Amended	Original	Remarks
GUIDANCE FOR THE APPROVAL OF MATERIALS AND EQUIPMENT FOR MARINE USE **Part 6 MACHINERY** **Chapter 7 APPROVAL OF VENTING SYSTEMS AND RELATED EQUIPMENT FOR OIL TANKERS** **7.4 Approval Test** **7.4.2 Details of Tests and Inspections** **1** *PV* valves ((1) and (2) are omitted.) (3) Construction (a) All flat joints of the housing are to be machined true and to be provided for a joint having an adequate metal-to-metal contact. The maximum gas leakage rate of the valve is to be provided and expressed as the volume in standard conditions that can leak from the valve at 75 % of the set pressure (nominal setting) and is to be as given in **Table 6.7**. Resilient-seating seals may be provided if the design is such that the disc closes tight against the seat in case the seals are destroyed, damaged or otherwise carried away. (b) The valves are to allow for the easy inspection	**GUIDANCE FOR THE APPROVAL OF MATERIALS AND EQUIPMENT FOR MARINE USE** **Part 6 MACHINERY** **Chapter 7 APPROVAL OF VENTING SYSTEMS AND RELATED EQUIPMENT FOR OIL TANKERS** **7.4 Approval Test** **7.4.2 Details of Tests and Inspections** **1** *PV* valves ((1) and (2) are omitted.) (3) Construction (a) All flat joints of the housing are to be machined true and to be provided for a joint having an adequate metal-to-metal contact. The device housings is to be gastight in the primary pressure zone upstream of the main valve seat to prevent the escape of vapours. Resilient-seating seals may be provided if the design is such that the disc closes tight against the seat in case the seals are destroyed, damaged or otherwise carried away. (b) The valves are to allow for the easy inspection	ISO 15364:2021 6.1

Amended	Original	Remarks
of the entire device and internal elements (including a check to verify the valve lifts smoothly without remaining in the open position), cleaning, repair or removal. Manual means (e.g. check-lift) is to be provided to verify that valve lifts freely and fully and does not remain in the open position. The manual means is to be part of the valve assembly and be operated without the need to add or remove parts. The design is not to allow the valve to be incorrectly reassembled after a disassembly due to wrong order of parts or missing parts.	of the entire device and internal elements (including a check to verify the valve lifts smoothly without remaining in the open position), cleaning, repair or removal. The design is not to allow the valve to be incorrectly reassembled after a disassembly.	ISO 15364:2021 6.9 ISO 15364:2021 11.2 d)
(c) The valves are to be designed such that condensed vapours are easily drained off without loss of function to prevent the passage of flames. The design is to also prevent the accumulation of water or condensed vapours inside the device and subsequent blockage due to freezing.	(c) The valves are to be designed such that condensed vapours are easily drained off without loss of function to prevent the passage of flames. The design is to also prevent the accumulation of water or condensed vapours inside the device and subsequent blockage due to freezing. Where the design does not permit complete drainage of condensed vapours through its connection to the tank, the housing is to be fitted with a plugged drain opening on the side of the atmospheric outlet of not less than 13 mm in diameter.	Deleted in ISO 15364:2021
((d) is omitted.)	((d) is omitted.)	
(e) The valves are to be capable of operating in a freezing condition (such as may cause blockage by frozen cargo vapours or by icing in bad weather), provided that the check-lift is operated to break the ice layer. If any device is provided with heating arrangements so that its surface temperature exceeds 85℃, it is to be operable at the highest surface temperature.	(e) The valves are to be capable of operating in a freezing condition (such as may cause blockage by frozen cargo vapours or by icing in bad weather) and if any device is provided with heating arrangements so that its surface temperature exceeds 85℃, then it is to be operable at the highest surface temperature.	ISO 15364:2021 6.7

Amended-Original Requirements Comparison Table (Venting Systems of Cargo Tanks in Tankers)

Amended	Original	Remarks
((f) and (g) are omitted.) (h) Valve discs are to normally close against the valve seat by metal-to-metal contact. The discs are to be guided by a suitable means to prevent binding and ensure proper self-closing (seating), taking into account the possible build-up of condensed vapours passing through the valve during loading. A clear indication, visible from the outside of the valve, is to be provided to indicate the position of the valve. The indicator is to be visible from below and from the side of the valve at deck level.	((f) and (g) are omitted.) (h) Valve discs are to normally close against the valve seat by metal-to-metal contact. The discs are to be guided by a suitable means to prevent binding and ensure proper self-closing (seating), taking into account the possible build-up of condensed vapours passing through the valve during loading. A clear indication, visible from the outside of the valve, is to be provided to indicate the position of the valve.	ISO 15364:2021 6.10
((i) to (k) are omitted.) (l) Means to offset the opening of a pressure or vacuum valve beyond the set pressure is to be designed in a failsafe manner and is not to prevent any required inspection procedures to be carried out. The offset opening pressure is to be verified and clearly marked.	((i) to (k) are omitted.)	ISO 15364:2021 6.21
(4) Tests and inspections ((a) to (c) are omitted.) (d) Leakage tests A leakage test is to be carried out in accordance with ISO 15364, and it is to be verified that the maximum allowable gas leakage rate specified in **Table 6.7** is satisfied.	(4) Tests and inspections ((a) to (c) are omitted.)	ISO 15364:2021 6.1
(e) Ice tests An ice test is to be carried out in accordance with ISO 15364, and the allowable accumulation of an external layer of ice at which the valve check-lift still operates is to be verified.		ISO 15364:2021 7.2.4
(f) Finish inspection When all finished, a general inspection is to be	(d) Finish inspection When all finished, a general inspection is to be	

Amended	Original	Remarks
carried out to ascertain the materials, construction and dimensions of the valve.	carried out to ascertain the materials, construction and dimensions of the valve, and to be pneumatically tested at 0.07 *MPa* (10 *psi*) either using a submerged test or a soap test for a duration of three minutes to ensure there is no leakage.	Deleted in ISO 15364:2021
Table 6.7 Maximum Allowable Leakage Rates Vent size (mm) / Maximum allowable leak rate (m^3/h) ≤ 150 / 0.0142 200–400 / 0.1416 ≥ 400 / 0.5663 Note: Vent size refers to the rated diameter (inner diameter) of the connecting flange.		ISO 15364:2021 Annex J Table J.1
7.6 Handling after the Approval	**7.6 Handling after the Approval**	
7.6.1 Tests and Inspection on the Individual Product The tests and inspection for the individual product whose prototype has been approved are to be carried out in accordance with the following **(1)** through **(6)** in the presence of the surveyor of the Society at manufacturing plant prior to shipment.	**7.6.1 Tests and Inspection on the Individual Product** The tests and inspection for the individual product whose prototype has been approved are to be carried out in accordance with the following **(1)** through **(6)** in the presence of the surveyor of the Society at manufacturing plant prior to shipment.	
(1) *PV* valves (a) Confirmation of the pressures at which the valve opens and closes (b) Hydraulic test (to be carried out before carrying out the test of **(a)**) (c) Leakage test to verify the maximum allowable leakage rate specified in **Table 6.7** is satisfied (d) Finished inspection	(1) *PV* valves (a) Confirmation of the pressures at which the valve opens and closes (b) Hydraulic test (to be carried out before carrying out the test of **(a)**) (c) Finished inspection	ISO 15364:2021 10
((2) to (6) are omitted.)	((2) to (6) are omitted.)	

Amended-Original Requirements Comparison Table (Venting Systems of Cargo Tanks in Tankers)

Amended	Original	Remarks
EFFECTIVE DATE AND APPLICATION **1.** This amendment applies to the following venting systems for cargo tanks in tankers: (1) systems installed on ships for which the building contract is placed on or after 4 December 2026; (2) in the absence of the contract, systems installed on ships the keels of which were laid or which were at a similar stage of construction on or after 4 December 2026; (3) systems installed on ships other than those prescribed in (1) and (2) above, contractually delivered on or after 4 December 2026; (4) in the absence of the contractual delivery date, systems installed on ships other than those prescribed in (1) and (2) above, actually delivered on or after 4 December 2026.		MSC 106/3/3