

Amendments

Pt. 3 Hull Structures



| Present | Amendment | Note |
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| <p style="text-align: center;">〈Guidance〉 – Pt 3</p> <p style="text-align: center;">Ch.1 General</p> <p style="text-align: center;">Section 5 Welding</p> <p>501. General</p> <p>4. Slot weld [See Rule]</p> <p>For the applying 501. 4 (2) of the Rules, <u>the length and spacing of slots is to be in accordance with Pt 13, Sub Pt 1, Ch 12, Sec 3, 4.2 of the Rules.</u></p> | <p style="text-align: center;">〈Guidance〉 – Pt 3</p> <p style="text-align: center;">Ch.1 General</p> <p style="text-align: center;">Section 5 Welding</p> <p>501. General <i>(2021)</i></p> <p>4. Slot weld [See Rule]</p> <p>For the applying 501. 4 (2) of the Rules, <u>slots have a minimum slot length 75 mm and width of twice the as built plate thickness. The spacing between the slot ends is generally be 2 to 3 times the slot length and not more than 250 mm. However, in the case of rudder (Including skegs formed as separate appendage, like as rudder), slot length is to be minimum 75 mm with width of 2 times of the rudder plate thickness. The spacing between slot ends is not to be more than 125 mm. (2026)</u></p> | <p>- Clarify the application of slot welding for non-CSR ships</p> <p>- refer to Pt 13, Sub Pt 1, Ch 12, Sec 3, 4.2.2/ Pt 4, Ch 1, 106. 2.</p> |

| Present | Amendment (1) | Note |
|--|---|--|
| <p style="text-align: center;">Ch.7 Double Bottoms</p> <p style="text-align: center;">Sec.1 General</p> <p>101. ~ 104. <omit></p> <p>105. Cofferdams</p> <p>1. <u>The following dedicated tanks are to be separated from adjacent tanks by cofferdams. However, these cofferdams may be omitted provided that the common boundaries of lubricating oil and fuel oil tank have full penetration welds.</u></p> <p>(1) Fuel oil (2) Lubricating oil (3) Vegetable oil (4) Fresh water</p> <p>2. The cofferdams in Par 1 are to be provided with the air pipes to comply with the requirements in Pt 5, Ch 6, 201, and with the manholes of adequate size which are well accessible.</p> <p>106. ~ 110 <omit></p> | <p style="text-align: center;">Ch.7 Double Bottoms</p> <p style="text-align: center;">Sec.1 General</p> <p>101. ~ 104. <same as present></p> <p>105. Cofferdams</p> <p><u>1. A cofferdam means an empty space arranged so that compartments on each side have no common boundary; a cofferdam may be located vertically or horizontally. As a rule, a cofferdam is to be kept gas-tight and is to be properly ventilated, provided with drainage arrangement, and of sufficient size to allow proper inspection, maintenance and safe evacuation.</u></p> <p><u>2. Cofferdams are to be provided between compartments intended for liquid hydrocarbons (including fuel oil, lubricating oil) and those intended for fresh water (water for propelling machinery and boilers) as well as tanks intended for the carriage of liquid foam for fire extinguishing.</u></p> <p><u>3. Furthermore, tanks carrying fresh water for human consumption are to be separated from other tanks containing substances hazardous to human health by cofferdams or other means as approved by the Society. Normally, tanks for fresh water and water ballast are considered non-hazardous.</u></p> <p><u>4. Where a corner to corner situation occurs, tanks are not considered to be adjacent.</u></p> <p><u>5. The cofferdams specified in 2. may be waived when deemed impracticable or unreasonable by the Society in relation to the characteristics and dimensions of the spaces containing such tanks, provided that the common boundaries have full penetration welds.</u></p> <p>6. The cofferdams in Par. 1 are to be provided with the air pipes to comply with the requirements in Pt 5, Ch 6, 201 and with the manholes of adequate size which are well accessible.</p> <p>106. ~ 110 <same as present></p> | <p>-The definition of cofferdam is consistent with Ch 15, 304</p> <p>- The cofferdam omission requirements remain the same as in Ch7</p> |

| Present | Amendment (2) | Note |
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| <p style="text-align: center;">〈Rules〉 – Pt 3</p> <p style="text-align: center;">Ch.15 DEEP TANKS</p> <p style="text-align: center;">Section 3 Fittings of Deep Tanks</p> <p>304. Cofferdam</p> <p>1. A cofferdam means an empty space arranged so that compartments on each side have no common boundary; a cofferdam may be located vertically or horizontally. As a rule, a cofferdam is to be kept gas tight and is to be properly ventilated, provided with drainage arrangement, and of sufficient size to allow proper inspection, maintenance and safe evacuation.</p> <p>2. Cofferdams are to be provided between compartments intended for liquid hydrocarbons (including fuel oil, lubricating oil) and those intended for fresh water (water for propelling machinery and boilers) as well as tanks intended for the carriage of liquid foam for fire extinguishing.</p> <p>3. Furthermore, tanks carrying fresh water for human consumption are to be separated from other tanks containing substances hazardous to human health by cofferdams or other means as approved by the Society. Normally, tanks for fresh water and water ballast are considered non-hazardous.</p> <p>4. Where a corner to corner situation occurs, tanks are not considered to be adjacent.</p> <p>5. The cofferdams specified in Par. 1 may be waived when deemed impracticable or unreasonable by the Society in relation to the characteristics and dimensions of the spaces containing such tanks, provided that:</p> <p>(1) The thickness of common boundary plates of adjacent tanks is increased, with respect to the thickness obtained according to Ch 15, Sec 2, by 2 mm in the case of tanks carrying fresh water or boiler feed water, and by 1 mm in all other cases;</p> <p>(2) the sum of the throats of the weld fillets at the edges of these plates is not less than the thickness of the plates themselves;</p> <p>(3) the structural test is carried out with a test pressure increased by 1 m.</p> | <p style="text-align: center;">〈Rules〉 – Pt 3</p> <p style="text-align: center;">Ch.15 DEEP TANKS</p> <p style="text-align: center;">Section 3 Fittings of Deep Tanks</p> <p>304. Cofferdam</p> <p>1. <u>As specified in Ch 7, 105.</u></p> | <p>- The contents of Ch15, Sec304 are omitted as they are identical to Ch7, Sec105.</p> |

| Present | Amendment (2) | Note |
|--|--|-----------------|
| <p><u>6.</u> The cofferdams in Par. 1 are to be provided with the air pipes to comply with the requirements in Pt 5, Ch 6, 201 and with the man-holes of adequate size which are well accessible.</p> <p><u>7.</u> Crew spaces and passenger spaces are not to be directly adjacent to the tanks for carriage of fuel oil. Such compartments are to be separated from the fuel oil tanks by cofferdams which are well ventilated and are not less than 600 mm in width for easy access. Where the top of fuel oil tanks has no opening and is coated with in-combustible coverings of 38 mm and over in thickness, the cofferdam between such compartments and the top of fuel oil tanks may be omitted.</p> | <p>6. The cofferdams in Par. 1 are to be provided with the air pipes to comply with the requirements in Pt 5, Ch 6, 201 and with the man-holes of adequate size which are well accessible.</p> <p><u>2.</u> Crew spaces and passenger spaces are not to be directly adjacent to the tanks for carriage of fuel oil. Such compartments are to be separated from the fuel oil tanks by cofferdams which are well ventilated and are not less than 600 mm in width for easy access. Where the top of fuel oil tanks has no opening and is coated with in-combustible coverings of 38 mm and over in thickness, the cofferdam between such compartments and the top of fuel oil tanks may be omitted.</p> | <p>- 7.→ 2.</p> |

| Present | Amendment (2) | Note |
|--|--|---|
| <p style="text-align: center;">〈Guidance〉 – Pt 3</p> <p style="text-align: center;">Ch.14 Watertight Bulkhead</p> <p style="text-align: center;">Section 4 Watertight Door</p> <p>402. ~ 404. 〈omit〉</p> <p>405. Indication [See Rule]</p> <ol style="list-style-type: none"> 1. For watertight doors with dogs/cleat for securing watertightness, position indicators required by 405. 1 of the Rules are to be provided to show whether all dogs/cleats fully and properly engage or not. 2. With respect to the provisions of 405. 1 of the Rules, a position indicator may not be required for doors which are designed to confirm easily whether the doors are open or closed and, if applicable, all dogs/cleats fully and properly engage or not. 3. <u>The door position indicating system required by 405. of the Rules is to be of self-monitoring type and the means for testing of the indicating system are to be provided at the position where the indicators are fitted.</u> 4. An indication required by 405. 2 of the Rules is to be placed locally showing that the door is in the “remote control” mode specified in 404. 2 (i.e. red light). <p>406. ~ 412 〈omit〉</p> | <p style="text-align: center;">〈Guidance〉 – Pt 3</p> <p style="text-align: center;">Ch.14 Watertight Bulkhead</p> <p style="text-align: center;">Section 4 Watertight Door</p> <p>402. ~ 404. 〈omit〉</p> <p>405. Indication [See Rule]</p> <ol style="list-style-type: none"> 1. For watertight doors with dogs/cleat for securing watertightness, position indicators required by 405. 1 of the Rules are to be provided to show whether all dogs/cleats fully and properly engage or not. 2. With respect to the provisions of 405. 1 of the Rules, a position indicator may not be required for doors which are designed to confirm easily whether the doors are open or closed and, if applicable, all dogs/cleats fully and properly engage or not. 3. The door position indicating system required by 405. of the Rules is to be of self-monitoring type and the means for testing of the indicating system are to be provided at the position where the indicators are fitted. 3. An indication required by 405. 2 of the Rules is to be placed locally showing that the door is in the “remote control” mode specified in 404. 2 (i.e. red light). <p>406. ~ 412 〈omit〉</p> | <p>- Deleted as it is a duplicate provision with the Rules.</p> |
| <p style="text-align: center;">〈reference -Rule〉</p> <p>405. Indication (2020) [See Guidance]</p> <ol style="list-style-type: none"> 3. The door position indicating system is to be of self-monitoring type and the means for testing of the indicating system are to be provided at the position where the indicators are fitted. | | |

〈External Review〉

Annex 3–6 Cargo Ships or Container Ships with OPEN–TOP (2025)

I. General

1. Application

- (1) The class notation OPEN–TOP(CC)(Hold Nos. a, b, ...) is based on the 「MSC/Circ. 608/Rev.1, dated 5 July 1994, Interim Guideline for Open–Top Containerships」. This annex specifies additional requirements for cargo ships or container ships designed to operate without fully or partially fitted with hatch covers on one or more cargo holds.
 - (A) For assigning the notation OPEN–TOP(CC)(Hold Nos. a, b, ...), for ships carrying only non-combustible cargo, the notation is to be given as OPEN–TOP(Hold Nos. a, b, ...) excluding (CC). (Refer to VI. 1. (3))
- (2) In order to be assigned this class Notation, agreement should be reached with the flag state regarding the application of this Annex.
- (3) The ships carrying IMSBC cargoes (solid bulk cargoes) are not permitted to omit hatch covers.

2. Definitions

- (1) Maximum sustained speed
Maximum sustained speed is defined as the maximum service speed taking into account speed loss due to resistance increase in regular waves. Voluntary speed loss is not taken into consideration.
- (2) Minimum ship manoeuvring speed
Minimum ship manoeuvring speed is defined as the minimum speed which maintains directional control and is consistent with the operating characteristics of the ship.
- (3) Green water
Green water is sea water other than spray shipped aboard the ship under normal operating conditions.

3. Freeboard

- (1) Minimum freeboard is to be determined by seakeeping characteristics and stability. Model tests and calculations are to be carried out to provide the Society with:
 - (A) measured data for the maximum hourly rate of ingress of green water, in m^3/hour , likely to be shipped into each cargo hold.
 - (B) evaluation of the adequacy of the discharge rates from cargo hold freeing ports (if fitted).
- (2) The maximum hourly rate of ingress of green water in any one open cargo hold determined from model testing is not to exceed the hatch opening area, in m^2 , multiplied by 0.4 m/hour .
- (3) A conventional geometrical freeboard and minimum bow height are to be calculated assuming that hatch covers are fitted. The freeboard and bow height assigned to the ship is not to be less than the equivalent geometrical freeboard determined from the ICLL.
- (4) All seasonal freeboards are to be omitted unless the minimum geometrical freeboard and corresponding seasonal freeboards for which the ship is eligible (assuming hatch covers fitted) are greater than the freeboard for which the model tests were satisfactorily carried out. In that case, the minimum geometrical freeboard and the corresponding seasonal freeboards greater than the freeboard for which the model tests were carried out are to be assigned.
- (5) The minimum freeboard and minimum bow height assigned to the ship are not too low than those corresponding to the model test conditions.

II. Loading conditions

1. Intact flooded condition

- (1) For the intact flooded condition, all holds intended to be left open in navigation are to be filled with a water level defined as follows:
 - (A) for **Cargo Ship**
The water level is to correspond to the volume of water ingress given in **IV.1(6)**.
 - (B) for **Container Ship**
The water level is to correspond to all open holds completely filled with water (permeability of 0.70 for container holds) to the level of the top of the hatch side or hatch coaming or, in the case of a ship fitted with cargo hold freeing ports, to the level of those ports,
- (2) For ships assigned the service notation **Cargo Ship**, the vertical hull girder bending strength in intact flooded condition is to be complied with the hull girder strength in intact flooded condition **Pt 3, Ch 3**. For ships assigned the service notation **Container Ship**, the vertical hull girder bending strength in intact flooded condition is to be complied with **Pt 14, Ch 5, Sec 2**. In addition, regarding local strength, cargo ships are to satisfy with the relevant provisions of **Pt 3**, of the Rules, and container ships are to be satisfied with the relevant provisions of **Pt 14** of the Rules. The still water bending moment is to be taken as the still water bending moment for the intact flooded condition provided by designer.
- (3) The intact flooded conditions are to be included in the loading manual. Cargo holds intended to be without hatch covers during navigation and all possible combinations are to be considered and specified.

III. Procedure of model tests

1. General

- (1) The model test procedure should be in accordance with **MSC/Circ. 608/Rev.1**.
- (2) The Society may request an observer to observe the test. The report shall be submitted to our Classification Society for reference.

IV. Stability

1. Intact stability

- (1) For container ships, it shall be in accordance with **MSC/Circ. 608/Rev.1**, and for cargo ships, it shall be in accordance with (2) to (7).
- (2) The ship's stability in all loading conditions except the intact flooding conditions shall comply with the **2008 IS Code**.
- (3) The stability of the ship in the intact flooded condition is to meet the survival criteria (with factor $s=1$) when calculated in accordance with **SOLAS Chapter II-1, Reg.7-2**.
- (4) Where cargo hold freeing ports are fitted, they are to be considered closed for the purpose of determining the flooding angle, provided that the reliable and effective control of closing of these freeing ports is satisfactory to the Society.
- (5) The ship in intact condition before water ingress should be assumed to be loaded at maximum draught for open-top condition taking into account the maximum allowable VCG resulting from intact and damage stability criteria.
- (6) The cargo holds are to be considered empty and filled with water on the tank top. The cargo holds are to be filled with the volume of water $V_{ingress}$, in m^3 , accumulated for 3 hours, and taken equal to (permeability of 0.95 for cargo holds):

$$V_{ingress} = 3 \cdot (R_{GW} + 0.1 \cdot A_{HO})$$

where:

- R_{GW} : Maximum hourly rate of green water, in m^3/hour , shipped in seagoing conditions as established by the comprehensive model testing.
- A_{HO} : Hatch opening area, in m^2 .

- (7) For the condition with flooded holds and an intact ship, the free surfaces shall be determined as follows:
 - (A) The holds are considered empty for the calculation of the free surface, regardless of whether they are fully loaded or not.
 - (B) the green water entered the cargo hold and will not pour out during heeling
 - (C) the maximum value of the free surface moment between the filling limits envisaged in the

cargo hold is to be considered. As an alternative, the correction to righting lever is suggested to be based on the real shifting moment of water in the virtual empty cargo hold. As guidance, the method described in the **2008 IS Code, Pt B, Ch 3, [3.1.9]** may be applied.

- (8) The calculations are to be performed for intermediate phases of hold flooding with each phase comprising of an accumulated height of water of 0,5 m until the height corresponding to the volume of water according to (6) is reached.

2. Damage stability

- (1) The ships assigned the class notation **OPEN-TOP** are to comply with the damage stability criteria. The coamings of open-top holds are to be considered as unprotected openings.

V. Hold bilge dewatering system and freeing ports

1. Hold bilge dewatering system

- (1) The bilge pumping system is to have a required capacity to pump, whichever is the greater below. Where the bilge pump is used, pumps are to be of the self-priming or the equivalent type and are to be so arranged that they are immediately operable when in use.
 - (A) the maximum hourly rate of green water shipped in seagoing conditions as established by the comprehensive model testing specified.
 - (B) an amount equal to rainfall of 0.1 m/hour regardless of the installation of rain covers.
 - (C) the amount of shipped green water measured during the seakeeping model tests for the dead ship condition in beam seas, multiplied by safety factor 2.
 - (D) four-thirds (133.3 %) of the amount of water required for fire-fighting purposes in the largest hold.
 - (E) an amount equal to the capacity required for ships with closed cargo holds.
- (2) The pumping of hold bilges is to be possible by at least three bilge pumps.
- (3) At least one of these pumps is to have a capacity of not less than the required capacity as defined in (1) and is to be dedicated to bilge and ballast service only. It is to be located in such a way that it will not be affected by a fire or other casualty to the space containing the pumps required in (4) or the space containing the main source of power and should be supplied from the emergency switchboard.
- (4) The combined output of at least two further pumps is not to be less than the required capacity as defined in (1). Where these pumps are used in common with the bilge pumps located in engine room, the capacity of each pump is to be more than 70% of the required capacity as specified in **Pt.5 Ch.6 405. 2** of the Rules for the Classification of Steel Ships. These pumps are to be supplied by the main source of electrical power or any other source of power independent of the emergency switchboard.
- (5) The bilge pumping system, including the piping system, is to incorporate sufficient redundancy features so that the system will be fully operational and capable of dewatering the hold spaces at the required capacity in the event of failure of any one system component.
- (6) All open-top cargo holds are to be fitted with water level detectors in accordance with MSC.188(79)/Rev.2. For single hold cargo ships, the requirements of SOLAS II-1/25 are to be satisfied, and for multiple hold cargo ship, the requirements of SOLAS II-1/25-1 are to be satisfied. In addition, the alarms are to annunciate in the machinery spaces and be independent of bilge pump controls.
- (7) If the loss of suction prevents the proper functioning of the bilge system, special measures to prevent this are to be considered, such as for instance, the installation of level indicators.
- (8) Open cargo hold drain wells are to be designed to ensure unobstructed discharge of water and easy access for cleaning under all conditions.
- (9) Where tween decks are fitted and form wells, ample provisions are to be made for rapidly freeing the tween decks from water and for draining them through evenly distributed openings.
- (10) In addition to above, the bilge piping system is to comply with the requirements of **Pt.5 Ch.6 Sec. 1, Pt.5 Ch.6 404. 1, 404. 2 and 406. 1 to 406. 5** of the Rules for the Classification of Steel Ships.
- (11) Upon completion of the installation, an operational test of the hold bilge dewatering system and associated water level detectors is to be conducted.

2. Freeing ports

- (1) If provided, freeing ports are to be fitted on both sides of each open cargo hold, subject to the following:
 - (A) the number, size and location of the freeing ports on each side of each open hold is to be sufficient to prevent the accumulation of water above the level defined in **MSC/Circ.608/Rev.1 5.12**.
 - (B) efficient means of closure to prevent the accidental ingress of water are to be provided. Such means are to be operated from above the freeboard deck. In the case of a ship operating in areas where icing is likely to occur, these arrangements are to be suitable to enable the ports to operate efficiently under such conditions.

VI. Fire protection

1. General

- (1) The fire protection system for open-top holds is to be based on the philosophy of containing the fire in the hold(or bay) of origin and to cool adjacent areas to prevent structural damage.
- (2) Whenever a fire detection system is required in the open hold area, the fire detection system is to be designed and arranged to take account of the specific hold and cargo configuration and ventilation arrangement.
- (3) For ships carrying only non-combustible cargo (as defined in the **FTP Code 2010, Annex 2**, paragraph 1), as an alternative to the water spray system required in **2.**, and subject to Flag Administration acceptance an equivalent arrangement applying fire-fighting monitors based on **MSC.1/Circ.1472** may be considered. In such cases, the water supply should be sufficient to operate the installed monitors.
- (4) Upon completion of the installation, an operational test of the water spray system(or equivalent system) is to be conducted.

2. Water spray system

- (1) Open-top holds are to be protected by a fixed water spray system. The system is to be capable of spraying water into the cargo hold from deck level downward. The system is to be designed and arranged to take account of the specific hold and cargo configuration.
- (2) The water spray system is to be able to effectively contain a fire in the hold(or bay) of origin. The spray system is to be subdivided, with each subdivision to consist of a ring-line at deck level in an open cargo hold.
- (3) The water spray system is to be capable of spraying the outer vertical boundaries of each open cargo hold(or bay) and of cooling the adjacent structure. The uniform application density is to be not less than 1.1 litres/min/m².
- (4) At least one dedicated fire extinguishing pump for the hold water spray system with a capacity to serve any one open-top hold is to be provided. The pump is to be installed outside the open-top area. Where the container bays above the deck may not be adequately protected, mobile water monitors may be considered.
The availability of water to the water spray system is to be at least 50% of the total capacity, with adequate spray patterns in the open-top hold, and with any one dedicated pump inoperable. For the case of a single dedicated water spray pump this may be accomplished by an interconnection to an alternative source from the weather deck, and it shall be capable of supplying the cargo hold with water spray at the capacity required in (3).
- (5) If tween deck panels (movable stowage platforms) are used, the area underneath the panels shall be protected with water spray system. The system design shall follow the principles specified in **SOLAS II-2/19.3.1.3**.

VII. Dangerous goods

1. Dangerous goods

- (1) Dangerous goods for which 'stowage on deck only' is specified in the **IMDG Code** are not to be carried in or vertically above the open-top holds.
- (2) Dangerous goods other than those described in (1) above are not to be carried in or vertically above open-top holds unless such holds are in full compliance with **SOLAS Chapter II-2, Reg. 19**.

- (3) Segregation of dangerous goods
The stowage and segregation requirements of the **IMDG Code** as amended shall be applied.

