

# Amended Rules for the Classification of Steel Ships

## (Pt. 3 Hull Structures)

Dec. 2019



KR

## - Main Amendments -

- (1) 01 Jan. 2020 (date of construction contract) or  
in the absence of a building contract, the keel of which is laid or which are at a similar stage of  
construction on or after 01 July 2020 or  
delivered on or after 01 Jan. 2024  
● Reflected IACS UI SC156 (R. 1)

Present	Amendment
<p style="text-align: center;"><b>CHAPTER 14 WATERTIGHT BULKHEADS</b></p> <p style="text-align: center;"><b>Section 1 ~ 3 &lt;omit&gt;</b></p> <p style="text-align: center;"><b>Section 4 Watertight Doors</b></p> <p><b>401. General [See Guidance]</b></p> <ol style="list-style-type: none"> <li>1. Any access openings, doors, manholes or ducts for ventilation, etc. are not to be cut in the collision bulkhead below freeboard deck. The number of openings in collision bulkheads above the freeboard deck is to be kept to a minimum as possible and all such openings are to be provided with weathertight means of closing.</li> <li>2. <u>Watertight doors(or access hatch cover) are to be provided for all access openings in the watertight bulkheads or openings to ensure the watertight integrity of the inner decks in accordance with the requirements in the following 402. to 405.</u></li> </ol>	<p style="text-align: center;"><b>CHAPTER 14 WATERTIGHT BULKHEADS</b></p> <p style="text-align: center;"><b>Section 1 ~ 3 &lt;same as current&gt;</b></p> <p style="text-align: center;"><b>Section 4 Watertight Doors</b></p> <p><b>401. General (2020) [See Guidance]</b></p> <ol style="list-style-type: none"> <li>1. Any access openings, doors, manholes or ducts for ventilation, etc. are not to be cut in the collision bulkhead below freeboard deck. The number of openings in collision bulkheads above the freeboard deck is to be kept to a minimum as possible and all such openings are to be provided with weathertight means of closing.</li> <li>2. <u>The design and testing requirements for watertight doors vary according to their location relative to the 1) equilibrium waterplane or intermediate waterplane at any stage of assumed flooding and or 2) bulkhead deck or freeboard deck.</u></li> <li>3. <u>Definitions</u> <ol style="list-style-type: none"> <li>(1) <u>Watertight: Capable of preventing the passage of water in any direction under a design head. The design head for any part of a structure shall be determined by reference to its location relative to the bulkhead deck or freeboard deck, as applicable, or to the most unfavourable equilibrium/intermediate waterplane, in accordance with the applicable subdivision and damage stability regulations, whichever is the greater. A watertight door is thus one that will maintain the watertight integrity of the subdivision bulkhead in which it is located.</u></li> <li>(2) <u>Equilibrium Waterplane: The waterplane in still water when, taking account of flooding due to an assumed damage, the weight and buoyancy forces acting on a vessel are in balance. This relates to the final condition when no further flooding takes place or after cross flooding is completed.</u></li> </ol> </li> </ol>

Present	Amendment
<p><b>402. Type of watertight doors [See Guidance]</b></p> <ol style="list-style-type: none"> <li>1. Watertight doors are to be of sliding type. Hinged or rolling type may, however, be accepted having regard to the position or the service condition of the door.</li> <li>2. Notwithstanding the provisions in <b>1</b> above, where watertight door is as small as crew can pass, the watertight door may be of hinged type or rolling type, except where the doors are required to be capable of being closed remotely in accordance with <b>404. 2.</b></li> <li>3. Notwithstanding the provisions in <b>1</b> above, watertight doors in large cargo hold division may be of a type other than sliding type provided that such doors are permanently closed at sea.</li> <li>4. Doors which are closed by dropping or by the action of a dropping weight are not permitted.</li> </ol> <p><b>403. &lt;omit&gt;</b></p>	<p>(3) <u>Intermediate Waterplane: The waterplane in still water, which represents the instantaneous floating position of a vessel at some intermediate stage between commencement and completion of flooding when, taking account of the assumed instantaneous state of flooding, the weight and buoyancy forces acting on a vessel are in balance.</u></p> <p>(4) <u>Sliding Door or Rolling Door: A door having a horizontal or vertical motion generally parallel to the plane of the door.</u></p> <p>(5) <u>Hinged Door: A door having a pivoting motion about one vertical or horizontal edge.</u></p> <p><b>402. Type of watertight doors [See Guidance]</b></p> <ol style="list-style-type: none"> <li>1. <b>&lt;same as current&gt;</b></li> <li>2. ~ in accordance with <b>404. 3.</b></li> <li>3. <b>4. &lt;same as current&gt;</b></li> <li>5. <u>Doors should be fitted in accordance with all requirements regarding their operation mode, location and outfitting, i.e. provision of controls, means of indication, etc., as shown in <b>Table 3.14.5</b> below. (2020)</u></li> </ol> <p><b>403. &lt;same as current&gt;</b></p>

Present	Amendment
<p><b>404. Control [See Guidance]</b></p> <p><u>1.</u> All watertight doors, except those which are to be permanently closed at sea, are to be capable of being opened and closed by hand locally, from both sides of the doors, with the ship listed of 30 degrees to either side.</p> <p><u>2.</u> <u>In addition to the requirements of 1 above, watertight doors which are used at sea or normally open at sea, are to be capable of being remotely closed by power from the navigation bridge.</u></p> <p><u>3.</u> It is not to be possible to remotely open any watertight door. In addition, watertight doors which are applying to the provisions of <b>402. 3</b> are not to be remotely controlled.</p>	<p><b>404. Control &lt;2020&gt; [See Guidance]</b></p> <p><u>1.</u> <u>Watertight doors are categorized as the following (1) to (4) corresponding to its purpose and frequency of use.</u></p> <p><u>(1) Normally Closed at sea : Kept closed at sea but may be used if authorised. To be closed again after use.</u></p> <p><u>(2) Permanently Closed at sea : The time of opening such doors in port and of closing them before the ship leaves port shall be entered in the log-book.</u></p> <p><u>(3) Normally Open at sea : May be left open provided it is always ready to be immediately closed.</u></p> <p><u>(4) Used at sea : In regular use, may be left open provided it is ready to be immediately closed.</u></p> <p><u>2.</u> All watertight doors, except those which are to be permanently closed at sea, are to be capable of being opened and closed by hand (<u>and by power, where applicable</u>) locally, from both sides of the doors, with the ship listed of 30 degrees to either side.</p> <p><u>3.</u> <u>Where indicated in <b>Table 3.14.5</b>, the doors are to be capable of being remotely closed by power from the bridge for all ships.</u></p> <p><u>4.</u> It is not to be possible to remotely open any watertight door. In addition, watertight doors which are applying to the provisions of <b>402. 3</b> are not to be remotely controlled.</p>

Present	Amendment
<p><b>405. Indication [See Guidance]</b></p> <ol style="list-style-type: none"> <li>1. <u>Watertight doors, except those permanently closed at sea, are to be provided with position indicators showing whether the doors are open or closed at all operating positions.</u></li> <li>2. In addition to the requirements of <b>1</b> above for watertight doors which are to be capable of being remotely closed, an indication is to be placed locally showing that the door is in remote control mode.</li> </ol>	<p><b>405. Indication &lt;2020&gt; [See Guidance]</b></p> <ol style="list-style-type: none"> <li>1. <u>Where shown in <b>Table 3.14.5</b>, position indicators are to be provided at all remote operating positions (5), for all ships and provided locally on both sides of the internal doors (6) for cargo ships, to show whether the doors are open or closed and, if applicable, with all dogs/cleats fully and properly engaged.</u></li> <li>2. &lt;same as current&gt;</li> <li>3. <u>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.</u></li> <li>4. <u>Signboard/instructions should be placed in way of the door advising how to act when the door is in "doors closed" mode.</u></li> </ol>
<p><b>406. Alarms [See Guidance]</b></p> <p>Watertight doors which are capable of being remotely closed are to be provided with an audible alarm which will sound at the door position whenever such a door is remotely closed.</p>	<p><b>406. &lt;same as current&gt;</b></p>
<p><b>407. Source of power</b></p> <ol style="list-style-type: none"> <li>1. The remote controls, indications and alarms required in <b>404.</b> to <b>406.</b> are to be operable in the event of main power failure.</li> <li>2. Where Electrical installations specified in <b>1</b> are situated below the free-board deck, they are to be provided with a degree of protection appropriate for flooding. <b>[See Guidance]</b></li> <li>3. Cables for devices specified in 1. are to comply with the requirements of <b>Pt 6, Ch 1, Sec 5</b> of the Rules.</li> </ol>	<p><b>407. Source of power</b></p> <ol style="list-style-type: none"> <li>1. The remote controls, indications and alarms required in <b>404.</b> to <b>406.</b> are to be operable in the event of main power failure. <u>Failure of the normal power supply of the required alarms shall be indicated by an audible and visual alarm. (2020)</u></li> <li>2.~ 3. &lt;same as current&gt;</li> </ol>

Present	Amendment
<p><b>408. Notices</b></p> <ol style="list-style-type: none"> <li>1. Watertight doors which are to be normally closed at sea are to have notices fixed to both sides of the doors stating "<b>To be kept closed at sea</b>".</li> <li>2. Watertight doors which are to be permanently closed at sea are to have notices fixed to both sides stating "<b>Not to be opened at sea</b>". Such doors which are accessible during the voyage are to be fitted with a device which prevents opening. <b>[See Guidance]</b></li> </ol> <p><b>409. Sliding doors [See Guidance]</b></p> <ol style="list-style-type: none"> <li>1. Sliding watertight doors are to be capable of being operated from an accessible position above the bulkhead deck and are to have an index at the operating position showing whether the door is open or closed. This remote control of the door may, however, be omitted where the Society is satisfied with such an arrangement having regard to the service condition of the door.</li> <li>2. Where the above control means is operated by rods, the lead of operating rods is to be as direct as possible and the screw is to work in a nut of gun-metal or other approved material.</li> <li>3. Sliding doors controlled from remote positions are also to be capable of being operated at the position of the door.</li> <li>4. The frames of vertically sliding watertight doors are to have no groove at the bottom in which dirt might lodge and prevent the door from closing.</li> </ol> <p><b>410. Hinged and rolling doors</b></p> <ol style="list-style-type: none"> <li>1. For hinged and rolling watertight doors, the hinge pins and the wheel axle of these doors are to be of gun-metal or other approved materials.</li> <li>2. Hinged and rolling watertight doors except those are to be permanently closed at sea, are to be of quick acting or single acting type which is capable of being closed and secured from both sides of the doors.</li> </ol>	<p><b>408. Notices</b></p> <ol style="list-style-type: none"> <li>1. Watertight doors which are to be normally closed at sea <u>but not provided with means of remote closure</u>, are to have notices fixed to both sides of the doors stating "<b>To be kept closed at sea</b>".</li> <li>2. &lt;same as current&gt;</li> </ol> <p><b>409. &lt;same as current&gt;</b></p> <p><b>410. &lt;same as current&gt;</b></p>

Present	Amendment
<p><b>411. Others</b></p> <p>For fitting of valves or cocks to a watertight bulkhead, see <b>Pt 5, Ch 6, 107. 11</b>. For pipes passing through bulkheads, see <b>Pt 5, Ch 6, 107. 8</b> and <b>10</b>. For electric cables passing through bulkhead, see <b>Pt 6, Ch 1, 508. 1</b> to <b>3</b>. ↓</p>	<p><b>411. &lt;same as current&gt;</b></p> <p><b>412. Test (2020) [See Guidance]</b></p> <ol style="list-style-type: none"> <li><u>1. Doors which become immersed by an equilibrium or intermediate water-plane, are to be subjected to a hydrostatic pressure test.</u></li> <li><u>2. For large doors intended for use in the watertight subdivision boundaries of cargo spaces, structural analysis may be accepted in lieu of pressure testing. Where such doors utilise gasket seals, a prototype pressure test to confirm that the compression of the gasket material is capable of accommodating any deflection, revealed by the structural analysis, is to be carried out.</u> ↓</li> </ol>



Table 3.14.5 : Doors in Internal Watertight Bulkheads and External Watertight Boundaries in Cargo Ships (2020)

A. Door in Internal Watertight Bulkheads

Position relative to bulkhead or freeboard deck	1. Frequency of Use while at sea	2. Type	3. Remote Closure	4. Remote Indication	5. Audible or Visual Alarm	6. Notice	7. Regulation	8. Comments
(1) Below	Used	POS	Yes	Yes	Yes (local)	No	SOLAS II-1/13-1.2 and 22.3 MARPOL I/28.3 ICLL66+A.320 1988 Protocol to ICLL66 IBC, and IGC	
	Norm. Closed	S, H	No	Yes	No	Yes	SOLAS II-1/13-1.3, 22.3 and 24.4	See Note 1
	Perm. Closed	S, H	No	No	No	Yes	24.3, and 24.4 Perm. SOLAS II-1/ 13-1.4, Closed S, H No No No Yes See Notes 3 + 4 13-1.5, 22.2, 24.3 and 24.4	See Notes 3 + 4
(2) At or above	Used	POS	Yes	Yes	Yes (local)	No	SOLAS II-1/13-1.2 and 22.3 MARPOL I/28.3 ICLL66+A.320 1988 Protocol to ICLL66 IBC, and IGC	See Notes 2 + 5
	Norm. Closed	S, H	No	Yes	No	Yes	SOLAS II-1/13-1.3, 22.3 and 24.4	See Note 1
	Perm. Closed	S, H	No	No	No	Yes	SOLAS II-1/13-1.4, 13-1.5, 24.3 and 24.4	See Notes 3 + 4

Notes:

Type

- Power operated, sliding or rolling      POS
- Power operated, hinged                      POH
- Sliding or Rolling                                S
- Hinged    H

1. If hinged, this door shall be of quick acting or single action type.
2. Under ICLL66, doors separating a main machinery space from a steering gear compartment may be hinged quick acting type provided the lower sill of such doors is above the Summer Load Line and the doors remain closed at sea whilst not in use.
3. The time of opening such doors in port and closing them before the ship leaves port shall be entered in the logbook, in case of doors in watertight bulkheads subdividing cargo spaces.
4. Doors shall be fitted with a device which prevents unauthorized opening.
5. Under MARPOL, hinged watertight doors may be acceptable in watertight bulkhead in the superstructure.
6. Passenger ships which have to comply with SOLAS II-1/14.2 require an indicator on the navigation bridge to show automatically when each door is closed and all door fastenings are secured.
7. Refer to the Explanatory Note to Regulation 17.1 of Res.MSC.429(98) regarding sliding watertight doors with a reduced pressure head and sliding semi-watertight doors.

**B. Door in External Watertight Boundaries below equilibrium or intermediate waterplane**

Position relative to bulkhead or freeboard deck	1. Frequency of Use while at sea	2. Type	3. Remote Closure	4. Remote Indication	5. Audible or Visual Alarm	6. Notice	7. Regulation	8. Comments
(1) Below	Perm. Closed	S, H	No	Yes	No	Yes	SOLAS II-1/15.9, 15-1.2, 15-1.3, 15- 1.4, 22.6, 22.12 and 24.1	See Notes 2 + 3
(2) At or above	Norm. Closed	S, H	No	Yes	No	Yes	SOLAS II-1/15-1.2	See Note 1
	Perm. Closed	S, H	No	Yes	No	Yes	SOLAS II-1/15-1.2 and 15-1.4	See Notes 2 +3

Notes:

Type

- Power operated, sliding or rolling      POS
- Power operated, hinged                      POH
- Sliding or Rolling                                S
- Hinged    H

1. If hinged, this door shall be of quick acting or single action type.
2. The time of opening such doors in port and closing them before the ship leaves port shall be entered in the logbook.
3. Doors shall be fitted with a device which prevents unauthorized opening.

# Amended Guidance for the Classification of Steel Ships

(Pt. 3 Hull Structures)

Dec. 2019



KR

## - Main Amendments -

- (1) 01 Jan. 2020 (date of construction contract) or  
in the absence of a building contract, the keel of which is laid or which are at a similar stage of  
construction on or after 01 July 2020 or  
delivered on or after 01 Jan. 2024
  - Reflected IACS UI SC156 (R. 1)
  
- (2) 01 Jan. 2020 (date of which application for survey is submitted)
  - IACS Recommendation 47 / Customer complaint
    - repair standard of tee joint and cruciform joint (Annex 3-4)

Present	Amendment
<p style="text-align: center;"><b>CHAPTER 14 WATERTIGHT BULKHEADS</b></p> <p style="text-align: center;"><b>Section 1 ~ 3 &lt;omit&gt;</b></p> <p style="text-align: center;"><b>Section 4 Watertight Doors</b></p> <p><b>401. General [See Rule]</b></p> <p>1. <u>Watertight doors are categorized as the following (1) to (4) corresponding to its purpose and frequency of use.</u></p> <p>(1) <u>Watertight doors which are to be Permanently Closed at Sea: Such doors are open in port and closed before the ship leaves port. The time of opening/closing such doors is to be entered in the log-book. (e.g. Bulkhead doors for loading /unloading)</u></p> <p>(2) <u>Watertight doors which are to be Normally Closed at Sea: Such doors are kept closed at sea but may be used if authorized by the officer of the watch and to be closed again after use.</u></p> <p>(3) <u>Watertight doors which are Normally Open at Sea: Such doors may be left open provided those are always ready to be immediately closed.</u></p> <p>(4) <u>Watertight doors which are Used at Sea: Such doors are normally used and may be left open provided those are ready to be immediately closed.</u></p> <p><b>402. Type of watertight doors [See Rule]</b></p> <p>Watertight doors provided in watertight bulkheads are to be sliding type as far as practicable. If hinged doors are used, they are to be accessible at any time and, further, to be protected against damages due to cargoes, etc. by suitable means.</p> <p><b>403. &lt;omit&gt;</b></p>	<p style="text-align: center;"><b>CHAPTER 14 WATERTIGHT BULKHEADS</b></p> <p style="text-align: center;"><b>Section 1 ~ 3 &lt;same as current&gt;</b></p> <p style="text-align: center;"><b>Section 4 Watertight Doors</b></p> <p>&lt;move to Rule&gt;</p> <p><b>402. Type of watertight doors [See Rule]</b></p> <p>1. <u>Watertight doors provided in watertight bulkheads are to be sliding type as far as practicable. If hinged doors are used, they are to be accessible at any time and, further, to be protected against damages due to cargoes, etc. by suitable means.</u></p> <p>2. <u>For passenger ships the watertight doors and their controls are to be located in compliance with SOLAS II-1/13.5.3 and II-1/13.7.1.2.2. (2020)</u></p> <p><b>403. &lt;same as current&gt;</b></p>

Present	Amendment
<p><b>404. Control [See Rule]</b></p> <p>1. Where it is necessary to operate the power unit for remote operation of the watertight door required by <b>404.</b> of the Rules, means to operate the power unit are also to be provided at remote control stations.</p> <p>2. Remote controls required by <b>404.</b> of the Rules, are to be in accordance with the followings.</p> <p>(1) &lt;omit&gt;</p> <p>(2) The operating console at the navigation bridge is to be provided with a diagram showing the location of each door, with visual indicators to show whether each door is opened or closed. A red light is to indicate a door is fully opened and a green light is to indicate a door is fully closed. When the door is being closed remotely, the red light is to indicate the intermediate position by flashing. The indicating circuit is to be independent of the control circuit for each door.</p> <p>3. &lt;omit&gt;</p>	<p><b>404. Control (2020) [See Rule]</b></p> <p>1. Where it is necessary to operate the power unit for remote operation of the watertight door required by <b>404.</b> of the Rules, means to operate the power unit are also to be provided at remote control stations. <u>The operation of such remote control is to be in accordance with <b>SOLAS II-1/13.8.1 to 13.8.3.</b> For tankers, where there is a permanent access from a pipe tunnel to the main pump room, the watertight door shall be capable of being manually closed from outside the main pump room entrance in addition to the requirements above.</u></p> <p>2. <u>With respect to the provisions of <b>404. 2</b> of the Rules, for passenger ships, the angle of list at which operation by hand is to be possible is 15 degrees or the maximum angle of heel during intermediate stages of flooding, whichever is the greater.</u></p> <p>3. <u>Where indicated in <b>Table 3.14.3</b>, the doors are to be capable of being remotely closed by power from the bridge and by hand also from a position above the bulkhead deck for passenger ships as required by <b>SOLAS II-1/13 7.1.4.</b></u></p> <p>4. Remote controls required by <b>404.</b> of the Rules, are to be in accordance with the followings.</p> <p>(1) &lt;same as current&gt;</p> <p>(2) The operating console at the navigation bridge is to be provided with a diagram showing the location of each door, with visual indicators to show whether each door is opened or closed. A red light is to indicate a door is fully opened and a green light is to indicate a door is fully closed. When the door is being closed remotely, the red light is to indicate the intermediate position by flashing. The indicating circuit is to be independent of the control circuit for each door. <u>This applies to cargo ships and passenger ships.</u></p> <p>5. &lt;same as current&gt;</p>

Present	Amendment
<p><b>4.</b> With respect to the provisions of <b>404.</b> of the Rules, where a watertight door is located adjacent to a fire door, both doors are to be capable of independent operation, remotely if required and from both sides of the each door.</p> <p><b>5.</b> The wording “navigation bridge” stated in <b>404.</b> of the Rules means the place always served by a watch officer and it normally represents the navigation bridge deckhouse.</p> <p><b>6.</b> With respect to the provisions of <b>404. 1</b> of the Rules, an operation capability of the ship listed of 30 degrees to either side is to be verified by prototype tests, etc.</p> <p><b>7.</b> With respect to the provisions of <b>404. 1</b> of the Rules, power operated doors are also to be capable of being opened and closed by power, as well as to by manual.</p> <p><b>405.</b> &lt;omit&gt;</p>	<p><b>6.</b> With respect to the provisions of <b>404.</b> of the Rules, where a watertight door is located adjacent to a fire door, both doors are to be capable of independent operation, remotely if required and from both sides of the each door. <u>Watertight doors may also serve as fire doors but need not be fire-tested notwithstanding the fire resistance of the division in which the watertight doors are fitted. However, such doors fitted above the bulkhead deck on passenger ships shall be tested to the FTP Code in accordance with the division they are fitted. If it is not practicable to ensure self-closing, means of indication on the bridge showing whether these doors are open or closed and a notice stating ‘To be kept closed at sea’ can be alternative of the self-closing.</u></p> <p><b>7.</b> &lt;same as current&gt;</p> <p><b>8.</b> &lt;same as current&gt;</p> <p><b>9.</b> &lt;same as current&gt;</p> <p><b>405.</b> &lt;same as current&gt;</p>

Present	Amendment
<p><b>406. Alarm [See Rule]</b></p> <p>An audible alarm required by <b>406.</b> of the Rules is to sound from the door begins to move and continue to sound until the door is completely closed.</p> <p><b>407.~ 408. &lt;omit&gt;</b></p> <p><b>409. Sliding doors [See Rule]</b></p> <ol style="list-style-type: none"> <li>1. &lt;omit&gt;</li> <li>2. <del>In application to <b>409. 1</b> of the Rules, the term "where the Society is satisfied" means the cases as specified in <b>401. 1</b> (1) and (2) of the Guidance.</del></li> </ol>	<p><b>406. Alarm (2020) [See Rule]</b></p> <ol style="list-style-type: none"> <li>1. An audible alarm required by <b>406.</b> of the Rules is to sound from the door begins to move and continue to sound until the door is completely closed. <u>Other audible alarms shall be provided that are distinct from those in the area. For passenger ships the alarm shall sound for at least 5 s but not more than 10 s before the door begins to move and shall continue sounding until the door is completely closed.</u></li> <li>2. <u>In the case of remote closure by hand operation, an alarm is required to sound only while the door is actually moving. In passenger areas and areas of high ambient noise, the audible alarms are to be supplemented by visual signals at both sides of the doors.</u></li> <li>3. <u>All watertight doors, including sliding doors, operated by hydraulic door actuators, either a central hydraulic unit or independent for each door is to be provided with a low fluid level alarm or low gas pressure alarm, as applicable or some other means of monitoring loss of stored energy in the hydraulic accumulators. This alarm is to be both audible and visible and shall be located on the central operating console at the navigation bridge.</u></li> </ol> <p><b>407.~ 408. &lt;same as current&gt;</b></p> <p><b>409. Sliding doors [See Rule]</b></p> <ol style="list-style-type: none"> <li>1. &lt;same as current&gt;</li> </ol> <p><b>412. Test (2020)</b></p> <ol style="list-style-type: none"> <li>1. <u>Doors which are not immersed by an equilibrium or intermediate water-plane but become intermittently immersed at angles of heel in the required range of positive stability beyond the equilibrium position are to be hose tested.</u></li> </ol>



Present	Amendment
	<p><b>2. Pressure Testing</b></p> <p>(1) <u>The head of water used for the pressure test shall correspond at least to the head measured from the lower edge of the door opening, at the location in which the door is to be fitted in the vessel, to the bulkhead deck or freeboard deck, as applicable, or to the most unfavourable damage waterplane, if that be greater. Testing may be carried out at the factory or other shore based testing facility prior to installation in the ship.</u></p> <p>(2) <u>The following acceptable leakage criteria should apply to</u></p> <ul style="list-style-type: none"> <li>- Doors with gaskets <u>No leakage</u></li> <li>- Doors with metallic sealing <u>Max leakage 1 liter/min.</u></li> </ul> <p>(3) <u>Limited leakage may be accepted for pressure tests on large doors located in cargo spaces employing gasket seals or guillotine doors located in conveyor tunnels, in accordance with the following</u></p> $\text{Leakage rate(liter/min.)} = \frac{(P + 4.572) \times h^3}{6,568}$ <p>where</p> <ul style="list-style-type: none"> <li><math>P</math> = perimeter of door opening (m)</li> <li><math>h</math> = test head of water (m)</li> </ul> <p>(4) <u>However, in the case of doors where the water head taken for the determination of the scantling does not exceed 6.10 m, the leakage rate may be taken equal to 0.375 liter/min if this value is greater than that calculated by the above-mentioned formula.</u></p> <p>(5) <u>For doors on passenger ships which are normally open and used at sea or which become submerged by the equilibrium or intermediate waterplane, a prototype test shall be conducted, on each side of the door, to check the satisfactory closing of the door against a force equivalent to a water height of at least 1 m above the sill on the centre line of the door.</u></p> <p><b>3. All watertight doors shall be subject to a hose test in accordance with <b>Annex 1-16 of Guidance Pt 1.</b> after installation in a ship. Hose testing is to be carried out from each side of a door unless, for a specific application, exposure to floodwater is anticipated only from one side. Where a hose test is not practicable because of possible damage to machinery, electrical equipment insulation or outfitting items, it may be replaced by means such as an ultrasonic leak test or an equivalent test.</b></p> <p style="text-align: center;">↓</p>

**Table 3.14.3 : Doors in Internal Watertight Bulkheads and External Watertight Boundaries in Passenger Ships (2020)**

**A. Door in Internal Watertight Bulkheads**

Position relative to bulkhead or freeboard deck	1. Frequency of Use while at sea	2. Type	3. Remote Closure	4. Remote Indication	5. Audible or Visual Alarm	6. Notice	7. Regulation	8. Comments
(1) Below	Norm. Closed	POS	Yes	Yes	Yes (local)	No	SOLAS II-1/13.4, 13.5.1, 13.5.2,13.6, 13.7.1,13.8.1, 13.8.2, 22.1, 22.3 and 22.4	Certain doors may be left open, see SOLAS II-1/22.3 and IMO MSC. 1/Circ.1564
	Perm. Closed	S, H	No	No	No	Yes	SOLAS II-1/13.9.1, 13.9.2, 14.2, 22.2 and 22.5	See Notes 3 + 4 + 6
(2) At or above	Norm. Closed	POS, POH	Yes	Yes	Yes (local)	No	SOLAS II-1/17.1 and 22.3	See Note 7
		S, H	No	Yes	Yes (remote)	Yes	SOLAS II-1/17-1.1, 17-1.2, 17-1.3, 23.6 and 23.8	See Note 1
		S, H	No	Yes	Yes (remote)	Yes	SOLAS II-1/17-1.1, 17-1.2, 17-1.3, 22.7 and 23.3 to 23.5	Doors giving access to below Ro-Ro Deck
	Perm. Closed	S, H	No	Yes	Yes (remote)	Yes		See Notes 1 + 3 + 4

Notes:

Type

- Power operated, sliding or rolling      POS
- Power operated, hinged                      POH
- Sliding or Rolling                                S
- Hinged    H

1. If hinged, this door shall be of quick acting or single action type.
2. Under ICLL66, doors separating a main machinery space from a steering gear compartment may be hinged quick acting type provided the lower sill of such doors is above the Summer Load Line and the doors remain closed at sea whilst not in use.
3. The time of opening such doors in port and closing them before the ship leaves port shall be entered in the logbook, in case of doors in watertight bulkheads subdividing cargo spaces.
4. Doors shall be fitted with a device which prevents unauthorized opening.
5. Under MARPOL, hinged watertight doors may be acceptable in watertight bulkhead in the superstructure.
6. Passenger ships which have to comply with SOLAS II-1/14.2 require an indicator on the navigation bridge to show automatically when each door is closed and all door fastenings are secured.
7. Refer to the Explanatory Note to Regulation 17.1 of Res.MSC.429(98) regarding sliding watertight doors with a reduced pressure head and sliding semi-watertight doors.

**B. Door in External Watertight Boundaries below equilibrium or intermediate waterplane**

Position relative to bulkhead or freeboard deck	1. Frequency of Use while at sea	2. Type	3. Remote Closure	4. Remote Indication	5. Audible or Visual Alarm	6. Notice	7. Regulation	8. Comments
(1) Below	Perm. Closed	S, H	No	No	No	Yes	SOLAS II-1/15.9, 22.6 and 22.12	See Notes 2 + 3
(2) At or above	Norm. Closed	S, H	No	Yes	No	Yes	SOLAS II-1/17.1 and 22.3 MSC.Circ.541	See Note 1
		S, H	No	Yes	Yes (Remote)	Yes	SOLAS II-1/17-1.1, 17-1.2, 17-1.3, 23.6 and 23.8	Doors giving access to below Ro-Ro Deck
	Perm. Closed	S, H	No	Yes	Yes (Remote)	Yes	SOLAS II-1/17-1.1, 17-1.2, 17-1.3, 23.3 and 23.5	See Notes 2 + 3

Notes:

Type

- Power operated, sliding or rolling      POS
- Power operated, hinged                      POH
- Sliding or Rolling                                S
- Hinged    H

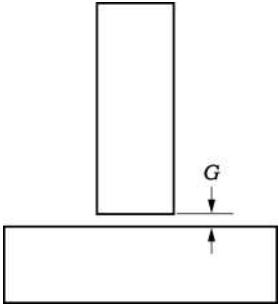
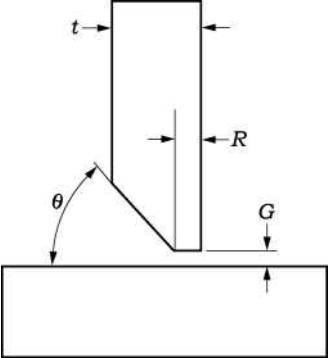
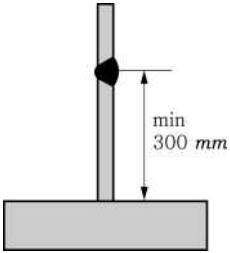
1. If hinged, this door shall be of quick acting or single action type.
2. The time of opening such doors in port and closing them before the ship leaves port shall be entered in the logbook.
3. Doors shall be fitted with a device which prevents unauthorized opening.

**Present**

**Annex 3-4 Guidance for the Hull Construction Monitoring Procedure**

1. ~ 6. <omit>

**Table 5 Fillet weld fit-up repair**

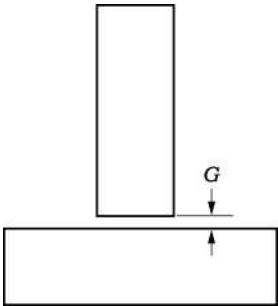
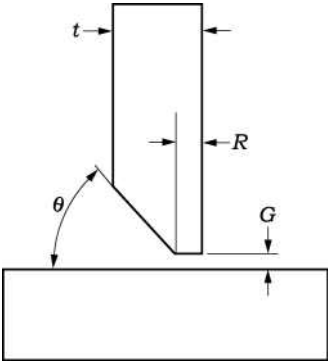
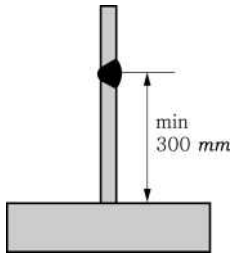
Detail	Repair Standard	Note
	<p><math>2 \text{ mm} &lt; G \leq 5 \text{ mm}</math> : length of weld to Rule leg by + (<math>G-2</math>)</p>	<p>For cruciform joints :</p> <p>1) <math>3 \text{ mm} &lt; G \leq 6 \text{ mm}</math> The weld should be full penetration and subject to additional ultrasonic NDE using both 45° and 70° probes, to the satisfaction of the surveyor.</p> <p>2) <math>G &gt; 6 \text{ mm}</math> The joint is to be adjusted until compliance is reached or an insert plate is to be fitted to the satisfaction of the surveyor.</p>
	<p><math>5 \text{ mm} &lt; G \leq 16 \text{ mm}</math> : champer to 30°- 45°, build up with welding on one side, with or without backing bar, remove backing strip if used, back gouge and seal with weld.</p>	
	<p><math>G \leq 16 \text{ mm}</math> or <math>G &gt; 1.5t</math> Insert plate of min width 300 mm to be used</p>	

## Amendment

### Annex 3-4 Guidance for the Hull Construction Monitoring Procedure

1. ~ 6. <same as current>

Table 5 Fillet weld fit-up repair

Detail	Repair Standard	Note
	<p><math>3 \text{ mm} &lt; G \leq 5 \text{ mm}</math> :</p> <p>length of weld to Rule leg by + (<math>G-2</math>)</p>	
	<p><math>5 \text{ mm} &lt; G \leq 16 \text{ mm}</math> :</p> <p>chamfer to 30°- 45°, build up with welding on one side, with or without backing bar, remove backing strip if used, back gouge and seal with weld.</p>	
	<p><math>G \leq 16 \text{ mm}</math> or <math>G &gt; 1.5t</math></p> <p>Insert plate of min width 300 mm to be used</p>	