RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

RULES

Part C Hull Construction and Equipment

2011 AMENDMENT NO.1

Rule No.27 30th June 2011

Resolved by Technical Committee on 3rd February 2011

Approved by Board of Directors on 25th February 2011

Rule No.27 30th June 2011
AMENDMENT TO THE RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

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

Part C HULL CONSTRUCTION AND EQUIPMENT

Amendment 1-1

Chapter 23 BULWARKS, GUARDRAILS, FREEING ARRANGEMENTS, CARGO PORTS AND OTHER SIMILAR OPENINGS, SIDE SCUTTLES, RECTANGULAR WINDOWS, VENTILATORS AND GANGWAYS

23.3 Bow Doors and Inner Doors

23.3.10 Operating and Maintenance Manual

Sub-paragraph -1(1) has been amended as follows.

1 An operating and maintenance manual for the door and inner door which is approved by the Society has to be provided on board and contain information on:
(1) Main particulars and design drawings
(a) Special safety precautions
(b) Details of vessel~~, class, statutory certificates~~
((c) to (f) are omitted)

23.4 Side Shell Doors and Stern Doors

23.4.9 Operating and Maintenance Manual

Sub-paragraph -1(1) has been amended as follows.

1 An approved Operating and Maintenance Manual for the doors is to be provided on board and contain necessary information on:
(1) Main particulars and design drawings
(a) Special safety precautions
(b) Details of vessel~~, class, statutory certificates~~
((c) to (f) are omitted)

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 1 July 2011.

Amendment 1-2

Chapter 15 LONGITUDINAL STRENGTH

15.4 Buckling Strength

Paragraph 15.4.1 has been amended as follows.

15.4.1 General

1 The buckling strength for main members related to longitudinal strength is to be in accordance with the requirements in this section.

2 In addition to the requirements specified in **-1** above, the buckling strength for members in regions where changes in the framing system or significant changes in the hull cross-section occur is to be in accordance with the requirement in this section.

~~**2**~~**3** The buckling strength can be examined by other appropriate analytical measures than that specified in this section subject to the approval by the Society.

~~**3**~~**4** When calculating the buckling stresses in **15.4.3** and **15.4.4**, the standard thickness deductions given in **Table C15.2** apply to t_b, t_w, t_f, and t_p according to the location.

EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 1 July 2011.

2. Notwithstanding the amendments to the Rules, the current requirements may apply to ships for which the date of contract for construction* is before the effective date.
*"contract for construction" is defined in the latest version of IACS Procedural Requirement(PR) No.29.

IACS PR No.29 (Rev.0, July 2009)

1. The date of "contract for construction" of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.

2. The date of "contract for construction" of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.
For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a "series of vessels" if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:
(1) such alterations do not affect matters related to classification, or
(2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.
The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.

3. If a contract for construction is later amended to include additional vessels or additional options, the date of "contract for construction" for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a "new contract" to which **1.** and **2.** above apply.

4. If a contract for construction is amended to change the ship type, the date of "contract for construction" of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Notes:
This Procedural Requirement applies from 1 July 2009.

Amendment 1-3

Chapter 2 STEMS AND STERN FRAMES

2.2 Stern Frames

2.2.2 Propeller Posts

Sub-paragraph -4 has been amended as follows.

4 For ships with relatively high speed for their length ~~and ships exclusively engaged in towing purposes~~, the scantlings of various parts of propeller posts are to be suitably increased.

Chapter 3 RUDDERS

3.1 General

3.1.3 Increase in Diameter of Rudder Stocks for Special Cases

Sub-paragraph -1 has been deleted and -2 and -3 have been renumbered to -1 and -2 respectively.

~~**1** The diameter of rudder stocks of ships exclusively engaged in towing services is not to be less than 1.1 times those required in this Chapter.~~
~~**2**~~**1** In ships which may be frequently steered at a large helm angle when sailing at their maximum speed, such as fishing vessels, the diameters of rudder stocks and pintles, as well as the section modulus of main pieces, are not to be less than 1.1 times those required in this Chapter.
~~**3**~~**2** In ships which might require quick steering, the diameter of rudder stocks is to be properly increased beyond the requirements in this Chapter.

EFFECTIVE DATE AND APPLICATION (Amendment 1-3)

1. The effective date of the amendments is 30 December 2011.
2. Notwithstanding the amendments to the Rules, the current requirements may apply to ships for which the date of contract for construction is before the effective date.
3. Notwithstanding the provision of preceding **2.**, the amendments to the Rules may apply to ships for which the application is submitted to the Society before the effective date upon request by the owner.

Amendment 1-4

Chapter 17 DECKS

17.1 General

Paragraph 17.1.4 has been amended as follows.

17.1.4 Compensation for Openings

1 Hatchways or other openings on strength or effective decks are to have well rounded corners, and compensation is to be suitably provided as necessary.

2 Where attachments such as slant plates or protective means are provided on hatch corners of cargo hatchways, such attachments are not to be directly welded onto strength decks.

Chapter 23 BULWARKS, GUARDRAILS, FREEING ARRANGEMENTS, CARGO PORTS AND OTHER SIMILAR OPENINGS, SIDE SCUTTLES, RECTANGULAR WINDOWS, VENTILATORS AND GANGWAYS

23.1 Bulwarks and Guardrails

23.1.3 Construction

Sub-paragraphs -4 to -6 have been added as follows.

4 A bracket type is recommended for the lower connections of bulwark stays (*See* **Fig.C23.1**). In cases where a gusset type is applied for the lower connections of bulwark stays (*See* **Fig.C23.2**), special consideration is to be given.
5 In cases where a bracket type is applied for the lower connections of bulwark stays, the bulwark stays are to be properly stiffened for the prevention of local buckling.
6 Expansion joints are to be provided at appropriate intervals in bulwarks.

Fig.C23.1 and Fig.C23.2 have been renumbered to Fig.C23.3 and Fig.C23.4 respectively and Fig.C23.1 and Fig.C23.2 have been added as follows.

Fig.C23.1 Example of Bracket Type

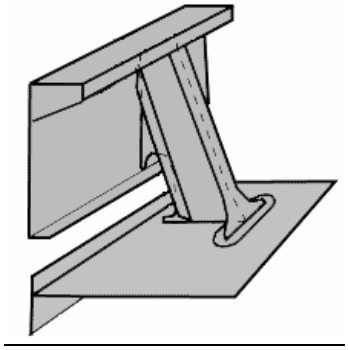
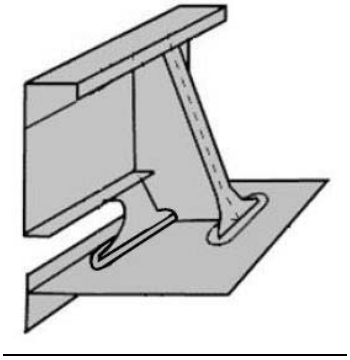


Fig.C23.2 Example of Gusset Type



23.3 Bow Doors and Inner Doors

23.3.4 Design Loads

Sub-paragraph -1(3) has been amended as follows.

1 Doors
(Omitted)
(3) For visor doors the closing moment M_y under external loads is to be taken as:

$M_y = F_x a + 10Wc - F_z b$ (*kN-m*)

W : Mass (*ton*) of the visor door
a : Vertical distance, in *m*, from the visor pivot to the centroid of the transverse vertical

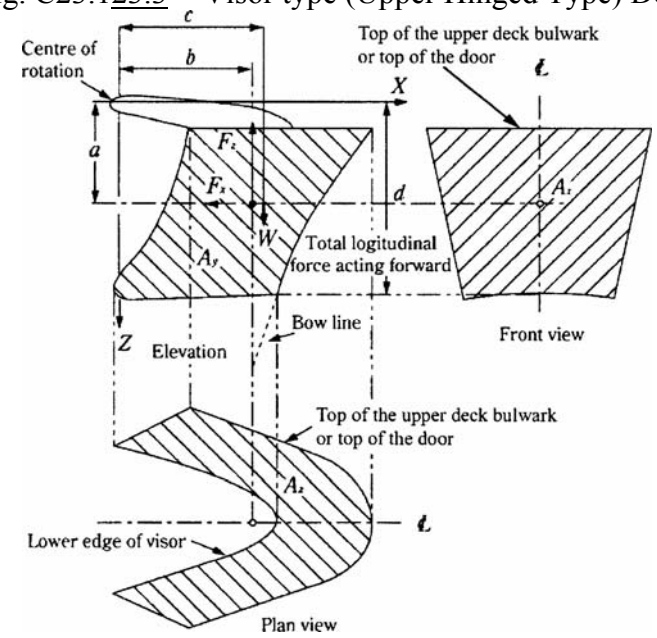
projected area of the visor door, as shown in **Fig. C~~23.1~~23.3**

b : Horizontal distance, in *m*, from the visor pivot to the centroid of the projected area of the visor door, as shown in **Fig. C~~23.1~~23.3**

c : Horizontal distance, in *m*, from the visor pivot to the centre of gravity of visor mass, as shown in **Fig. C~~23.1~~23.3**

(Omitted)

Fig. C~~23.1~~23.3 Visor type (Upper Hinged Type) Door



23.3.7 Securing and Supporting of Doors

Sub-paragraph -2(10) has been amended as follows.

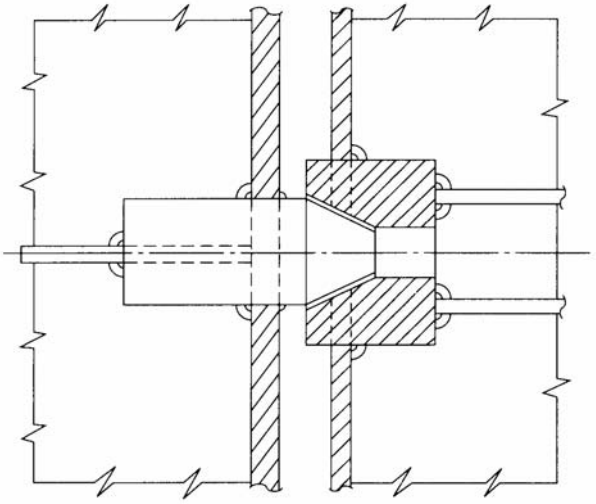
2 Scantlings

(Omitted)

(10) For side-opening doors, the thrust bearing has to be provided in way of girder ends at the closing of the two leaves to prevent one leaf from shifting towards the other one under the effect of unsymmetrical pressure (*See* example of **Fig.C~~23.2~~23.4**). Each part of the thrust bearing has to be kept secured on the other part by means of securing devices.

(Omitted)

Fig. C~~23.2~~23.4 Example of Thrust Bearing



EFFECTIVE DATE AND APPLICATION (Amendment 1-4)

1. The effective date of the amendments is 30 December 2011.

2. Notwithstanding the amendments to the Rules, the current requirements may apply to ships for which the date of contract for construction is before the effective date.

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

GUIDANCE

Part C Hull Construction and Equipment

2011 AMENDMENT NO.1

Notice No.41 30th June 2011

Resolved by Technical Committee on 3rd February 2011

Notice No.41 30th June 2011
AMENDMENT TO THE GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

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

Part C HULL CONSTRUCTION AND EQUIPMENT

Amendment 1-1

C15 LONGITUDINAL STRENGTH

C15.1 General

Paragraph C15.1.2 has been added as follows.

C15.1.2 Continuity of Strength

With respect to the provision of **15.1.2**, **Part C of the Rules**, continuity of strength is be maintained throughout the length of the ship. Where significant changes in structural arrangements occur, adequate transitional structures are to be provided.

C15.2 Bending Strength

C15.2.1 Bending Strength at the Midship Part

Sub-paragraph (7) has been amended as follows.

(7) The provisions of **(4)** to **(6)** above need not apply to ballast water exchange using the sequential method. However, bending moment and shear force calculations for each de-ballasting or ballasting stage in the ballast water exchange sequence are to be included in the loading manual or ballast water management plan of any vessel that intends to employ the sequential ballast water exchange method.

Paragraph C15.2.2 has been amended as follows.

C15.2.2 Bending Strength at Sections Other Than the Midship Part

~~For those ships categorised in the following **(1)** or **(2)**, the provisions specified in **15.2.1-1, Part C** of the Rules are to be applied using the coefficient C_2 obtained from the dotted line in **Fig. C15.2**.~~

~~(1) Ships with a C_b of less than 0.7~~

~~(2) Ships whose longitudinal bending moments in still water at the parts other than the midship part are equal to or greater than that at the midship part~~

"Where the Society considers that the application of requirements of **-1** above is inappropriate" stated in **15.2.2-2**, **Part C of the Rules** refer to cases in which the bending strength

for the locations categorised in the following **(1)** to **(3)** is examined. In these cases, the bending strength is to be in accordance with the requirement specified in **15.2.1-1**, **Part C of the Rules** by using the coefficient C_2 obtained from the dotted line in **Fig. C15.2**.

(1) Locations categorized in the following **(a)** to **(d)** for all ships:
  (a) In way of the forward end of the engine room
  (b) In way of the forward end of the foremost cargo hold
  (c) At any locations where there are significant changes in the hull cross-section
  (d) At any locations where there are changes in the framing system

(2) In addition to the locations specified in **-1** above, locations categorized in the following **(a)** to **(c)** for ships with large deck openings such as container ships. However, locations categorized in **(b)** and **(c)** are for only those ships with cargo holds aft of the superstructure, deckhouse or engine room.
  (a) At or near to the aft and forward quarter length positions
  (b) In way of the aft end of the aft-most holds
  (c) Aft end of the deckhouse or engine room

(3) In addition to the locations specified in **-1** and **-2** above, locations where deemed necessary by the Society for those ships categorised in the following **(a)** and **(b)**:
  (a) Ships with a C_b of less than 0.7
  (b) Ships whose longitudinal bending moments in still water at parts other than the midship part are equal to or greater than that at the midship part

Appendix C4 PERFORMANCE STANDARD FOR PROTECTIVE COATINGS FOR DEDICATED SEAWATER BALLAST TANKS IN ALL TYPES OF SHIPS AND DOUBLE-SIDE SKIN SPACES OF BULK CARRIERS (Resolution MSC.215(82) and IACS Unified Interpretations SC223)

Interpretation regarding Table 1

Paragraph 2 has been amended as follows.

~~**Interpretation regarding -2 PSP (Primary Surface Preparation)**~~

Interpretation regarding 2.2 Water soluble salt limit equivalent to NaCl

The conductivity of soluble salts is measured in accordance with ISO 8502-6 and ISO 8502-9, and compared with the conductivity of $50mg/m^2$ NaCl. If the measured conductivity is less than or equal to, then it is acceptable. Minimum readings to be taken are one (1) per plate in the case of manually applied shop primer. In cases where an automatic process for application of shop primer is used, there should be means to demonstrate compliance with PSPC through a Quality Control System, which should include a monthly test.

Interpretation regarding 2.3 Shop primer

Shop primers not containing zinc or not silicate based are considered to be "alternative systems" and therefore equivalency is to be established in accordance with Section 8 of the PSPC with test acceptance criteria for "alternative systems" given in Section 3.1 (right columns) of Appendixes 1 and 2 to Annex 1.

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 1 July 2011.

2. Notwithstanding the amendments to the Guidance, the current requirements may apply to ships for which the date of contract for construction* is before the effective date.
*"contract for construction" is defined in the latest version of IACS Procedural Requirement(PR) No.29.

IACS PR No.29 (Rev.0, July 2009)

1. The date of "contract for construction" of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.

2. The date of "contract for construction" of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.
For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a "series of vessels" if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:
(1) such alterations do not affect matters related to classification, or
(2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.
The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.

3. If a contract for construction is later amended to include additional vessels or additional options, the date of "contract for construction" for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a "new contract" to which **1.** and **2.** above apply.

4. If a contract for construction is amended to change the ship type, the date of "contract for construction" of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Notes:
This Procedural Requirement applies from 1 July 2009.

Amendment 1-2

C4 SUBDIVISIONS

C4.1 General

Paragraph C4.1.1 has been amended as follows.

C4.1.1 Application

"Those ships specifically approved by the Society" refers to the following.

(1) Bulk carriers having freeboards of type *B*-60 or *B*-100 as specified in the requirements of **Part V** of the Rules; however, when carrying deck cargoes, the requirements of **Chapter 4, Part C** of the Rules apply

~~(2) Offshore supply vessels complying with the requirements of *IMO Resolution MSC.235*(82)~~

(~~3~~2) Special purpose ships complying with the requirements of *IMO Resolution MSC*.266(84)

EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 30 December 2011.

2. Notwithstanding the amendments to the Guidance, the current requirements may apply to ships for which the date of contract for construction is before the effective date.

3. Notwithstanding the provision of preceding **2.**, the amendments to the Guidance may apply to ships for which the application is submitted to the Society before the effective date upon request by the owner.

Amendment 1-3

C17 DECKS

C17.1 General

Paragraph C17.1.4 has been amended as follows.

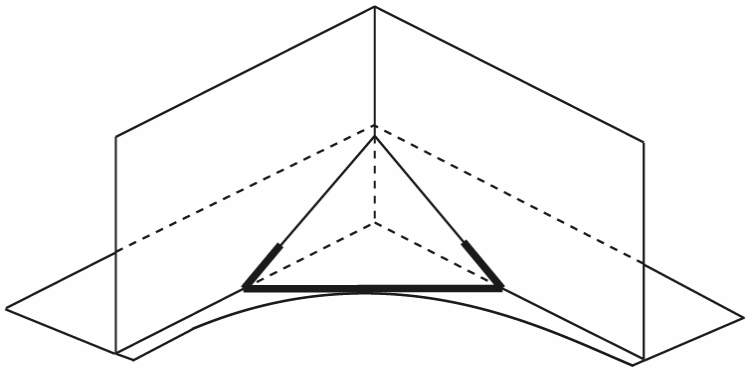
C17.1.4 Compensation for Openings

1 All corners of openings in decks, such as hatchways, are to be well rounded, properly smoothed and reinforced, as necessary, by thickening the deck plating or by means of doubling plates.

(Omitted)

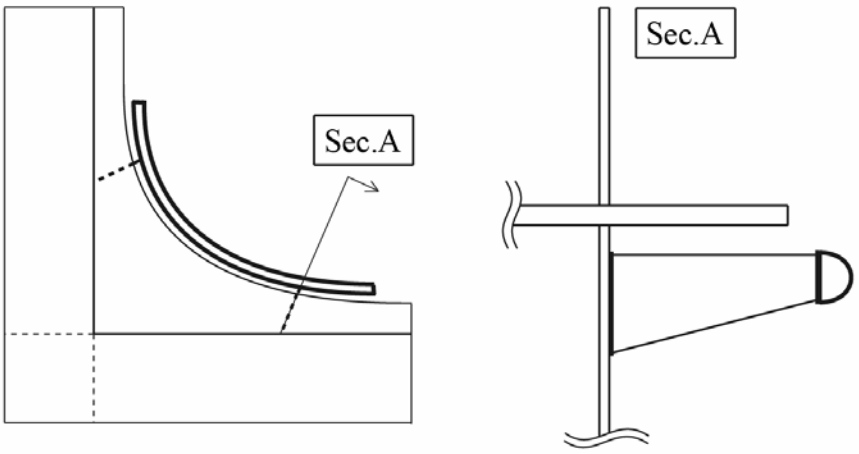
2 Where attachments such as slant plates or protective means are provided as stated in **17.1.4-2, Part C of the Rules**, such attachments are to be provided as referred to the method shown in **Fig. C17.1.4-4** or **Fig. C17.1.4-5**.

Fig. C17.1.4-4 Example of the Method for Providing Slant Plates



Note:
The connections between slant plates and strength deck (indicated in the bold line) are not to be welded.

Fig. C17.1.4-5 Example of the Method for Providing Protective Means



Note:
Protective means (i.e. half round bars) are to be provided on hatch side girders and hatch end beams.

C23 BULWARKS, GUARDRAILS, FREEING ARRANGEMENTS, CARGO PORTS AND OTHER SIMILAR OPENINGS, SIDE SCUTTLES, RECTANGULAR WINDOWS, VENTILATORS AND GANGWAYS

C23.1 Bulwarks and Guardrails

Paragraph C23.1.3 has been added as follows.

C23.1.3 Constructions

In cases where the base of a bulwark stay adopts a gusset type, "special consideration" in **23.1.3-4, Part C of the Rules** means the following **(1)** to **(3)**:

(1) The gusset plate is to be made of steel with the same yield stress as the steel of the upper deck to which the gusset plate is attached.

(2) The toes of gusset plates are to have a soft nose design.

(3) Pad plates are to be provided beneath the gusset plates. In addition, the breadth of such pad plates is to be as narrow as practicable. The pad plates are to be made of steel with the same yield stress as the steel of the upper deck to which the pad plate is attached.

EFFECTIVE DATE AND APPLICATION (Amendment 1-3)

1. The effective date of the amendments is 30 December 2011.

2. Notwithstanding the amendments to the Guidance, the current requirements may apply to ships for which the date of contract for construction is before the effective date.