**CHINA CLASSIFICATIONSOCIETY**

**CCS Rule Change Notice For:**

# Rules for Construction of Ocean-going Steel Fishing Vessels

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# CONTENTS

**PART 1 HULL**.....1-0

CHAPTER 1 GENERAL.....1-1

Section 2 HULL STRUCTURE MEMBERS .....1-1

Section 4 WELD DESIGN FOR HULL STRUCTURES.....1-1

CHAPTERS 2 HULL STRUCTURE .....1-5

Section 6 DOUBLE BUTTOMS.....1-5

**PART 2 ENGINE AND FISHING MACHINERY EQUIPMENT** .....2-0

CHAPTER 2 GENERAL REQUIREMENTS FOR PUMPS AND PIPING SYSTEMS .....2-1

APPENDIX 1 Production and Application of Plastic Piping Systems on Ships .....2-1

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# PART 1 HULL

# CHAPTER 1 GENERAL

## Section 2 HULL STRUCTURE MEMBERS

1.2.2 Attached plating of members

1.2.2.1 The effective sectional area $A$ of attached plating of primary members is to be determined as follows, but is not to be less than the sectional area of the face plate:

(1) For a member attached to plane plating:

$$A=10fbt_p \text{ in cm}^2$$

(2) For a member attached to corrugated plating and parallel to the corrugations:

$$A=10at \text{ in cm}^2$$

(3) For a member attached to corrugated plating and at right angles to the corrugations:

$$A=10b_f t_f \text{ in cm}^2$$

Where: $f$ ——factor, equal to $f=0.3(l/b)^{2/3}$, but not exceed 1;

$b$—— the mean width, in m, of the load-bearing area of primary members;

$t_p$——the mean thickness, in mm, of the attached plating;

$l$——the overall length, in m, of the primary member;

$a$——the width, in m, of corrugated plating flange;

$t$——the thickness, in mm, of corrugated plating;

$b_f$——the width, in m, of the face plate of primary members;

$t_f$——the thickness, in mm, of the face plate of primary members;

## Section 4 WELD DESIGN FOR HULL STRUCTURES

1.4.4.2 The size of fillet welds for hull structural connection is to be determined as follows:

Welding Factors Table Table1.4.4.2(1)

| Item | Welding factor | Remark |
|---|---|---|
| 1 General application (except as required below): | | |
| (1) Watertight or oiltight plate boundaries | 0.34 | |
| (2) Non-tight plate boundaries | 0.13 | |

| | | |
|---|---|---|
| | 0.10 | |
| (3) Longitudinals, frames, beams, and other secondary members to | 0.13 | In tanks |
| shell, deck or bulkhead plating | 0.21 | In way of end connections |
| (4) Panel stiffeners (i.e. small stiffeners) | 0.1 | |
| (5) Overlap welds | 0.27 | |
| (6) Longitudinals of the flat-bar type to plating | 0.21 | Double continuous |
| 2 Bottom structure of fishing tank area | | |
| (1) Tight centre girder: to keep | 0.44 | Deep penetration welding |
| to inner bottom | 0.44 | |
| (2) Non-tight centre girder (or centre keelson):to keel | 0.27 | |
| to inner bottom (or face plate of centre keelson) | 0.21 | No scallops |
| (3) Tight boundaries of floors, girders | 0.39 | . |
| (4) Non-tight boundaries of floors, girders (or side keelson) and | 0.21 | In way of 0.2 ×span at ends |
| brackets | 0.27 | In way of brackets at lower end of main frame |
| (5) Inner bottom longitudinals or reverse frames to inner bottom | 0.13 | |
| (6) Floors supporting plane bulkhead, corrugated bulkhead to inner bottom | 0.44 | Double continuous |
| 3 Hull framing | | |
| (1) Web frames to shell or stringers to shell | 0.16 | Main webs to shell plating 0.16 |
| (2) Webs of stringers to face plate or webs of web frames to face plate | 0.13 | |
| (3) Tank side brackets to shell and inner bottom | 0.34 | End bracket of frame to shell plating 0.34 |
| 4. Decks and supporting structure | | |
| (1) Strength deck plating to shell | 0.44 | See 5.2.5 of PART THREE of CCS Rules for Materials and Welding |
| (2) Other decks to shell and bulkheads (except where forming tank boundaries) | 0.21 | Generally double continuous |
| (3) Webs of cantilevers to deck and to shell in way of root bracket | 0.44 | |
| (4) Webs of cantilevers to face plate | 0.21 | |
| (5) Pillars: end connections | 0.34 | |
| end connections (tubular) | 0.44 | Deep penetration $t_n$ > 10mm turn on groove |
| (6) Girder web connections and brackets in way of pillar heads and heels | 0.21 | |
| (7) Web plates of hatch girders and deck web beams to deck, their face plates | 0.16 | |
| 5 Bulkhead and liquid tank structure | | |
| (1) watertight plane bulkheads boundaries | 0.39 | |
| (2) Stiffeners on watertight bulkheads where acting as pillars | 0.13 | |
| (3) watertight corrugated bulkheads boundaries | 0.44 | |

| | | |
|---|---|---|
| (4) Non-watertight pillar bulkhead boundaries | 0.13 | |
| (5) Perforated flats and wash bulkhead boundaries | 0.10 | |
| 6. Structure in machinery space | | |
| (1) Non-tight centre girder (or centre keelson) to keel and inner bottom(or face plate of centre keelson) | 0.27 | |
| (2) Non-tight floors to centre girder (or centre keelson) in way of engine, thrust and boiler bearers | 0.27 | |
| (3) Non-tight floors and girders (or side keelsons) to shell and inner bottom | 0.21 | |
| (4) Main engine foundation girders to top plate | 0.44 | Deep penetration, edge to be prepared |
| Main engine foundation girders to hull structure | 0.44 | with maximum root $\leq t_c/3$. |
| Main engine foundation girders to floors | 0.27 | |
| Main engine foundation girders to brackets | 0.21 | |
| (5) Transverse and longitudinal framing to shell | 0.13 | |
| 7. Construction in 0.25L forward | | |
| (1) Floors and girders (or centre keelson, etc.) to shell and inner bottom | 0.21 | |
| (2) Bottom longitudinals to shell | 0.13 | |
| (3) Transverse and longitudinal side framing to shell | 0.13 | |
| (4) Tank side brackets to frame and inner bottom | 0.34 | |
| (5) All internal structure in fore peak | 0.13 | Unless a greater weld factor is required |
| 8 Aft peak construction: All internal structure including stiffeners on aft peak bulkhead | 0.21 | Unless a greater weld factor is required |
| 9. Superstructure and deckhouses | | |
| (1) Connection of external bulkheads to deck | 0.34 | 1st and 2nd tier erections |
| | 0.21 | Elsewhere |
| (2) Internal bulkheads to deck | 0.13 | |
| 10Hatchways and closing arrangements | | |
| (1) Hatch coamings to deck | 0.34 | 0.44 at corners |
| (2) Hatch coaming stays (stiffeners, brackets) to coaming | 0.13 | |
| to deck | 0.21 | |
| (3) Hatch cover rest bar | 0.16 | |
| (4) Cleats and fittings | 0.44 | Increased welding may be required |
| (5) Primary and secondary stiffening of hatch covers | 0.10 | 0.13 for tank covers and where covers strengthened for loads over |
| 13. Steering control systems | | |
| (1) Rudder | | |
| ① Fabricated main piece and main piece to side plates and webs | 0.44 | Increased welding may be required |
| ② Slot welds inside plates | 0.44 | |
| ③ Remaining construction | 0.21 | |
| (2) Fixed and steering nozzles: Main structure | 0.44 | |
| Elsewhere | 0.21 | |
| (3) Thruster units and stabilizers: Main structure | 0.44 | |

| | | |
|---|---|---|
| Elsewhere | 0.21 | |
| 12 Miscellaneous fittings and equipment | | |
| (1) Rings for manhole type covers to deck, inner bottom or bulkhead | 0.34 | ~~Positions 1 and 2 specified by Load~~ |
| (2) Frames of shell and weathertight bulkhead doors | 0.34 | ~~Lineassignment~~ |
| (3) Stiffening of watertight doors | 0.21 | |
| (4) Ventilator, air pipe, etc., coamings to deck | 0.34 | Positions 1 and 2 specified by Load |
| Elsewhere | 0.21 | Line assignment |
| (5) Ventilator, etc., fittings | 0.21 | |
| (6) Scuppers and discharges, to deck | 0.44 | |
| (7) Bracket of portal frame, mast(posts), derrick posts(trawl beam) to deck | 0.44 | PART THREE of CCS Rules for Materials and Welding |
| (8) Seats of web winder, winches, windlass to deck | 0.44 | Special equipment subject to design |
| (9) Deck machinery seats to deck | 0.21 | Special equipment subject to design |
| (10) Mooring equipment (bollards, etc.) seats to deck | 0.21 | Increased or full penetration welding maybe required |
| (11) Bulwark stays to deck | 0.21 | |
| (12) Bulwark attachment and guard rails, stanchions, etc., to deck | 0.34 | |
| (13) Bilge keel backing bars to shell | 0.34 | |
| (14) Bilge keels to backing bars | 0.21 | |

1.4.4.8 The size of fillet welds in primary members is to comply with the following:

(1) Weld factors may be obtained from Table 1.4.4.8(1)

Weld Factors of Primary Members Table 1.4.4.8(1)

| Cross-sectional area of face plate of T-type members $A$, in $cm^2$ | Position ① | In tanks | | Other spaces | |
|---|---|---|---|---|---|
| | | To face plate | To plating | To face plate | To plating |
| | | $w_\tau$ | $w_\tau$ | $w_\tau$ | $w_\tau$ |
| $A \leq 30$ | At ends | 0.21 | 0.27 | 0.21 | 0.21 |
| | Remainder | 0.10 | 0.16 | 0.10 | 0.13 |
| $30 < A \leq 65$ | At ends | 0.21 | 0.34 | 0.21 | 0.21 |
| | Remainder | 0.13 | 0.27 | 0.13 | 0.16 |
| $65 < A \leq 95$ | At ends | 0.34 | 0.44 ② | 0.21 | 0.27 |
| | Remainder | 0.27 | 0.34 | 0.16 | 0.21 |
| $95 < A \leq 130$ | End | 0.34 | 0.44 ② | 0.27 | 0.34 |
| | Remainder | 0.27 | 0.34 | 0.21 | 0.27 |
| $130 < A$ | At ends | 0.44 | 0.44 ② | 0.34 | 0.44 ② |
| | Remainder | 0.34 | 0.34 | 0.27 | 0.34 |

①: The weld factors "at ends" are to be applied for 0.2 × the length of the member from each end, but at least beyond the toes of the member end brackets. On vertical webs the increased welding may be omitted at the top, but is to extend at least 0.3 × length from the bottom. "Length of the member" means the overall length of the member (including the end brackets).

②: Where the web plate thickness is increased locally, the throat thickness is to be determined by $0.44t_p$ or $0.34t_c$, whichever is the greater. For $t_p$, see 1.4.4.2(1) of this Section, and $t_c$ is the increased thickness of plate.

~~③: If fillet welding is adopted, the leg length $K$ can also be checked in the appendix Ⅱ at the end of this PART according to the welding factors $w_\tau$ in the table.~~

If fillet welding is adopted, the leg length $K$ can also be checked in the appendix Ⅱ at the

end of this PART according to the welding factors$w_\tau$ in the table.

(2) Where the webs of primary members are cut for the passage of secondary members and the width of the notch exceeds 15% of the stiffener spacing, the weld factor $w_\tau$ or the leg length *K* of fillet weld is to be multiplied by coefficient *C* obtained from the following formula:

$$C = \frac{0.85 \times \text{stiffener spacing}}{\text{length of web plating between notches}}$$

(3) In calculation of the throat thickness, the overall length of the weld at the ends of the member may be taken into account.

# CHAPTERS 2 HULL STRUCTURE

## Section 6 DOUBLE BUTTOMS

2.6.9.1 The thickness *t*of the inner bottom plating is not to be less than the following:

*t*=0.04*L*+5*s*+2.1mm, and not less than 6 mm, for 0.4*L*amidships

*t*=0.055*L*+4.8 mm, for engine spaces

Where: *s*——spacing of frames, in m

For 0.075*L* from the vessel's ends, the thickness is to be 0.9 times that required for 0.4*L* amidships. The thickness of the inner bottom plating in other regions is to be tapered gradually to the end thickness from the thickness within 0.4*L* amidships.

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# PART 2 ENGINE AND FISHING MACHINERY EQUIPMENT

# CHAPTER 2 GENERAL REQUIREMENTS FOR PUMPS AND PIPING SYSTEMS

## Appendix 1 Production and Application of Plastic Piping Systems on Ships [1][2]

1.3.4 Temperature

(1) The permissible working temperature depending on the working pressure is to be in accordance with Manufacturer's recommendations, but in each case it is to be at least 20° C lower than the minimum heat distortion/deflection temperature of the pipe material( determined according to ISO 75-2:2013 method A, or equivalent e.g. ASTM D648-18) .

1.4.1 Fire endurance

(1) Pipes and their associated fittings whose integrity is essential to the safety of fishing ships are required to meet the minimum fire endurance requirements of Appendix 1 or 2, as applicable, of IMO Resolution A.753(18), as amended by IMO Resolutions. MSC.313(88) and MSC.399(95).

(2) Depending on the capability of a piping system to maintain its strength and integrity, there exist five different levels of fire endurance for piping systems.

①Level 1. Piping having passed the fire endurance test specified in Appendix 1 of IMO Resolution. A.753(18), as amended by IMO Resolutions. MSC.313(88) and MSC.399(95) for a duration of a minimum of one hour without loss of integrity in the dry condition is considered to meet level 1 fire endurance standard (L1).

③Level 2. Piping having passed the fire endurance test specified in Appendix 1 of IMO Resolution. A.753(18), as amended by IMO Resolutions. MSC.313(88) and MSC.399(95) for a duration of a minimum of 30 minutes in the dry condition is considered to meet level 2 fire endurance standard (L2).

⑤Level 3. Piping having passed the fire endurance test specified in Appendix 2 of IMO Resolution. A.753(18) as amended by IMO Resolutions MSC.313(88) and MSC.399(95) for a duration of a minimum of 30 minutes in the wet condition is considered to meet level 3 fire endurance standard (L3).

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[1] *Production and Application of Plastic Piping Systems on Ships* addresses the provisions of IMO Resolution. A.753(18), as amended by IMO Resolutions. MSC.313(88) and MSC.399(95).

[2] This revision applies to plastic piping systems for which the date of application for type approval certification is dated on or after 1 July 2022; and plastic piping systems intended to be installed on ships contracted for construction on or after 1 July 2022.

Table 1.4.1：

ABBREVIATIONS：

L1——Fire endurance test (appendix 1 of IMO Resolution A.753(18), as amended by IMO Resolutions.MSC.313(88) and MSC.399(95)) in dry conditions, 60 min；

L1W——Fire endurance test (section 1.4.1（2）)；

L2——Fire endurance test (appendix 1 of IMO Resolution A.753(18), as amended by IMO Resolutions. MSC.313(88) and MSC.399(95)) in dry conditions, 30 min；

L2W——Fire endurance test (section 1.4.1（2）)；

L3——Fire endurance test (appendix 2 of IMO Resolution A.753(18), as amended by IMO Resolutions. MSC.313(88) and MSC.399(95)) in wet conditions, 30 min；

~~L1W——Fire endurance test (appendix 1 of IMO Resolution A.753(18), in dry conditions, 60 min, a maximum 5% flow loss in the system；~~

~~L2W——Fire endurance test (appendix 1 of IMO Resolution A.753(18), in dry conditions, 30 min, a maximum 5% flow loss in the system；~~

③Scuppers serving open decks in positions 1 and 2, as defined in Regulation 13 of Protocol of 1988 relating to the International Convention on Load Lines, 1966, as amended by IMO Resolutions up to MSC.375(93), should be "X" throughout unless fitted at the upper end with the means of closing capable of being operated from a position above the freeboard deck in order to prevent down flooding.

1.4.2 Flame Spread

（1）All pipes, except those fitted on open decks and within tanks, cofferdams, pipe tunnels, and ducts if separated from accommodation, permanent manned areas and escape ways by means of an A class bulkhead are to have low surface flame spread characteristics not exceeding average values listed in Appendix 3 of IMO Resolution A.753(18), as amended by IMO Resolutions. MSC.313(88) and MSC.399(95).

（2）Surface flame spread characteristics are to be determined using the procedure given in the 2010 FTP Code, Annex 1, Part 5 with regard to the modifications due to the curvilinear pipe surfaces as also listed in Appendix 3 of IMO Resolution A.753(18), as amended by IMO Resolutions. MSC.313(88) and MSC.399(95).

（3）Surface flame spread characteristics may also be determined using the test procedures given in ASTM D635-18, or in other national equivalent standards. Under the procedure of ASTM D635-18 a maximum burning rate of 60 mm/min applies. In case of adoption of other national equivalent standards, the relevant acceptance criteria are to be defined.

1.5.3 The Manufacturer is to have quality system that meets ISO ~~9000~~9001:2015 series standards or equivalent. The quality system is to consist of elements necessary to ensure that pipes and fittings are produced with consistent and uniform mechanical and physical properties.

1.5.6 In case the Manufacturer does not have an approved quality system complying with ISO ~~9000~~9001:2015 series or equivalent, pipes and fittings are to be tested in accordance with this

Appendix to the satisfaction of the surveyors for every batch of pipes.

1.6.7 Penetration of Divisions

(1) Where plastic pipes pass through “A”,“B” or “F”class divisions, arrangements are to be made to ensure that the fire endurance is not impaired. These arrangements are to be tested in accordance with Recommendations for fire test procedures for “A”, “B” and “F” bulkheads specified in ~~revised Resolution A.754(18)~~Part 3 of Annex 1 to the 2010 FTP Code (Resolution MSC.307(88) as amended by Resolution MSC.437(99)).