

General Rules for Automatic Drawing of Basic Hull Construction Plans

1. Scope

This Japanese Industrial Standard specifies the general requirements for computer-aided automatic drawing of basic hull construction plans⁽¹⁾ of ships. Designations and symbols for strakes, seams and butt joints, and numbering for frames and girders are specified in the ANNEX.

Note (1): Basic hull construction plans specified in this standard cover the following plans.

- (1) Midship section
- (2) Bulkhead construction
- (3) Longitudinal profile
- (4) Deck construction plan
- (5) Beam, pillar and under-deck longitudinal girder construction plan
- (6) Shell expansion plan

Remark: Requirements except those specified in this standard shall, as a rule, be in accordance with the requirements of JIS Z 8312, JIS Z 8313 and JIS Z 8314.

2. Applications of Lines

Applications of lines shall be as given in Table 1.

Table 1

Type of Line	Applications
<u>Continuous thick</u>	• Section of plate thickness • Attaching line of boundary panel of sub-division on the near side (Examples: bulkhead, deck, platform deck)
<u>Continuous thin</u>	• Visible outlines • Opening • Joint • Thickness of face plate or flange plate • Reference lines • Dimension lines • Extension line and leader line • Hatching
<u>Short dashes thick</u>	• Attaching line of boundary panel of sub-division on the far side (Examples: bulkhead, deck, platform deck) • Attaching line of girder and web on the far side
<u>Short dashes thin</u>	• Far side attached flange thickness • Indication of far side compartment • Outline of doubling plate on the far side • Attaching line of stiffener and beam on the panel plane (far side attached) (2) • Attaching line of stiffener and beam on the far side of girder and web
<u>Long chain thick</u>	• Girder and web on the panel plane (both near side and far side attached)
<u>Long chain thin</u>	• Stiffener and beam on the panel plane near side attached • Stiffener and beam on near side of girder and web • Centre line • Knuckle line • Indication of compartment on near side

Note (2): Short dashes thin (---) may be replaced by long chain thin (----).

3. Views and Direction of Ship

3.1 Direction of views Direction of views shall be as follows:

- (1) A plan is drawn as viewed from above to below.
- (2) A side view is drawn as viewed from starboard side to port side.
- (3) A cross sectional view is drawn as viewed from aft to forward.

Remark: Typical examples of drawing are shown in Reference Figure.

3.2 Orientation of hull on the drawing and specification of drawing board

3.2.1 The direction of hull shall be oriented so that the bow be placed on the right side and stern on the left, on the drawing sheet (e.g., plan, side view, shell expansion, etc.).

3.2.2 The drawing shall, as a rule, be so as to represent port side half of hull.
The drawing of those peculiar to starboard side, if necessary, may be partly shown on the starboard drawing sheet (e.g., plan, side view, cross sectional view, shell expansion, etc.).

Remark: Typical examples of drawing are shown in Reference Figure.

4. Presentation

4.1 Scantling The presentation of scantlings on rolled sections (including built-up sections) and the brackets, etc. shall be as given in Table 2.

Table 1

Type of line	Application
Continuous thick	- Section of plate thickness - Attaching line of boundary panel of subdivision on the port side (Example: hullhead deck, bottom deck)
Continuous thin	- Trunk outliner - Opening - Joint - Traverse of fore plate or transverse plate - Reference line - Reference line - Reference line and leader line - Heating
Short dashed thick	- Attaching line of boundary panel of subdivision on the starboard side (Example: hullhead, deck, bottom deck) - Attaching line of center and web on the starboard side
Short dashed thin	- Port side attached frame thickness - Indication of the side compartment - Outline of double plate on the starboard side - Attaching line of center and beam on the starboard side (the side attached) (5) - Attaching line of stiffener and beam on the starboard side of center and web
Long chain thick	Center and web on the main plate (both port side and starboard side)
Long chain thin	- Stiffener and beam on the main plate near side attached - Stiffener and beam on new side of center and web - Center line - Reference line - Indication of compartment on port side

Note (5): Short chain thin line may be replaced by long chain thin line.

3. Views and Direction of Ship

3.1 Direction of view

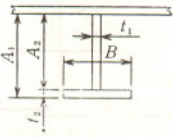
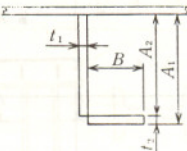
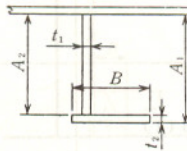
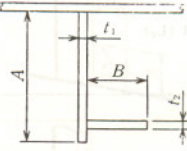
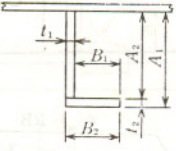
(1) A plan is drawn as viewed from above to below.

(2) A side view is drawn as viewed from starboard side to port side.

(3) A cross sectional view is drawn as viewed from aft to forward.

Remark: Typical examples of drawing are shown in Reference Figure.

Table 2 Presentation of scantling

Type		Presentation	
		Built-up type	Rolled type
Built-up ⁽³⁾ (T)		$A_2 \times t_1 + B \times t_2$ (T)	$A_1 \times B \times t_1 / t_2$ (T)
Built-up ⁽³⁾ (L ₁)		$A_2 \times t_1 + B \times t_2$ (L ₁)	$A_1 \times B \times t_1 / t_2$ (L ₁)
Built-up ⁽³⁾ (L ₂)		$A_2 \times t_1 + B \times t_2$ (L ₂)	$A_1 \times B \times t_1 / t_2$ (L ₂)
Built-up ⁽³⁾ (L ₃)		$A \times t_1 + B \times t_2$ (L ₃)	—
Built-up ⁽³⁾ (L ₄)		$A_2 \times t_1 + B_2 \times t_2$ (L ₄)	$A_1 \times B_2 \times t_1 / t_2$ (L ₄)

Note ⁽³⁾: Refer to Table 3 for the meanings of T, L₁, L₂, L₃ and L₄.

Note ⁽⁴⁾: (CFL) applies to the case of the flange of the rolled type.

Table 2 (Continued)

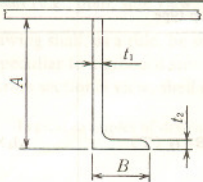
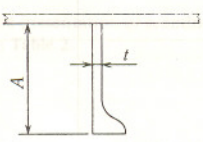
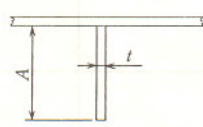
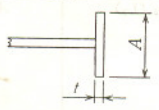
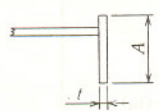
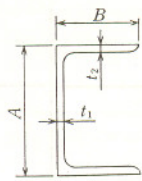
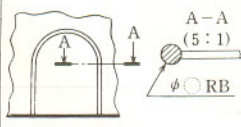
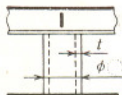
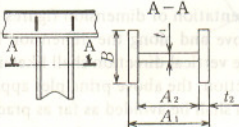
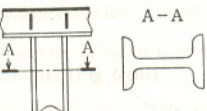
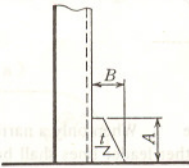
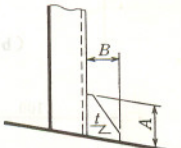
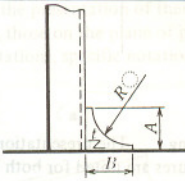
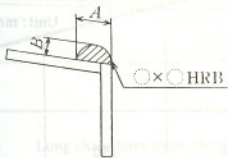
Type	Presentation	
	Built-up type	Rolled type
Rolled section		$A \times B \times t_1/t_2$ IA or $\angle A \times B \times t_1/t_2$
Bulb plate		$A \times t$ BP or $\bullet A \times t$
Flat bar (Slab bar)		$A \times t$ FB
Face plate		$A \times t$ FB (T)
		$A \times t$ FB (L2)
Channel		$A \times B \times t_1/t_2$ CH or $\square A \times B \times t_1/t_2$
Round bar		ϕ RB

Table 2 (Continued)

Type	Presentation		
	Built-up type	Rolled type	
Pipe		—	PILL $\phi \times t$
Pillar		$A_2 \times t_1 + B \times t_2$ (H)	$A_1 \times B \times t_1/t_2$ (H)
Rolled section		—	$A_1 \times B \times t_1/t_2$ (H), $A_1 \times B \times t_1/t_2$ (I), $\perp A_1 \times B \times t_1/t_2$ (H) or $\perp A_1 \times B \times t_1/t_2$ (I)
Bracket		$A \times B \times t$ ($\odot$ FL)	(⁴)
		$A \times B \times t$ ($\odot$ FL)	(⁴)
		$A \times B \times t$ R $\odot$	
Half-round bar		$A \times B$ HRB	

Note (⁴): ($\odot$ FL) applies to the case where flanged member is involved.

4.2 Presentation of scantling and location of members

4.2.1 Dimension lines Presentation of dimension lines shall be in accordance with the requirements of JIS Z 8317 (Fig. 1). The dimension lines always represent mould lines. However, when specific notation is given, they may be used as the presentation of plate cutting allowance.



Fig. 1

4.2.2 Presentation of dimension figures The presentation of dimension figures involving dimension lines in the horizontal direction shall be made immediately above and along the dimension lines leaving a small space in between, whereas that involving dimension lines in the vertical direction shall likewise be made immediately on the left side along the dimension lines in oblique direction, the above principles apply mutatis mutandis to (Fig. 2). Presentation of dimension figures in hatched section shall be avoided as far as practicable.

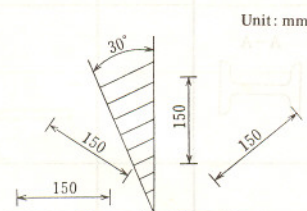


Fig. 2

4.2.3 Presentation of dimension figures for narrow space When only a narrow space is available for noting dimension figures to the extent no entry can be made, either leader lines shall be used (Fig. 3 (a)) or dimension figures shall be written above the extension line of the dimension line (Fig. 3 (b)).

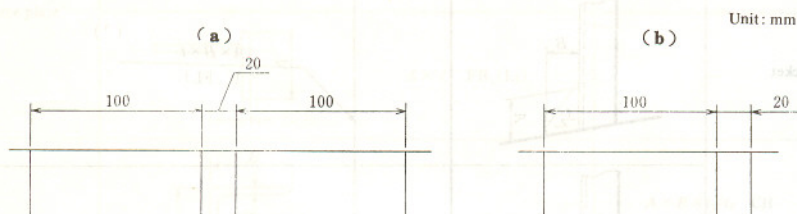


Fig. 3

4.2.4 Presentation of dimension figures for equal spacing The presentation of dimension figures for equal spacing shall be made in such a manner that dimension figures are noted for both outer ends of spaces with simplified entries with " " for the rest of equally divided spaces (Fig. 4).

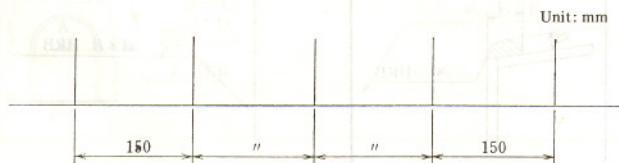


Fig. 4

4.2.5 Presentation of dimensions along girth The presentation of dimension figures for curved members shall be made by drawing a dimension line concentric with a given curve and dimension figures shall be made above the dimension line (Fig. 5).

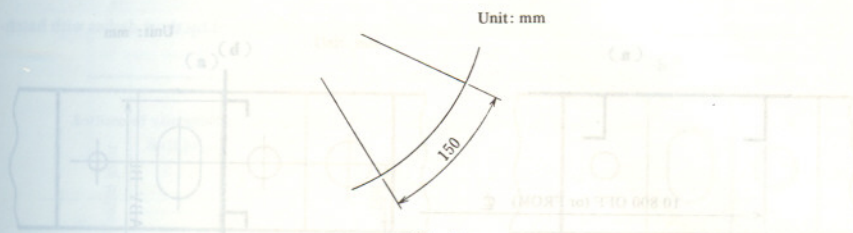


Fig. 5

4.2.6 Presentation of arc radius Presentation of arc radius shall be as follows:

- (1) When the dimension line is fitted, an arrow shall be placed inside of the arc only (Fig. 6(a)).
- (2) When the centre of radius is far from the arc, part of the dimension line near the centre of arc may be omitted (Fig. 6 (b)).
- (3) When the scale contraction is too large to put in an arrow, the presentation of radial dimensions shall be made by writing, for example R 150, on the inside of the arc (Fig. 6 (c)).

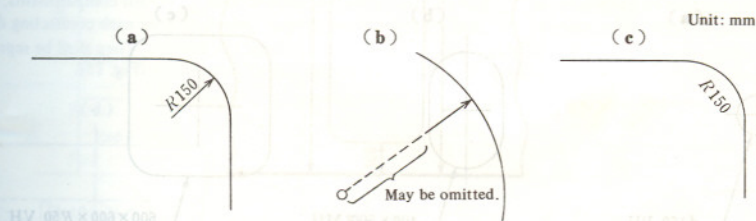
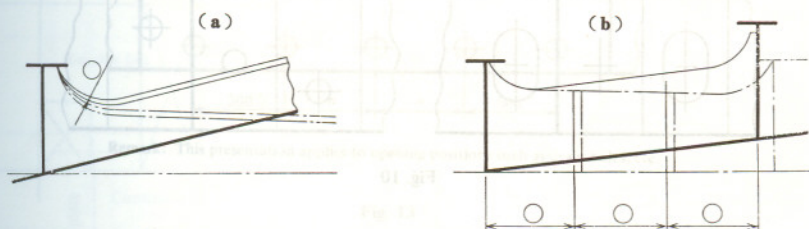


Fig. 6

4.2.7 Presentation of dimensions of inclined member For members arranged in the position inclined to the projection plane, the presentation of their dimensions shall be made with actual figures (Fig. 7 (a)). For members' positions, those on the plane of projection shall be used as they are (Fig. 7 (b)). Except for those presentations, specific notations shall be made.



Remark: Long chain lines show the developed shapes.

Fig. 7