BS ISO 129-4:2013

BSI Standards Publication

Technical product documentation (TPD) — Indication of dimensions and tolerances

Part 4: Dimensioning of shipbuilding drawings

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The UK participation in its preparation was entrusted to Technical Committee TDW/4, Technical Product Realization.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Technical product documentation (TPD) — Indication of dimensions and tolerances —

Part 4: Dimensioning of shipbuilding drawings

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Partie 4: Cotes des dessins de construction navale

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Foreword

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The committee responsible for this document is ISO/TC 10, *Technical product documentation*, Subcommittee SC 6, *Mechanical engineering documentation*.

ISO 129 consists of the following parts, under the general title *Technical product documentation (TPD) — Indication of dimensions and tolerances*:

— *Part 1: General principles*

— *Part 2: Dimensioning of mechanical engineering drawings*

— *Part 3: Architectural*

— *Part 4: Dimensioning of shipbuilding drawings*

INTERNATIONAL STANDARD **ISO 129-4:2013(E)**

Technical product documentation (TPD) — Indication of dimensions and tolerances —

Part 4: Dimensioning of shipbuilding drawings

1 Scope

This part of ISO 129 specifies the dimensioning for general use on metal hulls on shipbuilding drawings.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 128-25, *Technical drawings — General principles of presentation — Part 25: Lines on shipbuilding drawings*

ISO 129-1:—[1)], *Technical drawings — Indication of dimensions and tolerances — Part 1: General principles*

3 General principles

General principles of dimensioning are as follows.

a) The basic types of lines, their designations, as well as general rules for draughting of lines, are specified in ISO 128-25.

b) The rule of indication of dimension and tolerances are specified in ISO 129-1.

c) The location dimension of the hull structure shall be indicated with the distance of the assembled moulded line of the member from reference line (BL = base line, CL = centre line, AP = after perpendicular, FP = forward perpendicular, WL = water line).

d) The dimensions of the same member(s) shall be indicated only once; the dimensions of the members with identical specifications and sizes shall be indicated only once; these dimensions should be on the view(s) of the drawing that displays the member(s) most clearly.

4 Basic requirements

4.1 General

Dimensions indicating the location of a structural member in the hull shall be referenced as follows.

— In longitudinal direction: to a structural frame or to a station or to midship

— In vertical direction: to a BL, to a WL, or to a deck line

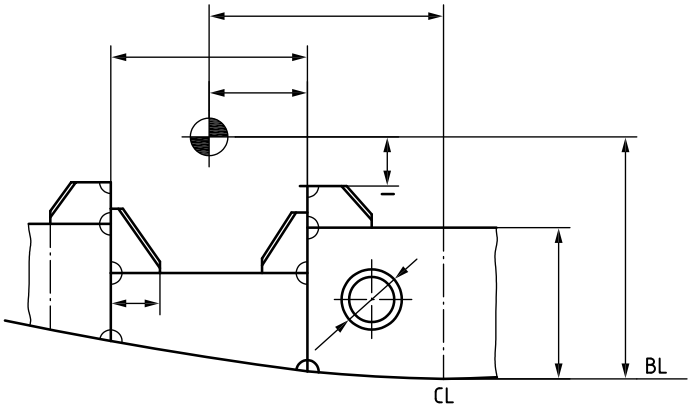
— In transverse direction: to a CL or to a broadside

1) To be published. (Revision of ISO 129-1:2004)

4.2 Dimension lines

4.2.1 Dimension lines shall be drawn with continuous narrow lines as per ISO 128-25.

Dimension lines should preferably be terminated on either end by closed 30°-arrowheads as shown in Figure 1, but other terminations as ISO 129-1:—, 5.3.2 are admissible.



Key

– location of the assembled moulded line of the member

shaft system section

Figure 1

4.2.2 In case of insufficient space for drawing arrowheads and writing measures, dimensions may be indicated as shown in Figure 2.

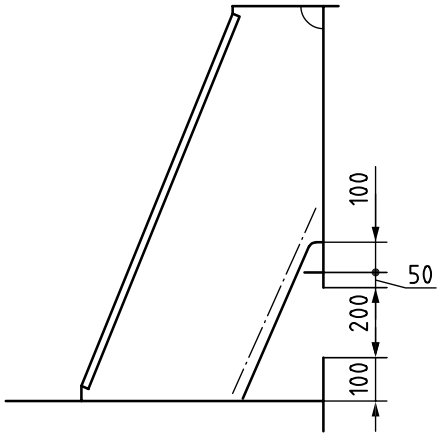
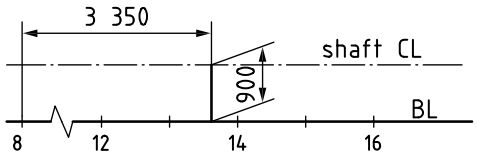


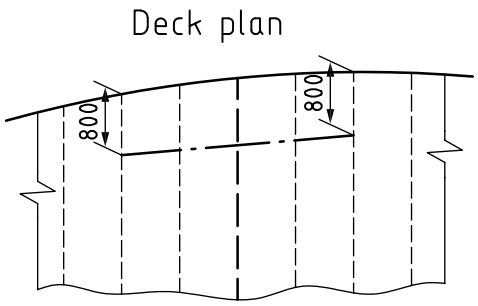
Figure 2

4.3 Extension lines

4.3.1 Extension lines shall be drawn with continuous narrow lines originating from the moulded line, frame line, station, axis, or reference line of the respective member. The extension lines terminate at the dimension lines as shown in Figures 1 and 3 and as defined in ISO 129-1:—, 5.4.



(a)

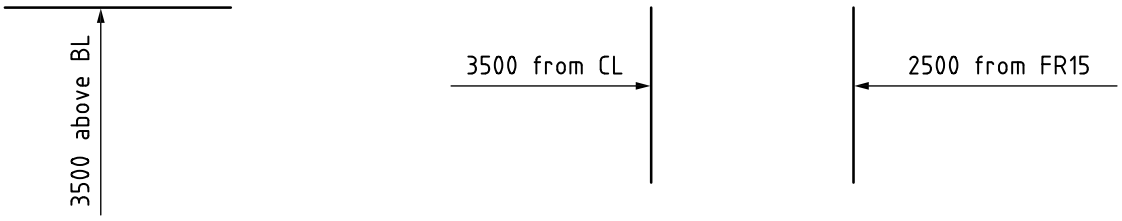


(b)

Figure 3

4.3.2 Extension lines shall be perpendicular to the dimension line. They may be oblique and parallel as shown in Figure 3 (b).

4.3.3 Dimension lines which start at one end at a reference line may be terminated at one end only if the dimension line otherwise would become too long. For examples, see Figure 4 (a) to Figure 4 (c).



(a) **(b)** **(c)**

Figure 4

4.3.4 At a rounded corner of the shear strake, an idealized corner point shall be drawn by extension lines of the moulded plate edges, as shown in Figure 5. The dimensions are referenced to this corner point.

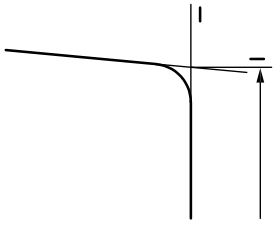


Figure 5

4.4 Types of dimensions indication

4.4.1 Dimensions shall be written above the dimension line. If the drawing would become too crowded, dimensions may be written above leader lines pointing towards the dimension lines.

4.4.2 Generally, dimension numbers shall not be crossed by lines.

4.4.3 When structural members, e.g. profile stiffeners, are equally spaced, this may be indicated as shown in Figure 6.

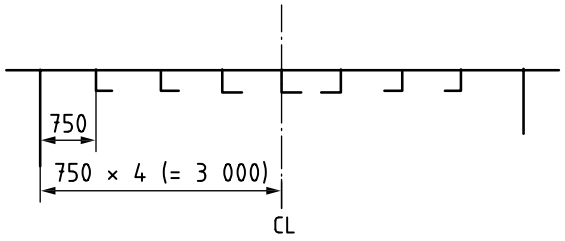


Figure 6

4.4.4 Offsets of curves are presented by offset tables as shown in Table 1, which is referenced to Figure 7.

Table 1 — Funnel offsets

Funnel offsets (half-breadths)											
Frame number	74	75	76	77	78	79	80	81	82	83	84
Top line			1 310	1 475	1 610	1 685	1 587	1 515	1 072		
Bottom line	1 332	1 530	1 722	1 890	2 045	2 170	2 235	2 200	2 032	1 710	1 040

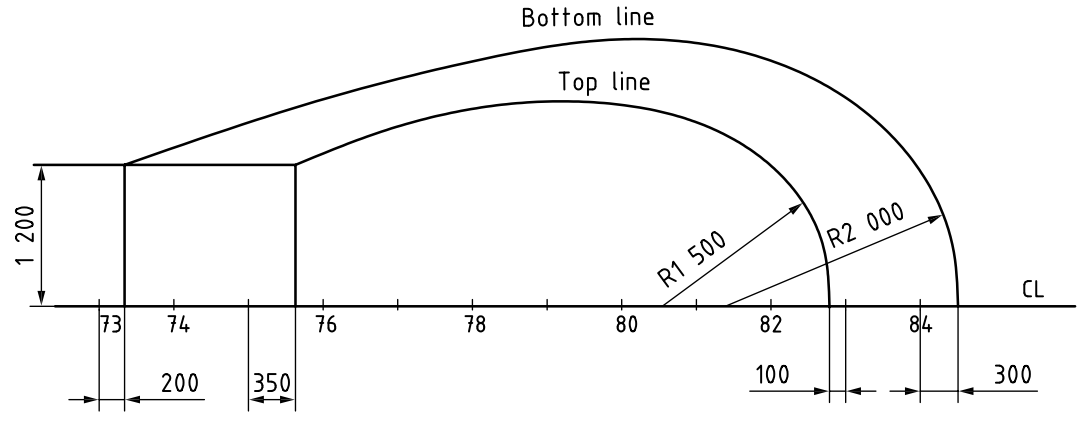


Figure 7

4.4.5 Inclinations of structures like funnel envelopes or front bulkheads of deckhouses shall be defined using rectangular coordinates and not angular measures.

4.4.6 When dimensioning a wall with various openings, one of the following principles shall be observed (see Figure 8).

a) Measures of rectangular openings should preferably, but not compulsorily, follow the sequence long side by short side. Measures are separated by “x”.

b) The coaming height, h, i.e. the distance of the lower edge of a door opening from the upper side of the deck below, may be defined by “h” preceding the measure, e.g. h200 in the opening far right.

c) The four corner radii of an opening shall typically be presented once by “R” preceding the measure.

d) Dimensions locating openings shall refer to their centres. The vertical distance, thereby, is normally referenced to the deck below.

e) There is no need to dimension the distance from the centre of openings to the moulded lines of neighbouring stiffeners if it is intended to locate the opening in the middle between the stiffeners.

f) Equally sized and arranged openings shall be dimensioned only once.

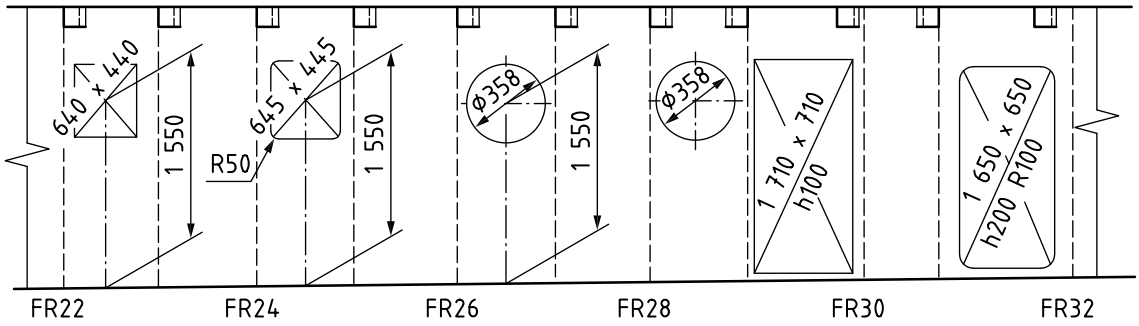
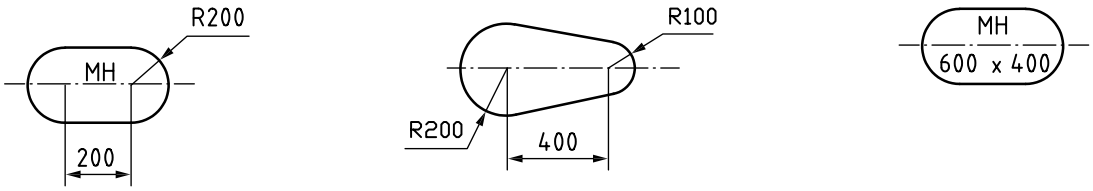


Figure 8

4.4.7 Dimensioning of manholes and lightening holes shall be as shown in Figure 9 (a) and (b); abbreviated “MH” shall be stated as shown in Figure 9 (a). Simplified dimensioning of manholes shall be stated as shown in Figure 9 (c).



(a) **(b)** **(c)**

Figure 9

4.4.8 Indications of opening dimensions for a drain hole, a clearance hole, and an air hole are shown in Figure 10.

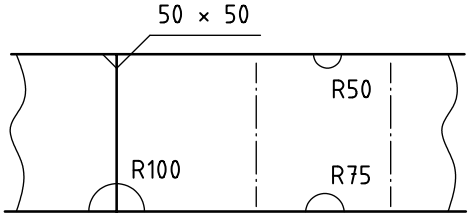


Figure 10

4.5 Dimensions of plates and profiles

Dimensions of plates and profiles, built girders, and brackets shall be indicated as shown in Table 2.

Table 2 — Dimensions of plates, profiles, built girders, and brackets

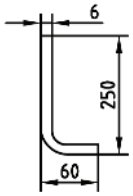
No.	Name	Symbol	Meaning of dimensions	Examples of dimensioning
Plate				
1	Plate		Thickness × width Thickness × width × length	12 × 1500 12 × 1500 × 6000
2	Flanged plate	L	Thickness × height, flange width 	L250 x 6,FL.60
Profile				
3	Flat bar	—	Width × thickness	—100 x 8
4	Round steel bar	●	Diameter	●50
5	Steel pipe	○	Outer diameter × thickness	○100x8
6	Square steel bar	■	Width	■100
7	Square hollow section	□	Width × thickness	□100 x 5
8	Half round steel	⌓	Diameter × thickness	⌓50 x 25
9	Bulb flat	⚑ or HP	Height × spherical width wall × thickness	⚑200 x 44 x 10 or HP 200 x 44 x 10
10	Equal L-section	L	Width × width × thickness	L150 x 150 x 15
11	Unequal L-section	L	Web height × flange width × web thickness × flange thickness	L200 x 90 x 9 x 12
12	T-steel	T	Width × thickness of web and face plate	T90 x 10
13	Steel channel	[	Height × width × thickness	[200 x 73 x 7
14	I-profile	I	Height × width × thickness	I270 x 122 x 85

Table 2 *(continued)*

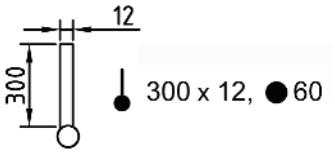
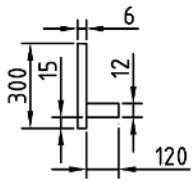
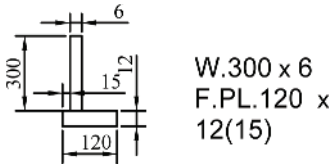
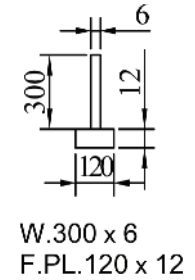
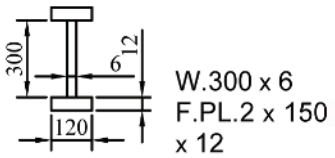
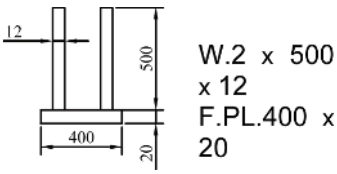
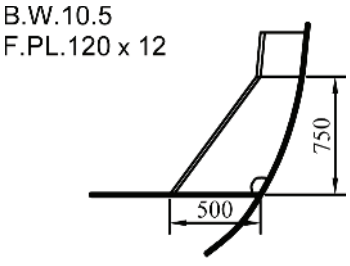
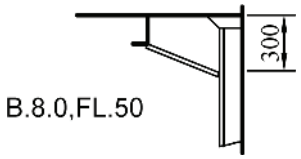
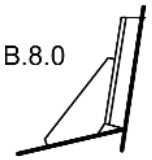
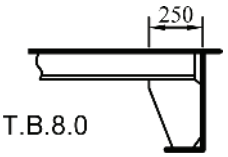
No.	Name	Symbol	Meaning of dimensions	Examples of dimensioning
Combined profile				
15	Combined flat ball steel		Height × thickness of web, diameter of round steel bar	
16	Built profile with face plate aside		1st line: depth × thickness of web, 15 mm protrusion of web may be added 2nd line: width × thickness of face plate	
17	Built asymmetric T-profile		1st line: height × thickness of web 2nd line: width × thickness of face plate, 15 mm side recess of face plate may be added	
18	Built symmetric T-profile		1st line: web, height × thickness of web 2nd line: width × thickness of face plate	
19	Built symmetric H-profile		1st line: height × thickness of web 2nd line: 2 × width × thickness of face plate	
20	Built twin-web profile		1st line: 2 × height × thickness of web 2nd line: width × thickness of face plate	
Bracket				
21	Built brackets with symmetric face plate		1st line: thickness of web 2nd line: width × thickness of face plate	

Table 2 *(continued)*

No.	Name	Symbol	Meaning of dimensions	Examples of dimensioning
22	Flanged bracket		Thickness of bracket, width of flange	
23	Plane bracket		Thickness of bracket	
24	Tripping bracket		Thickness of tripping bracket	
Explanation of symbols: B. = bracket; B.W. = bracket web; W. = web; F.PL. = face plate; FL. = flange; T.B. = tripping bracket				

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