BS ISO 17939:2015

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Ships and marine technology — Oil tank hatches

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National foreword

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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The committee responsible for this document is ISO/TC 8, *Ships and marine technology*, Subcommittee SC 8, *Ship design*.

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Ships and marine technology — Oil tank hatches

1 Scope

This International Standard specifies the classification, structure and main dimensions, materials, quality of manufacture, testing of watertightness and designation for oil tank hatches for application on board ships in order to ensure interchangeability of the hatches. The remaining dimensions, welding, and other details are left to the manufacturer.

These hatches generally conform to the requirements of the International Convention on Load Lines 1966 (ILLC66). These structures and specifications of oil-tight hatch covers in this International Standard meet IACS UR S26 requirements. The possibility for application in position 1 and position 2 has to be considered for each situation and, where necessary, the hatch covers shall be provided with additional stiffening.

This International Standard is applicable to the design, manufacturing, and test of accommodation ladders, as well as accommodation ladder used specifically in combination with pilot ladder (hereinafter referred as “pilot accommodation ladder”).

Users of this International Standard should note that while observing the requirements of this International Standard, they should, at the same time, ensure compliance with such statutory requirements, rules, and regulations as may be applicable to the individual ship concerned.

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 8501–1, *Preparation of steel substrates before application of paints and related products — Visual assessment of surface cleanliness — Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings.*

3 Classifications

3.1 Types

Oil tank hatches are divided into the following types, see Table 1.

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Table 1 — Classification of oil tank hatches

Dimensions in millimetres

Types		Definition	Nominal size	Application in accordance with ILLC66 in position (s)
A (circular)	A1	circular flat hatch cover	600, 700, 800, 900, 1 000, 1 200	2
	A1F	circular flat hatch cover with stiffener		1
	A2	circular curve hatch cover		2
	A2F	circular curve hatch cover with stiffener		1
B (long circular)	B	long circular hatch cover	600 × 800, 750 × 1 200, 750 × 1 300, 750 × 1 500, 850 × 1 500	2
	BF	long circular hatch cover with stiffener		1
C (upper circular, lower long circular)	C1	flat hatch cover (upper circular, lower long circular)	750 (750 × 1 200)[a] 750 (750 × 1 300)[a] 750 (750 × 1 500)[a] 850 (850 × 1 500)[a] 900 (900 × 1 500)[a]	2
	C1F	flat hatch cover with stiffener (upper circular, lower long circular)		1
	C2	curve hatch cover (upper circular, lower long circular)		2
	C2F	curve hatch cover with stiffener (upper circular, lower long circular)		1

[a] The data between parentheses are the size of lower long circular.

3.2 Structure and main dimensions

3.2.1 Type A1

Structure and main dimensions of type A1 hatch cover shall conform to the detail of Figure 1 and Table 2.

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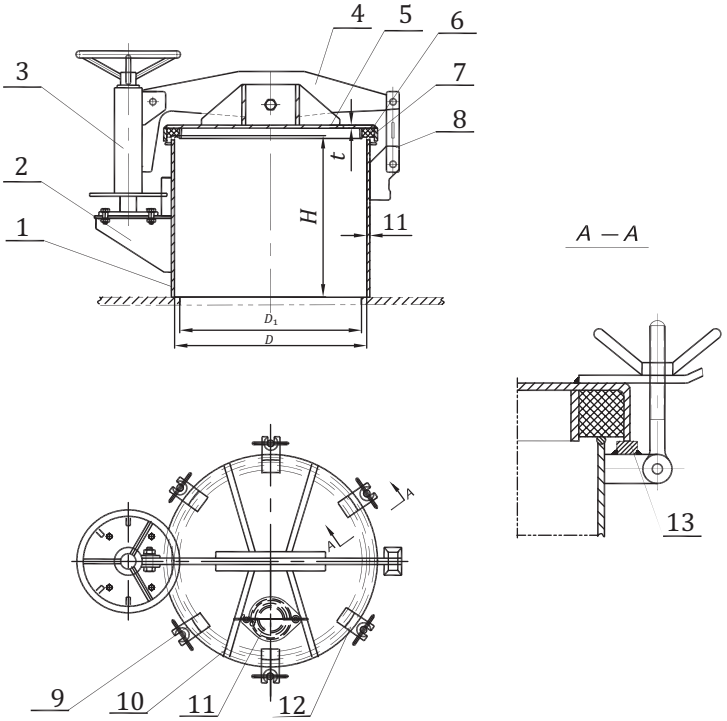
Dimensions in millimetres



Key

1	coaming	8	lock catch
2	bearing	9	wing clamp
3	actuator	10	stiffener
4	junction plate	11	measuring hole cover (optional)
5	cover plate	12	clamp plate
6	seal ring	13	bearing pad welded on the bracket of a toggle bolt for metal to metal contact
7	clamping ring		

NOTE Thickness of coaming shall comply with the related requirements, such as the requirements of classification societies.

Figure 1 — Structure of type A1 hatch

Table 2 — Main dimensions of type A1 and type A1F

Dimensions in millimetres

Nominal sizes D	**Deck opening sizes** D_1	H	t	**Number of clips**
600	570	≥600	12	4
700	670			6
800	770			
900	870			
1 000	970		14	
1 200	1 170			

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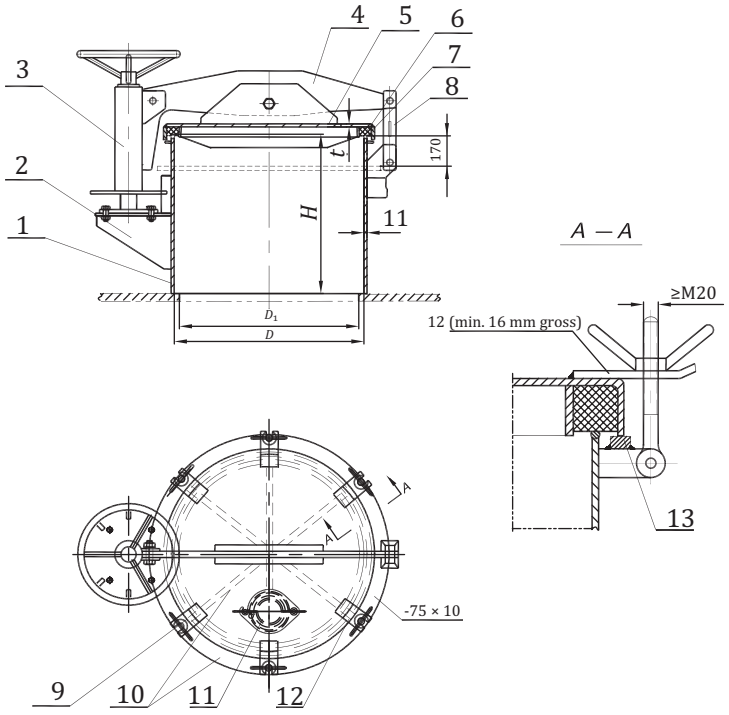
3.2.2 Type A1F

Structure and main dimensions of type A1F hatch cover shall conform to the detail of Figure 2 and Table 2.

Dimensions in millimetres



Key

1	coaming	8	lock catch
2	bearing	9	wing clamp
3	actuator	10	stiffener
4	junction plate	11	measuring hole cover (optional)
5	cover plate	12	clamp plate
6	seal ring	13	bearing pad welded on the bracket of a toggle bolt for metal to metal contact
7	clamping ring		

NOTE Thickness of coaming shall comply with the related requirements, such as the requirements of classification societies.

Figure 2 — Structure of type A1F hatch

3.2.3 Type A2

Structure and main dimensions of type A2 hatch cover shall conform to the detail of Figure 3 and Table 3.

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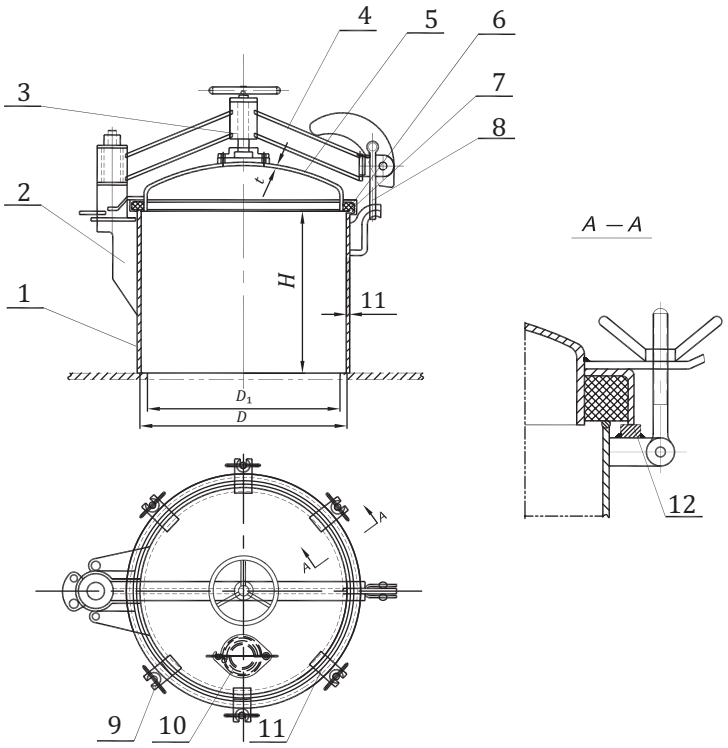
Dimensions in millimetres



Key

1	coaming	7	clamping ring
2	bearing	8	lock catch
3	actuator	9	wing clamp
4	connecting rod	10	measuring hole cover (optional)
5	cover plate	11	clamp plate
6	seal ring	12	bearing pad welded on the bracket of a toggle bolt for metal to metal contact

NOTE Thickness of coaming shall comply with the related requirements, such as the requirements of classification societies.

Figure 3 — Structure of type A2 hatch

Table 3 — Main dimensions of type A2 and type A2F

Dimensions in millimetres

Nominal sizes D	**Deck opening sizes** D_1	H	t	**Number of clips**
600	570	≥600	12	4
700	670			6
800	770			
900	870			
1 000	970		14	
1 200	1 170			

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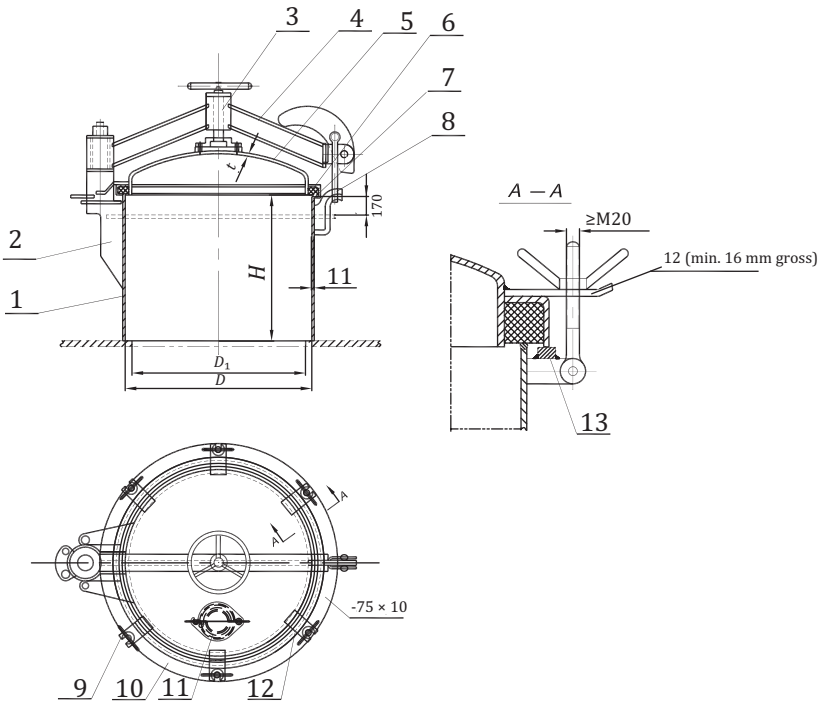
3.2.4 Type A2F

Structure and main dimensions of type A2F hatch cover shall conform to the detail of Figure 4 and Table 3.

Dimensions in millimetres



Key

1	coaming	8	lock catch
2	bearing	9	wing clamp
3	actuator	10	stiffener
4	connecting rod	11	measuring hole cover (optional)
5	cover plate	12	clamp plate
6	seal ring	13	bearing pad welded on the bracket of a toggle bolt for metal to metal contact
7	clamping ring		

NOTE Thickness of coaming shall comply with the related requirements, such as the requirements of classification societies.

Figure 4 — Structure of type A2F hatch

3.2.5 Type B

Structure and main dimensions of type B hatch cover shall conform to the detail of Figure 5 and Table 4.

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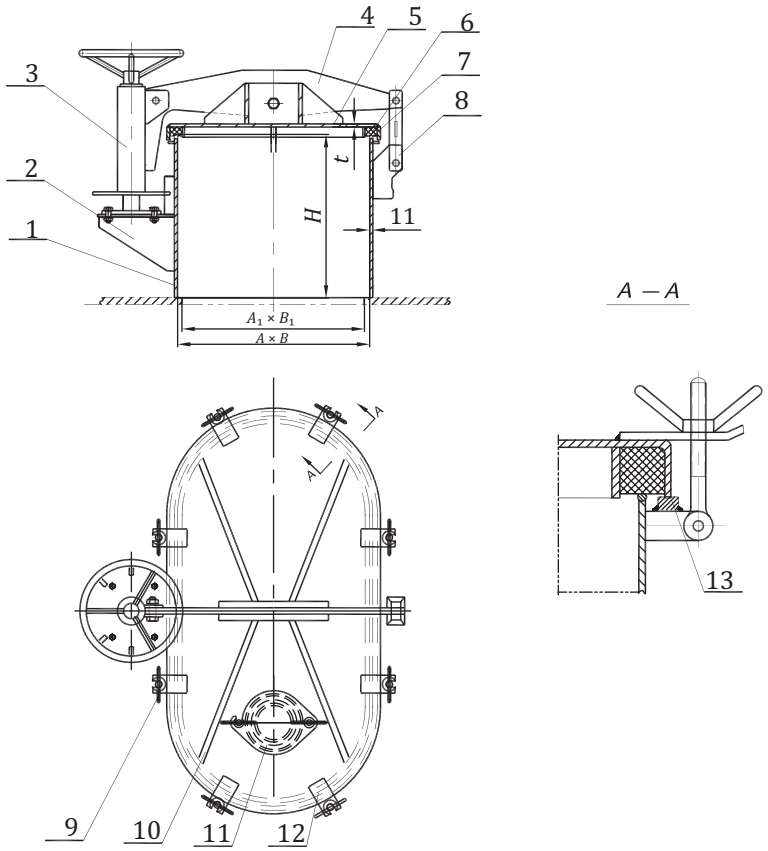
Dimensions in millimetres



Key

1	coaming	8	lock catch
2	bearing	9	wing clamp
3	actuator	10	stiffener
4	junction plate	11	measuring hole cover (optional)
5	cover plate	12	clamp plate
6	seal ring	13	bearing pad welded on the bracket of a toggle bolt for metal to metal contact
7	clamping ring		

NOTE Thickness of coaming shall comply with the related requirements, such as the requirements of classification societies.

Figure 5 — Structure of type B hatch

Table 4 — Main dimensions of type B and type BF

Dimensions in millimetres

Nominal sizes $A \times B$	**Coaming sizes** $A_1 \times B_1$	H	t	**Number of clips**
600 × 800	570 × 770	≥600	14	4
750 × 1 200	720 × 1 170			8
750 × 1 300	720 × 1 270			
750 × 1 500	720 × 1 470			
850 × 1 500	880 × 1 470			

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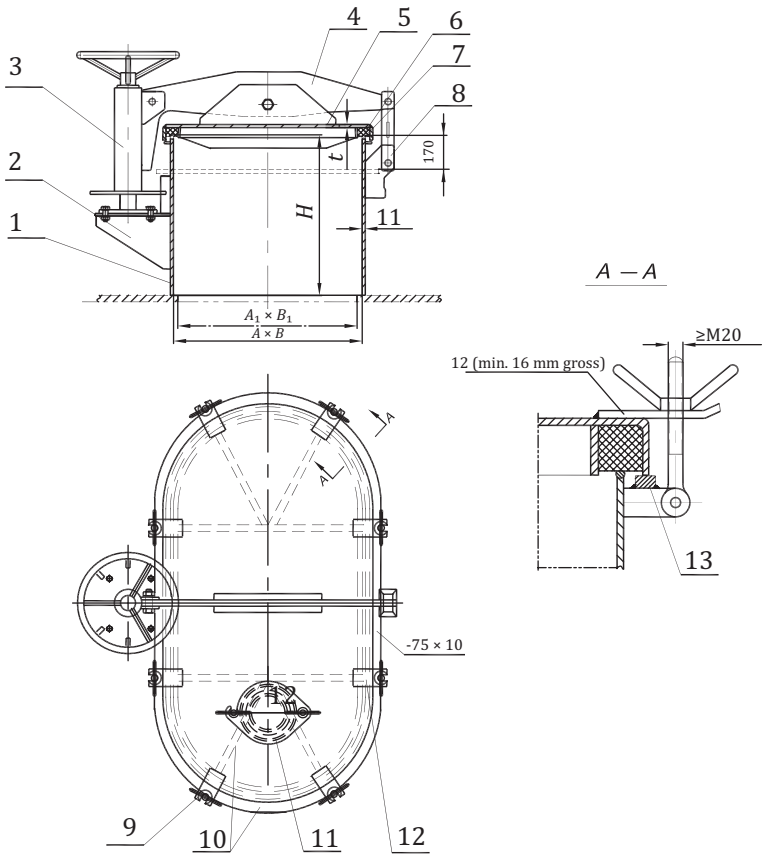
3.2.6 Type BF

Structure and main dimensions of type BF hatch cover shall conform to the detail of Figure 6 and Table 4.

Dimensions in millimetres



Key

1	coaming	8	lock catch
2	bearing	9	wing clamp
3	actuator	10	stiffener
4	junction plate	11	measuring hole cover (optional)
5	cover plate	12	clamp plate
6	seal ring	13	bearing pad welded on the bracket of a toggle bolt for metal to metal contact
7	clamping ring		

NOTE Thickness of coaming shall comply with the related requirements, such as the requirements of classification societies.

Figure 6 — Structure of type BF hatch

3.2.7 Type C1

Structure and main dimensions of type C1 hatch cover shall conform to the detail of Figure 7 and Table 5.

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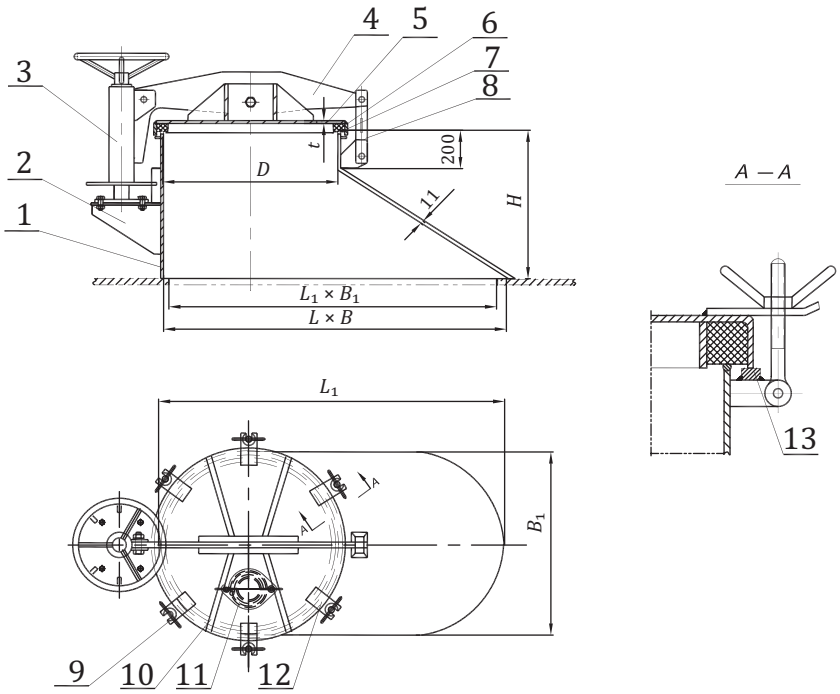
Dimensions in millimetres



Key

1	coaming	8	lock catch
2	bearing	9	wing clamp
3	actuator	10	stiffener
4	junction plate	11	measuring hole cover (optional)
5	cover plate	12	clamp plate
6	seal ring	13	bearing pad welded on the bracket of a toggle bolt for metal to metal contact
7	clamping ring		

NOTE Thickness of coaming shall comply with the related requirements, such as the requirements of classification societies.

Figure 7 — Structure of type C1 hatch

Table 5 — Main dimensions of type C1 and type C1F

Dimensions in millimetres

Nominal sizes D	**Deck opening sizes** $L_1 \times B_1$	**Coaming sizes of lower long circular** $L \times B$	H	t	**Number of clips**
750	720 × 1 170	750 × 1 200	≥600	14	6
	720 × 1 270	750 × 1 300			
	720 × 1 470	750 × 1 500			
850	820 × 1 470	850 × 1 500			
900	870 × 1 470	900 × 1 500			

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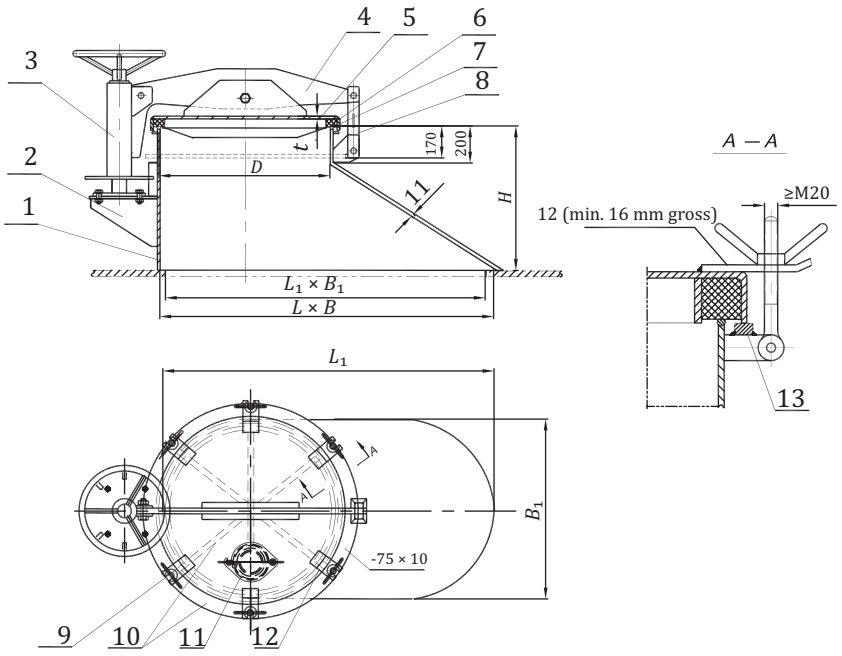
3.2.8 Type C1F

Structure and main dimensions of type C1F hatch cover shall conform to the detail of Figure 8 and Table 5.

Dimensions in millimetres



Key

1	coaming	8	lock catch
2	bearing	9	wing clamp
3	actuator	10	stiffener
4	junction plate	11	measuring hole cover (optional)
5	cover plate	12	clamp plate
6	seal ring	13	bearing pad welded on the bracket of a toggle bolt for metal to metal contact
7	clamping ring		

NOTE Thickness of coaming shall comply with the related requirements, such as the requirements of classification societies.

Figure 8 — Structure of type C1F hatch

3.2.9 Type C2

Structure and main dimensions of type C2 hatch cover shall conform to the detail of Figure 9 and Table 6.

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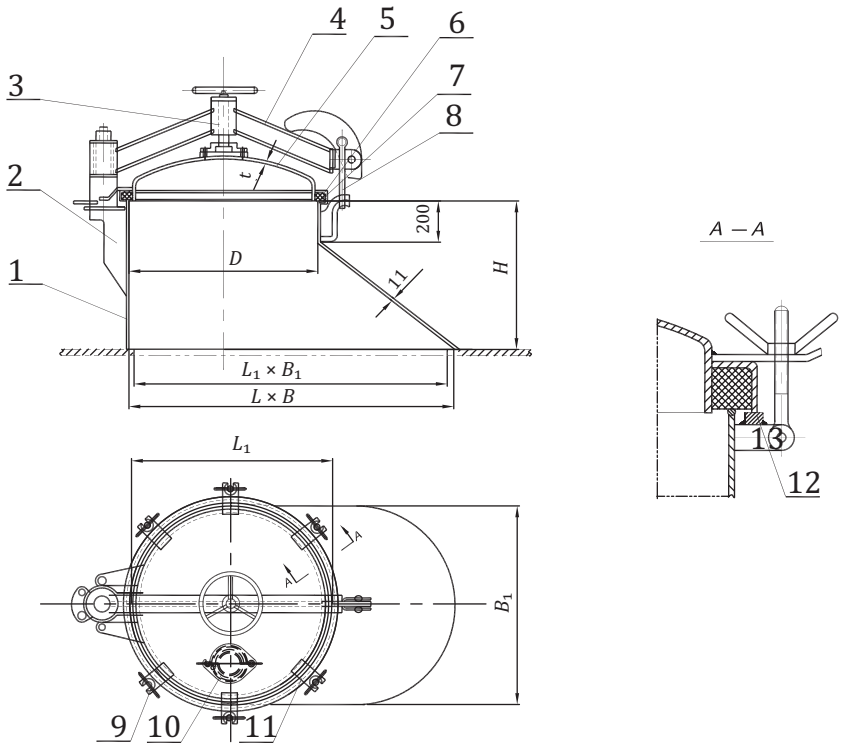
Dimensions in millimetres



Key

1	coaming	7	clamping ring
2	bearing	8	lock catch
3	actuator	9	wing clamp
4	connecting rod	10	measuring hole cover (optional)
5	cover plate	11	clamp plate
6	seal ring	12	bearing pad welded on the bracket of a toggle bolt for metal to metal contact

NOTE Thickness of coaming shall comply with the related requirements, such as the requirements of classification societies.

Figure 9 — Structure of type C2 hatch

Table 6 — Main dimensions of type C2 and type C2F

Dimensions in millimetres

Nominal sizes D	**Deck opening sizes** $L_1 \times B_1$	**Coaming sizes of lower long circular** $L \times B$	H	t	**Number of clips**
750	720 × 1 170	750 × 1 200	≥ 600	14	6
	720 × 1 270	750 × 1 300			
	720 × 1 470	750 × 1 500			
850	820 × 1 470	850 × 1 500			
900	870 × 1 470	900 × 1 500			

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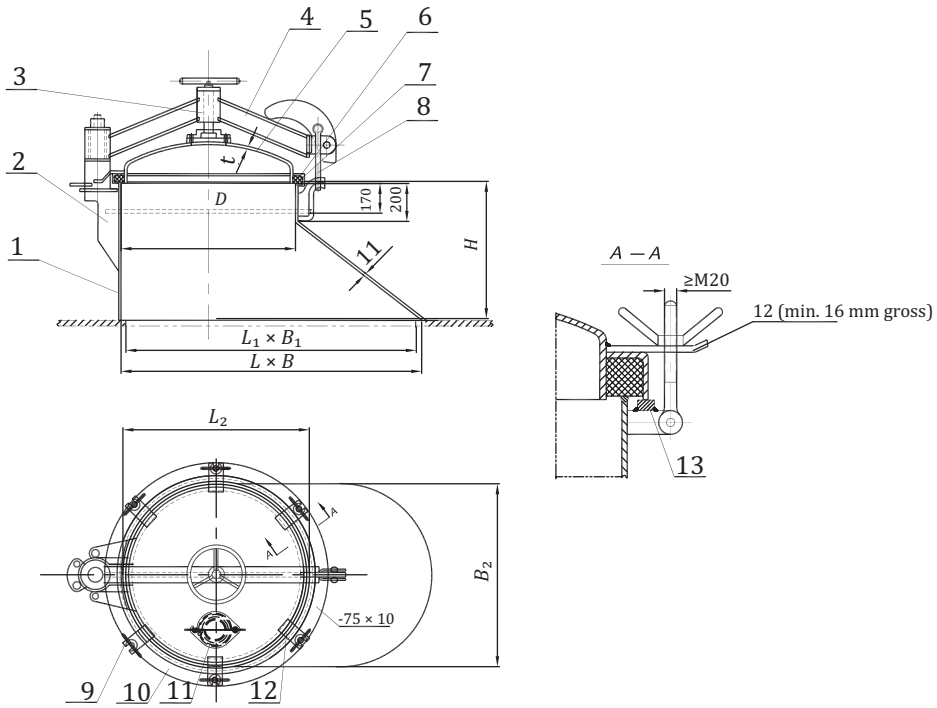
3.2.10 Type C2F

Structure and main dimensions of type C2F hatch cover shall conform to the detail of Figure 10 and Table 6.

Dimensions in millimetres



Key

1	coaming	8	lock catch
2	bearing	9	wing clamp
3	actuator	10	stiffener
4	connecting rod	11	measuring hole cover (optional)
5	cover plate	12	clamp plate
6	seal ring	13	bearing pad welded on the bracket of a toggle bolt for metal to metal contact
7	clamping ring		

NOTE Thickness of coaming shall comply with the related requirements, such as the requirements of classification societies.

Figure 10 — Structure of type C2F hatch

4 Materials

The coamings and covers shall be manufactured from weldable steel of 235 N/mm^2 minimum yield strength or equivalent shipbuilding-quality steel.

The junction plates, clamp plates, stiffeners, lock catches, ear plates, and measuring hole covers shall be manufactured from weldable mild steel of 235 N/mm^2 minimum yield strength.

The clamping rings, actuators, and wing clamps shall be manufactured from corrosion-resistant materials of 315 N/mm^2 minimum yield strength.

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The quality of the material forming the seal ring shall be satisfactory for service under marine conditions and shall provide effective and lasting sealing and resealing properties when the hatch is tightened under normal conditions.

5 Quality of manufacture

5.1 Appearance

The surface of oil tank covers shall be free from burrs, cracks, and other defects, and the rough edges shall be rounded corners by radius of 3 mm.

5.2 Rust-proof and surface treatment

The surface of steel components of oil tank hatches shall be treated as grade Sa2 or grade St2 and coating anti-corrosive primer twice, generally conform to the requirements of ISO 8501-1. The active components of oil tank hatches shall be coated by neutral grease.

The surface of stainless steel components of oil tank hatches shall be treated with passivation and the colour of surface shall be silver white and keep consistent.

5.3 Performance

The oil tank covers can be operated by one person. When opening or closing the oil tank cover, there shall be no shaking or stagnation.

6 Testing of watertightness

When the oil tank hatch is completed, coat the clamping ring of cover with white powder, and then close the cover tightly and finally open the hatch cover. The contact interface of sealing washer and clamping ring shall be continuous and the thickness of impression shall be not less than 50% of the thickness of the coaming.

Install the completed hatch on chamber dedicated for testing of watertightness, and then close the cover tightly and waterflood to the chamber when the hydrostatic pressure reaches 0,025 MPa, and keep at least 5 min. The oil tank cover shall be free of leakage.

7 Designation

Oil tank hatches conforming to this International Standard shall be designated by the following indications, in the order given:

a) denomination: oil tank hatches;

b) number of this International Standard: ISO 17939;

c) nominal size, as specified in Table 1.

EXAMPLE 1 Designation of an oil tank hatch with circular flat hatch cover in accordance with this International Standard, Type A1, with the nominal size 800 mm.

Oil tank hatch ISO 17939-A1-800

EXAMPLE 2 Designation of an oil tank hatch with long circular hatch cover (with stiffener) in accordance with this International Standard, Type BF, with the nominal size 750 mm × 1 200 mm.

Oil tank hatch ISO 17939-BF-750 × 1 200

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EXAMPLE 3 Designation of an oil tank hatch with curve hatch cover with stiffener (upper circular, lower long circular) with long circular hatch cover (with stiffener) in accordance with this International Standard, Type C2F, with the nominal size 750 (750 mm × 1 300 mm).

Oil tank hatch ISO 17939-C2F-750 (750 × 1 300)

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