

INTERNATIONAL
STANDARD

ISO
17939

First edition
2015-09-01

**Ships and marine technology — Oil
tank hatches**

Navires et technologie maritime — Huile trappe

STANDARDSISO.COM : Click to view the full PDF of ISO 17939:2015



Reference number
ISO 17939:2015(E)

© ISO 2015

STANDARDSISO.COM : Click to view the full PDF of ISO 17939:2015



COPYRIGHT PROTECTED DOCUMENT

© ISO 2015, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

	Page
Foreword	iv
1 Scope	1
2 Normative references	1
3 Classifications	1
3.1 Types	1
3.2 Structure and main dimensions	2
3.2.1 Type A1	2
3.2.2 Type A1F	4
3.2.3 Type A2	4
3.2.4 Type A2F	6
3.2.5 Type B	6
3.2.6 Type BF	8
3.2.7 Type C1	8
3.2.8 Type C1F	10
3.2.9 Type C2	10
3.2.10 Type C2F	12
4 Materials	12
5 Quality of manufacture	13
5.1 Appearance	13
5.2 Rust-proof and surface treatment	13
5.3 Performance	13
6 Testing of watertightness	13
7 Designation	13

STANDARDSISO.COM : Click to view the full PDF of ISO 17939:2015

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#).

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

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](#).

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

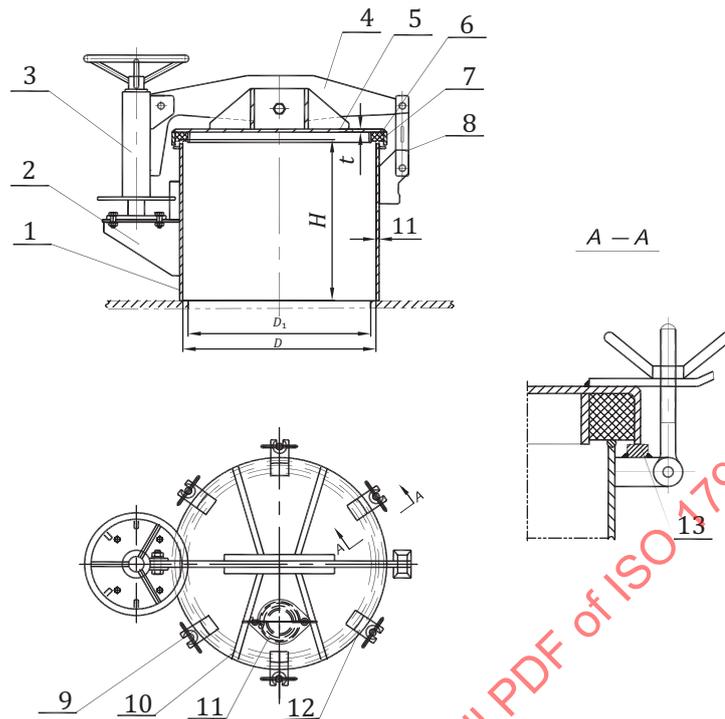
^a The data between parentheses are the size of lower long circular.

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](#).

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

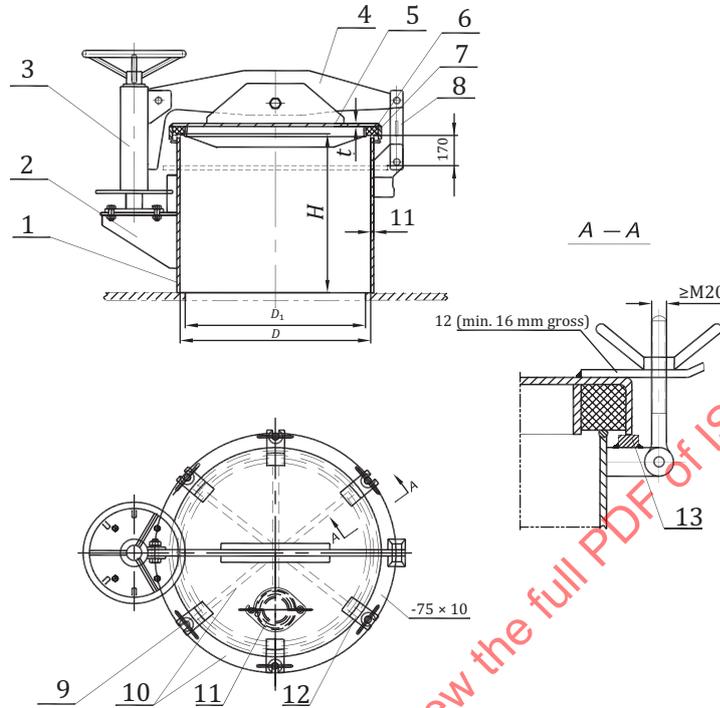
Dimensions in millimetres

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

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 | | |

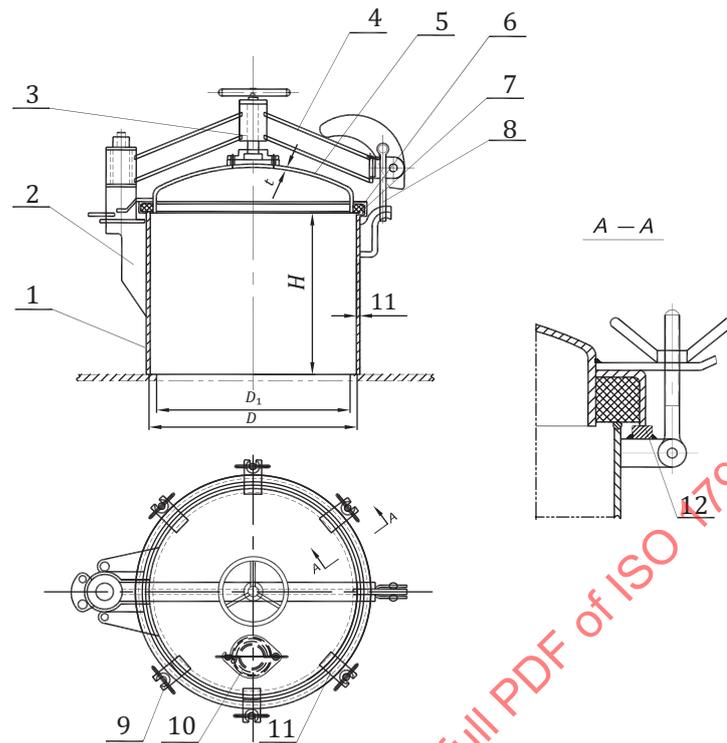
NOTE Thickness of coaming shall comply with the related requirements, such as the requirements of classification societies.

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](#).

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

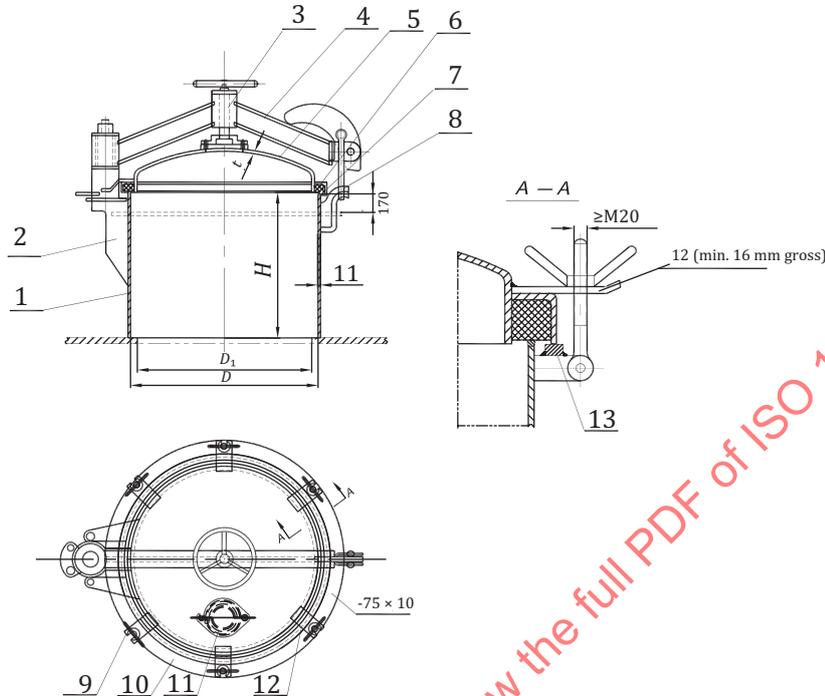
Dimensions in millimetres

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

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 | | |

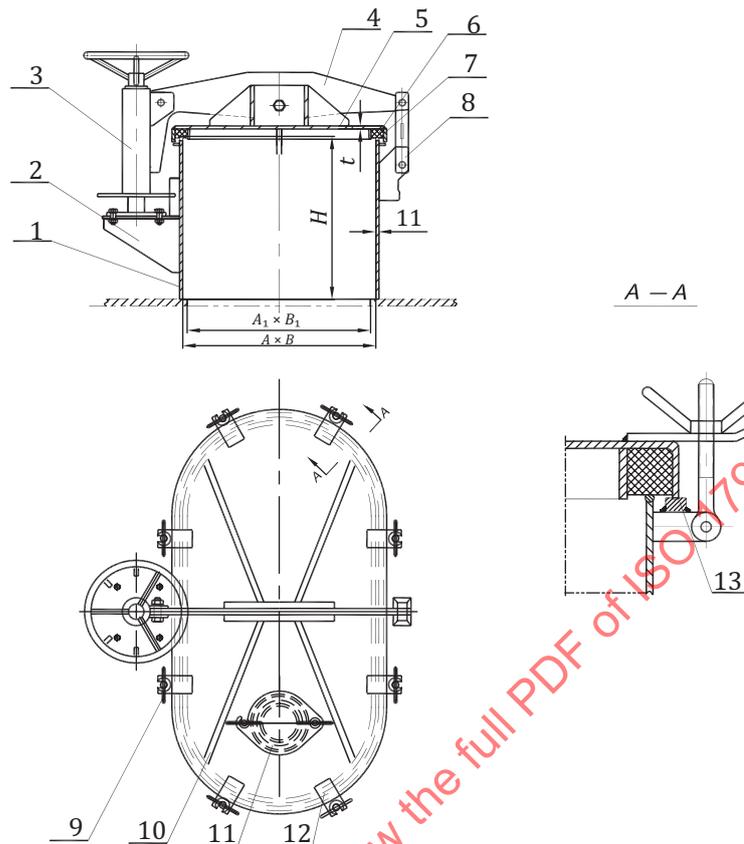
NOTE Thickness of coaming shall comply with the related requirements, such as the requirements of classification societies.

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](#).

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

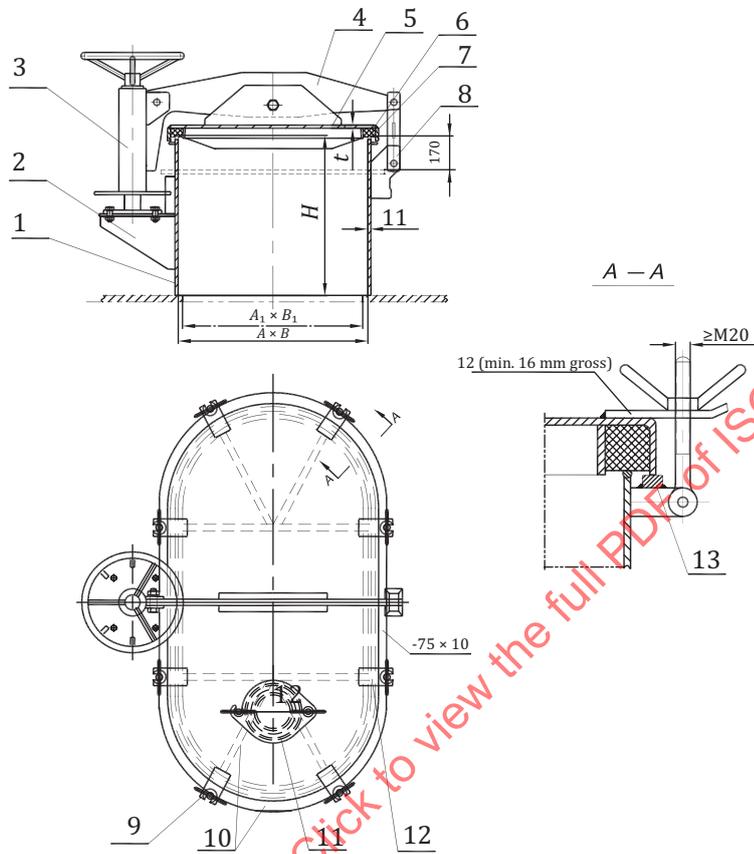
Dimensions in millimetres

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			

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 | | |

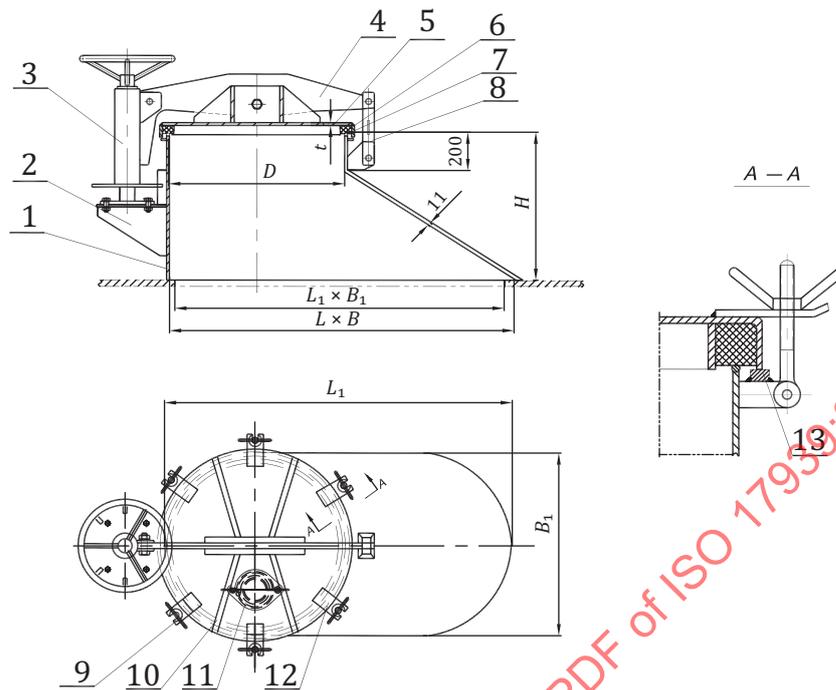
NOTE Thickness of coaming shall comply with the related requirements, such as the requirements of classification societies.

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](#).

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

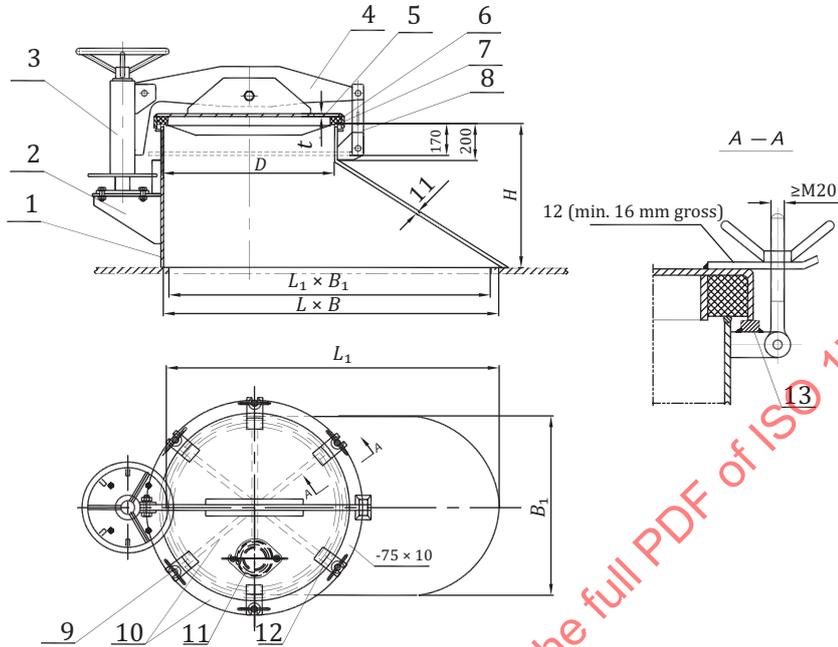
Dimensions in millimetres

Nominal sizes <i>D</i>	Deck opening sizes $L_1 \times B_1$	Coaming sizes of lower long circular $L \times B$	<i>H</i>	<i>t</i>	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			

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 | | |

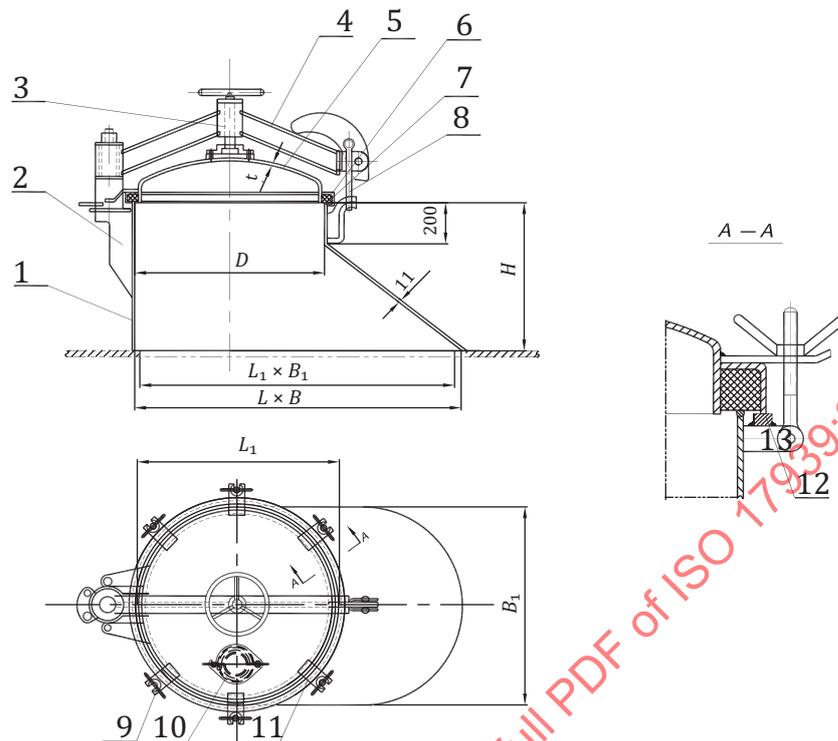
NOTE Thickness of coaming shall comply with the related requirements, such as the requirements of classification societies.

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](#).

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

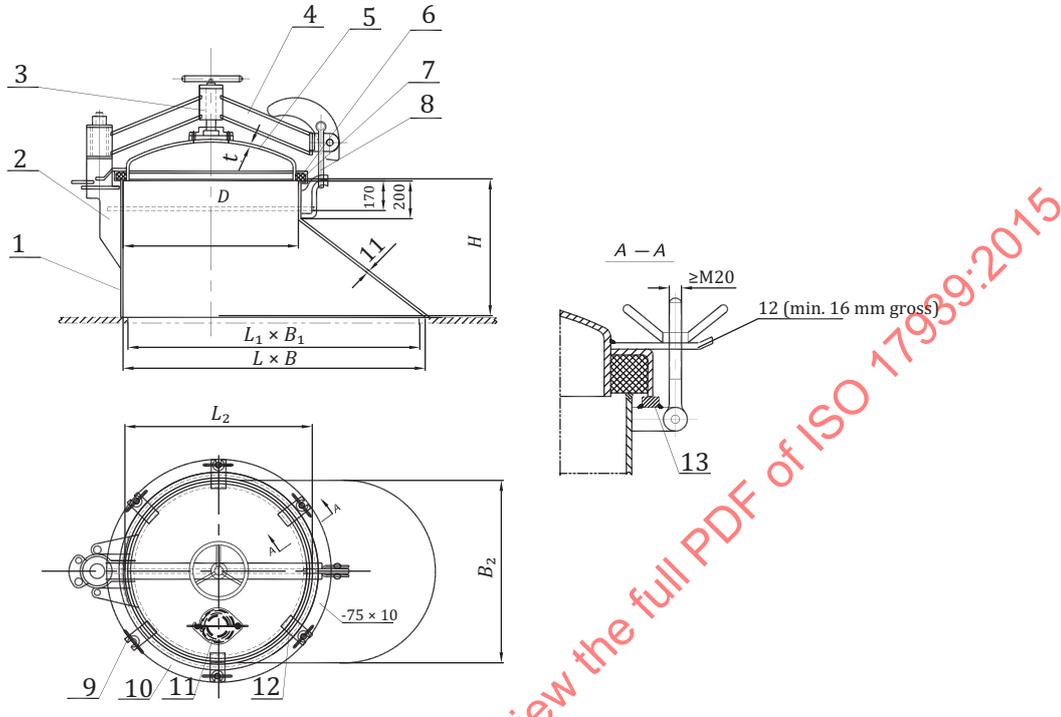
Dimensions in millimetres

Nominal sizes <i>D</i>	Deck opening sizes $L_1 \times B_1$	Coaming sizes of lower long circular $L \times B$	<i>H</i>	<i>t</i>	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			

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/mm² 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/mm² minimum yield strength.

The clamping rings, actuators, and wing clamps shall be manufactured from corrosion-resistant materials of 315 N/mm² minimum yield strength.