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Ships and marine technology — Fireproof watertight hatch covers

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Contents

	Page
Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Classification and designation	1
4.1 Types	1
4.2 Structure and main dimensions	2
5 Materials	4
6 Quality of manufacture	4
7 Test	5
8 Status display	5
9 Markings, packaging, transportation and storage	5
9.1 Marking	5
9.2 Packaging	6
9.3 Transportation and storage	6

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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).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 8, *Ship design*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Ships and marine technology — Fireproof watertight hatch covers

1 Scope

This document specifies the classification, flagging, requirements, test methods, inspection rules, markings, packaging, transportation and storage of fireproof watertight hatch covers installed on decks (hereinafter referred to as “hatch covers”).

This document applies to the design, manufacture and acceptance of fireproof watertight hatch covers installed on decks of ships where anticipated water pressure by wave is up to 10 m.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8501-1:2007, *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*

IEC 60529:2001, *Degrees of Protection provided by enclosures (IP Code)*

Consolidated text of the International Convention for the Safety of Life at Sea, 1974, and its Protocol of 1988: articles, annexes and certificates (SOLAS Consolidated Edition, 2020)

International Code for Application of Fire Test Procedures, 2010 (2010 FTP Code), as amended (Is this a full name of IMO FTP Code?)

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Classification and designation

4.1 Types

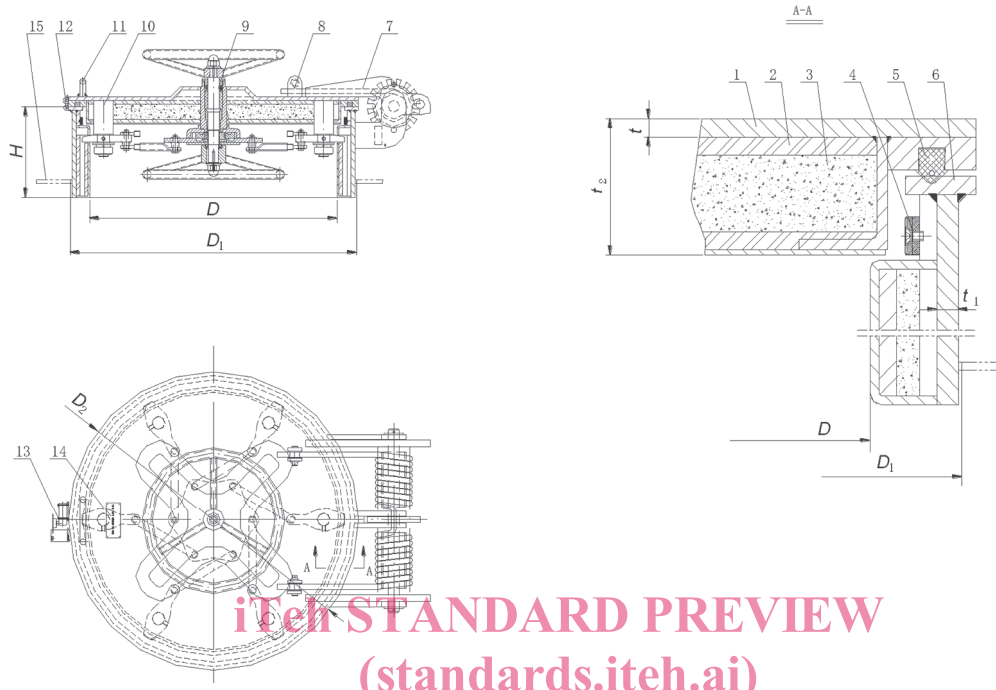
4.1.1 Depending on the shape, watertight hatch covers shall be classified into two types:

- A-type (round hatch cover);
- B-type (square hatch cover).

4.1.2 According to the fire-protection rating, watertight hatch covers shall be classified into three levels A-60, A-30, and A-0.

4.2 Structure and main dimensions

4.2.1 Some examples of the structure and main dimensions of A-type hatch cover are shown in Figure 1 and Table 1.



Key

- 1 cover plate
- 2 insulation plate
- 3 insulation
- 4 fireproof bar
- 5 seal ring
- 6 coaming
- 7 spring hinge
- 8 link rod
- 9 central opening device
- 10 dog device
- 11 handle
- 12 lock catch
- 13 limit switch
- 14 warning sign
- 15 deck

NOTE 1 H is the height of hatch cover coaming. H can be designed according to users practice.

NOTE 2 t_2 is the thickness of hatch cover. t_2 shall be no more than 75 mm and designed based on fire-protection rating.

NOTE 3 t is the thickness of cover plate. t can be designed based on water pressure.

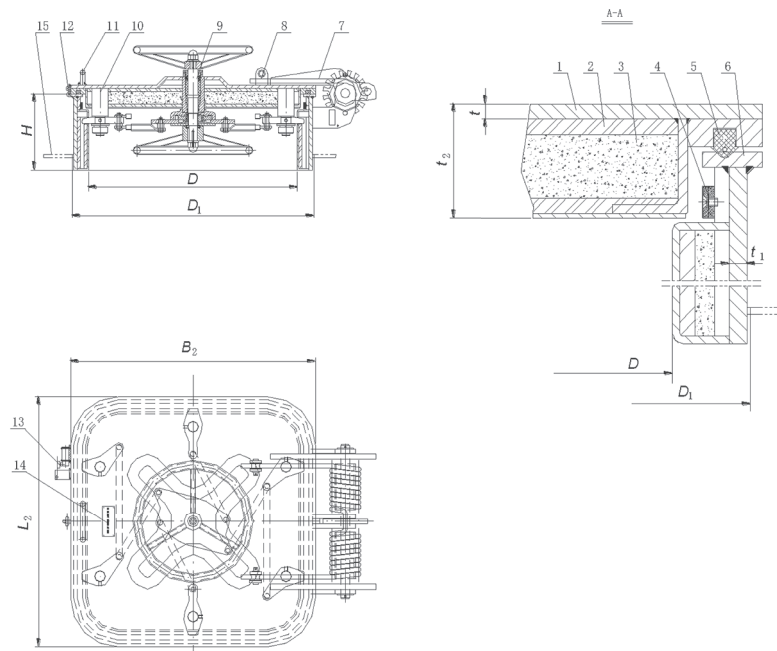
Figure 1 — Examples of structure of A-type hatch covers

Table 1 — Examples of main dimensions of A-type hatch covers

Dimensions in millimetres

Nominal size D	Deck opening size D_1	Cover outer dimension size D_2
Φ630	Φ730	Φ750
Φ730	Φ830	Φ850
Φ830	Φ930	Φ950

4.2.2 Some examples of the structure and main dimensions of B-type hatch cover are shown in Figure 2 and Table 2.



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Key

- | | |
|--------------------|--------------------------|
| 1 cover plate | 9 central opening device |
| 2 insulation plate | 10 dog device |
| 3 insulation | 11 handle |
| 4 fireproof bar | 12 lock catch |
| 5 seal ring | 13 limit switch |
| 6 coaming | 14 warning sign |
| 7 spring hinge | 15 deck |
| 8 link rod | |

NOTE 1 H is the height of hatch cover coaming. H can be designed according to users practice.

NOTE 2 t_2 is the thickness of hatch cover. t_2 shall be no more than 75 mm and designed based on fire-protection rating.

NOTE 3 t is the thickness of cover plate. t can be designed based on water pressure.

Figure 2 — Examples of structure of B-type hatch covers

Table 2 — Examples of main dimensions of B-type hatch covers

Dimensions in millimetres

Nominal size $L \times B \times R$	Deck opening size $L_1 \times B_1 \times R_1$	Cover outer dimension size $L_2 \times B_2 \times R_2$
630 × 630 × 100	730 × 730 × 150	750 × 750 × 160
630 × 830 × 100	730 × 930 × 150	750 × 950 × 160
830 × 830 × 100	930 × 930 × 150	950 × 950 × 160
1 030 × 1 030 × 100	1 130 × 1 130 × 150	1 150 × 1 150 × 160

Table 2 (continued)

Nominal size $L \times B \times R$	Deck opening size $L_1 \times B_1 \times R_1$	Cover outer dimension size $L_2 \times B_2 \times R_2$
830 × 1 230 × 100	930 × 1 330 × 150	950 × 1 350 × 160
1 230 × 1 230 × 100	1 330 × 1 330 × 150	1 350 × 1 350 × 160
1 330 × 1 330 × 100	1 430 × 1 430 × 150	1 450 × 1 450 × 160

4.2.3 The fireproof watertight hatch covers conforming to this document shall be designated as follows, in the order given:

- a) type: Hatch cover B or hatch cover A;
- b) nominal size;
- c) thickness of cover plate;
- d) thickness of coaming;
- e) height of coaming.

EXAMPLE The designation for a B-type hatch cover with nominal size 830 mm × 830 mm × 100 mm, thickness of cover plate 8 mm, thickness of coaming 8 mm and height of coaming 250 mm is:

Hatch cover B 830×830×8-8×250

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5 Materials

5.1 The cover plate and coaming shall be manufactured from shipbuilding steel with minimum tensile strength of 340 N/mm², or materials with equivalent strength.

5.2 The hinge shall be manufactured from materials with minimum tensile strength of 340 N/mm².

5.3 Opening device, hinge pin shall be manufactured from materials with minimum tensile strength of 350 N/mm².

5.4 Fireproof materials shall be suitable for the marine environment and meet fire-protection rating requirement in accordance with SOLAS and the IMO FTP Code.

6 Quality of manufacture

6.1 The surface of hatch covers shall be free from burrs, sharp edge, scratches, press marks and other defects, and the welded seam shall be smooth and free from cavity, cracks, slag entrapment, undercut, incomplete fusion and other defects.

6.2 The cover plate, coaming and its attachment shall not have any deformation, and hatch covers shall be treated as grade Sa2½ or grade St2 and coating anti-rust primer in compliance with the requirements of ISO 8501-1:2007.

6.3 Hatch covers shall be opened and closed easily without obstruction, and the moving parts shall be applied with lubricant grease.

6.4 Fireproof property of hatch covers shall comply with fireproof property for fire rated decks in Part 3 of Annex 1 of the 2010 FTP Code as amended.

6.5 The hatch cover shall have no leakage under water pressure of 0,1 MPa.

7 Test

7.1 Operate the hatch cover by opening and closing it twice in a row to check the agility of the opening device and the hinge. The result shall meet the requirements in [6.3](#).

7.2 Fireproof test of hatch covers shall comply with test requirement for fire rated decks in Part 3 of Annex 1 of the 2010 FTP Code as amended. The result shall meet the requirements in [6.4](#).

7.3 Install the hatch cover on a dedicated water pressure test box, increase the water pressure within the test box to 0,10 MPa and keep for 5 min, then release the water pressure. The results shall meet the requirements in [6.5](#).

8 Status display

8.1 In case local indicators and indicators located at the central control console in the navigation bridge are provided to indicate the status of each hatch cover, the indicators shall be regular indicators together with sound and light warning function:

- a) when the cover is fully open, the red light shall be on;
- b) when the cover is fully closed, the green light shall be on;
- c) if the hatch cover dogs are loose, an indicator shall display sound and light alarm.

8.2 The degree of protection of electrical equipment shall comply with IP 68 as specified in IEC 60529 when located in the open deck. Where located in the navigation bridge, this could be reduced to IP 22.

8.3 Where electrical equipment is installed in hazardous areas, they are to be certified for installation in the hazardous area.

8.4 The hatch cover shall have a conspicuous notice indicating "keep closed at sea".

9 Markings, packaging, transportation and storage

9.1 Marking

The nameplate material of fireproof watertight hatch covers shall be stainless steel or corrosion-resistant materials. As a minimum, the nameplate shall be marked with the following information:

- a) product name;
- b) product type;
- c) main technical parameters; fire-protection rating; water pressure;
- d) name of the manufacturer;
- e) year of manufacture;
- f) classification society inspection mark.