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**Ships and marine technology — Ships'  
ordinary rectangular windows**

*Navires et technologie maritime — Fenêtres rectangulaires de type  
courant pour navires*

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 3903 was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 8, *Ship design*.

This third edition cancels and replaces the second edition (ISO 3903:1993), which has been technically revised.

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# Ships and marine technology — Ships' ordinary rectangular windows

## 1 Scope

This International Standard specifies the classification of rectangular windows for ships (series, types and models), and gives the dimensions for interchangeability and construction, materials, tests, marking and designation of these rectangular windows.

NOTE 1 This International Standard is based on the experience of ships' window and glass manufacturers, shipbuilders and authorities who apply to ships the Regulations of the *International Convention for the Safety of Life at Sea, 1974 (SOLAS 1974)*, as amended, and of the *International Convention of Load Lines, 1966*, as amended.

## 2 Normative references

The following referenced documents are indispensable for the application 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 261, *ISO general purpose metric screw threads — General plan*

ISO 614, *Ships and marine technology — Toughened safety glass panes for rectangular windows and side scuttles — Punch method of non-destructive strength testing*

ISO 1207, *Slotted cheese head screws — Product grade A*

ISO 1580, *Slotted pan head screws — Product grade A*

ISO 2009, *Slotted countersunk flat head screws — Product grade A*

ISO 2010, *Slotted raised countersunk head screws — Product grade A*

ISO 3434, *Shipbuilding and marine structures — Heated glass panes for ships' rectangular windows*

ISO 3902, *Shipbuilding and marine structures — Gaskets for rectangular windows and side scuttles*

ISO 5779, *Shipbuilding — Ordinary rectangular windows — Positioning*

ISO 5797, *Shipbuilding and marine structures — Windows and side scuttles for fire-resistant constructions*

ISO 6345, *Shipbuilding and marine structures — Windows and side scuttles — Vocabulary*

ISO 7045, *Pan head screws with type H or type Z cross recess — Product grade A*

ISO 7046-2, *Countersunk flat head screws (common head style) with type H or type Z cross recess — Product grade A — Part 2: Steel screws of property class 8.8, stainless steel screws and non-ferrous metal screws*

ISO 7047, *Raised countersunk head screws (common head style) with type H or type Z cross recess — Product grade A*

ISO 21005, *Ships and marine technology — Thermally toughened safety glass panes for windows and side scuttles*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6345 apply.

## 4 Classification

Rectangular windows shall be classified by series, types, models and nominal sizes in accordance with 4.1 to 4.4 respectively.

NOTE 1 A survey of standardized rectangular windows is given in 4.5 and Table 3.

Further classification characteristics are the material classes; see 6.1 and Table 12.

### 4.1 Series

#### 4.1.1 Regular series (N)

Rectangular windows of the regular series shall contain a toughened safety glass pane that meets the requirements of ISO 21005.

#### 4.1.2 Fire-resistant series (P)

Rectangular windows of the fire-resistant series shall be provided for installation in “A” or “B” class divisions, containing a glass pane that meets the requirements of ISO 5797.

Modifications to the construction and installation of the glassholder and main frame, as well as additional testing and marking, shall be in accordance with ISO 5797.

#### 4.1.3 Heated series (H)

Rectangular windows of the heated series shall contain a heated glass pane in accordance with ISO 3434.

NOTE Modifications of the construction of glassholder or main frame are to be observed; see 5.1.2.

### 4.2 Types

Ships' ordinary rectangular windows may be of two types:

- Type E: Heavy-type rectangular window;
- Type F: Light-type rectangular window.

### 4.3 Models

Models shall be designated in accordance with the following principal characteristics:

- opening or non-opening model;
- opening direction of glassholder;
- type of fastening.

The various combinations of these, which are in accordance with the definitions in ISO 6345, are given in Table 1.

### 4.4 Nominal sizes

The nominal size is defined by the clear light dimension for width  $w_1$  and height  $h_1$  of the rectangular window, in millimetres, and is identified by a code number; see Table 2.

### 4.5 Survey of types, models and sizes

A survey is given in Table 3 for all rectangular windows standardized in this International Standard. It applies to window series N (regular), P (fire-resistant) and H (heated).

The illustrations given in Table 3 do not define the construction; they are simplified examples for information only.

**Table 1 — Principal characteristics of models**

Opening or non-opening	Opening direction			Fastening		Model designation code
				bolted (B)	welded (W)	
opening	inwards (I)	side-hinged	left-hand (L)	B	—	ILB
			right-hand (R)	—	W	ILW
		top-hinged (T)	left-hand (L)	B	—	IRB
			right-hand (R)	—	W	IRW
		top-hinged (T)	left-hand (L)	B	—	ITB
			right-hand (R)	—	W	ITW
	outwards (O)	side-hinged	left-hand (L)	B	—	OLB
			right-hand (R)	—	W	OLW
		top-hinged (T)	left-hand (L)	B	—	ORB
			right-hand (R)	—	W	ORW
		top-hinged (T)	left-hand (L)	B	—	OTB
			right-hand (R)	—	W	OTW
non-opening (NO)	—			B	—	NOB
				—	W	NOW

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**Table 2 — Nominal size**

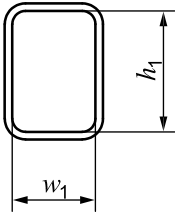
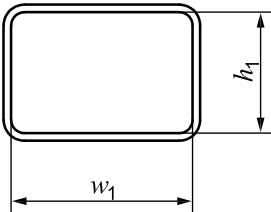
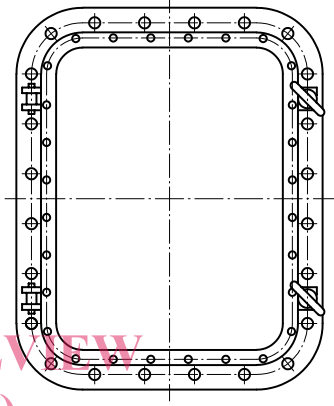
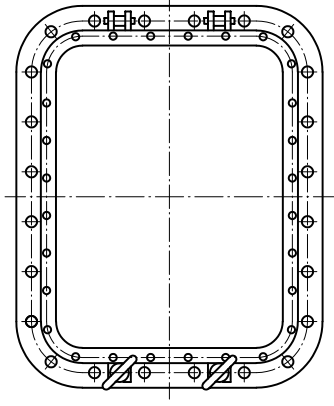
Code no.	Nominal size $w_1 \times h_1$ mm × mm	Illustration
1	300 × 425	
2	355 × 500	
3	400 × 560	
4	450 × 630	
5	500 × 710	
6	560 × 800	
7	900 × 630	
8	1 000 × 710	
9	1 100 × 800	

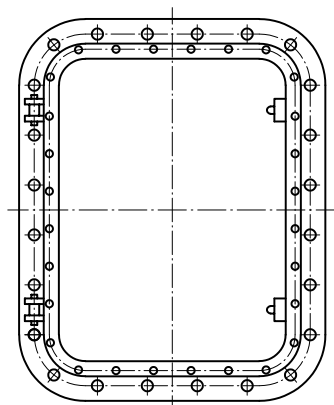
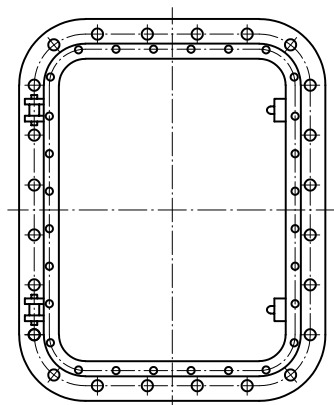
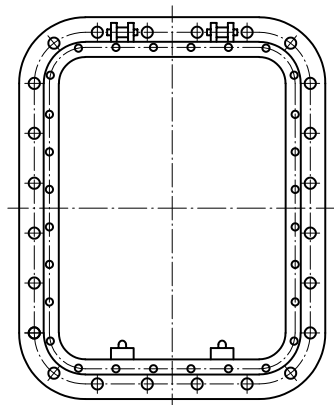
Table 3 — Survey of rectangular windows

Type (see 4.2)	Model (see 4.3)		Nominal size by code no. (see 4.4)	Illustration (bolted windows are shown)	
	bolted	welded			
<b>Inwards opening side-hinged windows</b>					
E	ILB	—	1 to 6		
	—	ILW			
	IRB	—			
	—	IRW			
F	ILB	—			
	—	ILW			
	IRB	—			
	—	IRW			
<b>Inwards opening top-hinged windows</b>					
E	ITB	—	4 to 8		
	—	ITW			
F	ITB	—	4 to 9		
	—	ITW			
<b>Outwards opening side-hinged windows</b>					

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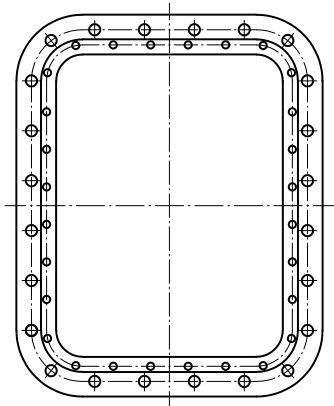
Table 3 (continued)

Type (see 4.2)	Model (see 4.3)		Nominal size by code no. (see 4.4)	Illustration (bolted windows are shown)		
	bolted	welded				
E	OLB	—	1 to 6			
	—	OLW				
	ORB	—				
	—	ORW				
F	OLB	—			1 to 6	
	—	OLW				
	ORB	—				
	—	ORW				
<p><b>Outwards opening top-hinged windows</b></p>						
E	OTB	—	4 to 8			
	—	OTW				
F	OTB	—	4 to 9			
	—	OTW				
<p><b>Non-opening windows</b></p>						

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Table 3 (continued)

Type (see 4.2)	Model (see 4.3)		Nominal size by code no. (see 4.4)	Illustration (bolted windows are shown)
	bolted	welded		
E	NOB	—	1 to 8	
F	—	NOW	1 to 9	

5 Technical requirements

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5.1 General

Rectangular windows of all series, types, models and nominal sizes shall be manufactured to the requirements (dimensions, materials, etc.) given in this International Standard. They shall be capable of meeting the test requirements specified in Clause 7. <https://standards.iteh.ai/catalog/standards/sist/41f7384f-3dbd-4a76-857a-e99949d1039e/iso-3903-2012>

5.1.1 Rectangular windows for fire-resistant constructions

In addition, for rectangular windows for fire-resistant construction, the glassholder and the main frame shall be made of a material that keeps its mechanical characteristics at the temperatures given in ISO 5797.

They shall be designed so that temperature gradients do not develop stresses in the glass which could result in rupture.

5.1.2 Heated rectangular windows

For heated rectangular windows, deviations in the design of glassholder or main frame based on the thickness of the heated glass pane, see ISO 3434, and the electrical connection shall be taken into consideration.

5.2 Dimensions

5.2.1 Main dimensions

The main dimensions of rectangular windows shall be as given in Figure 1 and Tables 4 and 5. The correlation between nominal sizes and types and models shall be as given in Table 3.

NOTE 1 Figure 1 does not define the construction of any series, type or model of rectangular windows; it is given for the indication of standardized dimensions only. The illustration shows an inwards opening side-hinged rectangular window.

5.2.2 Corner radii

The basic radius is the corner radius  $r_1$  of the clear light size; see Table 4.

