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ISO 11812

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Small craft — Watertight cockpits and quick-draining cockpits

Petits navires — Cockpits étanches et cockpits rapidement autovideurs

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Contents

Page

Foreword.....	v
Introduction.....	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Symbols	5
5 General requirements.....	6
5.1 Loading and measurement conditions.....	6
5.2 Requirements for “watertight” cockpits and recesses	6
5.3 Requirements for “quick draining” cockpits and recesses	7
5.4 Closing appliances	7
6 Requirements for quick-draining cockpit bottom	7
6.1 Minimum cockpit bottom height, $H_{B,min}$	7
6.2 Exception to 6.1 for recesses or lockers.....	8
6.2.1 Exception up to 10 % of cockpit bottom area.....	8
6.2.2 Lockers in the cockpit bottom	8
7 Requirements for drainage of quick-draining cockpits	8
7.1 Cockpit drainage.....	8
7.1.1 General.....	8
7.1.2 When the boat is upright.....	8
7.1.3 When the boat is heeled.....	8
7.2 Draining time	9
7.3 Number of drains	10
7.4 Minimum drain dimensions	10
7.4.1 Internal dimensions of the drain	10
7.4.2 Eventual protective grids.....	10
7.5 Centreboard housings and other types of drain	10
7.6 Drain fitting.....	11
7.7 Drain piping design and construction.....	11
7.8 Draining time assessment	11
7.8.1 General.....	11
7.8.2 Measurement of the draining time	11
7.8.3 Calculation of the draining time	12
7.8.4 Quick method of calculation for cockpit fitted with two drains.....	12
8 Requirements for sills	14
8.1 Sill height for watertight cockpits.....	14
8.2 Sill height and other requirements for quick-draining cockpits.....	14
8.2.1 Sill-height measurement	14
8.2.2 Requirements for sill height of quick draining cockpits	14
8.2.3 Requirements for companionway doors and appliances above sill height	14
8.2.4 Other requirements	15
9 Watertightness requirements.....	15
9.1 Watertightness requirements of watertight cockpits	15
9.2 Watertightness requirements of quick-draining cockpits.....	15
9.2.1 Watertightness of the cockpit	15
9.2.2 Permanently open ventilation openings	16
10 Owner’s manual — Documentation	16

Annex A (informative) Examples of single-plane cockpit bottoms	17
Annex B (normative) Analysis of multi-level cockpit bottom	19
Annex C (normative) Draining time calculation using tables	26
Annex D (normative) Alternative method of calculation — Direct calculation with head losses	30
Annex E (normative) Watertightness tests	33
Bibliography	36

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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 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 11812 was prepared by Technical Committee ISO/TC 188, *Small craft*.

Annexes B, C, D and E form a normative part of this International Standard.

Annex A is for information only.

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Introduction

The compliance to this International Standard may not be required to show that a boat fulfils the essential safety requirements of the Directive 94/25/EC, but it may be required by ISO 12217.

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Small craft — Watertight cockpits and quick-draining cockpits

1 Scope

This International Standard specifies requirements for cockpits and recesses to be designated either as “watertight” or as “quick-draining” on small craft of hull length up to 24 m.

It does not set requirements for the size and shape of a cockpit or recess, nor when or where it shall be used. It only considers draining by gravity, and not by pumping or other methods.

NOTE 1 The term “quick-draining cockpit” has been chosen to differentiate from the common understanding of “self-draining cockpit” where water may be drained overboard in certain conditions, but without specified draining speed, height of bottom or sill, etc.

NOTE 2 Examples of single-plane cockpit bottoms are given in informative annex A.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 8666:—¹⁾, *Small craft — Principal data*

ISO 9093-1:1994, *Small craft — Seacocks and through-hull fittings — Part 1: Metallic*

ISO 9093-2:—¹⁾, *Small craft — Seacocks and through-hull fittings — Part 2: Non-metallic*

ISO 12216:—¹⁾, *Small craft — Windows, portlights, hatches, deadlights and doors — Strength and tightness requirements*

ISO 12217-1:—¹⁾, *Small craft — Stability and buoyancy assessment and categorization — Part 1: Non-sailing boats of hull length greater than or equal to 6 m*

ISO 12217-2:—¹⁾, *Small craft — Stability and buoyancy assessment and categorization — Part 2: Sailing boats of hull length greater than or equal to 6 m*

ISO 12217-3:—¹⁾, *Small craft — Stability and buoyancy assessment and categorization — Part 3: Boats of hull length less than 6 m*

1) To be published.

3 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply.

3.1

design categories

description of the sea and wind conditions for which a boat is assessed to be suitable

NOTE The following design categories apply:

- **A: Ocean:** Designed for extended voyages where conditions may exceed wind force 8 (Beaufort scale) and significant wave heights of 4 m and above, and vessels largely self-sufficient; but excluding abnormal conditions such as hurricanes.
- **B: Offshore:** Designed for offshore voyages where conditions up to and including wind force 8 and significant wave heights up to and including 4 m may be experienced;
- **C: Inshore:** Designed for voyages in coastal waters, large bays, estuaries, lakes and rivers where conditions up to and including wind force 6 and significant wave heights up to and including 2 m may be experienced;
- **D: Sheltered waters:** Designed for voyages in close coastal waters, small bays, lakes, rivers and canals where conditions up to and including wind force 4 and maximum wave heights up to and including 0,3 m may be experienced.

3.2

length of hull

L_H

length of the hull according to ISO 8666

NOTE Length of hull is expressed in metres.

3.3

maximum beam

B_{max}

overall beam of monohull or multihull craft according to ISO 8666

NOTE Maximum beam is expressed in metres.

3.4

waterline

WL

waterline in the fully loaded ready-for-use condition

3.5

freeboard amidships

F_M

freeboard at mid-waterline in fully loaded ready-for-use condition according to ISO 8666

3.6

sailing boat

boat designed to use sails as its primary means of propulsion, as defined in ISO 12217-2

3.7

non-sailing boat

boat not designed to use sails as primary means of propulsion, as defined in ISO 12217-1

3.8

cockpit and recess

any area that may retain water, however briefly, due to rain, waves, boat heeling, etc.

NOTE Cockpits are normally designed for accommodation of people but, for the purpose of this International Standard, the term "cockpit" will be used either for a proper cockpit or for any recess. This means that

- bulwarks may create a large cockpit,
- open boats may effectively comprise a cockpit which includes nearly all the boat,
- cockpit(s) may be situated anywhere in the boat, and
- a cockpit may open aft to the sea.

3.9

watertight cockpit or recess

cockpit or recess which satisfies the requirements of this International Standard for watertightness and sill heights, but not those for drainage

3.10

quick-draining cockpit or recess

cockpit with characteristics and draining capacity which fulfil all the requirements of this International Standard for one or several design categories

NOTE According to its characteristics, a cockpit may be considered quick-draining for one design category, but maybe not for a higher category.

3.11

cockpit sole

essentially horizontal surface(s) of the cockpit on which people normally stand

3.12

cockpit bottom

lowest surface of the cockpit sole where water collects before being drained

NOTE 1 Devices raising the standing level(s) from the rigid part of the cockpit sole, e.g. grating, stands, bridge decks, are not considered as part of the cockpit bottom.

NOTE 2 The cockpit bottom is considered to comprise only one plane. A cockpit bottom with several levels is considered according to annex B.

3.13

bridge deck

area just outside the companionway opening and above the cockpit bottom, onto which people normally step before entering the accommodation

3.14

closing appliance

device used to cover an opening in the cockpit, hull or superstructures

EXAMPLE Hatch, window, door, engine cover, etc.

3.15

cockpit water-retention height

h_C

height of the water contained in the cockpit measured between the cockpit bottom and the point of overflow outboard, the boat being upright, at rest and fully loaded

NOTE 1 This height corresponds to the lowest point where the overflow area, expressed in square metres, is $> 0,005 L_H B_{max}$, and is usually the lowest point of the cockpit coaming.

NOTE 2 For assessing h_C , every closing appliance, including the companionway door(s) is assumed to be closed.

3.16
cockpit bottom height

H_B
height of the cockpit bottom above the waterline, the boat being upright, at rest and fully loaded

NOTE For a single-plane cockpit bottom, H_B is measured at the centre of surface of this plane. For a multi-plane bottom, H_B is measured according to annex B.

3.17
minimum cockpit bottom height

$H_{B,min}$
minimum value of H_B required by this International Standard

3.18
drain

outlet of the cockpit enabling any water contained to be discharged outboard by gravity

NOTE A drain can be

- a pipe discharging overboard above or below the waterline,
- a part of the cockpit allowing direct discharge overboard,
- scuppers and freeing port,
- etc.

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3.19
companionway opening

opening giving way to accommodation <https://standards.iteh.ai/catalog/standards/sist/f20bf88f-e232-4805-bfe3-814366148c34/iso-11812-2001>

NOTE There may be several companionway openings.

3.20
companionway door

door or closing appliance intended to close a companionway opening

3.21
washboards

closing appliance for companionway opening made of several mobile boards that, when closed, are stacked one on top of each other

NOTE 1 This is a very frequent device on sailing monohulls.

NOTE 2 Boards are added as the weather worsens to constitute a higher sill.

3.22
sill

barrier above which water in the cockpit may enter companionway openings and downflood the boat

NOTE The lids to cockpit lockers or any opening other than the companionway opening, and leading into non-quick-draining parts of the boat are not considered to be sills if the closing appliance covering them fulfils the watertightness requirements of clause 9.

3.23
fixed sill

sill being a fixed, integral and permanent part of the cockpit

3.24**semi-fixed sill**

any closing appliance movable but permanently attached to the boat which, when in place, constitutes a sill higher than the fixed sill

EXAMPLE Sliding or hinged doors, hatches, sliding sills, but excluding washboards.

NOTE A lanyard is not regarded as a permanent attachment.

3.25**sill height** h_s

height of sill, either the top of a fixed sill, or of the mobile part, when closed, for a semi-fixed sill

3.26**minimum sill height** $h_{s,min}$

minimum value of sill height required by this International Standard

3.27**cockpit volume** V_C

volume, in cubic metres, of water that can be instantaneously contained in the cockpit before discharge, which is the volume below h_C

3.28**cockpit volume coefficient** k_C

ratio between the cockpit volume and the reserve buoyancy

$$k_C = \frac{V_C}{L_H B_{max} F_M}$$

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3.29**degree of watertightness**

ability of a closing appliance, fitting or surface, to resist ingress of water according to the conditions of protection from water

NOTE The degree of water tightness is summarized as follows.

Degree 1 Degree of tightness providing protection against effects of continuous immersion in water.

Degree 2 Degree of tightness providing protection against effects of temporary immersion in water.

Degree 3 Degree of tightness providing protection against splashing water.

Degree 4 Degree of tightness providing protection against water drops falling at an angle of up to 15° from the vertical.

4 Symbols

Table 1 summarizes the main symbols used in this International Standard.

Table 1 — Summary of symbols

Symbol	Unit	Meaning	Subclause or annex concerned
B_{\max}	m	Maximum beam	3.3, 3.28
C_1	—	Draining-time reduction coefficient	Annex C
C_2	—	Loss coefficient for discharge above the waterline	Annex C
C_3	—	Loss coefficient for discharge below the waterline	Annex C
d	mm	Drain diameter in millimetres	7.8, annexes B,C,D
D	m	Drain diameter in metres	Annex D
F_M	m	Freeboard amidships	3.5, 3.28
h_C	m	Cockpit water-retention height	3.15, 7.2, 8.1, 9.1, annexes A, B, C, D
H_B	m	Cockpit bottom height above the waterline	3.16, 6.1, annex B
$H_{B,\min}$	m	Minimum cockpit bottom height above the waterline	3.17, 6.1, 7.6, annex B
h_S	m	Sill height	3.25, 8.2, 9.2, annex B
$h_{S,\min}$	m	Required minimum sill height	3.26, 8.2, 9.2, annex B
k_C	—	Cockpit volume coefficient	3.28, 7.2
L_H	m	Length of hull	3.2, 3.28
t_{\max}	min	Maximum allowable draining time	7.2, 7.8, annexes B,C,D
t_{ref}	min	Reference draining time = t_{\max}/V_C	7.8, annexes B, C
V_C	m ³	Cockpit volume	3.27, 3.28, 7.2

NOTE Heights measured above the cockpit bottom have symbols beginning with h , whereas heights measured above the waterline have symbols beginning with H .

5 General requirements

5.1 Loading and measurement conditions

The loading conditions for the subclauses 5.2 to 5.4 are “fully loaded ready-for-use” as defined in ISO 8666. In some cases, the mass of water contained in specific volumes shall be added to this loading (see 6.2.1 and 6.2.2).

The measurement or calculations shall be made with the boat upright and at rest in smooth water.

NOTE This loading condition is surpassed and maybe the trim altered when the cockpit is in its draining period, i.e. when partially or totally filled with water.

5.2 Requirements for “watertight” cockpits and recesses

A “watertight” cockpit or recess shall

- have its sills in accordance with clause 8, and
- show a degree of watertightness in accordance with clause 9.

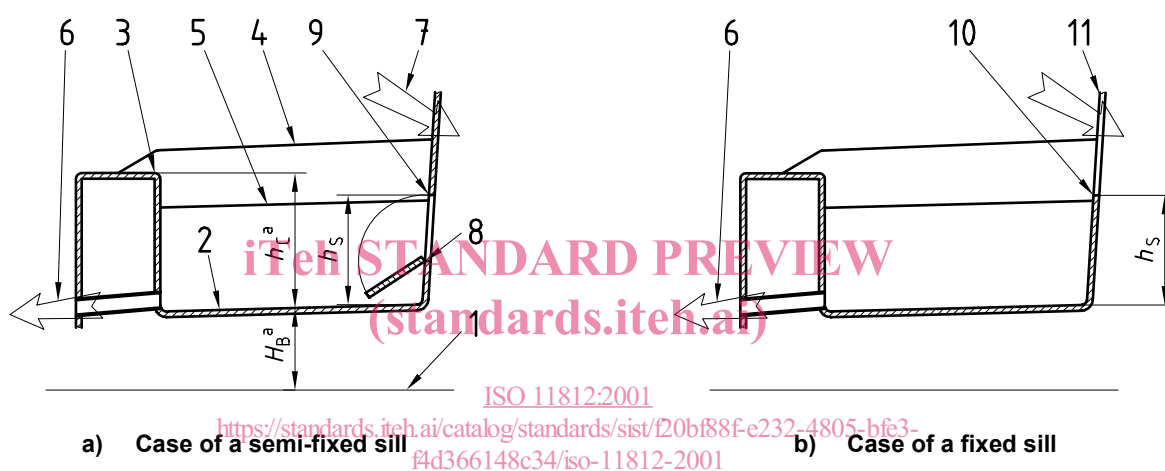
5.3 Requirements for “quick draining” cockpits and recesses

A “quick-draining” cockpit or recess shall

- have its bottom height H_B above the the waterline in accordance with clause 6;
- have its draining devices in accordance with clause 7;
- have its sills in accordance with clause 8;
- show a degree of watertightness in accordance with clause 9.

For simplicity, the main part of this International Standard considers cockpits having only one bottom level. Cockpits having several bottom levels shall be analysed according to annex B.

Figure 1 gives schematically the principal heights used in this International Standard for a one-level bottom cockpit.



Key

1	Waterline	7	Access companionway
2	Cockpit bottom	8	Top of the fixed part
3	Overflow point	9	Top of the mobile part
4	Coamings Chambers and compartments	10	Top of fixed sill
5	Seats	11	Companionway closed by washboards
6	Drain		
^a	H_B and h_C measured at the centre of the cockpit bottom		

Figure 1 — Schematic longitudinal section of a cockpit

5.4 Closing appliances

Closing appliances fitted in watertight cockpits and quick-draining cockpits, and giving access to the interior of the boat, shall fulfil the requirements of ISO 12216 and of clause 9.

6 Requirements for quick-draining cockpit bottom

6.1 Minimum cockpit bottom height, $H_{B,min}$

The minimum cockpit bottom height, $H_{B,min}$, above the the waterline shall be according to Table 2.