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## Small craft — Watertight or quick draining recesses and cockpits

*Petits navires — Cavités et cockpits étanches ou autovideurs*

ICS: 47.080

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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](http://www.iso.org/directives)).

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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 188, *Small craft*.

This second edition cancels and replaces the first edition (ISO 11812:2003), of which it constitutes a major revision. In this revision, based on 10 years of application, the main changes are:

- introduction of the concept of aft open cockpits;
- clarification of requirements;
- systematic usage of the general term "recess" instead of "cockpit";
- clarification of requirements on engine ventilation ducts in recesses;
- implementation of multi bottom recesses or recesses with a foot-well in the main core of the standard;
- deletion of "major head losses" (friction in drain pipes) as their effect was very small, but this made the calculation much more complex;
- improved data for "minor head losses" (local losses) to correspond to common practice;
- reduction of remaining water in the recess from 0,1 m to 0,05 m.

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# Small craft — Watertight or quick draining recesses and cockpits

## 1 Scope

This International Standard specifies requirements for recesses and cockpits in terms of watertightness, draining time, and sills in way of cockpit companionway doors or hatches, for small craft up to 24 m length of hull. Recesses located in elevated part of the craft shall be considered by the scope of this standard. This standard only considers normal operation of craft, as defined in ISO 8666.

Unattended craft recess issues are considered out of the scope of this standard;

It does not set requirements for the size and the shape of a recess or cockpit, or where it shall be used. It only considers draining by gravity, and not by pumping or other methods.

This international standard does not guarantee that the water contained in a watertight or quick draining recess or cockpit will not harm stability and floatability, which are covered by ISO 12217.

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

## 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 8666— *Small craft — Principal data.*

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

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

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

ISO 12217 (all parts), *Small craft — Stability and buoyancy assessment and categorization.*

ISO 12215- Parts 5& 7, *Small craft — Stability and buoyancy assessment and categorization.*

## 3 Terms and definitions

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

### 3.1

#### design category

description of the sea and wind conditions for which a craft is assessed to be suitable (see ISO 8666)

NOTE 1 to entry: The definitions of these design categories align with those used in the Recreational Craft Directive of the European Union, EU Directive 2013/53/EC.

### 3.2

#### **sailing craft**

craft for which the primary means of propulsion is by wind power, having reference sail area, as defined in ISO 12217:  $A_s \geq 0,07(m_{LDC})^{2/3}$  where  $m_{LDC}$  is the mass of the craft in the maximum load condition, expressed in kilograms.

### 3.3

#### **non-sailing craft**

craft not designed to use sails as primary means of propulsion

### 3.4

#### **heeled waterline**

the level of the water on the hull in the fully loaded, ready-for-use condition according to ISO 8666 when the craft is inclined to:

- an angle of 7° for motor boats and sailing multihulls; or
- 30° or immersion of the sheerline, whichever occurs first, for monohull sailing boats.

### 3.5

#### **recess**

volume open to the air that may retain water within the range of loading conditions and corresponding trims

EXAMPLE Cockpits, wells, open volumes or areas bounded by bulwarks or coamings.

NOTE 1 to entry: Cabins, shelters or lockers provided with closures according to the requirements of ISO 12216 are not recesses.

NOTE 2 to entry: A recess can be composed of several recesses connected together

### 3.6

#### **cockpit**

recess intended for the accommodation of people

### 3.7

#### **watertight recess**

recess which satisfies the requirements of this document for watertightness requirements and sill height, but not those for drainage

### 3.8

#### **quick-draining recess**

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

NOTE 1 to entry: According to its characteristics, a recess may be considered quick-draining for one design category, but not for a higher category.

### 3.9

#### **recess open to the sea**

recess where its aft boundary is open to the outside of the craft with a recess retention height equal to zero according to 3.21.

NOTE 1 to entry Figure 1 c) gives an example of a recess open to the sea .



**3.10****recess bottom**

the lowest surface of the recess sole where water collects before being drained. The recess bottom may have several levels

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

**3.11****recess bottom height** $H_B$ 

height of the recess bottom above waterline, the craft being upright, at rest and fully loaded

**3.12****minimum recess bottom height** $H_{B\min}$ 

Minimum value of  $H_B$  required by this document

**3.13****single bottom recess**

recess where the bottom has only one plane

**3.14****multi-bottoms recess**

recess where the bottom has more than one plane

**3.15****bridge deck**

area in the proximity of the companionway opening and above recess bottom, on which people normally step before entering the accommodation

**3.16****interior**

Inside part of the craft watertight envelope.

**3.17****watertightness degree**

capacity of an appliance or fitting to resist ingress of water, according to the conditions of exposure to water.

**Table 1 — Definitions of the degrees of watertightness**

Degree of watertightness:	Definition
1 (waterproof)	Constructed to withstand continuous immersion Protection against effects of continuous immersion of water
2 (watertight)	Constructed to prevent ingress of water when tested according to D.2 Protection against effects of temporary immersion water
3 (weathertight)	Constructed to minimize seepage when tested according to D.3 Protection against splashing water

4 (spraytight)	Protection against waterdrops falling at an angle of up to 15° from the vertical
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**3.18  
downflooding opening**

opening in the hull or deck (including the edge of a recess) that might admit water into the interior or bilge of a craft, or a recess, apart from those excluded by ISO 12217

**3.19  
appliance**

device made of a plate and its associated framing, opening and fixture systems, if relevant, used to cover an opening in the hull, deck or superstructure of a craft; that may be fixed or opening (detachable, hinged, sliding, folding, etc.)

EXAMPLE Windows, portlights, hatches, deadlights, doors, sliding appliances, escape hatches, washboard.

**3.20  
fixed appliance**

Non-opening appliance

**3.21  
opening appliance**

appliance that can be opened

**3.22  
recess retention height**

$h_c$   
height of water in a recess, when the craft is upright and at design trim, at which 20% of the uppermost periphery of the surrounding coaming (measured in a horizontal plane parallel to waterline) would be covered by water, assuming that all gates, doors or drainage openings are considered to be sealed, unless the drainage area is greater than  $0,005L_H B_H$

Note 1 to entry: The design trim is in  $m_{LDC}$  condition as defined in ISO 8666

**3.23  
drain**

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

NOTE 1 to entry Examples of drains: a pipe discharging overboard above or below waterline; a part of the recess allowing direct discharge overboard; scuppers and freeing port.

**3.24  
companionway**

opening intended for crew access to the craft's interior and fitted with an opening appliance

Note 1 to entry: the opening appliance can be a door, a hatch, vertical, horizontal etc.

Note 2 to entry: There may be several companionways.

**3.25  
sill**

barrier above which water in the recess may enter companionway openings and downflood the craft

Note 1 to entry: 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 6.

### 3.26 fixed sill

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

### 3.27 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 1 to ENTRY: A lanyard is not regarded as a permanent attachment.

### 3.28 washboards

closing appliance for companionway opening made of several mobile boards sliding in a rabbet that, when closed, are stacked one on top of each other, and located above the required sill height  $h_{s \text{ min}}$

Note 1 to entry: This is a frequent device on sailing monohulls: boards are added as the weather worsens

### 3.29 sill height $h_s$

vertical distance between the adjacent recess bottom and the top of the sill

### 3.30 minimum sill height $h_{s \text{ min}}$

minimum sill height required by this document

### 3.31 recess volume

$V_c$

volume of water that can be contained in a recess before discharge

Note 1 to entry: the volume shall be the maximum volume, considering any possible combination of outside doors, movable coamings, etc. The volume is measured from the recess bottom up  $h_c$ , assuming that all closing appliances and drains are closed

### 3.32 foot-basin

specific recess located between recess and companionway opening, having a lower bottom than the surrounding recess and covered with a grating

### 3.33 readily accessible

capable of being reached quickly and safely for effective use under emergency conditions without the use of tools

## 4 Symbols

Table 1 summarizes the main symbols used in this document.

**Table 2 — Table of symbols used in the main core**

Symbol	Meaning	Unit
$B_H$	Beam of hull as defined by ISO 8666	m
$F_M$	Freeboard amidships as defined by ISO 8666	m
$h_C$	Recess retention height	m
$h_S$	Sill height	m
$h_{S\ min}$	Required minimum sill height	m
$H_B$	Recess bottom height above waterline	m
$H_{B\ min}$	Minimum recess bottom height above waterline	m
$k_C$	Recess volume coefficient	-
$L_H$	Length of hull as defined by ISO 8666	m
$V_C$	Recess volume	m <sup>3</sup>
$t_{max}$	Maximum allowable draining time	min
$t_{ref}$	Reference draining time	min
$d_i$	Drain diameter in millimetres	mm
NOTE: Heights measured above the recess bottom have symbols beginning with <i>h</i> , whereas heights measured above waterline have symbols beginning with <i>H</i> .		

## 5 General requirements

### 5.1 Loading and measurement conditions

Unless otherwise specifically stated in the text:

- the craft is in maximum load condition  $m_{LDC}$  as defined in ISO 8666;
- lengths and heights are all measured in m, areas in m<sup>2</sup>, volumes in m<sup>3</sup>, time in minutes and/or seconds;
- measurements or calculations shall be made with the craft upright and at rest in calm water.

### 5.2 Requirements for watertight and “quick draining” recesses

Table 2 summarizes relevant clauses to address requirements for watertight and “quick draining” recesses.

**Table 3 — Relevant clauses for recesses compliance**

Requirements:	Watertight recess	“Quick draining” recess
<b>Watertightness</b>	Clause 6	Clause 6
<b>Companionway Sill</b>	<i>None</i>	Clause 7
<b>Height of recess bottom</b>	<i>None</i>	Clause 8
<b>Drainage</b>	<i>None</i>	Clause 9 and 10
<b>Strength of appliances</b>	ISO 12216	ISO 12216