

# Small craft — Bilge-pumping systems

The European Standard EN ISO 15083:2003 has the status of a  
British Standard

ICS 47.080





## National foreword

This British Standard is the official English language version of EN ISO 15083:2003. It is identical with ISO 15083:2003.

The UK participation in its preparation was entrusted to Technical Committee GME/33, Small craft, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

### Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the BSI Electronic Catalogue or of British Standards Online.

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 25 February 2003

### Summary of pages

This document comprises a front cover, an inside front cover, the EN ISO title page, the EN ISO foreword page, the ISO title page, pages ii to v, a blank page, pages 1 to 8, the Annex ZA page, the Annex ZB page, an inside back cover and a back cover.

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### Amendments issued since publication

Amd. No.	Date	Comments
14449 Corrigendum No. 1	9 April 2003	Correction to EN ISO foreword page and incorporating the Annex ZA and Annex ZB pages

ICS 47.080

English version

## Small craft - Bilge-pumping systems (ISO 15083:2003)

Navires de plaisance - Systèmes de pompage de cale (ISO  
15083:2003)

Kleine Wasserfahrzeuge - Lenzeinrichtungen (ISO  
15083:2003)

This European Standard was approved by CEN on 11 December 2002.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

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## **Foreword**

This document (EN ISO 15083:2003) has been prepared by Technical Committee ISO/TC 188 "Small craft", the secretariat of which is held by CMC.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2003, and conflicting national standards shall be withdrawn at the latest by August 2003.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZB, which is an integral part of this document.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

## **Endorsement notice**

The text of ISO 15083:2003 has been approved by CEN as EN ISO 15083:2003 without any modifications.

NOTE Normative references to International Standards are listed in Annex ZA (normative).

# INTERNATIONAL STANDARD

**ISO**  
**15083**

First edition  
2003-02-01

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## **Small craft — Bilge-pumping systems**

*Petits navires — Systèmes de pompes de cale*



Reference number  
ISO 15083:2003(E)





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## Foreword

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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 15083 was prepared by Technical Committee ISO/TC 188, *Small craft*.

## Introduction

Bilge-pumping systems as specified in this International Standard are limited to normal amounts of water in an intact boat due to spray, rain, seepage, spillage, and occasional small amounts of water shipped from boat movements in heavy weather.

This International Standard is not intended to enable flooding resulting from hull damage, to be dealt with.





# Small craft — Bilge-pumping systems

## 1 Scope

This International Standard specifies requirements for pumping or alternative means designed to remove normal accumulations of bilge water for small craft with a hull length,  $L_H$ , up to 24 m according to ISO 8666.

This International Standard does not set requirements for bilge pumps or bilge-pumping systems designed for damage control.

## 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 8666:2002, *Small craft — Principal data*

ISO 8849:—<sup>1)</sup>, *Small craft — Electrically operated bilge-pumps*

ISO 9093 (all parts), *Small craft — Seacocks and through-hull fittings*

ISO 11812:2001, *Small craft — Watertight cockpits and quick-draining cockpits*

ISO 12216:2002, *Small craft — Windows, portlights, hatches, deadlights and doors — Strength and watertightness requirements*

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

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply. The meanings of symbols used in the definitions are given in Clause 4.

### 3.1

#### **design category**

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

#### **3.1.1**

##### **design category A**

##### **category for “ocean” sailing**

boat designed for extended voyages where conditions experienced may exceed wind force 8 (Beaufort Scale) and significant wave heights of 4 m and above, but excluding abnormal conditions (e.g. hurricanes)

1) To be published. (Revision of ISO 8849:1990)





### 3.1.2

#### **design category B**

##### **category for “offshore” sailing**

boat designed for offshore voyages where conditions up to and including wind force 8 (Beaufort Scale) and significant wave heights up to and including 4 m may be experienced

### 3.1.3

#### **design category C**

##### **category for “inshore” sailing**

boat designed for voyages in coastal waters, large bays, estuaries, lakes and rivers, where conditions up to and including wind force 6 (Beaufort Scale) and significant wave heights up to and including 2 m may be experienced

### 3.1.4

#### **design category D**

##### **category for sailing in “sheltered waters”**

boat designed for voyages in sheltered waters, small bays, estuaries, lakes, rivers and canals, where conditions up to and including wind force 4 (Beaufort Scale) and maximum occasional wave heights up to and including 0,5 m may be experienced

### 3.2

#### **sailing boat**

boat for which the primary means of propulsion is by wind power, having a total profile area of all sails that may be set at one time when sailing close hauled ( $A_S$ ) of greater than  $0,07(m_{LDC})^{2/3}$

NOTE The total profile area of all sails is expressed in square metres.

### 3.3

#### **fully decked boat**

boat in which the horizontal projection of the sheerline comprises any combination of

- watertight deck and superstructure, and/or
- cockpits and quick-draining recesses which comply with ISO 11812, and/or
- watertight recesses complying with ISO 11812 with a combined volume of less than  $L_H B_H F_M / 40$ ,

all closing appliances being watertight in accordance with ISO 12216

NOTE Open and partially decked boats do not comply with this definition.

### 3.4

#### **enclosed steering position**

steering position intended to be used in severe weather, having rigid or flexible enclosures on top and at least three sides

### 3.5

#### **exposed steering position**

steering position intended to be used in severe weather, not having rigid or flexible enclosures on top and at least three sides

### 3.6

#### **accumulation of bilge water**

minor amounts of water collecting in the bilge from spray, rain, seepage, spillage, and water shipped from normal boat movements or breaking waves



**3.7****critical bilge-water level**

level at which bilge water will contact metallic fuel tanks, couplings, engine pans, non-submersible machinery, or non-watertight electrical circuits and connections, with the craft in the static floating position or in normal operation

**3.8****maximum heeled waterline**

〈non-sailing boats〉 level of water on the hull when the hull is inclined to an angle of 7° heel

**3.9****maximum heeled waterline**

〈sailing boats〉 level of water on the hull when the hull is inclined to an angle of 30° heel or the level of the sheerline amidships, whichever is less

**3.10****submersible bilge pump**

pump designed to be located below water level

**3.11****water head**

maximum head of water in the bilge-pump discharge line, measured vertically from the pump inlet port to the centre of the discharge line's highest position

**3.12****accessible**

capable of being reached for inspection, removal or maintenance without removal of any permanent element of the boat structure

**3.13****readily accessible**

capable of being reached for operation, inspection or maintenance without the use of tools or removal of any element of the boat structure or any item of portable equipment

**4 Symbols**

For the purposes of this International Standard, the symbols and associated units in Table 1 apply.

<b>Table 1 — Symbols</b>		
<b>Symbol</b>	<b>Unit</b>	<b>Meaning</b>
$A_S$	$m^2$	Projected sail area, according to ISO 8666
$B_H$	m	Beam of the hull, according to ISO 8666
$F_M$	m	Freeboard, midship, to the loaded waterline according to ISO 8666
$L_H$	m	Length of the hull, according to ISO 8666
$m_{LDC}$	kg	Mass of the boat in light craft condition with the maximum total load added, according to ISO 8666

IP 56

Degree of tightness providing protection against splashing water according to IEC 60529

IP 67

Degree of tightness providing protection against the effects of temporary immersion in water according to IEC 60529





## 5 Requirements

### 5.1 Type, number and location

#### 5.1.1 General

Bilge-pumping systems shall be capable of removing water from all main compartments of the craft where water can accumulate.

Fore and aft peaks with a combined volume of less than or including 10 % of the displacement of the craft in the fully loaded ready-for-use condition, according to ISO 8666, need not be linked to the bilge-pumping system if trapped water in those compartments can be emptied into the main bilges by a valve, or drained by other means.

Type(s), number(s) and location(s) of bilge-pumping systems shall be in accordance with requirements in 5.1.2 and 5.1.3.

#### 5.1.2 Open and partially decked boats

For open and partially decked boats, the means of bailing shall be specified in the owner's manual.

NOTE For partially decked boats, the installation of a bilge pump is recommended.

#### 5.1.3 Fully decked boats

##### 5.1.3.1 General

Fully decked boats shall be fitted with one or more bilge pumps according to the requirements in 5.1.3.2 and 5.1.3.3.

##### 5.1.3.2 Primary bilge pump

For craft in design categories A, B and C:

- a) where the main steering position is exposed and the water head in the discharge line is less than 1,5 m, one manual bilge pump shall be installed, permanently attached to the boat structure and operable from within the cockpit, with all doors, hatches and other accesses to the interior of the boat closed;
- b) where the main steering position is exposed and the water head in the discharge line is 1,5 m or more, one manual or powered bilge pump or bilge pumping system (e.g. electric) shall be installed, permanently attached to the boat structure and operable from the main steering position, with all doors, hatches and other accesses to the interior of the boat closed;
- c) where the main steering position is enclosed within the craft, one powered bilge pump or bilge-pumping system shall be installed and the bilge pump shall be operable from the main steering position.

For craft in design category D:

- if  $L_H$  is greater than 6 m, one manual or powered bilge pump or bilge-pumping system shall be installed;
- if  $L_H$  is less than or equal to 6 m, one manual bilge pump or other means of bailing shall be available, which shall be specified in the owner's manual.

5.1.3.3 Secondary bilge pump

For craft in design categories A, B and C, one additional manual, mechanical or electric bilge pump or bilge-pumping system shall be installed, which shall be capable of removing water from all bilge compartments and which shall be operable from a readily accessible position.

For craft in design category D, no secondary bilge pump is required.

5.2 Summary of requirements

Table 2 is a summary of the requirements listed in 5.1.

Table 2 — Summary of bilge-pump requirements

Boat type	Boat characteristics	Type of pump	Bilge-pump requirements
Open and partially decked boats Design categories A, B, C, D	Exposed		or means of bailing Subclause
			See Owner's manual 5.1.2
	Fully decked boats	Primary pump	1 manual pump (water head less than 1,5 m)
			1 manual, mechanical or electric pump (water head 1,5 m or more)
		Secondary pump	1 manual or mechanical or electric pump
Design category A, B, C	Enclosed	5.1.3.3	
		Primary pump	1 manual or mechanical or electric pump

5.1.3.2 e) steering position 5.1.3.3 Secondary pump 1 manual or mechanical or electric pump

		5.1.3.2	
		a)	
		5.1.3.2	
		b)	
Fully decked boats	L <sub>H</sub> greater than 6 m	Primary pump	1 manual or mechanical or electric pump
Design category D	L <sub>H</sub> less than or equal to 6 m	5.1.3.2	
		Primary pump	5.1.3.2 1 manual pump, for alternative see Owner's manual

5.3 Capacity

The capacity of each bilge pump, according to 5.1.3 shall be not less than



10 l/min for boats with  $L_H$  less than or equal to 6 m,

15 l/min for boats with  $L_H$  greater than 6 m and less than 12 m, or

30 l/min for boats with  $L_H$  greater than or equal to 12 m.

These volumes per minute shall be achieved when the pump is subjected to a back pressure of 10 kPa.

For manual bilge pumps, the capacity shall be rated for 45 strokes per minute.

## **6 Design and construction**

### **6.1 General**

**6.1.1** The design and construction of bilge-pumping systems shall withstand the pressures, temperatures and stresses likely to be encountered under normal operating conditions.

Bilge pumps shall be operable within temperature limits ranging from 0 °C to + 60 °C and shall withstand storage temperatures, without operation, of – 40 °C to + 60 °C when in the dry condition.

**6.1.2** Spigots/spuds of bilge pumps and other components shall be long enough to provide support for the hose, and permit the use of clamps.

**6.1.3** Unless permanently fitted, bilge-pump handles shall be secured to minimize the risk of accidental loss.

**6.1.4** No bilge pump may discharge into a cockpit unless the cockpit opens aft to the sea. Bilge pumps shall not be connected to cockpit drains.

### **6.2 Electrically operated pumps**

**6.2.1** Electric bilge pumps shall comply with ISO 8849.

**6.2.2** Electrical connections shall be water resistant to a degree of IP 67 according to IEC 60529, and shall be placed above the maximum acceptable water level, unless submersible.

**6.2.3** Where the switch is subject to spray water, it shall be water resistant to a degree of IP 56 according to IEC 60529.

## **7 Installation**

**7.1** Bilge pumps shall be mounted in an accessible location for servicing and clearing the intake.

**7.2** Bilge-pump water inlets (e.g. strainers) shall be designed and installed to minimize ingestion of debris likely to cause pump failure and shall be accessible for cleaning.

**7.3** Intake hoses shall not collapse under maximum pump suction.

**7.4** Bilge-pump pipes and hoses shall be installed to minimize flow restriction.

**7.5** Outlets on the hull shall be above the maximum heeled waterline as defined in 3.8 and 3.9, unless a seacock is installed in accordance with ISO 9093, and there is a means to prevent backflow into the boat.

**7.6** Where several pumps discharge through one through-hull fitting, the system shall be designed so that the operation of one pump will not feed back through another pump, and the simultaneous operation of the pumps will not diminish the pumping capacity of the system.

**7.7** Hose connections shall be secured with non-corrosive types of clamps, or with permanently attached end-fittings.

**7.8** Non-submersible bilge pump motors shall be located above the critical bilge-water level.

**7.9** Bilge pumps with automatic controls shall be provided with a readily accessible manual power-supply switch to activate the pump.

**7.10** Automatic controls shall be provided with a visual indication showing that power is supplied to the pump and that the pump is set and ready to operate in automatic mode.



**7.11** Hand pumps shall be installed in such a way that they can be operated at their rated capacity according to 5.3.

## **8 Owner's manual**

The information specified in Annex A shall be included in the owner's manual.



## **Annex A**

(normative)

### **Information to be provided in the owner's manual**

#### **A.1 Information for the owner/operator**

The boat and/or pump manufacturer shall supply information on the following aspects of the bilge-pumping system:

type, capacity and location of each bilge pump;

operating instructions;

requirements for servicing.

#### **A.2 Owners/operators responsibility**

It is the responsibility of the owner/operator to have at least one bailer/draw bucket on board, secured against accidental loss.

This requirement applies to

all open and partially decked boats, and

fully decked boats of design category D without a bilge pump.

#### **A.3 Safety precautions**

##### **A.3.1 Caution**

Check the function of all bilge pumps at regular intervals. Clear debris from the pump inlets.

If fitted, the seacocks in the fore and aft peak bulkheads shall be kept closed and shall only be opened to let water drain into the main bilges.

##### **A.3.2 Warning**

The combined capacity of the system is not intended to drain the craft in the case of damage.

## Annex ZA (normative)

### Normative references to international publications with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE Where an International Publication has been modified by common modifications, indicated by (mod.), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN</u>	<u>Year</u>
ISO 8666	2002	Small craft - Principal data	EN ISO 8666	2002
ISO 8849	1990	Small craft — Electrically operated bilge-pumps	EN 28849	1993
ISO 9093-1	1994	Small craft — Seacocks and through-hull fittings — Part 1: Metallic	EN ISO 9093-1	1997
ISO 9093-2	2002	Small craft - Seacocks and through-hull fittings - Part 2: Non-metallic	EN ISO 9093-2	2002
ISO 11812	2001	Small craft — Watertight cockpits and quick-draining cockpits	EN ISO 11812	2001
ISO 12216	2002	Small craft — Windows, portlights, hatches, deadlights and doors — Strength and watertightness requirements	EN ISO 12216	2002



**Annex ZB**  
(informative)

**Clauses of this European Standard addressing essential requirements or other provisions of EU Directives**

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and supports essential requirements of EU Directive 94/25/EC.

**WARNING:** Other requirements and other EU Directive may be applicable to the product(s) falling within the scope of this standard.

The following clauses of this standard, as detailed in Table ZB.1, are likely to support requirements of Directive 94/25/EC.

Compliance with the clauses of this standard provides one means of conforming with the specific essential requirements of the Directive concerned and associated EFTA regulations.

**Table ZB.1: Correspondence between this European Standard and EU Directives**

Clauses/sub-clauses of this European Standard	Corresponding annexes/paragraphs of Directive 94/25/EC	Comments
All Clauses	Annex I, Clause 3.5	
Clause 8, Annex A	Annex I, Clause 2.5	





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