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**Inflatable boats —**

**Part 2:**

**Boats with a maximum motor power rating  
of 4,5 kW to 15 kW inclusive**

*Bateaux pneumatiques —*

*Partie 2: Bateaux équipés d'un moteur d'une puissance maximale comprise  
entre 4,5 kW et 15 kW inclus*

ISO 6185-2:2001

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Reference number  
ISO 6185-2:2001(E)

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Printed in Switzerland

## Contents

	Page
Foreword.....	v
Introduction.....	vi
<b>1 Scope .....</b>	<b>1</b>
<b>2 Normative references .....</b>	<b>1</b>
<b>3 Terms and definitions .....</b>	<b>2</b>
<b>4 Materials .....</b>	<b>3</b>
4.1 General.....	3
4.2 Reinforced materials (excluding glass-fibre-reinforced plastics components) and/or unsupported materials making up the hull.....	3
4.2.1 Requirements.....	3
4.2.2 Test methods.....	3
4.3 Wood.....	5
4.3.1 General.....	5
4.3.2 Plywood.....	5
4.3.3 Constructional timbers.....	5
4.4 Metal and synthetic material parts.....	5
4.5 Glass-fibre-reinforced plastics.....	5
<b>5 Functional components .....</b>	<b>5</b>
5.1 Conditioning.....	5
5.2 Hull fittings.....	6
5.2.1 Requirement.....	6
5.2.2 Test method.....	6
5.3 Manual lifting and carrying devices.....	6
5.3.1 Requirement.....	6
5.3.2 Test method.....	6
5.4 Valves.....	6
5.4.1 Inflation.....	6
5.4.2 Deflation.....	7
5.5 Rowlocks and oars.....	7
5.5.1 Requirements.....	7
5.5.2 Abrasion damage.....	7
5.5.3 Prevention from loosening.....	7
5.5.4 Strength of rowlocks.....	7
5.5.5 Use of the rowlocks and oars.....	7
5.6 Transom (where applicable).....	7
5.6.1 Requirement.....	7
5.6.2 Test method.....	8
5.7 Hull drainage.....	8
5.8 Rudder steering system (where offered as standard or optional equipment).....	8
5.8.1 Strength of the assembly.....	8
5.8.2 Rudder-blade.....	8
5.9 Remote steering system (where offered as standard or optional equipment).....	8
5.10 Motor-securing line attachment (Type V only).....	8
5.11 Towing device (all types).....	8
5.12 Seating and attachment systems (where offered as standard or optional equipment).....	8
<b>6 Safety requirements and test methods of the completed boat.....</b>	<b>9</b>
6.1 Maximum permissible number of persons.....	9
6.2 Maximum motor power.....	9
6.3 Static stability of the boat.....	9

6.3.1	Requirement .....	9
6.3.2	Test method.....	9
6.4	Maximum load capacity.....	10
6.4.1	Requirement .....	10
6.4.2	Test method.....	10
6.5	Design working pressures .....	11
6.6	Strength of the hull .....	11
6.6.1	Requirement .....	11
6.6.2	Test method.....	11
6.7	Safety ropes and grab handles.....	13
6.7.1	Requirement .....	13
6.7.2	Test method.....	13
6.8	Residual buoyancy .....	13
6.8.1	Requirement .....	13
6.8.2	Test method.....	13
6.9	Manoeuvrability.....	13
6.9.1	Requirement .....	13
6.9.2	Test method.....	13
6.10	Compartmentation .....	14
6.11	Field of vision from the helm position.....	14
7	Performance requirements and test methods .....	14
7.1	General.....	14
7.2	Drop test (RIBs only) .....	15
7.2.1	Requirement .....	15
7.2.2	Test method.....	15
7.3	In-water performance (Type V only).....	15
7.3.1	Requirement .....	15
7.3.2	Test methods.....	16
7.4	Strength of the towing device (both types).....	16
7.4.1	Requirement .....	16
7.4.2	Test method.....	16
7.5	Rowing test (where applicable, see 5.5).....	18
7.6	Watertightness test (not applicable to open floor, self-bailing craft).....	18
7.6.1	Requirement .....	18
7.6.2	Test method.....	18
8	Builder's plate(s).....	18
9	Operator's instructions and warning notes .....	19
10	Standard equipment .....	20
Annex A	(normative) Inflatable craft propelled by sail (Type VI).....	21
Annex B	(informative) General arrangement of a typical Type V boat.....	24
Bibliography	.....	25

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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 part of ISO 6185 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 6185-2 was prepared by Technical Committee ISO/TC 188, *Small craft*.

ISO 6185-2, together with ISO 6185-1 and ISO 6185-3, cancel and replace ISO 6185:1982. They differ significantly from ISO 6185:1982 as they cover boats made from unsupported materials, whereas the latter only covered boats made from reinforced materials.

ISO 6185 consists of the following parts, under the general title *Inflatable boats*:

- Part 1: Boats with a maximum motor power rating of 4,5 kW
- Part 2: Boats with a maximum motor power rating of 4,5 kW to 15 kW inclusive
- Part 3: Boats with a maximum motor power rating of 15 kW and greater

Annex A forms a normative part of this part of ISO 6185. Annex B is for information only.

## Introduction

ISO 6185 is subdivided into three parts as shown in Figure 1.

It excludes:

- single-chambered boats,
- boats of buoyancy less than 1 800 N,
- boats made from unsupported materials of more than 12 kN inflated buoyancy and powered by motors exceeding 4,5 kW, and
- boats greater than 8 m in overall length.

It is not applicable to:

- aquatic toys, and
- inflatable liferafts.

Part 1:

- |          |   |
|----------|---|
| Type I   | Boats propelled exclusively by manual means.              |
| Type II  | Powered boats not exceeding 4,5 kW.                       |
| Type III | Canoes and kayaks.  |
| Type IV  | Sail craft with a maximum sail area of 6 m <sup>2</sup> . |

Part 2:

- |         |   |
|---------|---|
| Type V  | Powered boats of 4,5 kW to 15 kW inclusive.               |
| Type VI | Sail craft with sail area greater than 6 m <sup>2</sup> . |

Part 3:

- |           |  |
|-----------|--|
| Type VII  | Powered boats of 15 kW and greater.          |
| Type VIII | Powered offshore boats of 75 kW and greater. |

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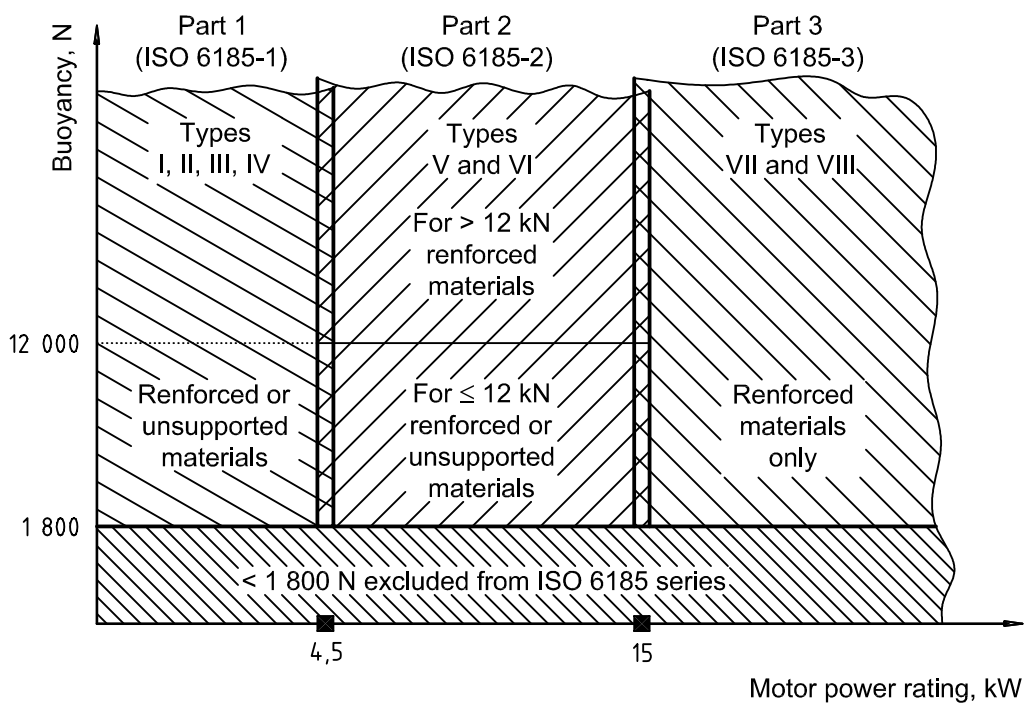


Figure 1 — Illustration of how the three parts of ISO 6185 are divided

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## Inflatable boats —

### Part 2:

## Boats with a maximum motor power rating of 4,5 kW to 15 kW inclusive

### 1 Scope

This part of ISO 6185 specifies the minimum safety characteristics required for the design, materials to use, manufacture and testing of inflatable boats (including rigid inflatable boats) less than 8 m in overall length with a minimum buoyancy of 1 800 N.

This part of ISO 6185 is applicable to the following types of inflatable boats, intended for use within the operating temperatures of – 15 °C to + 60 °C:

- Type V: Inflatable boats capable of taking a motor power rating of 4,5 kW to 15 kW inclusive;
- Type VI: Inflatable craft propelled by sail with a sail area greater than 6 m<sup>2</sup> (see normative annex A).

NOTE For boats with power ratings of 4,5 kW and less, refer ISO 6185-1, and for boats with power ratings of 15 kW and greater, refer to ISO 6185-3.

This part of ISO 6185 excludes single-chambered boats and boats made from unsupported materials of more than 12 kN buoyancy and powered by motors exceeding 4,5 kW, and is not applicable to aquatic toys and inflatable liferafts.

### 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 6185. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 6185 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 1817: 1999, *Rubber, vulcanized — Determination of the effect of liquids*

ISO 2411:2000, *Rubber- or plastics-coated fabrics — Determination of coating adhesion*

ISO 3011:1997, *Rubber- or plastics-coated fabrics — Determination of resistance to ozone cracking under static conditions*

ISO 4646:1989, *Rubber- or plastics-coated fabrics — Low-temperature impact test*

ISO 4674:1977, *Fabrics coated with rubber or plastics — Determination of tear resistance*

ISO 7000:1989, *Graphical symbols for use on equipment — Index and synopsis*

## ISO 6185-2:2001(E)

ISO 8665:1994, *Small craft — Marine propulsion engines and systems — Power measurements and declarations*

ISO 9775:1990, *Small craft — Remote steering systems for single outboard motors of 15 kW to 40 kW power*

ISO 10592:1994, *Small craft — Hydraulic steering systems*

ISO 11192: —<sup>1)</sup>, *Small craft — Graphical symbols*

ISO 11591:2000, *Small craft, engine driven — Field of vision from helm position*

ISO 12215-1:2000, *Small craft — Hull construction and scantlings — Part 1: Materials: Thermosetting resins, glass-fibre reinforcement, reference laminate*

ISO 15652: —<sup>1)</sup>, *Small craft — Remote steering systems for inboard mini jet boats*

### 3 Terms and definitions

For the purposes of this part of ISO 6185, the following terms and definitions apply.

#### 3.1

##### **inflatable boat**

buoyant structure (hull), achieving all or part of its intended shape and buoyancy by the medium of inflation and which is intended for the transportation of people and/or loads on the water, and where the design and shape of it gives it the capability of withstanding forces and movements arising from sea conditions

#### 3.2

##### **rigid inflatable boat**

##### **RIB**

**inflatable boat** (3.1) with the lower part of the hull constructed as a rigid unit and the topsides (inflatable hull) achieving its intended shape and buoyancy (or part thereof) by the medium of inflation

#### 3.3

##### **buoyancy of the boat**

volume of any chamber, which forms the inflatable hull, and any other chamber which is permanently fixed to it

#### 3.4

##### **buoyancy of a RIB**

buoyancy comprising, for calculation purposes, in addition to the inflated buoyancy, the permanent inherent buoyancy or at least two compartments of permanent sealed buoyancy, fixed to the rigid hull, not exceeding 20 % of the total buoyancy

#### 3.5

##### **calculation of the buoyancy**

determination of buoyancy by measuring or calculating the volume at the design working pressure recommended by the manufacturer and expression as a force, where required

NOTE The conversion factor is 9,81 kN/m<sup>3</sup> of the total buoyancy.

#### 3.6

##### **permanent inherent buoyancy**

non-intercellular (closed-cell) foam or other materials which are less dense than fresh water and which have minimal water absorption over their intended life expectancy and which are in (a) sealed compartment(s) in the hull.

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<sup>1)</sup> To be published.

**3.7****permanent sealed buoyancy**

sealed airtight compartment(s) filled with air

**3.8****reinforced materials**

materials which have a coated base cloth

**3.9****unsupported materials**

materials which have no base cloth

**3.10****inboard length**

length of the cockpit, including the area below any spray cover, measured along the boat centreline between the innermost points of the bow and stern

**4 Materials****4.1 General**

All materials shall be selected by the manufacturer according to the stresses to which the craft is to be subjected (shape, dimensions, maximum load, installed power, etc.) and also to the intended service conditions. Use under normal seagoing conditions shall not materially impair their performance and they shall meet the requirements specified in 4.2 to 4.5.

All materials of the inflatable boat shall be inherently rotproof.

**4.2 Reinforced materials (excluding glass-fibre-reinforced plastics components) and/or unsupported materials making up the hull****4.2.1 Requirements**

All materials contributing to the integrity of the boat shall meet the relevant requirements stipulated below and shall retain their full serviceability within the operating temperature range of  $-15\text{ °C}$  to  $+60\text{ °C}$ .

Unsupported materials shall not be used for boats of more than 12 kN buoyancy (see 3.3).

**4.2.2 Test methods****4.2.2.1 Sampling**

Carry out the test with test pieces taken from the constituent materials prior to manufacturing the boat. The boats are vulcanized during manufacture, the test pieces shall also be vulcanized.

**4.2.2.2 Resistance to liquids**

Carry out the test on the external side or the sides of the material in contact with the ambient environment as specified in ISO 1817 but using ASTM oil No. 1.

In cases a) and b) shown in Table 1, the change in mass per unit area shall not exceed  $100\text{ g/m}^2$  following the stipulated period of contact with the test fluid at a temperature of  $70\text{ °C} \pm 2\text{ °C}$ .

Table 1 — Tests liquids

Test liquid	Period of contact
a) Oil	22 h ± 0,25 h
b) Salt water <sup>a</sup>	336 h (minimum)
<sup>a</sup> Components of salt water: Distilled water + 30 g of sodium chloride per litre.	

**4.2.2.3 Resistance to ozone**

Carry out the test on the external side or the sides in contact with the ambient environment as specified in ISO 3011.

- Exposure time: 72 h
- Temperature of test: 30 °C ± 2 °C
- Concentration: 50 ppm<sup>2)</sup>, that is to say, a volume fraction of 0,5 × 10<sup>-6</sup>
- Mandrel diameter: 5 times the material thickness

There shall be no signs of cracking on completion of the test when the test samples are examined under a magnification of 10 ×.

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**4.2.2.4 Resistance to cold**

All materials shall satisfy the requirements of ISO 4646 at a temperature of -15 °C.  
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**4.2.2.5 Tear strength**

**4.2.2.5.1 Reinforced material**

Carry out the test as specified in ISO 4674:1977, method A2. The minimum value of tear resistance, in newtons, is given by the formula:

$$0,375 d (1,14 p + 0,14)$$

where

- d* is the maximum tube diameter, in millimetres, measured within the straight sections of the buoyancy tube section;
- p* is the recommended working pressure, in bars, at 20 °C.

In all cases, the minimum value shall be not less than 75 N.

**4.2.2.5.2 Unsupported material**

As in 4.2.2.5.1 except that the minimum value shall be not less than 40 N.

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2) Parts of ozone per hundred million of air by volume.