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Small craft — Personal watercraft — Construction and system installation requirements

Petits navires — Véhicules nautiques à moteur — Exigences de construction et d'installation des systèmes

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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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 188, *Small craft*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 464, *Small craft*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 13590:2003), which has been technically revised.

The main changes are as follows:

— in Clause 1, it has been clarified that outboard powered personal watercraft and jet powered surfboards are outside the scope of this document;

— comparing all values to SAE and industry standards;

— using the single term "craft's ground" for both "earthed" and "ground";

— requirements for watercraft identification have been added in new Clause 5;

— requirements for cellular plastic used to encase metallic fuel tanks have been removed (former 5.2.2);

— requirements for plastic-encased metallic fuel tanks have been removed (former 5.3.2);

— requirements for carburettors have been removed (former 5.6);

— the fuel fill system grounding value in 6.13 has been corrected;

— requirements for propulsion engine cut-off device have been added in new Clause 13;

— requirements for off throttle steering when underway have been added in Clause 16;

— requirements for the owner's manual have been added in Clause 18;

— off-throttle steering testing methods have been added in new Annex A.

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Small craft — Personal watercraft — Construction and system installation requirements

1 Scope

This document specifies construction and system installation requirements for personal watercraft. It addresses the builder's plate, watercraft identification, permanently installed petrol fuel systems, electrical systems, steering systems, ventilation, hull structure and floatation, stability, mooring and towing, flooding, off-throttle steering and the owner's manual.

This document does not apply to outboard powered personal watercraft and jet powered surfboards.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1817:2022, *Rubber, vulcanized or thermoplastic — Determination of the effect of liquids*

ISO 7326:2016, *Rubber and plastics hoses — Assessment of ozone resistance under static conditions*

ISO 7840:2021, *Small craft — Fire-resistant fuel hoses*

ISO 8469:2021, *Small craft — Non-fire-resistant fuel hoses*

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
personal watercraft
watercraft intended for sports and leisure purposes, of less than 4 m in hull length, which uses a propulsion engine having a water jet pump as its primary source of propulsion and is designed to be operated by a person or persons sitting, standing, or kneeling on, rather than within the confines of a hull

Note 1 to entry: The measurement methodology for the length of hull is defined in ISO 8666.

3.2
fuel system
entire assembly of the fuel fill, vent, tank and distribution components, including but not limited to pumps, valves, strainers, and filters

3.3
static floating position
condition in which a personal watercraft floats in calm water, with each fuel tank filled to its rated capacity, but with no person or items of portable equipment on board

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3.4
conduit
any type of rigid plastic or metal piping or tubing that supports the conductors contained within

3.5
sheath
material used as a continuous protective covering, such as electrical tape, moulded rubber, moulded plastic or flexible tubing, around one or more insulated conductors

3.6
open to the atmosphere
space or compartment that has at least 0,34 m^2 of open area directly exposed to the atmosphere for each cubic metre of net compartment volume

3.7
engine compartment
space where the engine is permanently installed

3.8
bilge
area, excluding *engine compartments* (3.7), in the personal watercraft, below a height of 100 mm measured from the lowest point in the personal watercraft, where liquid can collect when the personal watercraft is in its *static floating position* (3.3)

3.9
engine compartment bilge
space in the *engine compartment* (3.7) or a connected compartment, below a height of 300 mm measured from the lowest point, where liquid can collect when the personal watercraft is in its *static floating position* (3.3)

3.10
builder's plate
label or plate to display basic user information related to the personal watercraft

3.11
handlebar
mechanical means for applying manual steering effort into the connected *helm* (3.12), normally a horizontal configuration with hand grips at each end

3.12
helm
mechanism, exclusive of *handlebars* (3.11) or other means for manual application of a controlling force, by which the controlling force is fed into a personal watercraft steering system

3.13
craft's ground
ground that is established by a conducting connection (intended or accidental) with the common ground (potential of the earth's surface), including any conductive part of the wetted surface of the hull

Note 1 to entry: "Ground" is also known as "earth".

[SOURCE: ISO 10088:—[1)], 3.12]

1) Under preparation. Stage at the time of publication: ISO/FDIS 10088:2021.

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3.14
normal accumulation of bilge water
minor amounts of water collecting in the *bilge* (3.8) from spray, rain seepage and spillage that can be removed by bilge pumps

Note 1 to entry: The height of the normal accumulation of bilge water is below the lowest part of the engine, or measured at the top of the bilge pump inlet or the bilge pump automatic float switch.

3.15
accessible
capable of being reached for inspection, removal or maintenance without removal of permanent craft structure

3.16
readily accessible
capable of being reached for use, inspection, removal or maintenance without the use of tools

3.17
propulsion engine cut-off device
switch or other system that, when activated in an emergency, provides the means to shut off the mechanical propulsion system

3.18 Terms related to the off-throttle testing (see Annex A)

3.18.1
advance
distance travelled along an extension of a previous straight line course measured from the completion of steer input

3.18.2
apex marker
test triangle (3.18.7) marker closest to the *turn markers* (3.18.9)

3.18.3
entrance chute
area of the test course between the *gate markers* (3.18.4) and the *turn markers* (3.18.9)

3.18.4
gate marker
marker at the beginning of the *entrance chute* (3.18.3)

3.18.5
off throttle condition
condition where the forward thrust throttle is completely released by the operator and the engine returns to idle

3.18.6
off throttle steering
any means provided with the personal watercraft that allows manoeuvring of the craft in an *off throttle condition* (3.18.5)

3.18.7
test triangle
area, outlined by markers, that the personal watercraft is not meant to enter during the test

3.18.8
transfer
perpendicular distance from an extension of a previously straight line course

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3.18.9
turn marker
marker at the end of the *entrance chute* (3.18.3)

4 Builder's plate

Personal watercraft shall display a permanently installed builder's plate.

NOTE Requirements for builder's plate are found in ISO 14945.

5 Watercraft identification

Personal watercraft shall display a permanent identification number.

NOTE 1 The identification number is subject to certain international as well as national regulations.

NOTE 2 Requirements for the identification number are found in ISO 10087.

6 Fuel system

6.1 General

6.1.1 Each fuel system fitting, joint and connection shall be accessible.

6.1.2 The fuel system shall be designed not to leak liquid fuel into the personal watercraft when

a) the personal watercraft is overturned through 180° of roll in either direction, or

b) the personal watercraft is overturned through 90° of pitch in either direction.

6.1.3 The fuel system shall be designed not to leak liquid fuel into the personal watercraft when subjected to the greater of the following two values: 20 kPa or 1,5 times the highest hydrostatic pressure to which the component can be subjected in service.

6.1.4 The fuel system shall be designed to supply fuel to the engine within 10 s of the engine being energized and automatically stop the supply of fuel within 10 s of the engine being de-energized.

6.2 Fuel tanks

6.2.1 Materials prohibited for fuel tanks

6.2.1.1 A fuel tank shall not be constructed of terneplate.

6.2.1.2 Unless it has an inorganic sacrificial galvanic coating on the inside and outside of the tank, a fuel tank shall not be constructed of black iron or steel.

6.2.1.3 A metallic fuel tank encased in cellular plastic or in fibre-reinforced plastic shall not be constructed from a ferrous alloy.

6.2.2 Fuel level indication

A means shall be provided to check the fuel level, or a reserve fuel supply shall be provided.

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