SLOVENSKI STANDARD
oSIST prEN ISO 8848:2022

01-februar-2022

Mala plovila - Daljinski mehanski sistemi krmiljenja (ISO/FDIS 8848:2021)

Small craft - Remote mechanical steering systems (ISO/FDIS 8848:2021)

Kleine Wasserfahrzeuge - Steueranlagen (ISO/FDIS 8848:2021)

Petits navires - Appareils à gouverner commandés à distance (ISO/FDIS 8848:2021)

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47.080	Čolni	Small craft

oSIST prEN ISO 8848:2022 **en,fr,de**

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Small craft — Remote mechanical steering systems

Petits navires — Appareils à gouverner commandés à distance

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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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 of ISO 8848 cancels and replaces the second edition (ISO 8848:2020), of which it constitutes a minor revision. Changes have been made to align the document with other ISO/TC 188 standards and to avoid circularity of normative references.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Small craft — Remote mechanical steering systems

1 Scope

This document specifies design, construction, installation and test requirements for remote mechanical cable steering systems and the output ram interface point to rudders, jet drives, outboard and sterndrive engines for small craft.

It is applicable to three distinct classes of steering systems for use on various types of craft:

— standard duty steering systems, for small craft with single and twin installations of outboard engines with a total over 15 kW power, and with rudders, sterndrives and water-jet drives;

— light duty steering systems, for small craft with a single outboard engine of 15 kW to 40 kW power;

— mini-jet steering systems, excluding personal watercraft.

NOTE Standard and light duty steering systems are mechanically interchangeable. A standard duty steering system can be used on a craft designed for a light duty system. However, a light duty steering system cannot be used on a craft that requires a standard duty steering system. Mini-jet steering systems are mechanically differentiated from the previously mentioned systems and can only be used on mini-jet craft as defined in this document.

This document does not address emergency means for steering the craft.

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 12217-1:2015, *Small craft — Stability and buoyancy assessment and categorization — Part 1: Non-sailing boats of hull length greater than or equal to 6 m*

ISO 12217-2:2015, *Small craft — Stability and buoyancy assessment and categorization — Part 2: Sailing boats of hull length greater than or equal to 6 m*

ISO 12217-3:2015, *Small craft — Stability and buoyancy assessment and categorization — Part 3: Boats of hull length less than 6 m*

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
craft-mounted steering system
assembly including all components necessary to transmit remote manual effort to the end of the *output ram* (3.20) and a means to secure an output ram guide tube to the *craft* (3.16)

3.2
interface point
point of mechanical interface in the *steering system* (3.11) where a connection is made between the *output ram* (3.20) and the craft components that are not supplied as part of the same assembly

3.3
control element
device connected to the *steering mechanism* (3.6) that allows the operator to apply manual steering effort to the *steering system* (3.11)

EXAMPLE *Steering wheel* (3.13), *handlebar* (3.5), *joystick* (3.7).

3.4
drag link
device in an *engine-mounted steering system* (3.10) by which the linear force of the *output ram* (3.20) is transmitted to the engine steering arm

3.5
handlebar
mechanical means for applying a manual steering effort to the *steering mechanism* (3.6) in a horizontal configuration, with hand grips at each end and the helm connected at the middle

3.6
steering mechanism
device, to which a *control element* (3.3) is attached for manual application of a controlling force, and by which the controlling force is fed into a *steering system* (3.11)

3.7
joystick
operator input device for the simultaneous control of thrust, steering and propulsion

3.8
mini-jet craft
craft (3.16) weighing less than 1 000 kg, with an inboard engine powering a water-jet pump as its primary method of propulsion, designed to be operated with one or more persons within the confines of a hull

3.9
minimum retained system performance
system performance after test(s), such that at least 90 % of the steering arc normally available each side of the mid-position can be obtained by exertion of no more than 27 N·m of torque at the *steering mechanism* (3.6), through the *control element* (3.3)

Note 1 to entry: This criterion does not define the *steering system* (3.11) performance while a *craft* (3.16) is underway, but is rather intended to provide quantitative limits for design and test purposes.

3.10
engine-mounted steering system
assembly including all components necessary to transmit a remote manual effort to the end of the *output ram* (3.20) which is affixed to an engine mounted steering tube and a *drag link* (3.4) supplied by the engine manufacturer

3.11
steering system
assembly including all components necessary to transmit a remote manual effort to the rudder, outboard engine, sterndrive or water-jet drive

3.12
two-cable steering system
two independent cables attached at the *interface point(s)* (3.2) of the *output ram(s)* (3.20) and at the helm and driven by a common steering shaft, generally used to minimize steering backlash or lost motion

3.13
steering wheel
mechanical means for applying a manual steering effort to the helm, normally a circular configuration with a continuous loop at the distal end of support spokes with the helm connected at the rotational axis

3.14
steering wheel diameter
actual diameter
D_a
diameter of the circle formed by the outermost sections of the *steering wheel* (3.13)

Note 1 to entry: See Figure 6.

3.15
steering wheel dish
distance between the two parallel planes formed by the aft rim surface and the forward hub surface of a *steering wheel* (3.13)

Note 1 to entry: See Figure 6.

3.16
craft
small craft
recreational boat, and other watercraft using similar equipment, of up to 24 m length of hull (L_H)

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

[SOURCE: ISO 8666:2020, 3.15, modified — Note 1 to entry has been added.]

3.17
standard duty steering system
remote mechanical *steering system* (3.11) designed to the requirements of this document for use on *craft* (3.16) with outboard engines (single and dual) with a total of 15 kW and greater power, inboard engines, sterndrives and water-jet drives

3.18
light duty steering system
remote mechanical *steering system* (3.11) designed to the requirements of this document for use on *craft* (3.16) with single outboard engines between 15 kW and 40 kW power that is permanently marked with a maximum power rating of 40 kW

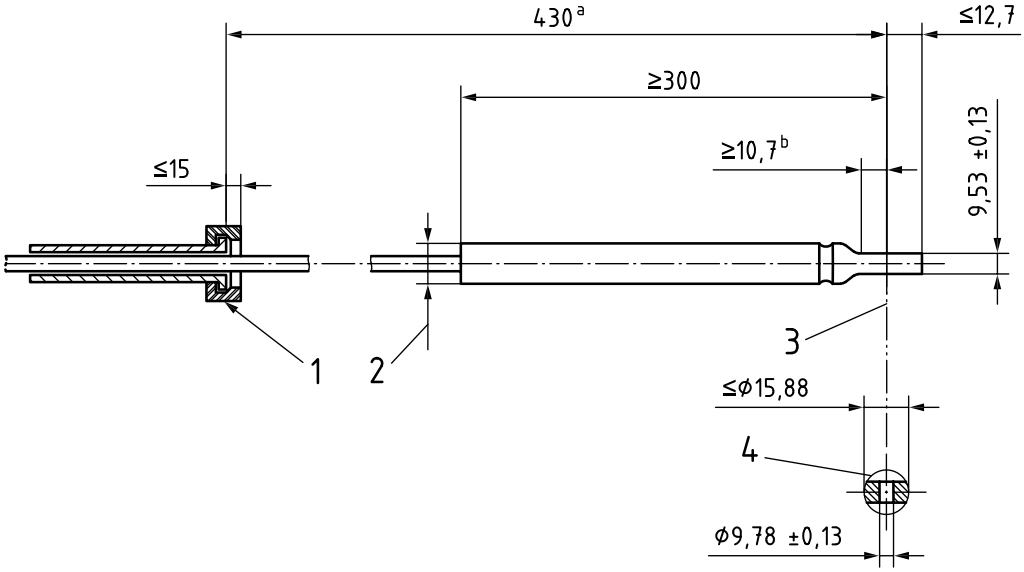
3.19
mini-jet steering system
remote mechanical *steering system* (3.11) designed to the requirements of this document for use on *mini-jet craft* (3.8)

3.20
output ram
portion of the remote mechanical steering cable that interfaces with the outboard engine steering tube and *drag link* (3.4), steering actuator or craft mounted steering tube/rudder

4 Constructional requirements

4.1 When steering systems are factory installed in the craft, the complete system shall be supplied. In outboard engine craft, the system shall be supplied complete to the interface point at the output ram end as shown in Figure 1.

Dimensions in millimetres



Key

1 coupler nut
2 output ram tube
3 interface point
4 end fitting

a Mid-travel position.
b Flat.

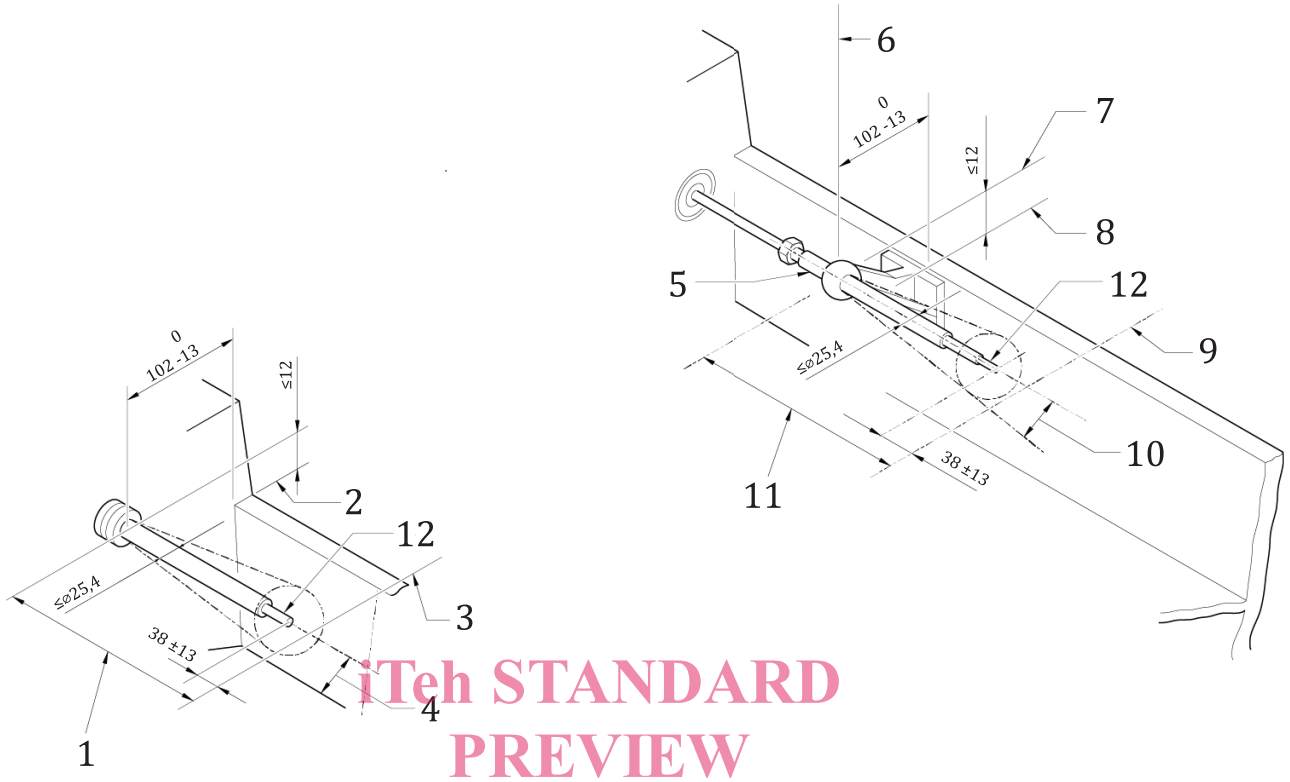
NOTE Minimum travel: 100 mm each side of mid-travel position.
Maximum travel: 115 mm each side of mid-travel position.
Coupler nut 7/8-14 UNF-2B thread (optional for boat mounted systems).

Figure 1 — Output ram

4.2 Installation of the steering system shall be in accordance with the instructions provided by the steering system manufacturer.

4.3 Craft suitable for twin outboard engines shall be so designated. It shall also be specified whether the craft is suitable for engine-mounted steering systems, craft-mounted steering systems or both. If the craft is suitable for craft-mounted steering systems, it shall also be specified whether engine well mounting, transom mounting or both (see Figure 2) may be used.

Dimensions in millimetres



a) Engine well mounting **b) Transom mounting**

Key

1	380 mid-travel position	7	centreline of swivel to be 0 +12 above transom
2	engine mounting face of clamp bracket	8	face of clamp bracket
3	engine centreline	9	engine centreline
4	articulation 15° min.	10	articulation 15° min.
5	7/8-14 NF.2B thread – 16 min. length on tube	11	mid-travel position
6	swivel axis 102 0 −13 square off face of transom	12	interface point

NOTE Minimum travel: 100 mm each side of mid-travel position.
Maximum travel: 115 mm each side of mid-travel position.

Figure 2 — Craft-mounted steering system

4.4 Components of the steering system shall be resistant to corrosion, either by virtue of material or coating thereof, and shall be galvanically compatible with adjoining components.

4.5 All threaded fasteners whose integrity affects safe operation of the system, such that separation or loss of the fastener would cause sudden loss of steering without warning, shall be provided with a locking means.

4.6 Threaded fasteners whose integrity affects operation of the system, such that separation or loss of the fastener would cause sudden loss of steering without warning, and that can be expected to be disturbed by installation or adjustment procedures, shall be referenced by instructions for correct assembly and shall either:

— be locked by a device whose presence is determinable by visual inspection, or by feel, following assembly;