SLOVENSKI STANDARD
oSIST prEN ISO 11105:2018

01-december-2018

Mala plovila - Zračenje bencinskega motorja in/ali prostorov za bencinski tank (ISO/DIS 11105:2018)

Small craft - Ventilation of petrol engine and/or petrol tank compartments (ISO/DIS 11105:2018)

Kleine Wasserfahrzeuge - Belüftung von Räumen mit Ottomotoren und/oder Benzintanks (ISO/DIS 11105:2018)

Petits navires - Ventilation des compartiments contenant des moteurs à essence et/ou réservoirs à essence (ISO/DIS 11105:2018)

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ICS:

47.020.20	Ladijski motorji	Marine engines and propulsion systems
47.080	Čolni	Small craft

oSIST prEN ISO 11105:2018 **en,fr,de**

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Small craft — Ventilation of petrol engine and/or petrol tank compartments

Navires de plaisance — Ventilation des compartiments moteur à essence et/ou réservoir à essence

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Foreword

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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).

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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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 188, *Small craft*, Subcommittee SC 2, *Engines and propulsion systems*.

This third edition cancels and replaces the second edition (ISO 11105:1997).

The main changes compared to the previous edition are as follows:

— definitions have been added under section 3;

— several sections of the standard have been re-organized for clarity;

— subclauses 4.4, , 4.6, 4.9, 4,11, 4.13, 5.1, 6.1, 6.4, 6.6, 6.7, 6.8 and 6.9 have been added;

— subclauses 4.7, 4.10, 5.1, 6.10 have been amended.

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 — Ventilation of petrol engine and/or petrol tank compartments

1 Scope

This document specifies requirements for ventilation of petrol engine and petrol tank compartments in small craft, having petrol engines for propulsion, electrical generation or mechanical power, to prevent accumulation of explosive gases in these compartments. Personal watercraft are not covered in this document.

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 8846, *Small craft — Electrical devices — Protection against ignition of surrounding flammable gases*

ISO 11192, *Small craft — Graphical symbols*

3 Terms and definitions

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

3.1
habitable space
space surrounded by permanent structure in which there is provision for any of the following activities: sleeping, cooking, eating, washing/toilet, navigation, steering

Note 1 to entry: Spaces intended exclusively for storage, open cockpits with or without canvas enclosures and engine rooms are not included.

3.2
net compartment volume
the result of subtracting the volume of the permanently installed items of equipment and accessories from the total, or gross, compartment volume

3.3
nominal voltage
those commonly used voltages such as 6, 12, 24 and 32 volts DC

3.4
open to the atmosphere
compartment or space having at least 0,34 m^2 of permanent open area directly exposed to the atmosphere for each cubic meter of net compartment volume

3.5
permanently installed
securely fastened so that tools, such as wrenches and screwdrivers, must be used for removal

3.6
ventilation
the changing of air within a compartment by natural or mechanical means

Note 1 to entry: Ventilation may be effected by dilution of contaminated air, by local exhaust of contaminated air, or by introduction of fresh air.

4 General requirements

4.1 Natural ventilation shall be provided in petrol tank compartments, except where the net volume of the space is less than 3 liters, in accordance with Clause 5.

4.2 Powered ventilation and natural ventilation shall be provided in petrol engine compartments in accordance with Clauses 5 and 6.

4.3 The ventilation duct sizes and airflow requirements shall be calculated based on net compartment volumes.

4.4 Ducts shall be self-draining.

4.5 Compartments or spaces containing fixed petrol engines and/or fixed petrol tanks shall be separated from habitable spaces. This is met where the structure fulfils the following requirements:

a) The boundaries are continuously sealed (e.g. welded, brazed, glued, laminated or otherwise sealed);

b) Penetrations for cables, piping etc. are closed by fittings, seals and/or sealants;

c) Access openings such as doors, hatches, etc. are equipped with fittings so they can be secured to minimize the flow of gas or vapours in the closed position.

The effectiveness of the boundary joints or sealing may be demonstrated either by documentation or visual inspection.

4.6 Portable tanks shall be stored in areas which are open to the atmosphere.

4.7 External openings of ventilation intakes and exhausts shall be located according to ISO 10088:2013, Clause 5.2.6.

4.8 Ventilation supply and exhaust ducts shall not open directly into a habitable space.

4.9 Ventilation ducts or opening shall terminate on the exterior of the craft and outside of weather enclosures.

4.10 The minimum internal cross sectional area of ventilation ducting for petrol tank compartments shall be at least 1134 mm^2.

4.11 The minimum internal cross sectional area of ventilation ducting for petrol engine compartments shall be at least 3161 mm^2.

4.12 Intake and exhaust ducts shall not share the same plenum or exterior opening. If intake and exhaust ducts are mounted side by side, a barrier shall be placed between the ducts.

4.13 The minimum internal cross-sectional area of terminal fittings for flexible ventilation ducts installed to meet the requirements of 5.3 shall not be less than 80 % of the required internal cross-sectional area of the flexible ventilation duct.

NOTE Ventilation Openings (i.e. louvers, grates, grills, etc.) must meet the required minimum cross-sectional area as calculated under 5.3. The 20 % allowable cross-sectional area reduction is only permitted at attachment points of terminal fittings to the ducting.

4.14 Only ignition-protected items in accordance with ISO 8846 shall be installed in compartments, lockers or housings that contain:

— petrol engines;

— petrol fuel tanks;

— petrol fuel line connections.

5 Natural ventilation systems

5.1 Unless open to the atmosphere, each compartment in a craft shall have a natural ventilation system if

— it contains a permanently installed petrol engine; or

— it contains a permanently installed petrol tank.

5.2 Natural ventilation shall be achieved by an airflow in a compartment by the following:

— a supply opening or duct from the atmosphere; and

— an exhaust opening or duct to the atmosphere.

Each exhaust opening or duct shall originate in the lower one-third of the compartment with its opening above the normal accumulation of bilge water.

Each supply opening or duct and each exhaust opening or exhaust duct in a compartment shall be located above the normal accumulation of bilge water.

Compartment air intake and exhaust duct openings shall be separated by at least 600 mm, compartment dimensions permitting.

5.3 The minimum combined area of the intake and exhaust ventilation openings shall be calculated by the following formula:

$$A = 3\,300 \ln (V/0{,}14)$$

where

A is the minimum combined internal cross-sectional area of the openings or ducts, in square millimeters;

V is the net compartment volume equal to the total compartment volume minus the volume of permanently installed components in it, in cubic meters.

Corresponding graphs are given in Figure 1 and Figure 2

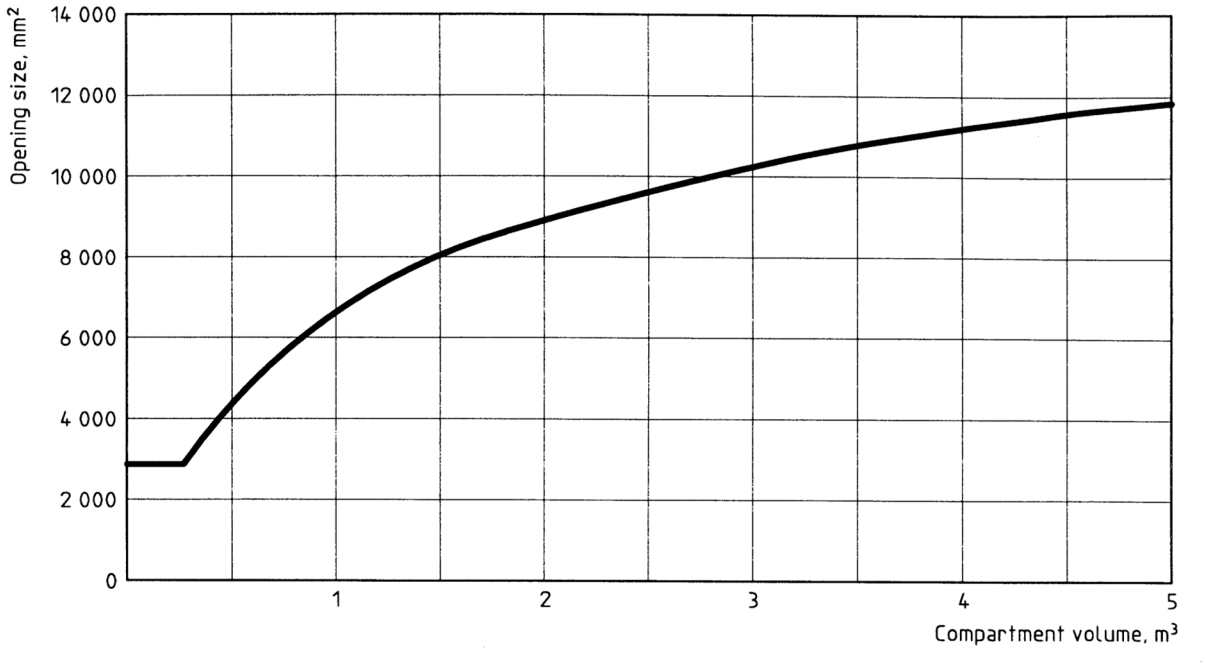

Figure 1 — Natural ventilation opening size for petrol engine compartments

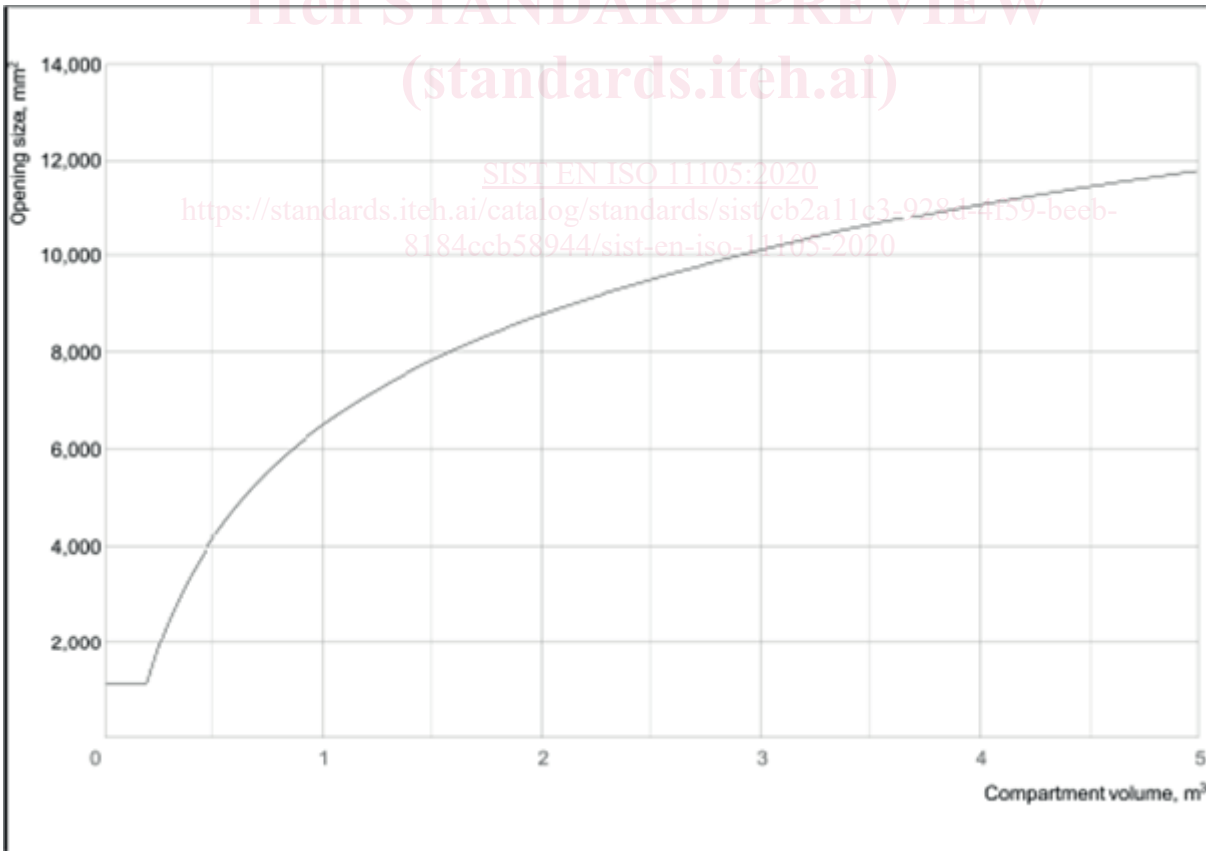

Figure 2 — Natural ventilation opening size for petrol tank compartments

5.4 The exhaust of the natural ventilation system may be part of the powered ventilation system.