

INTERNATIONAL STANDARD

ISO
13342

First edition
1995-10-15

Small craft — Static thrust measurement for outboard motors

*Navires de plaisance — Mesurage de la poussée statique
des moteurs hors-bord*



Reference number
ISO 13342:1995(E)

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.

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.

International Standard ISO 13342 was prepared by Technical Committee ISO/TC 188, *Small craft*.

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International Organization for Standardization

Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Small craft — Static thrust measurement for outboard motors

1 Scope

This International Standard specifies the method for measuring and declaring the forward and reverse thrust of outboard motors in a stationary situation to determine if start-in-gear protection, as specified in ISO 11547, is required.

2 Normative reference

The following standard contains provisions which through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 11547:1994, *Small craft — Start-in-gear protection*.

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 thrust: Horizontal force, in newtons, which the outboard motor is capable of producing.

3.2 declared value of maximum thrust: Average of the thrust measurement that can be maintained for not less than 10 s within $\pm 10\%$ of fluctuation at a particular throttle setting.

4 Outboard motor

4.1 When testing production outboard motors for formal declaration, the test unit shall be representative of the manufacturer's production units.

4.2 The test outboard motor shall be run-in, operated and adjusted in accordance with the manufacturer's specifications.

4.3 The test outboard motor may be modified only if it is done in accordance with written instructions included in a modification kit provided by the manufacturer and listed in a catalogue or brochure by the manufacturer. Any throttle limitation built into the standard engine for forward or reverse shall remain in place unless specifically stated otherwise in the kit instructions.

5 Test conditions and procedure

5.1 The test shall be performed in still water between sea level and 250 m maximum altitude.

5.2 The minimum water depth below the propeller shaft centreline shall be 4 times the propeller diameter.

5.3 The test outboard motor thrust force shall be measured by a gauge or transducer that has been calibrated to an accuracy within $\pm 2\%$ of the maximum thrust being observed.

5.4 No obstruction shall project below the water surface in front of or behind the propeller so as to cause ventilation or induce cavitation. There shall be a clear flow area for 3 m in front of and behind the propeller for a distance of 0,7 m on either side.

5.5 The vertical position of the test outboard motor shall be adjusted so that the propeller is sufficiently below the water surface to prevent ventilation, or at the depth specified by the manufacturer if this is deeper.

5.6 During thrust measurement, the propeller shaft shall be parallel to the water surface within $\pm 5^\circ$. In addition, the angle of pull from the measuring device to the fixed point shall be parallel to the water surface within $\pm 5^\circ$.

6 Presentation of data

6.1 Any declaration of thrust shall include both forward and reverse thrust with the engine speed

obtained and shall be limited to the standard range of propellers sold by the outboard manufacturer through its normal channels of distribution.

6.2 The declaration shall include propeller diameter, pitch and part number, as well as the identification of any kit used to modify the outboard motor or propeller in any manner.

6.3 No correction factor shall be applied to the observed value of thrust.

Reverse thrust is irregular due to exhaust ventilation of the propeller. Average reverse thrust values shall therefore be used.

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