INTERNATIONAL STANDARD

ISO 11102-2

First edition
1997-10-01

Reciprocating internal combustion engines — Handle starting equipment —

Part 2:
Method of testing the angle of disengagement

Moteurs alternatifs à combustion interne — Dispositifs de démarrage à la manivelle —

Partie 2: Méthode d'essai de l'angle de désengagement

Reference number
ISO 11102-2:1997(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 11102-2 was prepared by Technical Committee ISO/TC 70, *Internal combustion engines*.

ISO 11102 consists of the following parts, under the general title *Reciprocating internal combustion engines — Handle starting equipment*:

— *Part 1: Safety requirements and tests*

— *Part 2: Method of testing the angle of disengagement*

Annex A of this part of ISO 11102 is for information only.

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Printed in Switzerland

Reciprocating internal combustion engines — Handle starting equipment —

Part 2:
Method of testing the angle of disengagement

1 Scope

This part of ISO 11102 describes the method for testing the angle of disengagement of starting handle equipment i.e. testing of the essential safety requirements according to ISO 11102-1 for reciprocating internal combustion engines for land, rail and marine use, excluding engines used to propel road vehicles and aircraft. It may be applied to engines used to propel road construction, earth moving machines and for other applications where no suitable international standards exist.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 11102. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 11102 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 11102-1:1997, *Reciprocating internal combustion engines — Handle starting equipment — Part 1: Safety requirements and tests.*

3 Testing of the disengagement travel

3.1 Apparatus

The test shall be carried out on the type of reciprocating internal combustion engine for which the starting handle was designed. The engine shall be mounted on test equipment as generally indicated in figure 1 or 2, as appropriate.

3.2 Procedure

Set the stop (3) so that the starting handle grip lies horizontally. For the first test hang a mass (5) of 5 kg from the centre of the grip (2). Turn the engine flywheel (6) smoothly in its reverse direction using the crankhandle (7). Measure the distance moved before disengagement occurs on the scale (4) using a mark on the shank (1) of the starting handle. Repeat the above procedure with a 50 kg mass.

NOTE — The direction of rotation of the crankhandle may differ from that of the engine (as defined in ISO 1204) depending on the coupling of the crankhandle to the engine (e.g. it may be linked to the crankshaft, camshaft, geardrive or beltdrive).

4 Testing of the angle of disengagement

The angle of disengagement shall either be calculated from the measured travel, or shall be measured directly using the method described in clause 3, with the linear scale replaced by an angular scale.

5 Tolerances

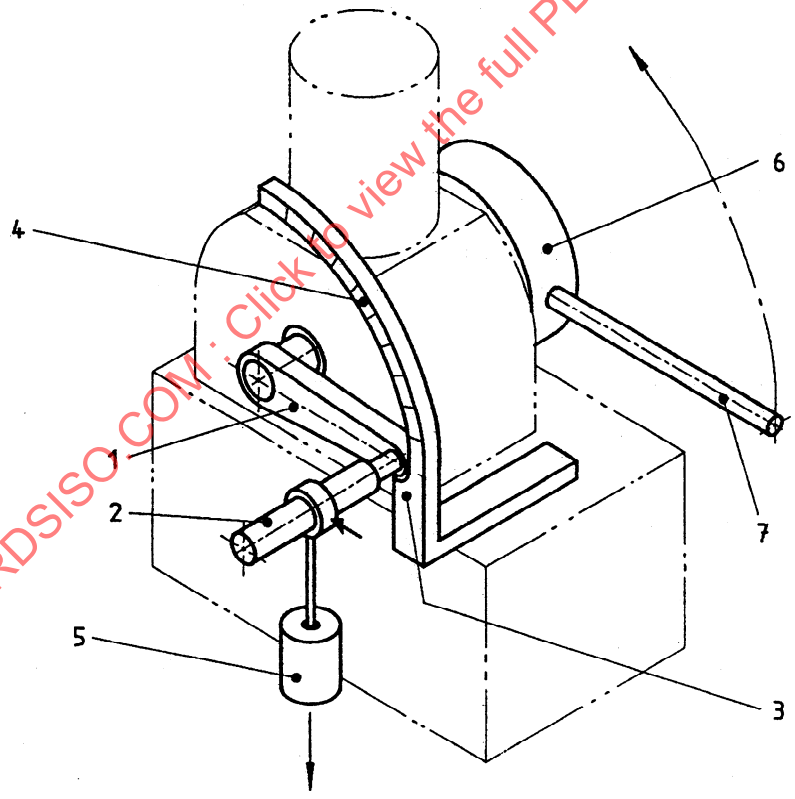
The angle shall be measured to the nearest degree, and the travel to ± 2 mm.

6 Number of tests

10 tests shall be carried out for each test mass.

7 Test report

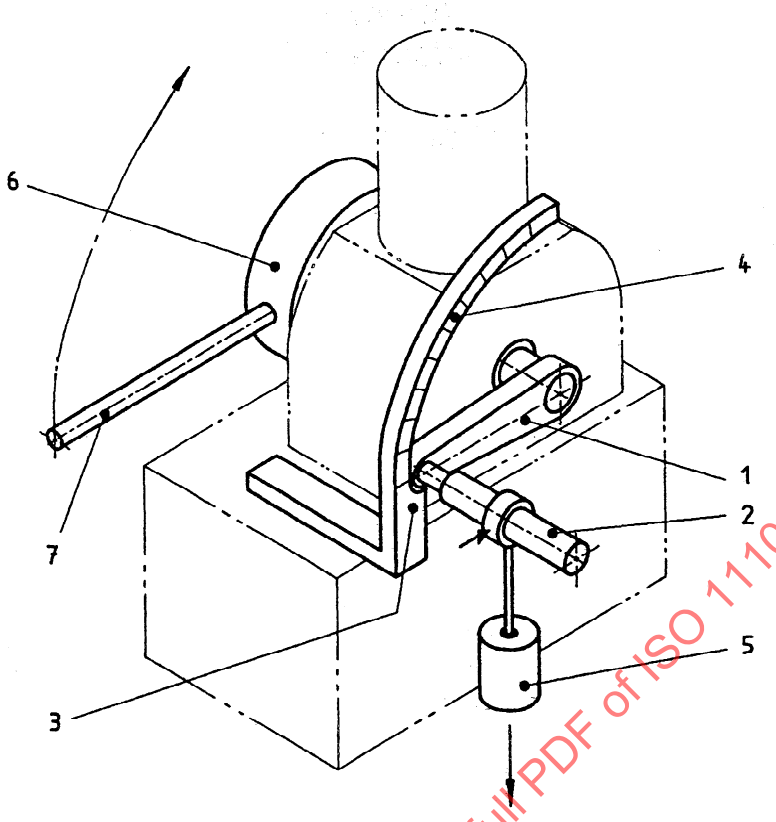
The largest angle measured and travel determined during the 10 tests shall be recorded on the test report (see ISO 11102-1).



Key

1	Starting handle shank	5	Test mass
2	Starting handle grip	6	Flywheel
3	Stop for starting handle	7	Crankhandle
4	Scale		

Figure 1 — Test for apparatus for clockwise engine



Key

1	Starting handle shank	5	Test mass
2	Starting handle grip	6	Flywheel
3	Stop for starting handle	7	Crankhandle
4	Scale		

Figure 2 — Test for apparatus for anticlockwise engine

Annex A
(informative)

Bibliography

[1] ISO 1204:1990, *Reciprocating internal combustion engines — Designation of the direction of rotation and of cylinders and valves in cylinder heads, and definition of right-hand and left-hand in-line engines and locations on an engine.*