



**SLOVENSKI STANDARD**  
**SIST EN ISO 11102-2:2000**

**01-april-2000**

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**Reciprocating internal combustion engines - Handle starting equipment - Part 2:  
Method of testing the angle of disengagement (ISO 11102-2:1997)**

Reciprocating internal combustion engines - Handle starting equipment - Part 2: Method of testing the angle of disengagement (ISO 11102-2:1997)

Hubkolben-Verbrennungsmotoren - Handkurbel-Starteinrichtungen - Teil 2: Verfahren zur Messung des Aulösewinkels (ISO 11102-2:1997)

Moteurs alternatifs a combustion interne - Dispositifs de démarrage a la manivelle - Partie 2: Méthode d'essai de l'angle de désengagement (ISO 11102-2:1997)

**Ta slovenski standard je istoveten z: EN ISO 11102-2:1997**

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**ICS:**

|        |                                 |                             |
|--------|---------------------------------|-----------------------------|
| 27.020 | Motorji z notranjim zgorevanjem | Internal combustion engines |
|--------|---------------------------------|-----------------------------|

|                                 |           |
|---------------------------------|-----------|
| <b>SIST EN ISO 11102-2:2000</b> | <b>en</b> |
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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN ISO 11102-2

October 1997

ICS 27.020

Descriptors: see ISO document

English version

Reciprocating internal combustion engines - Handle starting  
equipment - Part 2: Method of testing the angle of  
disengagement (ISO 11102-2:1997)

Moteurs alternatifs à combustion interne - Dispositifs de  
démarrage à la manivelle - Partie 2: Méthode d'essai de  
l'angle de désengagement (ISO 11102-2:1997)

Verbrennungsmotoren - Handkurbel-Starteinrichtungen -  
Teil 2: Verfahren zur Messung des Auslösewinkels (ISO  
11102-2:1997)

This European Standard was approved by CEN on 12 September 1997.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

## Foreword

The text of the International Standard ISO 11102-2:1997 has been prepared by Technical Committee ISO/TC 70 "Internal combustion engines" in collaboration with Technical Committee CEN/TC 270 "Internal combustion engines", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 1998, and conflicting national standards shall be withdrawn at the latest by April 1998.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## Endorsement notice

The text of the International Standard ISO 11102-2:1997 was approved by CEN as a European Standard without any modification.

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INTERNATIONAL  
STANDARD

ISO  
11102-2

First edition  
1997-10-01

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**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*

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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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# 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.

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#### 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

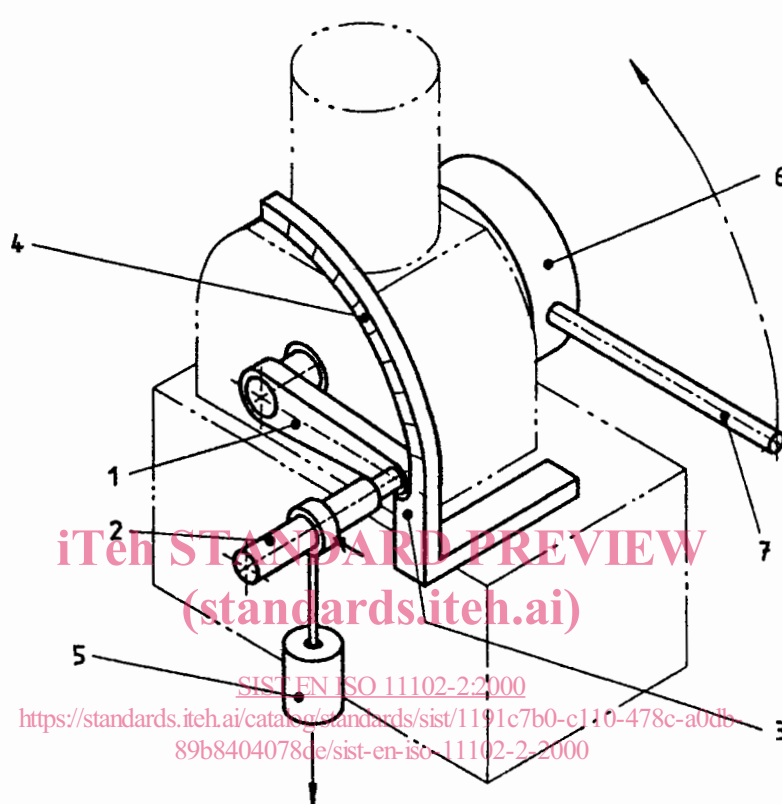
The angle shall be measured to the nearest degree, and the travel to  $\pm 2$  mm.

#### 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).

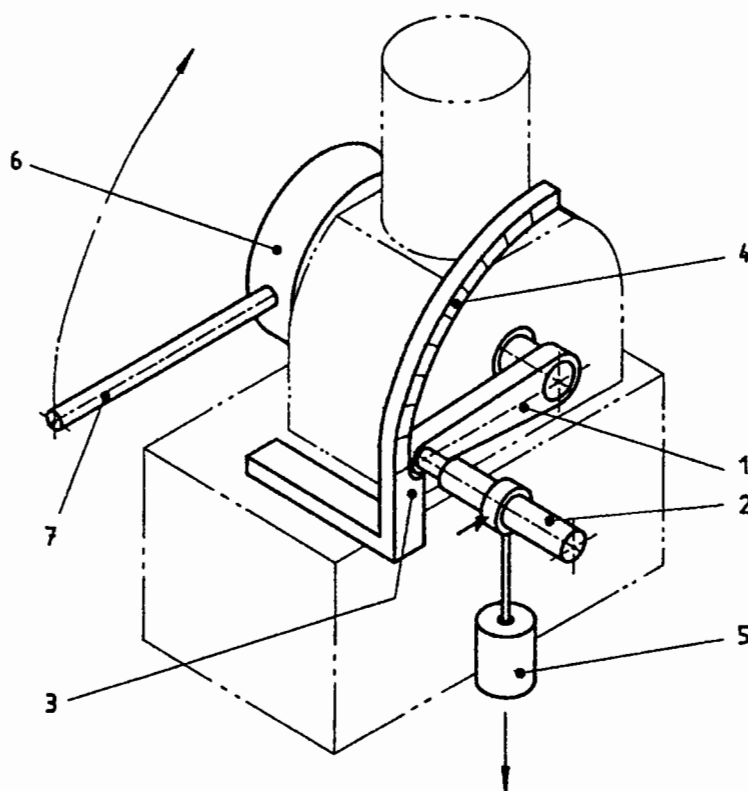


#### Key

|   |                          |   |             |
|---|--------------------------|---|-------------|
| 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**

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