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“जानने का अधिकार, जीने का अधिकार”
Mazdoor Kisan Shakti Sangathan
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”
Jawaharlal Nehru
“Step Out From the Old to the New”

Indian Standard

RECIPROCATING INTERNAL COMBUSTION ENGINES

PART 6 HAND-OPERATED CONTROL DEVICES — STANDARD DIRECTION OF MOTION

( First Revision )

ICS 27.020.00
NATIONAL FOREWORD

This Indian Standard (Part 6) (First Revision) which is identical with ISO 2261 : 1994 'Reciprocating internal combustion engines — Hand-operated control devices — Standard direction of motion' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Automotive Primemovers, Transmissions and Steering Systems and Internal Combustion Engines Sectional Committee and approval of the Transport Engineering Division Council.

This standard was first published in 1974. The first revision has been undertaken due to revision of the base standard as indicated above.

The Sectional Committee decided to align the Indian Standard with the corresponding International Standard wherever feasible and wherever the domestic considerations were not so intense so as to have standards different from the ISO Standards. This decision was taken with a view to upgrade the quality of the products in line with the International Standards.

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker, while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (revised)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.
1 Scope

This International Standard specifies the direction of motion of hand-operated devices for speed regulation and reversing of reciprocating internal combustion (RIC) engines, having particular regard to RIC engines for marine and rail propulsion — irrespective of whether the operator's position is near the engine or remote from it.

Valves for the control of liquids and gases are excluded.

2 Effects of actuating the operating device

2.1 Where separate operating devices for reversing and speed regulation are installed:

a) actuating the operating device for reversing results in a forward movement, or a backward movement;

b) actuating the operating device for speed results in a speed increase or decrease.

2.2 Where combined operating devices for reversing and speed are installed:

a) actuating the operating device from the centre position in one direction results in a forward movement with increasing speed;

b) actuating the operating device from the centre position in the opposite direction results in a backward movement with increasing speed.

c) actuating the operating device from the travelling position to the centre position results in a speed decrease to a full stop.

3 Designation of operations

Operating directions and effects caused by actuation of the control devices are coordinated in tables 1 and 2.

4 Preferred position of operator on installations on which the direction of movement of the vehicle is visible to the operator

Operator positions should preferably be arranged in such a manner that the operator is looking towards the front of the vehicle.

If the operator's position is arranged parallel to the direction of travel of a vehicle (the operator looking sideways), the operator’s position should be arranged in such a manner that the operating directions of the control devices correspond to the definitions given in this International Standard.

5 Designation

To indicate the effect resulting from the motion of an operating device, standardized symbols — instead of words — shall be placed next to the operating device (as shown in tables 3 and 4). These symbols are in accordance with ISO 7000 and IEC 417, as appropriate.
Table 1 — Operating directions and effects with separate operating devices for reversing and for speed regulation

<table>
<thead>
<tr>
<th>Designation of operation</th>
<th>Motion of operating device</th>
<th>Type of operating device</th>
<th>Direction of motion of operating device¹</th>
<th>Increase of speed or movement ahead</th>
<th>Decrease of speed or movement backward</th>
</tr>
</thead>
<tbody>
<tr>
<td>A₁</td>
<td>linear or approximately linear</td>
<td>hand lever</td>
<td></td>
<td>away from the operator</td>
<td>towards the operator</td>
</tr>
<tr>
<td>B₁</td>
<td>approximately linear</td>
<td>hand lever</td>
<td></td>
<td>upwards</td>
<td>downwards</td>
</tr>
<tr>
<td>C₁</td>
<td>turning</td>
<td>handwheel or crank handle</td>
<td></td>
<td>to the right</td>
<td>to the left</td>
</tr>
<tr>
<td>D₁</td>
<td>turning</td>
<td>handwheel or crank handle</td>
<td></td>
<td>clockwise</td>
<td>counter-clockwise</td>
</tr>
</tbody>
</table>

¹ The above diagrams are used to describe the direction of motion and shall not be used as graphic symbols. The graphic symbols to be used are shown in table 3.

Table 2 — Operating directions and effects with a combined operating device for both reversing and speed regulation

<table>
<thead>
<tr>
<th>Designation of operation</th>
<th>Motion of operating device</th>
<th>Type of operating device</th>
<th>Direction of motion of operating device¹ from central (stop) position with increase of speed²</th>
<th>Movement ahead</th>
<th>Movement backward</th>
</tr>
</thead>
<tbody>
<tr>
<td>A₂</td>
<td>linear or approximately linear</td>
<td>hand lever</td>
<td></td>
<td>away from the operator</td>
<td>towards the operator</td>
</tr>
<tr>
<td>B₂</td>
<td>approximately linear</td>
<td>hand lever</td>
<td></td>
<td>upwards</td>
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</tr>
<tr>
<td>C₂</td>
<td>turning</td>
<td>handwheel or crank handle</td>
<td></td>
<td>to the right</td>
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</tr>
<tr>
<td>D₂</td>
<td>turning</td>
<td>handwheel or crank handle</td>
<td></td>
<td>clockwise</td>
<td>counter-clockwise</td>
</tr>
</tbody>
</table>

¹ The above diagrams are used to describe the direction of motion and shall not be used as graphic symbols. The graphic symbols to be used are shown in table 3.

² Decrease of speed in every case will be attained by actuation of the operating device in the direction towards the central (stop) position.
<table>
<thead>
<tr>
<th>Designation of operation</th>
<th>Symbols for speed-progressive increase or decrease</th>
<th>Explanation</th>
<th>ISO/IEC Registration No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A, B or C</td>
<td><img src="#" alt="Symbol A" /></td>
<td>Motion of the operating device towards the wide end of the wedge results in an increase of speed.</td>
<td>IEC 417-5004</td>
</tr>
<tr>
<td>D</td>
<td><img src="#" alt="Symbol D" /></td>
<td>Motion of the operating device towards the point of the wedge results in a decrease of speed.</td>
<td>ISO 7000-1364</td>
</tr>
<tr>
<td><strong>Symbols for vehicle direction</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>forward movement</strong></td>
<td>With engines driving a vehicle — marine or rail — directly (without a reversing gear) the direction of rotation of the engine determines the direction in which the vehicle moves.</td>
<td>ISO 7000-0775</td>
</tr>
<tr>
<td></td>
<td><img src="#" alt="Symbol Forward" /></td>
<td>Forward movement of the vehicle is indicated by a symbol representing the vehicle with an arrow pointing towards the front end (bow) of the vehicle.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>backward movement</strong></td>
<td>Backward movement of the vehicle is indicated by a symbol representing the vehicle with an arrow pointing towards the rear end (stern) of the vehicle.</td>
<td>ISO 7000-0776</td>
</tr>
</tbody>
</table>
Table 4 — Illustrations of typical operations

<table>
<thead>
<tr>
<th>Designation of operation</th>
<th>Vehicle speed</th>
<th>Vehicle direction</th>
<th>Designation of operation</th>
<th>Vehicle direction and speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>A₁</td>
<td></td>
<td></td>
<td>A₂</td>
<td></td>
</tr>
<tr>
<td>B₁</td>
<td></td>
<td></td>
<td>B₂</td>
<td></td>
</tr>
<tr>
<td>C₁</td>
<td></td>
<td></td>
<td>C₂</td>
<td></td>
</tr>
<tr>
<td>D₁</td>
<td></td>
<td></td>
<td>D₂</td>
<td></td>
</tr>
</tbody>
</table>

NOTE — The actual design may differ from the illustration shown above.

The operating devices may be combined at random according to the application.
Annex A
(informative)

Bibliography


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Amendments Issued Since Publication

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