International Standard 7752/1

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Lifting appliances — Controls — Layout and characteristics — Part 1: General principles

Appareils de levage — Organes de service — Disposition et caractéristiques — Partie 1: Principes généraux

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 7752/1 was developed by Technical Commitee ISO/TC 96, *Cranes, lifting appliances and related equipment*, and was circulated to the member bodies in April 1982.

It has been approved by the member bodies of the following countries:

Australia	Germany, F.R.	Poland
Austria	India	Romania
Belgium	Ireland	South Africa, Rep. of
Brazil	Italy	Spain
Czechoslovakia	Japan	United Kingdom
Egypt, Arab Rep. of	Korea, Rep. of	USA
Finland	Netherlands	USSR
France	Norway	

No member body expressed disapproval of the document.

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Lifting appliances — Controls — Layout and characteristics — Part 1: General principles

1 Scope and field of application

This Standard establishes principles and requirements for the controls of lifting appliances.

It deals with the arrangement of those controls which are used in positioning loads and it serves as general basis for the elaboration of detailed standards covering controls for particular types of lifting appliances.

2 Definition

For the purpose of this International Standard, the following applies:

2.1 driver: The person who is operating the appliance for the purposes of positioning loads.

3 Basic requirements

3.1 The function of the controls of power operated lifting appliances is to permit a driver to position a load from a control station that may be remote from the machinery powering the motions of the lifting appliance.

3.2 As far as possible the control levers (pedals or push buttons) shall be placed so that the driver's hands or feet position themselves on the controls naturally. Where possible, the direction of movement of the control should be in line with the natural movement of the limb: for example foot controls should be operated by the pressure of the foot and not by a sideways movement of the leg.

3.3 The force required to engage a lifting appliance control shall be a function of frequency of use and ergonometric considerations which vary with machine type; however, required forces shall not exceed 160 N for hand levers and 300 N for foot pedals. It is intended that actual control forces shall not give rise to driver fatigue.

4 Safe operation

Operating controls shall be arranged in such a manner as to minimise the possibility of personal injury and property damage.

Where applicable and desirable for safety (for example with certain electric lifting appliances) an emergency stop shall be provided close to each control station.

5 Driver fatigue

The controls of a lifting appliance shall, consistent with the duty of the appliance, be designed and positioned on ergonomic principles to minimise driver fatigue.

6 Control levers and pedals

6.1 In cases where the relative orientation of the control station and motion controlled does not change, the direction of movement of the control shall relate logically to the direction of the motion controlled with the convention that, if there is a lever type hoist controller, movement towards the driver corresponds to upward movement of the load.

These criteria apply when the controls are operated from a seated or standing position or when the driver can be either seated or standing.

6.2 The position of controls shall be such that when the driver is intentionally engaging one or several controls, inadvertent engagement of another control is unlikely.

6.3 Control levers shall, where necessary and appropriate, be provided with stops, detents or any other mechanism to facilitate operation. All control levers shall return to their neutral positions automatically upon release when not knuckled or toggled in.

6.4 When detents are provided for lever controls, the detent at the "off" or "neutral" position shall be distinguishable from any other detents provided.

6.5 On or near each control, the function of which shall be identified, there shall be affixed a written notice or symbols which clearly show the directions of movement of the lifting appliance.

6.6 Remote control stations, when used, shall include controls arranged to return to the off position when engagement

pressure is released. In these cases an emergency stop covering all motions shall be provided.

When warning devices are provided their audible or visual warning signals shall be perceived at the remote control stations.

Bibliography

ISO 3411, *Earth-moving machinery — Human physical dimensions of operators and minimum operator space envelope.*