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मानक

IS 13558-1 (1992): Cranes - Controls - Layout and characteristics, Part 1: General principles [MED 14: Cranes, Lifting Chains and Related Equipment]



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भाग 1 सामान्य सिद्धान्त

Indian Standard

CRANES — CONTROLS — LAYOUT AND CHARACTERISTICS

PART 1 GENERAL PRINCIPLES

UDC 621.873-51

C BIS 1992

BUREAU OF INDIAN STANDARDS MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG

NEW DELHI 110002

November 1992

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Price Group 1

Cranes, Lifting Chains and Its Related Equipment Sectional Committee, HMD 14

NATIONAL FOREWORD

This Indian Standard which is identical with ISO 7752-1: 1983 'Lifting appliances — Controls — Layout and characteristics — Part 1: General principles' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendations of the Cranes, Lifting Chains and Its Related Equipment Sectional Committee (HMD 14) and approval of the Heavy Mechanical Engineering Division Council.

This standard is being published in five parts. Other parts of this standard are as follows:

Part 2 Mobile cranee

Part 3 Tower cranes

Part 4 Jib cranes

Part 5 Overhead travelling cranes and portal bridge cranes

The text of ISO Standard has been approved as suitable for publication as Indian Standard without deviations. Certain terminology and conventions are, however, not identical to those used in Indian Standards. Accordingly wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

In this adopted standard, reference appears to an International Standard under 'Bibliography' for which Indian Standard also exists. The corresponding Indian Standard which is to be substituted in its place is listed below along with its degree of equivalence for the editions indicated:

International Standard

Corresponding Indian Standard

Degree of Equivalence

ISO 3411 : 1982 Earthmoving machinery — Human physical dimensions of operators and minimum operator space envelop IS 11115 : 1985 Human physical dimensions of operators and minimum operator space envelop for earth moving machinery

Technically equivalent

Indian Standard CRANES — 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

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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.

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Bibliography

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

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