INTERNATIONAL STANDARD

ISO 11660-5

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Cranes — Access, guards and restraints —

Part 5: Bridge and gantry cranes

Appareils de levage à charge suspendue — Moyens d'accès, dispositifs de protection et de retenue —
Partie 5: Ponts roulants et portiques

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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.

Attention is drawn to the possibility that some of the elements of this part of ISO 11660 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 11660-5 was prepared by Technical Committee ISO/TC 96, *Cranes*, Subcommittee SC 9, *Bridge and gantry cranes*.

ISO 11660 consists of the following parts, under the general title *Cranes — Access, guards and restraints*:

— *Part 1: General*

— *Part 2: Mobile cranes*

— *Part 3: Tower cranes*

— *Part 4: Jib cranes*

— *Part 5: Bridge and gantry cranes*

Cranes — Access, guards and restraints —

Part 5:
Bridge and gantry cranes

1 Scope

This part of ISO 11660 establishes the particular requirements relating to the access, guards and restraints for bridge and gantry cranes as defined in ISO 4306-1 and gives criteria for the selection of the appropriate equipment under the various conditions of use expected of the crane.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 11660. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 11660 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 11660-1:1999, *Cranes — Access, guards and restraints — Part 1: General.*

IEC 60204-32, *Safety of machinery — Electrical equipment of machines — Part 32: Requirements for hoisting machines.*

3 Access

3.1 General

This clause deals with the operational access to bridge and gantry cranes mounted on elevated or ground runways, and with the requirements for access for the regular and emergency maintenance and repair of such cranes.

3.2 Bridge cranes in buildings or on elevated runways

3.2.1 Access to crane-access landing

Bridge and gantry cranes which are intended to have a permanent driver in the control cabs shall permit access from a permanent landing which has been fastened to the crane supporting structure.

The recommended means of access given in Table 1 shall be in accordance with the forms and dimensions given in Table 4 of ISO 11660-1:1999.

Table 1 — Recommended means of access

Height of crane access above floor level m	Recommended means of access
1 to 15	Stairs Inclined ladders Vertical ladders
15 to 25	Stairs
> 25	Powered access Stairs

3.2.2 Access landing

The normal access to the crane shall permit access or egress from an access landing. Access openings shall be protected by suitable self-closing means such as

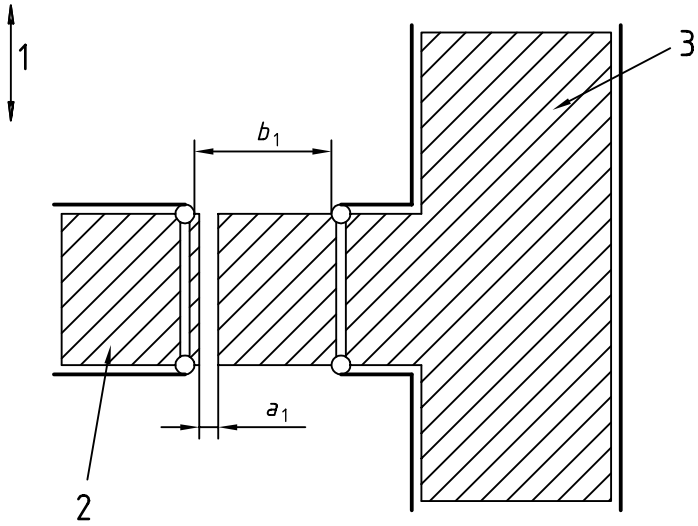
— inward-opening doors or gates;

— sliding gates, vertical or horizontal;

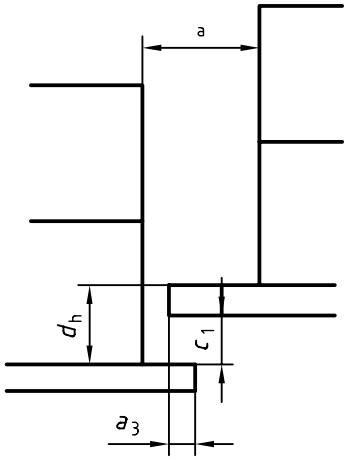
— vertically pivoted rails.

The access landing and the corresponding crane landing shall be within 10 mm of a common level or have a step of height between 180 mm and 250 mm.

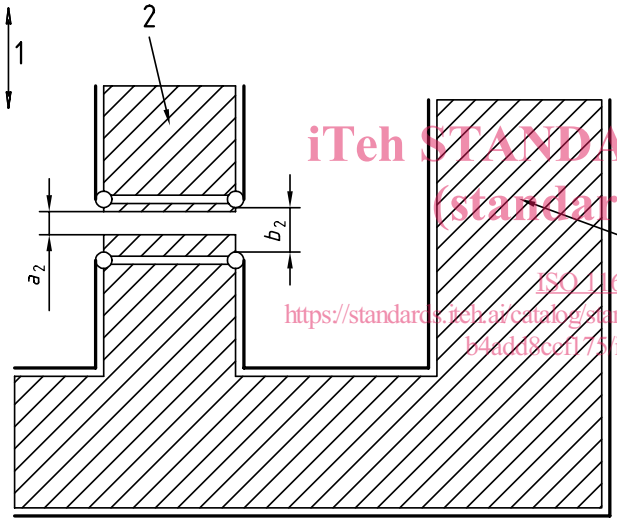
Clearances in access landing shall be in accordance with Figure 1. If these clearances are not satisfied, other means shall be provided to address the shearing, crushing and falling hazards, e.g. interlocks.



a) Shearing condition [a]



c) Clearances in case of overlapping [c]



b) Crushing condition [b]

Key

1 Crane travel movement

2 Crane landing

3 Permanent landing

a b_1 or b_2

[a] Shearing condition:

50 mm $\leqslant a_1 \leqslant$ 100 mm

400 mm $\leqslant b_1 \leqslant$ 500 mm

[b] Crushing condition:

150 mm $\leqslant a_2 \leqslant$ 250 mm

200 mm $\leqslant b_2 \leqslant$ 300 mm

[c] Shearing and crushing conditions:

$a_3 \leqslant$ 150 mm

$c_1 \geqslant$ 150 mm

$|d_h|$ < 10 mm (without overlapping), or

180 mm $\leqslant |d_h| \leqslant$ 250 mm (with overlapping)

Figure 1 — Clearances in access landing

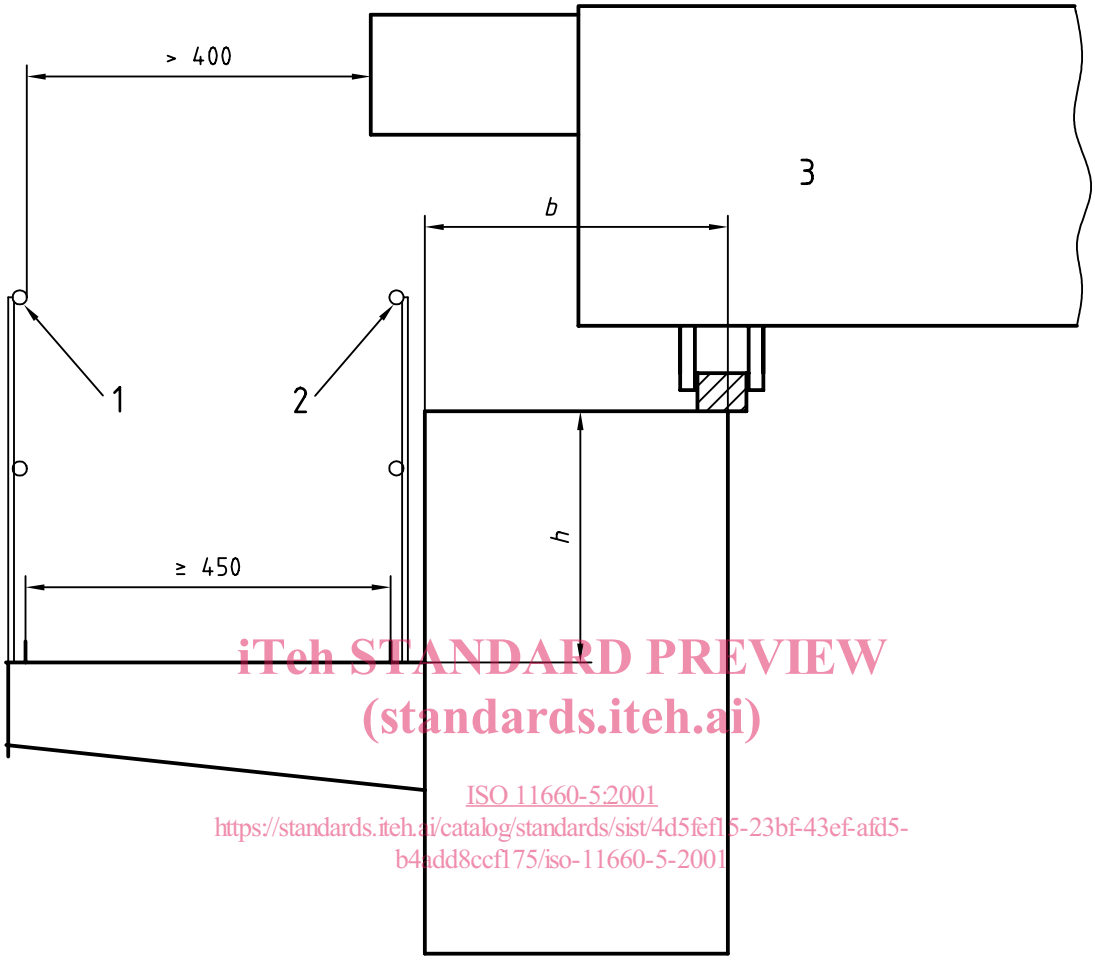
3.2.3 Alternative access over the crane

3.2.3.1 General

Access to the driver's cabin for driver or for maintenance personnel may be over crane structure. Any elevated walkways or platforms on the bridge, trolley or runway shall have handrails and toe boards in accordance with ISO 11660-1 on all exposed sides (see Figures 2 and 3). Where these clearances cannot be achieved, e.g. in existing buildings, alternative means of safety shall be provided to achieve safe access.

Access to the crane bridge and trolley may be by vertical ladders where stairs or steps are not practicable.

Dimensions in millimetres



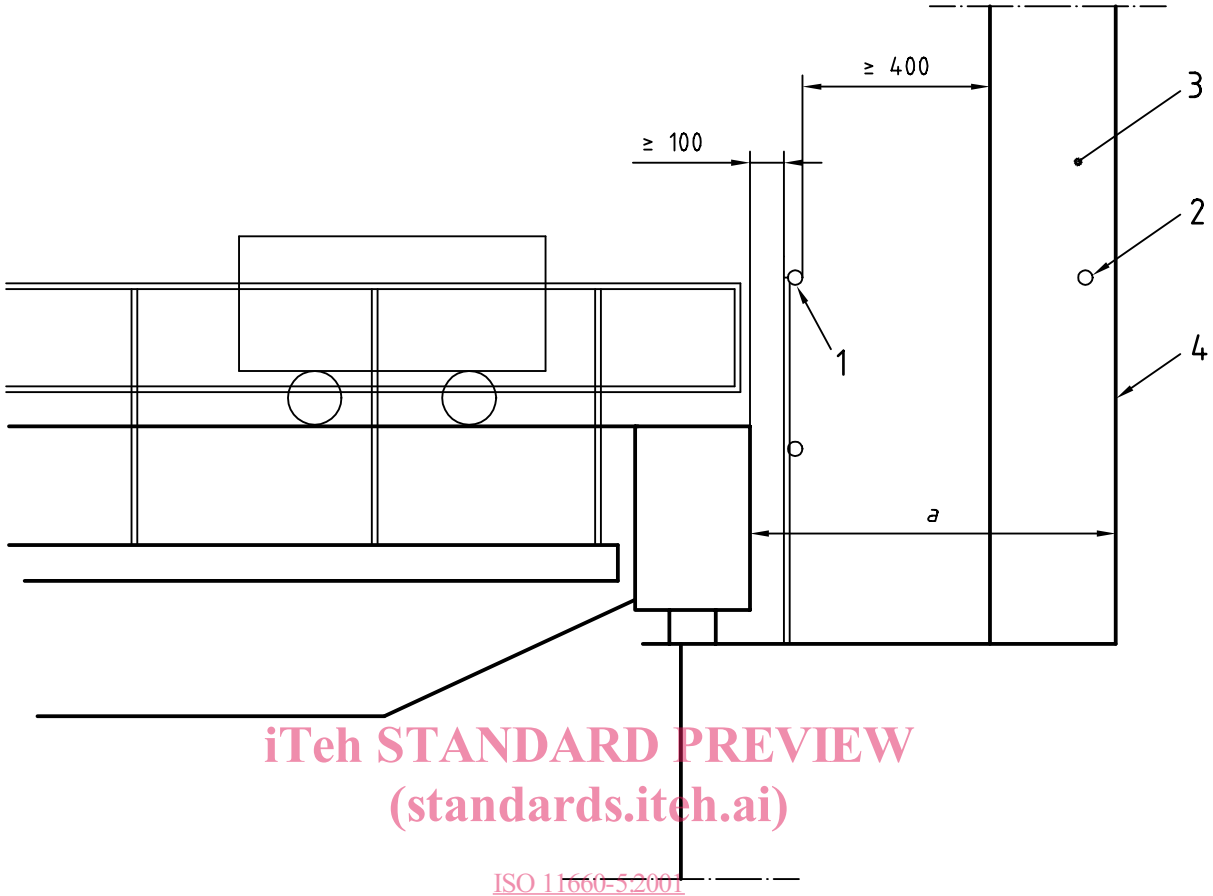
Key

1 Handrail A
2 Handrail B
3 Trolley

NOTE Handrail B may be omitted if $h + b \geqslant 1{,}25$ m or $h \geqslant 0{,}70$ m.

Figure 2 — Gangway on the bridge girder — Guarding conditions

Dimensions in millimetres



Key

1 Handrail A
2 Handrail B
3 Column
4 Wall

NOTE 1 Handrail A may be omitted if $a \geqslant 600$; handrail B may be omitted if $a \geqslant 1000$ or handrail A is provided.

NOTE 2 With a distance of $\geqslant 100$ mm and < 500 mm from railing to powered components, two horizontal intermediate bars in the permanent-landing railings are a safe solution in order to avoid feet reaching into hazardous area. In addition, this division of the railing height into thirds facilitates climbing over in the direction of the crane, in locations where no openings are provided in the railing, in order to avoid crushing hazards.

Figure 3 — Gangway on the runway — Guarding conditions

3.2.3.2 Access control

Access to all cranes shall require the permission of the driver.

When the factors listed below reduce the driver's accessibility, the user/supplier shall consider the use of a “Permit to Board” system.

A “Permit to Board” system shall inform the driver of the request to board, who gives permission to board to the person requesting access. This may be performed by a system of push-buttons and indicating lamps or by an acoustic intercommunication system.