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**Cranes—Access, guards and
restraints—Part 1: General**

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In the event of any doubts arising as to the contents,
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Contents

	Page
Introduction	1
1 Scope	1
2 Normative references	1
3 Terms, definitions and symbols	2
3.1 Terms and definitions	2
3.2 Symbols	3
4 Access	4
4.1 Classification of access	4
4.2 Selection of access	4
5 General requirements	5
6 Stairs and stepped ladders	6
7 Rung ladders and footholds	8
7.1 Rung ladders	8
7.2 Footholds	10
8 Hoop guards	11
9 Walkways, inclined walkways, platforms and manholes	13
10 Handholds, handrails, intermediate guard-rails and side protection	15
11 Minimum free space for walkway and inclined walkway	17
12 Hatch	18
13 Guards and restraints	18
13.1 Guards for moving parts	18
13.2 Prevention of objects from falling	18
14 Electrical guarding	19
Annex A (informative) Examples of surface considered to be slip-resistant	20
Annex JA (informative) Comparison table between JIS and corresponding International Standard	21

Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Health, Labour and Welfare and the Minister of Economy, Trade and Industry, through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Crane Association (JCA)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently **JIS B 8826-1:2004** is replaced with this Standard.

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JIS B 8826 series consists of the following 5 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: Overhead travelling cranes and portal bridge cranes

Cranes—Access, guards and restraints— Part 1: General

Introduction

This Japanese Industrial Standard has been prepared based on the second edition of **ISO 11660-1** published in 2008 with some modifications of the technical contents, in order to reflect the actual situation in Japan.

The portions given sidelines or dotted underlines are the matters in which the contents of the corresponding International Standard have been modified. A list of modifications with the explanations is given in Annex JA.

1 Scope

This Standard establishes the general requirements for access to control stations and other areas of cranes defined in **JIS B 0146-1**, during normal operations, maintenance, inspection, erection, dismantling and emergency. It also deals with guards and restraints in general, concerning the protection of persons on or near the crane with regard to moving parts, falling objects or live parts.

The particular requirements for various types of cranes are given in **JIS B 8826-2**, **JIS B 8826-3**, **JIS B 8826-4** and **JIS B 8826-5**. In some cases, the particular requirements may not comply with the general requirements. Different dimensions can be permitted provided an equivalent or higher degree of protection is achieved.

NOTE : The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 11660-1:2008 *Cranes—Access, guards and restraints—Part 1: General* (MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21-1**.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions (including amendments) shall be applied.

JIS B 0146-1 *Cranes—Vocabulary—Part 1: General*

JIS B 8826-2 *Cranes—Access, guards and restraints—Part 2: Mobile cranes*

JIS B 8826-3 *Cranes—Access, guards and restraints—Part 3: Tower cranes*

JIS B 8826-4 *Cranes—Access, guards and restraints—Part 4: Jib cranes*

JIS B 8826-5 *Cranes—Access, guards and restraints—Part 5: Overhead travelling cranes and portal bridge cranes*

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purpose of this Standard, the terms and definitions given in JIS B 0146-1, and the following apply.

3.1.1 rung ladder

means of access consisting of side-rails and rungs which accommodate one or two feet, used where the angle of inclination to the horizontal of inclination exceeds 75°

3.1.2 stepped ladder

means of access consisting of side-rails and steps which accommodate both feet, used where the angle of inclination to the horizontal exceeds 60°

3.1.3 stair

means of access used where the angle of inclination to the horizontal does not exceed 60° , with steps

3.1.4 ramp

plane inclined at an angle of 20° or less from the horizontal, without steps

3.1.5 walkway

part of an access system, with essentially horizontal flooring (5° or less), that permits walking or crawling between locations on a crane

3.1.6 rest platform, landing

horizontal surface situated at intervals between flights of ladders or stairs

3.1.7 platform

horizontal surface for the support of persons engaged in operation, maintenance, inspection or repair work

3.1.8 handrail

device that provides continuous hand support between two locations

3.1.9 handhold

means of providing support by a single hand placement

3.1.10 toeboard

vertical plate that is placed around the perimeter of the walkway, platform and rest platform to retain loose objects

3.1.11 foothold

means of providing support for one or two feet

3.1.12 manhole

access opening to allow the passage of a person and which can be fitted with a cover

3.1.13 hatch

access opening to allow the passage of a person and which is fitted with a hinged door

3.1.14 personal protective equipment

any device or appliance designed to be worn or held by an individual for protection against one or more health and safety hazards, e.g. safety belt

3.1.15 step

part of a ladder or stairs consisting of a horizontal surface which accommodates both feet

3.2 Symbols

For the purpose of this Standard, the following symbols and definitions apply.

- a* stride distance, see Figure 3
- b* rung end, see Figure 5
- c* free length for hand clearance, see Figure 4
- d* distance between centre line of rung and vertical surface, see Figure 6
- e* distance between ladder and an obstacle to the rear, see Figure 6
- f* distance between axis of ladder and a lateral obstacle, see Figure 6
- g* gap between discontinuous elements, see Figures 5 and 12
- h* riser height, see Figure 3
- i* rung pitch, see Figure 5
- k* rung size, see Figure 5
- m* step width, see Figures 3 and 5
- n* diameter/width of handrail/handhold, see Figure 4
- p* tread depth, see Figure 3
- q* hand clearance to mounting surface, see Figure 4
- r* vertical distance between lower part of handrail/handhold and floor/fothold, see Figure 4
- s* vertical distance between higher part of handrail/handhold and floor of platform/rest platform situated at top of ladder/stair, see Figure 4
- t* clearance between edge of handrail/handhold situated along ladder and edge of rung/side-rail of ladder, see Figure 4
- u* clearance between parallel handrails/handholds through which body must pass, see Figures 4 and 7
- v* distance between floor/stair and handrail/guard-rail, see Figure 12
- v₁* gap between top of toeboard and bottom of intermediate guard-rail, see Figure 12
- v₂* gap between top of intermediate guard-rail and bottom of guard-rail, see Figure 12
- w* distance between floor and top of toeboard, see Figure 12

y clearance between floor and lower edge of toeboard, see Figure 12

z distance between rung and handhold/handrail, see Figure 7

4 Access

4.1 Classification of access

The classification of access shall be in accordance with Table 1.

Table 1 Classification of access

Type	Use of access
Type 1 access	access used for normal operation, maintenance or inspection
Type 2 access	access which does not satisfy part of dimensions specified for Type 1 access but is still used for maintenance or inspection out of necessity

4.2 Selection of access

Access to control stations, machinery spaces and portions of the crane for which periodic inspection or maintenance is required shall be provided by means such as steps, stairs, ladders, gangways, landings and platforms complete with such handrails, handholds and other accessories as are necessary.

The system shall allow for safe access to cabin and walkway.

For cranes that are regularly erected and dismantled, means of access shall be provided as required for those operations. Their design shall permit performance of the work required.

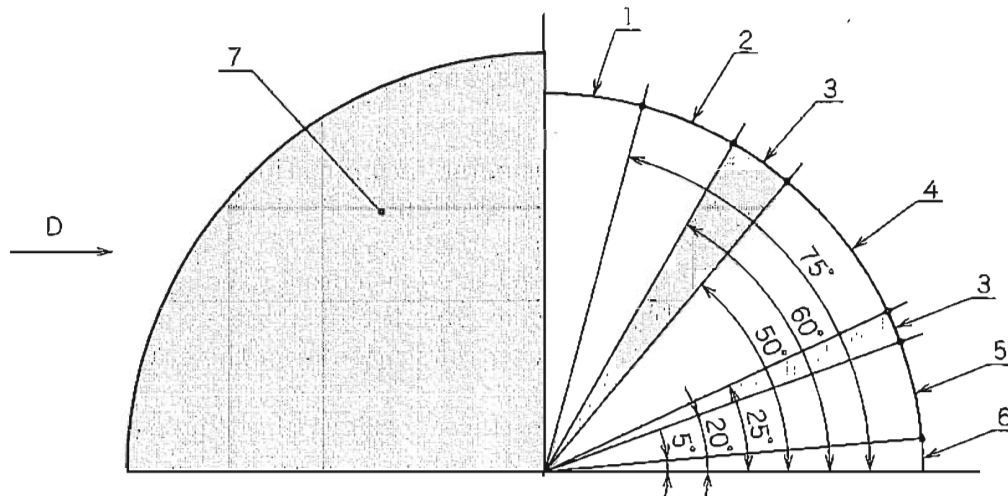
For high cranes, it may be advantageous to have a powered access means to the cabin. If a powered access system is provided, the crane shall be designed to receive it. In this case, a complementary means of access of Type 2 shall also be provided.

Manufacturers shall take into consideration the following when determining the means of access to be provided:

- a) frequency of use;
- b) equipment or tools to be carried;
- c) vertical distance to cover;
- d) nature of use, e.g. maintenance, inspection, walkway.

Figure 1 shows the ranges of angle for different means of access in their working position.

Provision of access should be in the following preferential order: stair, rung ladder, stepped ladder. In addition, fixed means (e.g. hoop guard, handrail, toeboard) shall be preferred to personnel protective equipment.



- 1 rung ladder
- 2 stepped ladder
- 3 stairs (avoid inclinations of 20° to 25° and 50° to 60° as much as possible)
- 4 stairs
- 5 inclined walkway
- 6 walkway
- 7 prohibited area
- D access direction for climbing

Figure 1 Ranges of angle for different means of access in their working position

5 General requirements

5.1 Provisions shall be made on every access to provide simultaneous three point support (two hands and one foot; or two feet and one hand).

5.2 Where lateral body movement is necessary from a rung of a ladder to another support surface, the distance between the step or rung and the nearest edge of the support surface shall be within a spherical radius of 0.3 m maximum (see Figure 2).

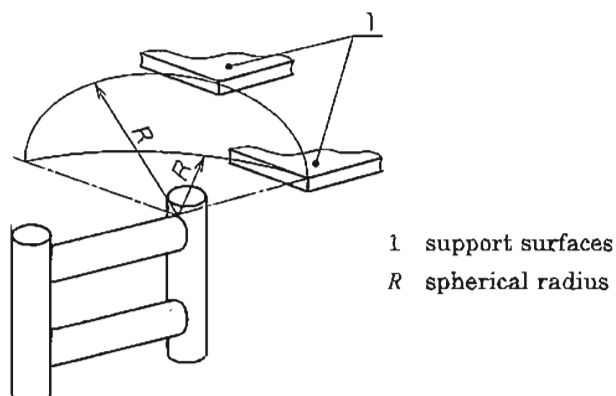


Figure 2 Distance between a step or rung and the nearest edge of any support surface