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**Safety of machinery—Guards—
General requirements for the design
and construction of fixed and
movable guards**

ICS 13.110

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Health, Labour and Welfare and the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal of establishing a Japanese Industrial Standard from the Japan Machinery Federation (JMF), with a draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

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Safety of machinery—Guards— General requirements for the design and construction of fixed and movable guards

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 14120** published in 2002 without modifying the technical contents.

This Standard specifies general principles for the design and construction of guards, both fixed and movable. It is intended for use by manufacturers, designers, standards makers and other interested parties.

As a Type-B2 standard, it is intended to provide assistance in the production of Type-C standards which cover detailed aspects for specific groups of machines, and to provide guidance in the absence of an appropriate Type-C standard.

In accordance with the requirements laid down in **JIS B 9700-1** : 2004 and **JIS B 9700-2** : 2004, the machine designer shall identify the hazards present at a machine, carry out a risk assessment and reduce risk by design before considering safeguarding techniques.

1 Scope

This Standard specifies general requirements for the design and construction of guards provided primarily to protect persons from mechanical hazards.

This Standard applies primarily to machines which will be manufactured after it is published.

Attention is drawn to the use of guards to minimize exposure to non-mechanical hazards.

The requirements are applicable if fixed and movable guards are used. This Standard does not cover those parts of guards which actuate interlocking devices. These are covered in **JIS B 9710** : 2006.

This Standard does not provide requirements for special systems relating specifically to mobility or to the ability to lift loads such as rollover protective structures (ROPS) and falling-object protective structures (FOPS).

NOTE : The International Standard corresponding to this Standard is as follows.

ISO 14120 : 2002 *Safety of machinery—Guards—General requirements for the design and construction of fixed and movable guards* (IDT)

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**.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. If the indication of the year is given to the referred standard, the edition of indicated year applies but the revision (including amendments) made thereafter does not apply.

JIS B 9700-1:2004 *Safety of machinery—Basic concepts, general principles for design—Part 1: Basic terminology, methodology*

NOTE : Corresponding International Standard: **ISO 12100-1**:2003 *Safety of machinery—Basic concepts, general principles for design—Part 1: Basic terminology, methodology* (IDT)

JIS B 9700-2:2004 *Safety of machinery—Basic concepts, general principles for design—Part 2: Technical principles*

NOTE : Corresponding International Standard: **ISO 12100-2**:2003 *Safety of machinery—Basic concepts, general principles for design—Part 2: Technical principles* (IDT)

JIS B 9702:2000 *Safety of machinery—Principles of risk assessment*

NOTE : Corresponding International Standard: **ISO 14121**:1999 *Safety of machinery—Principles of risk assessment* (IDT)

JIS B 9707:2002 *Safety of machinery—Safety distances to prevent danger zones being reached by the upper limbs*

NOTE : Corresponding International Standard: **ISO 13852**:1996 *Safety of machinery—Safety distances to prevent danger zones being reached by the upper limbs* (IDT)

JIS B 9708:2002 *Safety of machinery—Safety distances to prevent danger zones being reached by the lower limbs*

NOTE : Corresponding International Standard: **ISO 13853**:1998 *Safety of machinery—Safety distances to prevent danger zones being reached by the lower limbs* (IDT)

JIS B 9709-1:2001 *Safety of machinery—Reduction of risks to health from hazardous substances emitted by machinery—Part 1: Principles and specifications for machinery manufacturers*

NOTE : Corresponding International Standard: **ISO 14123-1**:1998 *Safety of machinery—Reduction of risks to health from hazardous substances emitted by machinery—Part 1: Principles and specifications for machinery manufacturers* (IDT)

JIS B 9710:2006 *Safety of machinery—Interlocking devices associated with guards—Principles for design and selection*

NOTE : Corresponding International Standard: **ISO 14119**:1998 *Safety of machinery—Interlocking devices associated with guards—Principles for design and selection* (IDT)

JIS B 9711:2002 *Safety of machinery—Minimum gaps to avoid crushing of parts of the human body*

NOTE : Corresponding International Standard: **ISO 13854**:1996 *Safety of machinery—Minimum gaps to avoid crushing of parts of the human body* (IDT)

JIS B 9960-1:1999 *Safety of machinery—Electrical equipment of machines—Part 1: General requirements*

NOTE : Corresponding International Standard: **IEC 60204-1**:1997 *Safety of machinery—Electrical equipment of machines—Part 1: General requirement* (MOD)

3 Terms and definitions

For the purposes of this Standard, the terms and definitions given in **JIS B 9700-1**:2004 and the following apply.

3.1 guard

part of a machine specifically used to provide protection by means of a physical barrier

NOTE 1 A guard may act:

- alone, in which case it is only effective when it is closed;
- in conjunction with an interlocking device with or without guard locking, in which case protection is ensured whatever the position of the guard (see also **3.5**).

NOTE 2 Depending on its construction, a guard may be called casing, cover, screen, door, enclosing guard, etc.

NOTE 3 See **JIS B 9700-2**:2004, **5.3.2** and this Standard for the classification of guards and requirements.

(See **JIS B 9700-1**:2004, **3.25**)

3.2 fixed guard

guard kept in place, that is closed, either permanently (by welding, etc.), or by means of fasteners (screws, nuts, etc.) making removal/opening impossible without using tools

(See **JIS B 9700-1**:2004, **3.25.1**)

3.2.1 enclosing guard

guard which prevents access to the danger zone from all sides

See figure 1.

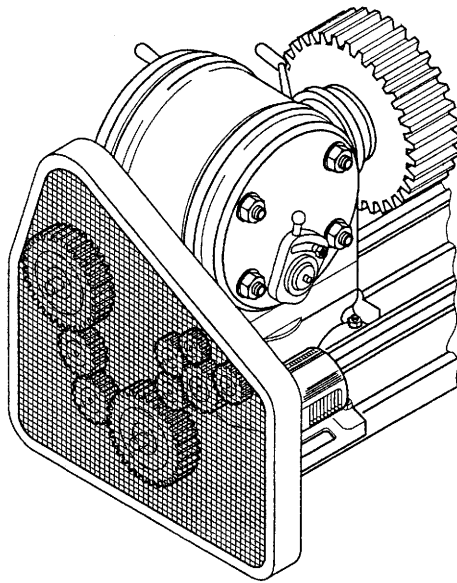


Figure 1 Example of an enclosing guard totally preventing access to transmission machinery

3.2.2 distance guard

guard which does not completely enclose a danger zone, but which prevents or reduces access by virtue of its dimensions and its distance from the danger zone, for example perimeter fence or tunnel guard

See figures 2 and 3.

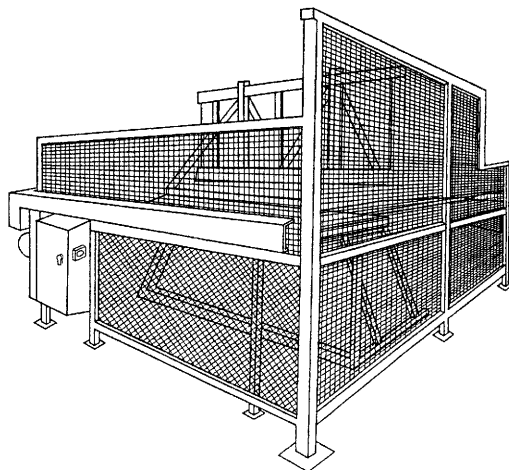


Figure 2 Example of a distance guard

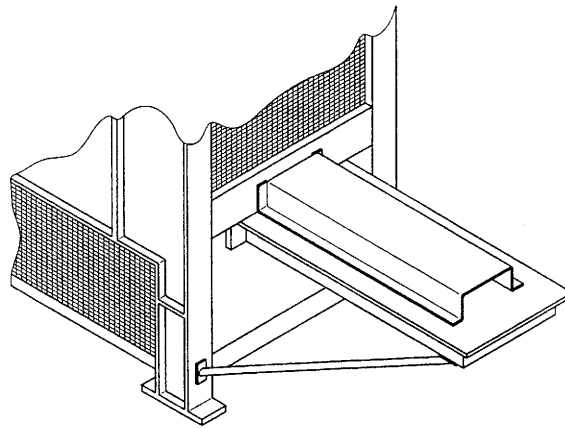


Figure 3 Example of a distance guard: tunnel guard providing protection at machine feed or discharge area

3.3 movable guard

guard generally connected by mechanical means, for example with hinges or slides, to the machine frame or an adjacent fixed element and which can be opened without the use of tools

(See **JIS B 9700-1 : 2004, 3.25.2**)

3.3.1 power-operated guard

movable guard that is operated with the assistance of power from a source other than persons or gravity

3.3.2 self-closing guard

movable guard operated by a machine element (for example a moving table) or by the workpiece or a part of the machining jig, so that it allow the workpiece (and the jig) to pass and then automatically returns (by means of gravity, a spring, other external power, etc.) to the closed position as soon as the workpiece has vacated the opening through which it has been allowed to pass

See figure 4.

3.3.3 interlocking guard with a start function, control guard

special form of an interlocking guard which, once it has reached its closed position, gives a command to initiate the hazardous machine function(s) without the use of a separate start control

(in accordance with **JIS B 9700-1 : 2004, 3.25.6**)

NOTE : The use of control guards is subject to certain conditions (see **5.4.9**).