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ISO 11684

Second edition
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Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Safety labels — General principles

Tracteurs et matériels agricoles et forestiers, matériels à moteur pour jardins et pelouses — Étiquetage de sécurité — Principes généraux

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 14, *Operator controls, operator symbols and other displays, operator manuals*.

This second edition cancels and replaces the first edition (ISO 11684:1995), which has been technically revised.

The main changes are as follows:

— the title has been changed for clarification, i.e. "*Safety signs and hazard pictorials*" has been changed to "*Safety labels*";

— the scope has been modified to clarify the state of the art;

— Clause 3 (Terms and definitions) has been added to define safety labels;

— the normative references and the terms and definitions' source information have been updated;

— the term "sign" has been changed to label where appropriate to align with TC 145/SC 2;

— the title of Annex F (former Annex D) has been updated;

— the Bibliography has been updated.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The purpose of this document is to provide, for tractors, machinery for agriculture and forestry, and powered lawn and garden equipment, general principles for the design of safety labels to alert persons to a hazard, describe the nature of that hazard, describe the consequences of potential injury from it, and instruct persons on how to avoid it. The continued growth in international trade and commerce has made it necessary to establish a universal communication method for conveying safety information.

This document satisfies the global need to harmonize the system for conveying safety information using graphical means so that it relies as little as possible on the use of text messages. Safety labels that include text can be used when some of the necessary safety information cannot be communicated in graphical form.

Education is an essential part of any system that provides safety information. Although safety colours and labels are essential to any safety information system, they can be used only to supplement job site management practices such as proper working methods, instructions, accident prevention measures and training.

Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Safety labels — General principles

1 Scope

This document establishes general principles for the design of safety labels and hazard pictorials permanently affixed to, or displayed electronically on, tractors, machinery for agriculture and forestry, and powered lawn and garden equipment. This document outlines safety label objectives, describes the basic safety label formats and colours, provides guidance on developing the various panels that together constitute a safety label, and includes safety label information with regard to operator's manuals.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements for this document. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3600, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Operator's manuals — Content and format*

ISO 3864-2, *Graphical symbols — Safety colours and safety signs — Part 2: Design principles for product safety labels*

ISO 3864-4, *Graphical symbols — Safety colours and safety signs — Part 4: Colorimetric and photometric properties of safety sign materials*

ISO 11783-6, *Tractors and machinery for agriculture and forestry — Serial control and communications data network — Part 6: Virtual terminal*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
safety label
label that informs the observer of one or more potential hazards and describes the safety precautions and/or actions required to avoid the hazard(s)

Note 1 to entry: It communicates a hazard, a hazardous situation, a precaution to avoid a hazard and/or a result of not avoiding a hazard.

Note 2 to entry: Adapted from ISO 3864-2.

3.2
safety sign
sign which gives a general safety message, obtained by a combination of a colour and geometric shape and which, by the addition of a graphical symbol or hazard pictorial, gives a particular safety message

[SOURCE: ISO 3864-1:2011, 3.12]

3.3
border
band that defines the edge of a label or graphical symbol

[SOURCE: ISO 17724:2003, 5]

3.4
panel
area of a *safety label* (3.1) that has a distinctive background colour different from adjacent areas of the label, or which is clearly delineated by a *border* (3.3)

[SOURCE: ISO 17080:2005, 2.2, modified — "product safety" was changed to "safety".]

3.5
signal word panel
area of a *safety label* (3.1) containing a signal word to communicate the category of risk associated with a hazard

3.6
signal word
word that calls attention to a potentially or imminently hazardous situation

[SOURCE: ISO 17724:2003, 73]

3.7
CAUTION
signal word (3.6) used to indicate a potentially hazardous situation which, if not avoided, can result in minor or moderate injury

[SOURCE: ISO 17724:2003, 6, modified — "may result" has been changed to "can result"]

3.8
WARNING
signal word (3.6) used to indicate a potentially hazardous situation which, if not avoided, could result in death or serious injury

[SOURCE: ISO 17724:2003, 84]

3.9
DANGER
signal word (3.6) used to indicate an imminently hazardous situation which, if not avoided, will result in death or serious injury

[SOURCE: ISO 17724:2003, 18, modified — "may result" has been changed to "will result"]

3.10
hazard
source of potential harm

[SOURCE: ISO 12100:2010, 3.6]

3.11
hazard pictorial
visual description of the *hazard* (3.10) and/or the consequences of not avoiding the hazard and/or visual instructions for hazard avoidance

[SOURCE: ISO 9244:2008, 3.9]

3.12
hazard description panel
area of a *safety label* (3.1) that contains information that indicates a *hazard* (3.10)

3.13
hazard description pictorial
visual description of the *hazard* (3.10) and/or the consequences of not avoiding the hazard

[SOURCE: ISO 9244:2008, 3.8]

3.14
hazard avoidance panel
area of a *safety label* (3.1) that contains information that indicates how to avoid the hazard

3.15
hazard avoidance pictorial
visual instruction for hazard avoidance

[SOURCE: ISO 9244:2008, 3.7]

3.16
prohibition sign
component of a *safety label* (3.1) used to forbid a hazardous action

[SOURCE: ISO 9244:2008, 3.12, modified — The word "machine" was omitted from the definition.]

3.17
safety colour
colour with special properties to which a safety meaning is attributed

[SOURCE: ISO 17080:2005, 2.5]

3.18
safety shape
geometric shape to which a safety meaning is attributed

[SOURCE: ISO 17724:2003, 67]

3.19
graphical symbol
visually perceptible figure with a particular meaning, used to transmit information independently of language

[SOURCE: ISO 7001:2007, 3.1]

3.20
risk
combination of the probability of occurrence of harm and the severity of that harm

[SOURCE: ISO 12100:2010, 3.12]

3.21
message panel
area of a *safety label* (3.1) that contains text describing the hazard, the consequence of exposure to the hazard, and avoidance of the hazard

3.22
panel separation line
line that separates a panel from another panel or from a border

4 Safety labels — Application, presentation and general requirements

4.1 Objectives

4.1.1 The objectives of a safety label are to:

a) alert persons to an existing or potential hazard;

b) identify the hazard;

c) describe the nature of the hazard;

d) explain the consequences of potential injury from the hazard;

e) instruct persons about how to avoid the hazard.

4.1.2 Electronic safety signs are an option on equipment displays. These signs should be used for hazards related to unique configurations, events, or functions of the equipment or system (see Clause 12).

4.1.3 The requirements of 4.3 and 4.4 do not apply to electronic safety signs.

4.2 General

4.2.1 A safety label conveys information about hazards associated with operation of a machine.

4.2.2 The following standard formats for safety labels are described in this document:

— two panel safety label without text (see 5.1);

— two panel safety label with text (see 6.1)

— three panel safety label without text (see 5.1); or

— three panel safety label with text (see 6.1)

NOTE 1 Alternative formats (for example, ISO 3864-2) and/or variations on these standard formats can be used as appropriate.

NOTE 2 When multiple avoidance measures are applicable to a hazard, or when multiple hazards are applicable to an avoidance measure, additional panels can be added.

NOTE 3 Safety labels without text can address requirements for multiple languages and the movement of machines from one country to another.

4.2.3 Either a vertical or a horizontal configuration is acceptable.

4.3 Location

In achieving the objectives of 4.1, it shall be ensured that safety labels

a) are located on the machine in the area near the hazards or in the control area from where the hazards can be prevented,

b) are distinctive on the equipment,

c) are placed in clearly visible locations,

d) are protected to the greatest extent practicable from damage and obliteration, and

e) designed to comply with environmental factors (see 4.4).

4.4 Expected life

A safety label is considered permanent if, when viewed at distances described in 10.2, the label has good colour and legibility after exposure tests for weatherability at a latitude of 25° to 35° north or south on a surface inclined at 45° facing south or north, respectively, for a period of at least two years. Similar weatherability conditions simulated in a laboratory may be accepted.

4.5 Effective use

Use safety labels that are relevant to the hazard. Care shall be taken to prevent excessive use of safety signs on the machine to avoid confusion. Their overuse can reduce their effectiveness.

4.6 Operator's manual information

4.6.1 Safety labels shall be repeated in the operator's manual according to ISO 3600. Safety labels may be used in service and other technical manuals, as needed. Their application in manuals is not subject to the requirement against overuse given in 4.5.

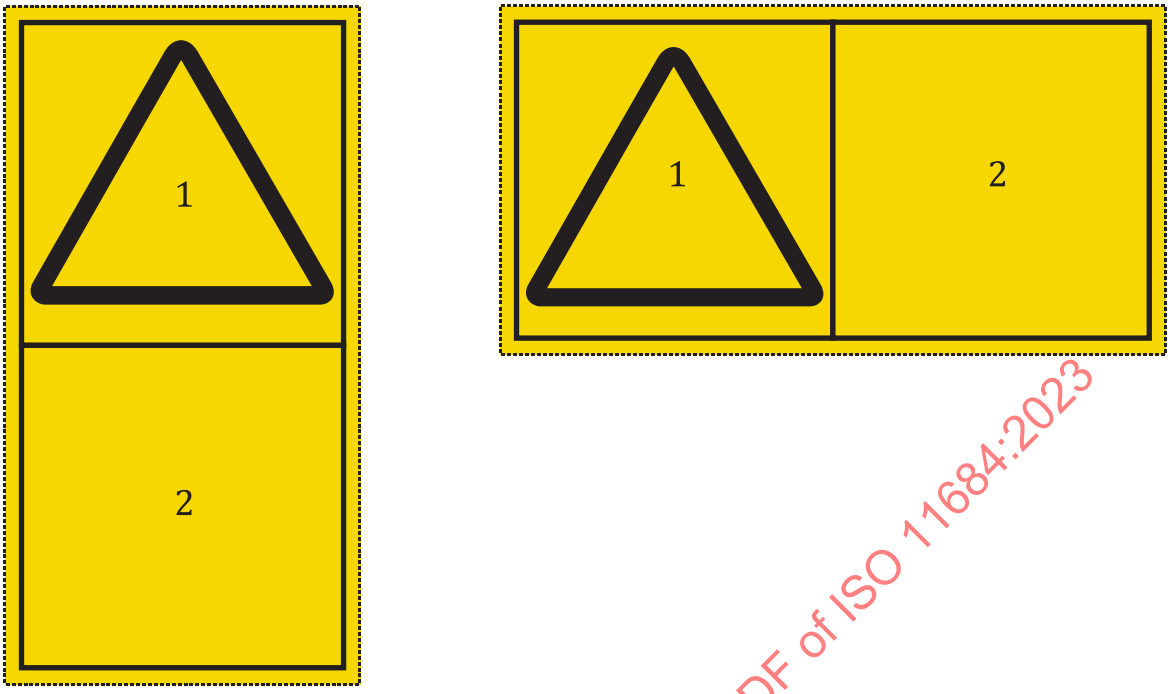
4.6.2 Instructions shall be provided in the operator's manual regarding the maintenance and replacement of safety labels.

5 Safety labels without text (no-text safety labels)

5.1 Two-panel safety labels

A two-panel safety label shall contain a hazard description panel and a hazard avoidance panel. The hazard description panel shall contain either a hazard description pictorial enclosed by the safety alert triangle (see Figure 5), or an exclamation mark enclosed by the safety alert triangle as shown in Figure 8. The hazard avoidance panel shall contain one or more hazard avoidance pictorials.

See Figure 1.



a) Vertical configuration **b) Horizontal configuration**

Key

1 hazard description panel

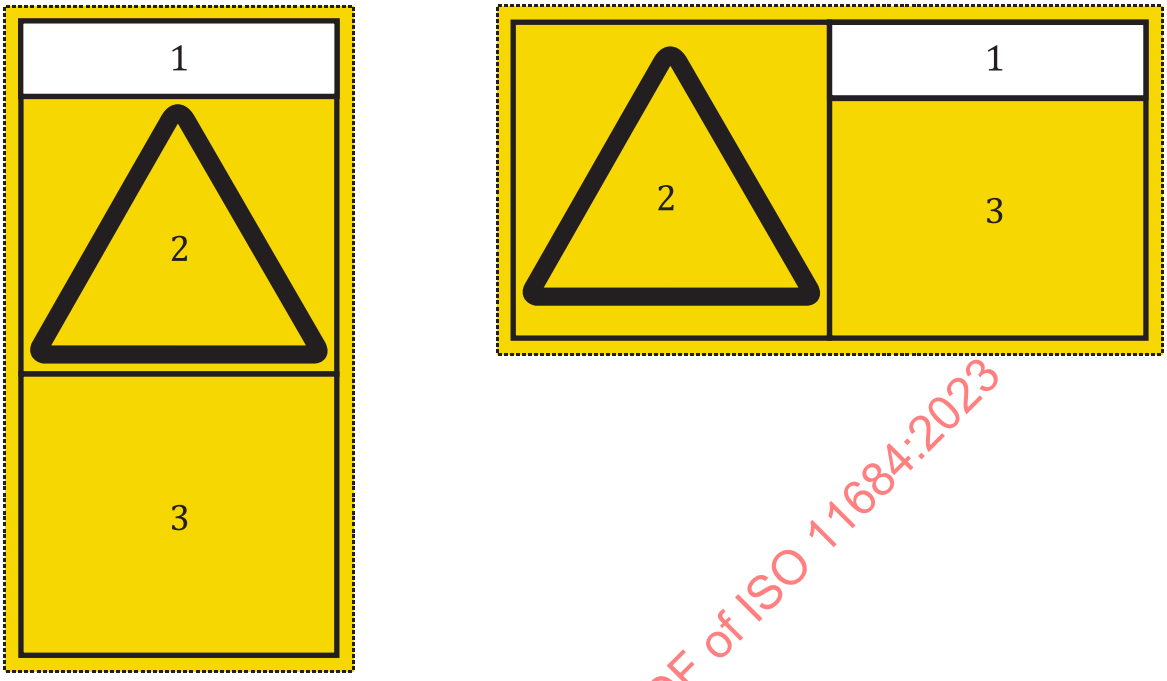
2 hazard avoidance panel

Figure 1 — Two-panel (no-text) safety label

5.2 Three-panel safety labels without text

A three-panel safety label without text shall contain a signal word panel, a hazard description panel and a hazard avoidance panel. The signal word panel shall contain the safety alert symbol and one of the three signal words described in 7.1.2. The hazard description panel shall contain either a hazard description pictorial enclosed by the safety alert triangle (see Figure 5) or an exclamation mark enclosed by the safety alert triangle as shown in Figure 6. The hazard avoidance panel shall contain one or more hazard avoidance pictorials.

See Figure 2.



a) Vertical configuration **b) Horizontal configuration**

Key

1 signal word panel
2 hazard description panel
3 hazard avoidance panel

Figure 2 — Three-panel safety label with signal word without text

5.3 Colour of the hazard description panel

The colour of the hazard description panel shall be yellow.

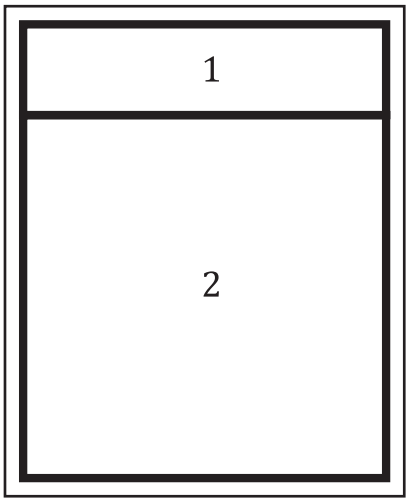
5.4 Colour of the hazard avoidance panel

The colour of the hazard avoidance panel shall be yellow.

6 Safety labels with text (text safety labels)

6.1 Two-panel safety label with text

The signal word panel shall contain the safety alert symbol and one of the three signal words described in 7.1.2. The message panel shall contain text describing the hazard, the consequence of exposure to the hazard, and avoidance of the hazard. See Figure 3.



Key

1 signal word panel

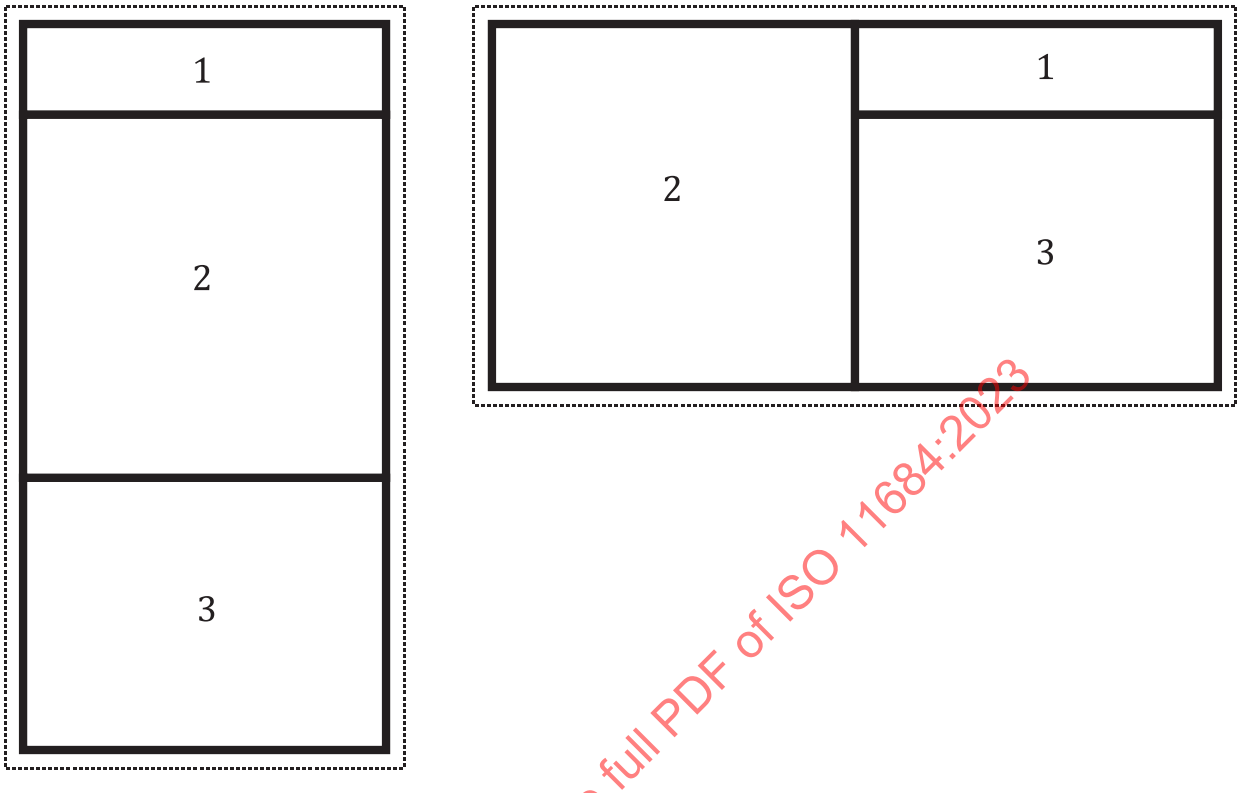
2 message panel

Figure 3 — Two-panel text safety label with text

6.2 Three-panel safety label with text

The signal word panel shall contain the safety alert symbol and one of the three signal words described in 7.1.2. The hazard description panel shall contain a hazard description pictorial or, in some cases, a combination of hazard description pictorial and hazard avoidance pictorial, and may contain text. The hazard avoidance panel shall contain text, or a hazard avoidance pictorial, or a combination of both that describes how to avoid the hazard.

See Figure 4.



a) Vertical configuration **b) Horizontal configuration**

Key

1 signal word panel
2 hazard description panel
3 hazard avoidance panel

Figure 4 — Three-panel safety label with text

6.3 Colour of the hazard description panel

The colour of the hazard description panel shall be white.

6.4 Colours of the hazard avoidance panel

The colour of a hazard avoidance panel that contains a hazard avoidance pictorial shall be white. The colour of a hazard avoidance panel that contains only text shall be white with black text or black with white text.

7 Signal word panel

7.1 General

7.1.1 The signal word panel of a safety label shall contain the safety alert symbol and one of the three signal words described in 7.1.2. The safety alert symbol shall be positioned before the signal word (see signal word panel illustrations in Table 1). The base of the safety alert symbol shall be aligned with the base of the signal word letters and the height of the safety alert symbol shall be equal to or greater than the height of the signal word letters.

7.1.2 The three signal words, DANGER, WARNING, and CAUTION, are reserved for personal injury hazards. Choice of the signal word is based upon an estimate of the likelihood of exposure to the hazard and of the probable consequences of exposure to the hazard, according to the general meaning and use in Table 1.

7.2 Colours and general meaning of signal word panels

The colours of the signal word panel shall be in accordance with Table 1 and Annex B based on the signal word used.

Table 1 — General meaning and use of colours in signal word panels

Background colour of panel	Contrast colour	General meaning and use	Signal word panel illustration (Example A)	Signal word panel illustration (Example B)
Red	White	DANGER signal word panel to identify a high level of risk		
Orange	Black	WARNING signal word panel to identify a medium level of risk		
Yellow	Black	CAUTION signal word panel to identify a low level of risk		

8 Pictorials

8.1 General

8.1.1 Hazard description pictorials and hazard avoidance pictorials are the two basic types of pictorials for use on safety labels.

8.1.2 Avoid addressing more than one hazard by a single pictorial unless the hazards are closely related.

8.2 Pictorials used in safety labels

8.2.1 Pictorials used in safety labels shall be black.

8.2.2 Other colours may be used to emphasize specific aspects of a pictorial (for example, red, to indicate fire).

8.2.3 Symbols used to communicate prohibition or to convey instruction to stop an activity shall be as specified in 8.4.

8.2.4 Pictorials used in safety labels shall conform to the principles of design outlined in Annex F.

8.2.5 Arrows used in safety labels shall conform to the principles of design outlined in Annex F.

8.3 Hazard description pictorial

8.3.1 General

Examples of hazard description pictorials are shown in Annex C. Alternative hazard description pictorials may be used or developed as appropriate.

8.3.2 Safety alert triangle

8.3.2.1 The safety alert triangle shall be as shown in Figure 5.

NOTE 1 See ISO 3864-1:2011, 6.4 for layout principles.

NOTE 2 See ISO 3864-3:2012, 7.4.4 for exclusion zone requirements for pictorials enclosed by the safety alert triangle.

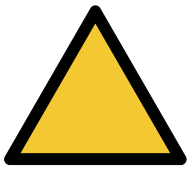


Figure 5 — Safety alert triangle

8.3.2.2 The safety alert triangle with exclamation mark shall be as shown in Figure 6.

Figure 6 — Safety alert triangle with exclamation mark (ISO 7010-W001)

8.3.2.3 The colour of the safety alert triangle and the safety alert triangle with exclamation mark shall be black. The colour inside of the safety alert triangle shall be yellow.

8.4 Hazard avoidance pictorial

8.4.1 General

Examples of hazard avoidance pictorials are shown in Annex D. Alternative hazard avoidance pictorials may be used or developed as appropriate.

8.4.2 Prohibition symbols

8.4.2.1 When creating a hazard avoidance pictorial to communicate prohibition of an action or the presence of a person in a location, a prohibition symbol according 8.4.2.2 or 8.4.2.4 shall be used.

8.4.2.2 The prohibition symbol may be the diagonal cross prohibition symbol IEC 60417-6287. The diagonal cross prohibition symbol is shown in Figure 7.

Figure 7 — Diagonal cross prohibition symbol

8.4.2.3 Sizing of the diagonal cross prohibition symbol depends on how it is used with a particular pictorial. It is important that the diagonal cross prohibition symbol is sufficiently large to be easily recognized, but care shall be taken to avoid obscuring any critical detail of the pictorial. The diagonal cross prohibition symbol may be placed over the entire pictorial or over only the portion of the pictorial that represents the specific action or location to be avoided.

8.4.2.4 The circle with diagonal bar prohibition symbol may be used to communicate prohibition of an action or the presence of a person in a location, provided that the requirements of ISO 3864-1, ISO 3864-2, and ISO 3864-3 for prohibition safety labels are adhered to. The circle with diagonal bar prohibition symbol is shown in Figure 8.

Figure 8 — Circle with diagonal bar prohibition symbol

8.4.3 STOP instruction

8.4.3.1 The word STOP may be used to convey the instruction to stop an activity. It shall be shown in red. See Figure 9.

Figure 9 — STOP instruction

8.4.3.2 Alternatively, the use of a red octagon with or without the symbol STOP, shown in white, may be used to pictorially communicate the instruction to stop an activity. See Figure 10.

Figure 10 — Red octagon instruction (ISO 7000-3308 modified)

9 Borders and panel separation lines

9.1 For no-text safety labels, the colour of the border shall be yellow. If it is necessary to differentiate the safety label from the colour of the surface on which is it affixed, the border may be black or an additional outside white or black border may be used.

9.2 For text safety labels, the colour of the border shall be the colour of the signal word panel according to Table 1. If it is necessary to differentiate the safety label from the surface on which it is affixed, the border may be black or an additional outside white or black border may be used.

9.3 Panel separation lines shall be black.

10 Letter style and size

10.1 Letter style

10.1.1 Signal word panel lettering shall be upper case sans serif letters.

10.1.2 Text should use proper upper-case and lower-case letters, or terms may be in all upper-case letters for emphasis.

10.1.3 The font may be one of the following or a font with similar legibility: Arial, Arial Bold, Helvetica, Helvetica Bold, Folio Medium, Franklin Gothic, Futura, News Gothic Bold, Meta Bold, or Univers.

10.2 Letter size

10.2.1 Lettering shall be of a size that enables a person with normal vision, including corrected vision, to read the safety label at a safe viewing distance from the hazard.

10.2.2 Safe viewing distance for the signal word panel lettering shall take into consideration a reasonable hazard avoidance reaction time.

10.2.3 Safe viewing distance for the other panel lettering may be different than the safe viewing distance for the signal word panel lettering.

10.2.4 Signal word panel letter height should be at least 50 % greater than the selected height of the other panel lettering.

10.2.5 Minimum letter height shall be not less than 6 mm for signal panel lettering nor less than 3 mm for upper case letters in other panel lettering.

11 Languages, translations and multi-language safety labels

11.1 Safety labels containing a signal word and/or text should be in one of the languages of the country where the machine is to be used.

11.2 Safety labels without text require no language translation. However, when safety labels without text are used, the following shall be provided:

a) appropriate text, that explains the respective safety labels without text, printed in the operator's manual in the appropriate language; and

b) a safety label without text that includes a hazard description pictorial that is the safety alert triangle with exclamation mark and hazard avoidance pictorial that instructs the operator to read the operator's manual (see Figure 11).

Figure 11 — Two panel safety label without text — Read operator's manual

12 Electronic safety signs

12.1 General

Electronic safety signs shown on equipment displays have additional specific requirements that are different than physical safety labels on equipment.

12.2 Electronic safety sign acknowledgement

12.2.1 It is only permissible to remove electronic safety signs from the display's data mask under either of the two following conditions:

— The sign is acknowledged by the operator,

NOTE In some situations, the system can reassert the sign after a delay.

— The conditions that originated the safety sign have cleared and there is no indication that a hazard still exists.

12.2.2 A physical button, a programmed soft key as defined in ISO 11783-6, or both, or any other required operator input or interaction shall be used for operator acknowledgement of electronic safety signs.

12.3 Priority of electronic safety signs

DANGER and WARNING electronic safety signs shall be high priority alarm masks and CAUTION electronic safety signs shall be medium priority alarm masks as defined in ISO 11783-6. The order in which alarm masks are shown shall be determined, first by the priority attribute defined (that is, high, medium, or low), and second by chronological order. When more than one alarm mask with the same priority is asserted, the first one processed by the display shall become the active alarm mask shown. When the highest active alarm mask is removed, the next-highest priority alarm mask shall become the active alarm mask shown.

12.4 Timing of electronic safety signs

12.4.1 For precautionary hazards (that is, hazards that can occur in the future), the electronic safety sign shall be shown as soon as the system detects the configuration, test, or function that could cause the hazard.

— Whenever possible, limit electronic safety signs only to configurations that could experience the hazard.

— Avoid repetitive usage of electronic safety signs that can become a nuisance to the operator.

12.4.2 For an event-related hazard (that is, a hazard that could have already occurred as indicated by data), the electronic safety sign shall be shown immediately.

Annex A
(informative)

Recommended safety label dimensions

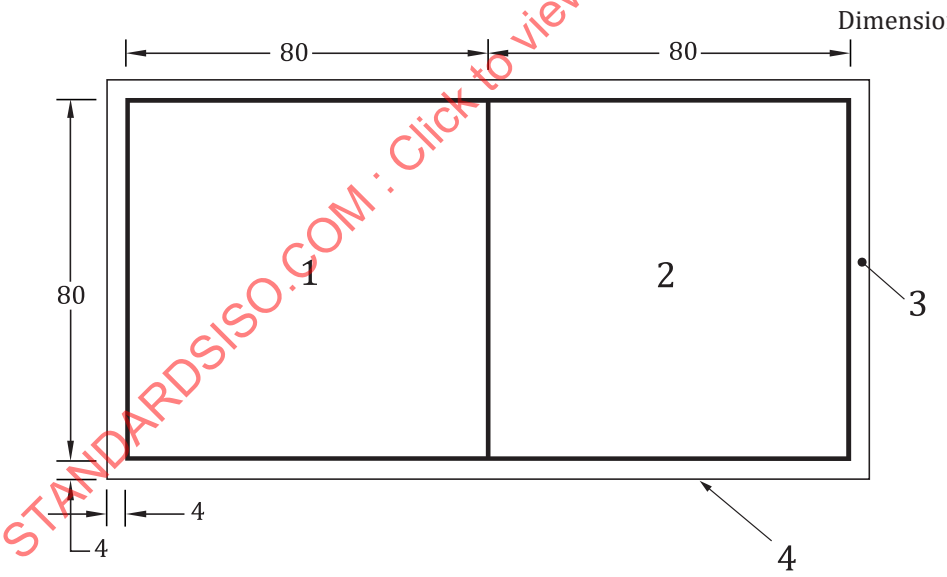
A.1 General

A.1.1 The recommended dimensions of safety labels are shown in Figures A.1 and A.2. Smaller or larger sizes may be used as required. Proportions may be varied as necessary to provide a sufficiently large signal panel or to provide adequate space for the panel text to be set in a legible type size.

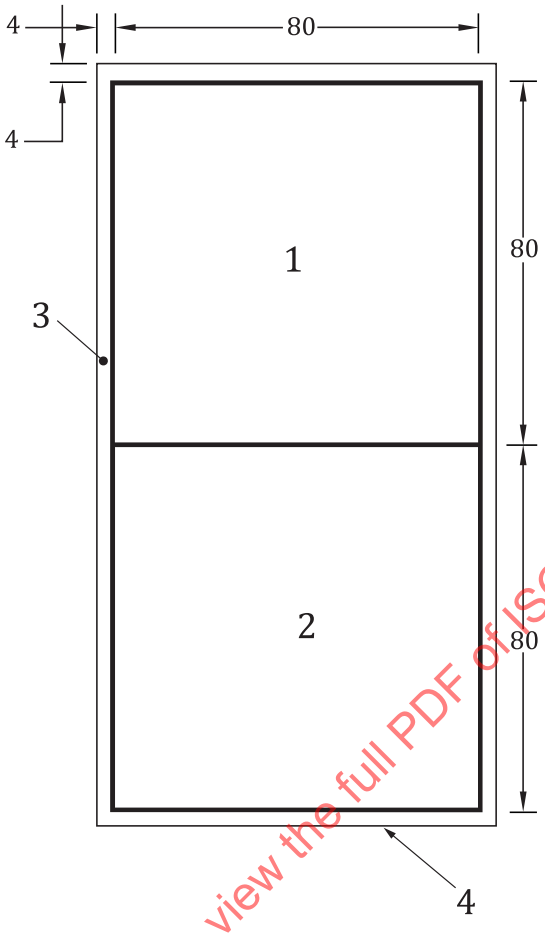
A.1.2 The corners of a safety label may have a small radius proportional in size to the safety label's dimensions. The line width of the border may be adjusted based on the size of the panels, background contrast and visual clarity.

A.1.3 Electronic safety signs shall take up the entire space available in the display's data mask as defined in ISO 11783-6. Any information present in an area outside the electronic safety sign that is not directly related to the electronic safety sign shall be blanked or dimmed.

A.2 Recommended dimensions — Two-panel (no-text) format



a) Horizontal configuration



b) Vertical configuration

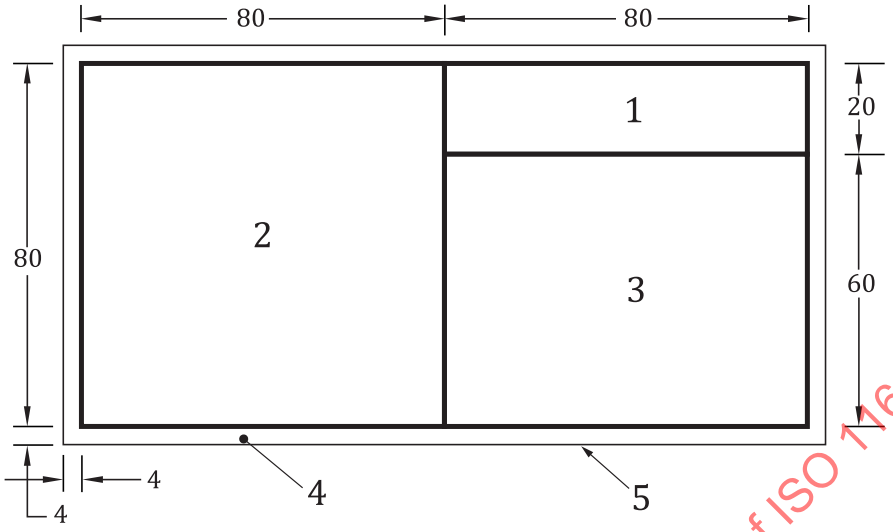
Key

1 hazard description panel
2 hazard avoidance panel
3 border
4 outer edge of safety label

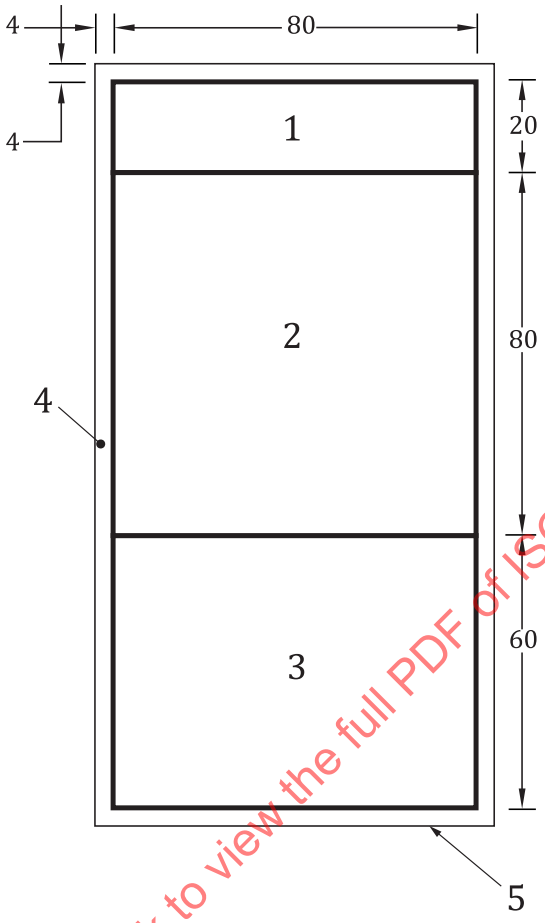
Figure A.1 — Recommended dimensions — Two-panel (no-text) format

A.3 Recommended dimensions — Three-panel (text and no-text) format

Dimensions in millimetres



a) Horizontal configuration



b) Vertical configuration

Key

1 signal word panel
2 hazard description panel
3 hazard avoidance panel
4 border
5 outer edge of safety label

Figure A.2 — Recommended dimensions — Three-panel (text and no-text) format

Annex B
(normative)

Colour specifications of safety labels

The colours used in safety labels shall be in accordance with ISO 3864-4 and ISO 3864-2. The permitted colours are red, orange, yellow, white and black. The requirements for orange are found in ISO 3864-2.

Annex C
(informative)

Hazard description pictorials

C.1 General

This annex presents examples of hazard description pictorials intended for use on safety labels. Alternative hazard description pictorials may be used as appropriate, and additional hazard description pictorials may need to be developed.

C.2 Chemical (ingestion/burn) hazards

See Figures C.1 and C.2.

Figure C.1 — Caustic liquids — Chemical burns to fingers or hand

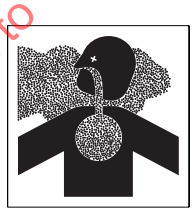


Figure C.2 — Poisonous fumes or toxic gases — Asphyxiation

C.3 Electrical (shock/burn) hazards

See Figures C.3 to C.5.

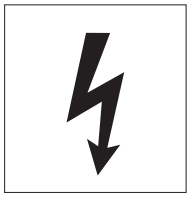


Figure C.3 — Electrical shock/electrocution (IEC 60417-6042 without triangle)

Figure C.4 — Electrical shock/electrocution

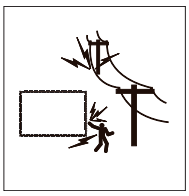


Figure C.5 — Electrical shock/electrocution — General contact with powered conductors

C.4 Falling hazards

See Figure C.6.

Figure C.6 — Falling hazard — General

C.5 Fluid (Injection, leak/spray) hazards

See Figures C.7 to C.8.

Figure C.7 — High pressure fluid — Injection into body

Figure C.8 — High pressure spray — Erosion of flesh

C.6 Mechanical — Crushing hazards

See Figures C.9 to C.11.

Figure C.9 — Crushing of fingers or hand — Force applied from above

Figure C.10 — Crushing of toes or foot — Force applied from above

Figure C.11 — Crushing of whole body — Force applied from above

C.7 Mechanical — Cutting hazards

See Figures C.12 to C.14.

Figure C.12 — Cutting of fingers or hand

Figure C.13 — Cutting of foot

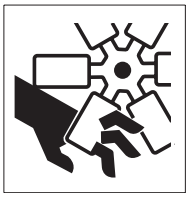


Figure C.14 — Severing of fingers or hand Engine fan

C.8 Mechanical — Entanglement hazards

See Figures C.15 to C.19.

Figure C.15 — Leg entanglement in machinery

Figure C.16 — Fingers or hand entanglement — Rotating parts

Figure C.17 — Whole body entanglement — Power take-off (PTO) drive shaft

Figure C.18 — Hand and arm entanglement — Chain or toothed belt drive

Figure C.19 — Hand and arm entanglement — Belt drive

C.9 Mechanical — Thrown or flying object hazards

See Figures C.20 to C.22.

Figure C.20 — Large thrown or flying object

Figure C.21 — Thrown or flying objects — Whole body exposure

Figure C.22 — Thrown or flying objects — Face exposure

C.10 Runover/backover/strike hazards

See Figure C.23.

Figure C.23 — Runover/backover

C.11 Stability (rollover) hazards

See Figure C.24.

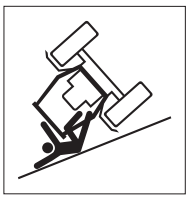


Figure C.24 — Machine rollover — ROPS

C.12 Stored energy release hazards

See Figure C.25.

Figure C.25 — Kickback or upward motion — Lever

C.13 Thermal (burn/contact) hazards

See Figure C.6.

Figure C.26 — Hot surfaces — Burns to fingers or hands

C.14 Thermal (combustion/explosion) hazards

See Figures C.27 and C.28.

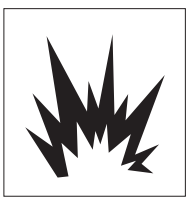


Figure C.27 — Explosion

Figure C.28 — Fire or open flame

Annex D
(informative)

Hazard avoidance pictorials

D.1 General

This annex presents examples of hazard avoidance pictorials intended for use on safety labels. Alternative hazard avoidance pictorials may be used as appropriate, and additional hazard avoidance pictorials may need to be developed.

D.2 Read the manuals

See Figures D.1 and D.2

Figure D.1 — Read operator's manual (ISO 7000-0790)

Figure D.2 — Read technical manual for proper service procedures (ISO 7000-1659)

D.3 Stay safe distance from hazard

See Figures D.3 to D.6.

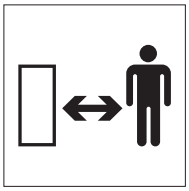


Figure D.3 — Stay safe distance from hazard — General

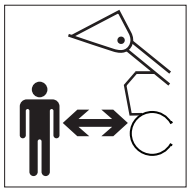


Figure D.4 — Stay clear of raised boom and bucket

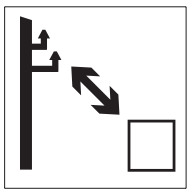


Figure D.5 — Stay safe distance from electrical power lines

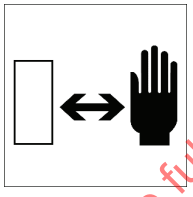


Figure D.6 — Keep hands safe distance from hazard

D.4 Secure lifting and/or locking device

See Figures D.7 to D.9.

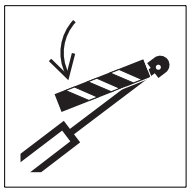


Figure D.7 — Secure lifting cylinder with locking device before getting in hazardous area

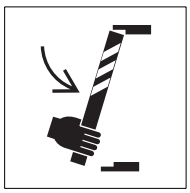


Figure D.8 — Attach support before getting in hazardous area

Figure D.9 — Insert safety lock before getting in hazardous area

D.5 Wait until all moving machine components have completely stopped

See Figure D.10.

Figure D.10 — Wait until all machine components have completely stopped before touching them

D.6 Shut off engine and remove key before maintenance or repairs

See Figure D.11 and D.12.

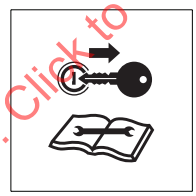


Figure D.11 — Shut off engine and remove key before performing maintenance or repair work

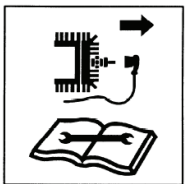


Figure D.12 — Shut off engine and remove spark plug connector before performing maintenance or repair

D.7 Always lock ROPS in upright position

See Figure D.13.

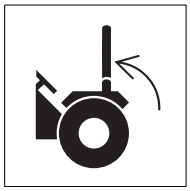


Figure D.13 — Always lock ROPS in upright position

D.8 Thrown or flying objects

See Figures D.14 and D.15.

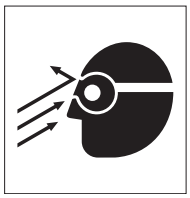


Figure D.14 — Eye protection required

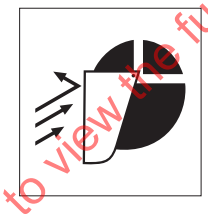


Figure D.15 — Face protection required

D.9 Wear seat belt

See Figure D.16.

Figure D.16 — Wear seat belt (ISO 7000 - 0249)

D.10 Prohibitions — General

D.10.1 No riders other than in the provided seat

See Figures D.17 and D.18.

Figure D.17 — Do not ride on platform or ladder

Figure D.18 — Do not ride on fender

D.10.2 Do not sit on this surface

See Figure D.19.

Figure D.19 — Do not sit on this surface (ISO 7010-P018)

D.10.3 Stay clear of equipment

See Figure D.20 to D.22.

Figure D.20 — Stay clear of draft link lifting range while operating rockshaft controls

Figure D.21 — Stay clear of baler gate swing area while tractor engine is running

Figure D.22 — Stay clear of raised gate unless safety lock is applied

D.10.4 Start engine from operator's seat only

See Figure D.23.

Figure D.23 — Start engine from operator's seat only

D.10.5 Do not loosen cap until cool

See Figure D.24.

Figure D.24 — Do not loosen cap until cool

D.10.6 No ether — Low temperature starting aid

See Figure D.25

Figure D.25 — No ether - Low temperature starting aid

D.11 Prohibitions – Hands and feet

D.11.1 Do not open or remove safety shields while engine is running

See Figure D.26.

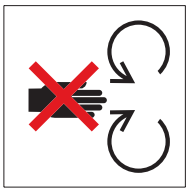


Figure D.26 — Do not open or remove safety shields while engine is running

D.11.2 Do not reach into crushing area

See Figure D.27.

Figure D.27 — Do not reach into crushing area

D.11.3 No hands

See Figure D.28.

Figure D.28 — No hands

D.11.4 Do not step (on this surface)

See Figure D.29 and D.30.

Figure D.29 — Do not step

Figure D.30 — Do not step (on this surface) (ISO 7010 – P019)

D.11.5 Do not walk or stand here

See Figure D.31.

Figure D.31 — Do not walk or stand here (ISO 7010-P024)

Annex E
(informative)

Examples of safety labels without text

E.1 General

This annex presents examples of no-text safety labels for a number of hazards. These sample safety labels are shown in the vertical configuration two-panel format (no signal panel, one hazard description panel, one hazard avoidance panel). Additional safety labels may need to be developed for other hazards.

The text description for each safety label provides a sample of explanatory text appropriate for inclusion in the operator's manual. This operator's manual text may be expanded or otherwise adapted as required for the specific use of the safety label.

E.2 Read the operator's manual

See Figure E.1.

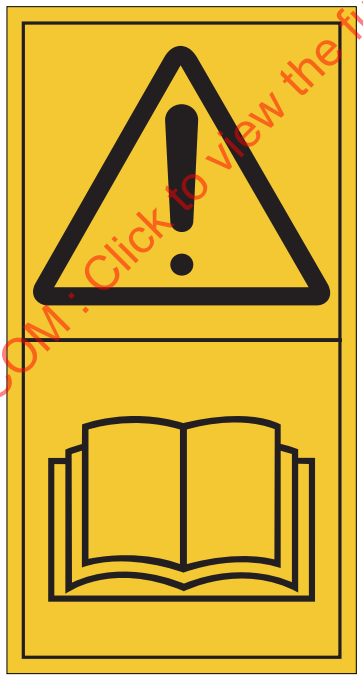


Figure E.1 — Read the operator's manual

E.3 Stay safe distance from hazard

See Figure E.2.

Figure E.2 — Stay safe distance from hazard — General

E.4 Shut off engine and remove key before performing maintenance or repair work

See Figure E.3.

Figure E.3 — General safety alert — Shut off engine and remove key before performing maintenance or repair work

E.5 Stay safe distance from electrical power lines

See Figure E.4.

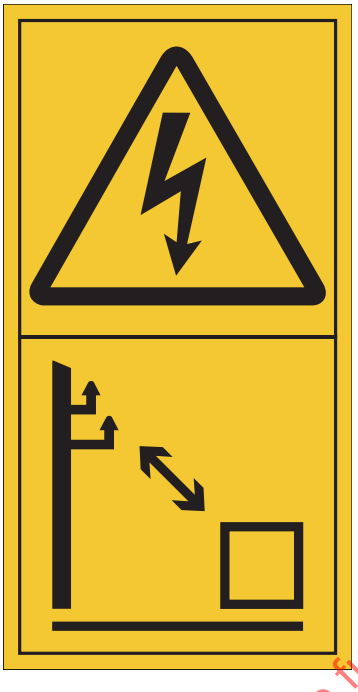


Figure E.4 — Electrical shock or electrocution — Stay safe distance from electrical power lines

Annex F
(informative)

Principles and guidelines for graphic design of hazard description and hazard avoidance pictorials

F.1 General

This annex provides principles and guidelines for good graphic design of hazard description and hazard avoidance pictorials, as well as instructions for drawing the human figure and other pictorial elements. Good consistent visual design is important for conveying the meaning of both hazard description and hazard avoidance pictorials.

F.2 Guidelines for creating pictorials

Although each safety label and hazard pictorial shall be considered on its own terms, a number of general guidelines for good pictorial design may be articulated.

— Use representational pictorials rather than abstract symbols.

— Use a solid graphical representation of human body elements or the full human figure. An outline representation may be used when depicting a person whose presence is necessary to complete the pictorial but who is not directly involved with the hazard.

— When objects, faces or the full human body are shown, use the view (generally front or side) that is most easily recognized.

— Use pictorials depicting dramatic action and showing the involvement of the human figure or body elements with the hazard.

— Use a simplified graphical representation of the machine elements that create the hazard. Use filled (solid) graphics of the hazardous machine elements, unless these filled areas detract from easy recognition of the human figure. Use outline graphics of complete machines or of substantial portions of machines to locate hazardous areas or machine elements in context.

— Be specific in depicting hazards, especially when the nature or location of the hazard is not readily apparent. Be generic in depicting hazards and hazardous situations only when generality is possible and adequately communicates the necessary information.

— Use arrows where necessary to show actual or potential movement. In some cases, movement of a machine component is implicit in the pictorial graphics and arrows need not be added. Be consistent in selecting and using alternative arrow graphics to represent different types of movement or spatial relationships: falling or flying objects, direction of motion of machine components, direction of motion of entire machines, the exertion of pressure or force, and keeping a safe distance away from a hazard. (See F.8.)

— Avoid using the prohibition symbols (diagonal cross, circle with diagonal bar) where the symbol would obscure identification of the prohibited action or where the meaning of the prohibition symbol is not explicitly clear.

— Do not use red to represent blood.

F.3 Human figure

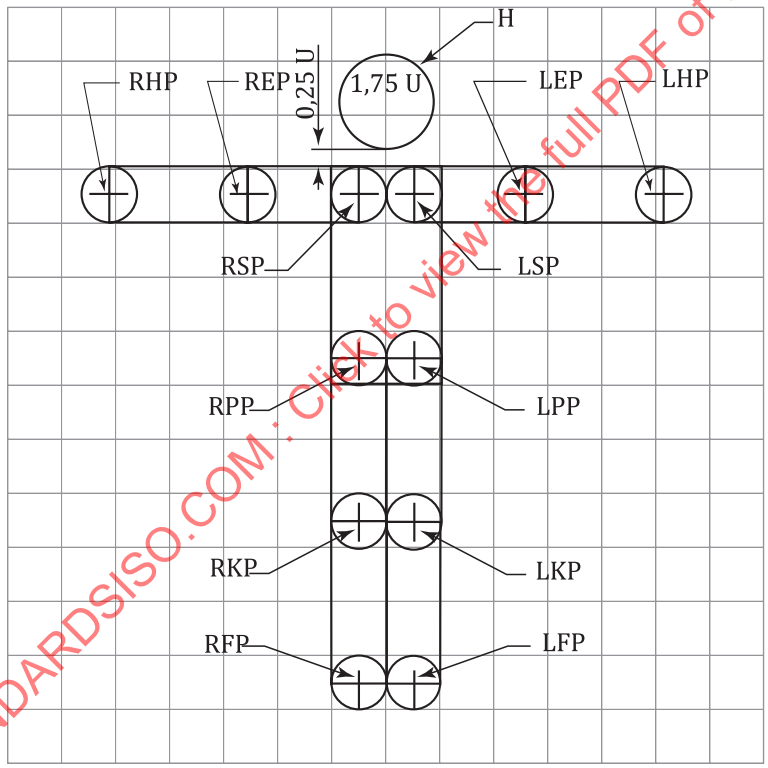
F.3.1 Drawing the basic human figure

The human figure is frequently the main component in the pictorial. Depict it in a simple but believable form. For the greatest long-range benefit, it should always be pictured consistently. Interpretation should be instantaneous and not require the viewer to study the pictorial to determine which part of the body is involved or how it is involved. The human figure presented here was designed to satisfy these specific requirements. Therefore, it should not be distorted or reproportioned, except as noted in F.3.3. Its purposes are to alert persons who see the safety label and to help avoid accidents, not to be an artistic presentation.

F.3.2 Human figure unit system

The standard pictorial figure is based on a grid system of squares of uniform size or "units." The full human figure is 12 units tall, 2 units wide at the trunk, and has a circular head 1,75 units in diameter. The precise unit measurements for drawing the figure are shown in Figure F.1. The hands and feet end in semicircles.

Dimensions in units



Key

H	head	REP	right elbow pivot
LEP	left elbow pivot	RHP	right hand pivot
LHP	left hand pivot	RSP	right shoulder pivot
LSP	left shoulder pivot	RPP	right hip pivot
LPP	left hip pivot	RKP	right knee pivot
LKP	left knee pivot	RFP	right foot pivot
LFP	left foot pivot		

Figure F.1 — Human figure unit system

F.3.3 Human figure animation

Action or movement of the figure can be depicted by using pivot points shown in Figure F.1. The unit proportions remain the same, except in situations where the overlapping of limbs causes a visual foreshortening of the limbs. When foreshortening occurs, it is compensated for by adding 0,5 unit to the limb. Figure F.2 shows the human figure in various positions. The position the figure will assume in the pictorial is usually determined by

— the nature of the hazard,

— the direction or orientation of the hazard,

— movements or positions resulting from involvement with the hazard,

— the type of injury caused by the hazard, and

— movements or positions involved in the operation of equipment.

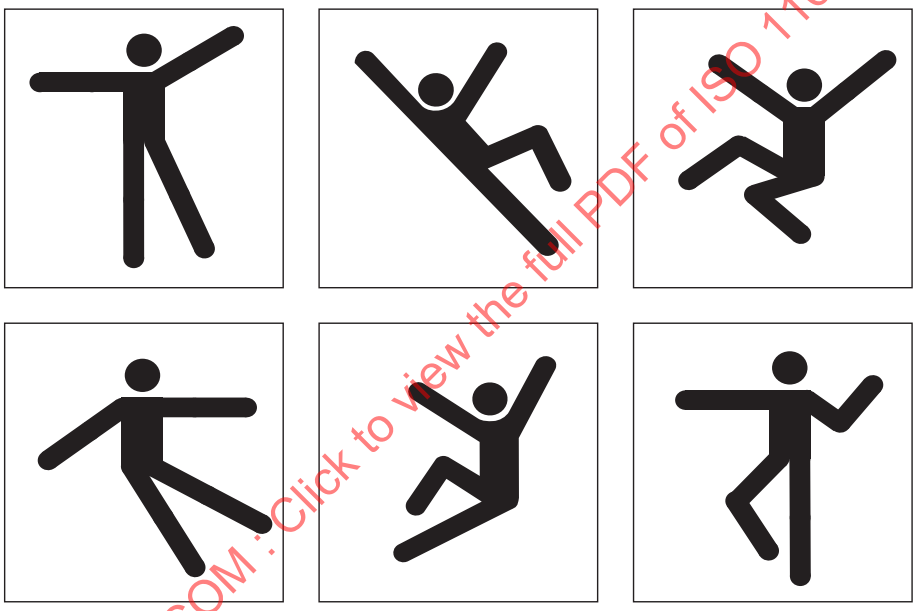


Figure F.2 — Examples of human figure animation

F.3.4 Bold representation versus outline drawing of human figure

F.3.4.1 This bold representation of the human form is more effective than a line drawing of the same human form in focusing the observer's attention on the person whose potentially hazardous situation is the subject of the pictorial. However, if more than one human figure appears in the pictorial, a person not directly exposed to the hazard may be a line drawing.

EXAMPLE The driver of a machine in a run-over hazard pictorial or a falling rider hazard pictorial.

F.3.4.2 The line drawing of a human figure should be used

— only for representing persons not directly at risk in the hazardous situation, or

— only when, by being combined with the bold human form, the combination results in a pictorial that is easier to understand and communicates better.

Figure F.3 shows a pictorial in which both line and bold drawing human forms are used.

Figure F.3 — Example of pictorial using both line and bold drawing human forms

F.3.5 Stationary, free-standing human figure (viewed from front or rear)

The standard pictorial human figure is modified when the person is depicted in a stationary, free-standing position. The IEC symbol denoting "Heavy (obese) patient — For use on medical equipment" (IEC 60417- 5391) is used as the pictorial human figure in hazard avoidance pictorials that communicate the idea of keeping a safe distance away from a hazard (see F.8.6) and in some hazard avoidance pictorials that communicate the idea of keeping away from a hazardous location (see F.9). Figure F.4 shows the stationary, free-standing human figure.

Figure F.4 — Stationary, free-standing human figure

F.3.6 Profile head

Whenever the head is involved with the hazard, the profile version is used facing either left or right. The profile head can also be used whenever the full figure or upper torso is to appear in profile to create an impression that the figure or torso itself is in the profile position. Figure F.5 gives examples of hazard pictorials that use the profile head.

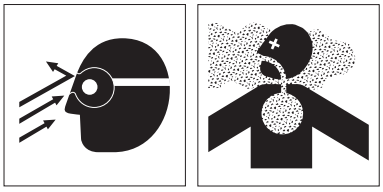


Figure F.5 — Examples of pictorials using head profile

F.4 Upper torso

Hazards that involve the arms, hands or head can best be dramatized by using the upper torso rather than the full torso. In most cases, the upper torso would appear in profile and the profile head would be used rather than the frontal or circular head. When depicted in a profile position, the upper torso can also be effective in conveying directional movement with the hazard. If hands are involved in the hazard, or if the depiction of hands would aid in visual dramatization, they should be added to the figure (see F.5.2). Figure F.6 gives examples of hazard pictorials that use the upper torso.