



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Safety of machinery - Minimum gaps to avoid crushing of parts
of the human body**

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Table of Contents

Foreword	3
Introduction	5
1 Scope	7
2 Normative references	7
3 Terms and definitions	7
4 Minimum gaps	8
4.1 Methodology for the use of this document	8
4.2 Minimum gap values	10
Annex A (Informative) Illustration of crushing zones	13

1 Scope

This document specifies minimum gaps relative to parts of the human body.

This document enables the user (e.g. standard makers, designers of machinery) to avoid hazards from crushing zones. And adequate safety can be achieved.

This document is applicable to risks from crushing hazards only.

This document is not applicable to other possible hazards, e.g. impact, shearing, drawing-in.

Note: For impact, shearing, drawing-in hazards, additional or other measures are to be taken.

2 Normative references

The contents of the following documents, through normative references in this text, constitute indispensable provisions of this document. Among them, for dated references, only the edition corresponding to that date applies to this document. For undated references, the latest edition (including all amendments)

applies to this document.

ISO 12100:2010 Safety of machinery - General principles for design - Risk assessment and risk reduction

ISO 13857 Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100, ISO 13857 and the following apply.

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

3.1 Crushing zone Zone in which the human body or parts of the human body are exposed to a crushing hazard.

Note: This hazard will be generated if - two movable parts are moving towards one another, or - one movable part is moving towards a fixed part.

See also Annex A.

4.1 Methodology for the use of this document

The method of using this document shall form part of the iterative safety strategy outlined in ISO 12100:2010, Clause 4.

The user of this document shall a) identify the crushing hazards, b) assess the risks from these hazards in accordance with ISO 12100, paying particular attention to the following:

- where it is foreseeable that the risk from a crushing hazard involves different parts of the body, the minimum gap in Table 1 relating to the largest of these parts shall be applied [see also d)];
 - the unpredictable behaviour of children and their body dimensions if children are included in the population at risk;
 - whether parts of the body can enter the crushing zone in a configuration other than those indicated in Table 1;
 - whether thick or bulky clothing (e.g. protective clothing for extreme temperatures) or tools have to be taken into account;
 - whether machinery will be used by persons wearing thick soled footwear (e.g. clogs), which will increase the effective dimension of the foot;
- c) select from Table 1 the appropriate minimum gap relating to the body part at risk (see also Annex A), and