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

GB/T 19876-2012

Replacing GB/T 19876-2005

**Safety of machinery -- Positioning of safeguards with respect to
the approach speeds of parts of the human body**

机械安全 与人体部位接近速度相关的安全防护装置的定位

(English Translation)

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Table of Contents

Preface	
Introduction	
1 Scope	
2 Normative references	
3 Terms, Definitions, Symbols and Abbreviations	
3.1 Terms and Definitions	
3.2 Symbols and Abbreviations	
4 Method	
5 General formula for system-wide shutdown performance and minimum distance calculation	
5.1 System-wide downtime performance	
5.2 Minimum distance	
6 Minimum distance calculation for electro-sensitive protective equipment using active photoelectric protection system	
6.1 Overview	
6.2 The detection area is perpendicular to the approach direction	
6.3 Detection area parallel to approach direction	
6.4 The detection area is at an angle to the approach direction	
6.5 Prevent bypassing the detection zone of electro-sensitive protective equipment and entering the danger zone	
6.6 Indirect Approach-The path from the detection area to the danger area is blocked by an obstacle	
7 Calculation method of pressure sensitive pad or pressure sensitive floor position	
7.1 Overview	
7.2 Step installation	
8 Two-hand controls	
9 Interlocking guards without guard locking	
Appendix A (Informative Appendix) Calculation Example	
Appendix B (Informative) Termination of Dangerous Machine Functions	
Appendix C (Informative) Examples of Considering Indirect Access	
Appendix D (Informative Appendix) Measurement and Calculation of System-wide Shutdown Performance	
Appendix E (informative) Number of beams and their height above the datum	
Reference	

1 Scope 1

2 Normative references 1

3 Terms, Definitions, Symbols and Abbreviations 2

3.1 Terms and Definitions 2

3.2 Symbols and Abbreviations 3

4 Method 4

5 General formula for system-wide shutdown performance and minimum distance calculation 6

5.1 System-wide downtime performance 6

5.2 Minimum distance6

6 Minimum distance calculation for electro-sensitive protective equipment using active photoelectric protection system 7

6.1 Overview 7

6.2 The detection area is perpendicular to the approach direction 7

6.3 Detection area parallel to approach direction 10

6.4 The detection area is at an angle to the approach direction 11

6.5 Prevent bypassing the detection zone of electro-sensitive protective equipment and entering the danger zone 13

6.6 Indirect Approach-The path from the detection area to the danger area is blocked by an obstacle 15

7 Calculation method of pressure sensitive pad or pressure sensitive floor position 17

7.1 Overview 17

7.2 Step installation 17

9 Interlocking guards without guard locking 17

Appendix A (Informative Appendix) Calculation Example 19

Appendix B (Informative) Termination of Dangerous Machine Functions 26

Appendix C (Informative) Examples of Considering Indirect Access 27

Appendix D (Informative Appendix) Measurement and Calculation of System-wide

Shutdown Performance 29

Appendix E (informative) Number of beams and their height above the datum 31

Reference 32

Mechanical safety related to the speed of approaching body parts Positioning of safety guards

1 Scope

This standard specifies the positioning of safety guards in relation to the approach speed of human body parts.

This standard specifies parameters based on the value of the approach speed of human body parts and provides means for actuation from detection zones or safety guards Method for determining the minimum distance to the danger zone.

Approach speed values (walking speed and upper extremity movement) in this standard have been verified by timed tests or practical experience. This standard gives Guidelines for calculating minimum distances for typical approaches. This standard does not consider other forms of approach, such as running, jumping or falling.

Note 1: Other forms of approach can lead to approach speeds higher or lower than the values specified in this standard.

Safety guards considered in this standard include.

a) Electro-sensitive protective equipment [see IEC 61496 (all parts)], including.

--- Light curtains and light grids (AOPDs);

--- Laser scanners (AOPDDRs) and 2D vision systems;

b) Pressure-sensitive protective devices (see GB/T 17454.1, GB/T 17454.2, GB/T 17454.3), especially pressure-sensitive pads;

c) Two-hand operating device (see GB/T 19671);

d) Interlocking guards without guard locking (see GB/T 18831).

This standard specifies the hazards arising from the detection zone, detection surface, detection line, detection point or entry point of an interlocking guard to the moving parts of the machine.

(e.g. crushing, shearing, entanglement) distance to the danger zone.

This standard applies to machinery defined in GB/T 15706.

This standard does not apply to protection against risks posed by hazards arising from flying solid or fluid materials, emissions, radiation or electricity.

Note 2: When determining the invasive distance "C" value in the formula, the anthropometric data between the 5th and 95th percentiles of people aged 14 and over were used.

Note 3: The data in this standard is based on industrial experience; if this standard is used for non-industrial purposes, it is the designer's responsibility to take this into account.

Note 4: This standard does not use data specifically for children. Until specific data on the child's approach speed are available, designers have the responsibility takes into account that the child may be detected sooner or the child may enter the danger zone before being detected.

This standard does not apply to safety guards (such as suspended hanging two-hand control).

The minimum distances derived in accordance with this standard do not apply to detection in areas already protected by guards or electro-sensitive protective equipment.

Safety guards in the absence of human presence.

2 Normative references the following documents are essential for the application of this document. For dated references, only the dated version applies to this article pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 15706-2012 General Principles of Mechanical Safety Design Risk Assessment and Risk Reduction (ISO 12100:2010, IDT) GB 23821-2009 Safety of machinery to prevent the upper and lower limbs from touching the safety distance of the danger zone (ISO 13857:2008, IDT) IEC 61496-1:2004 Safety of machinery electro-sensitive protective equipment - Part 1: General requirements and tests
(Safetyofmachinery-Electro-sensitiveprotectiveequipment-Part 1: Generalrequirementsandtests)

3 Terms, Definitions, Symbols and Abbreviations

3.1 Terms and Definitions GB/T 15706 as well as the following terms and definitions apply to this document.

3.1.1

actuation

Physical actuation when a safety guard detects a human body or a body part.

3.1.2

overallsystemstoppingperformance Time interval between actuation of the sensing function and termination of the hazardous machine function.

Note: Adapted from IEC 61496-1:2004 3.1.3 detectioncapability Supplier-specified limits for sensing function parameters that cause actuation of protective devices.

[IEC/T S62046.2004, 3.1.2] 3.1.4 electro-sensitiveprotectiveequipment ESPE an integration