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

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**Robotics - Safety design for industrial robot systems - Part 2:
Manual load/unload stations**

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1. Structure and Drafting Rules of Standardization Documents"

Drafting.

This document is Part 2 of GB /Z 43065 "Safety Design of Robotic Industrial Robot Systems". GB /Z 43065 has been released

The following sections are included.

---Part 1; End effector;

---Part 2. Manually load/unload the workstation.

This document is equivalent to ISO /T R20218-2.2017 "Safety Design of Robotic Industrial Robot Systems Part 2. Manual Installation"

Load/Unload Workstation". The document type was adjusted from ISO technical report to my country's national standardization guiding technical document.

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

Introduction

The purpose of manual loading/unloading workstations is to allow operators to interact directly with industrial robotic systems, for example, to feed materials in or out

Robot cell. The layout of the robot cell is designed to provide a hazard-free work area and reduce the risk of evading or violating the designed safety

Protective motives.

This document is a supplement to the safety requirements for industrial robot systems specified in 5.10.6 of GB 11291.2-2013. it is height lower than

The 1400mm manual loading/unloading workstation provides additional guidance to allow working in an ergonomic manner while maintaining

safety, and provide guidance on alternative methods of obstructing access to the robotic cell. ISO 14738, ISO 6385 and GB 11291.2-2013

Appendix A provides additional information on potential ergonomic hazards.

Note. GB 11291.2-2013 stipulates in 5.10.6 that the minimum height of the boundary guard (distance guard) needs to be 1400mm. If risk assessment

The results determined that due to the design of the manual loading/unloading workstation, this document provides

An alternative design is provided that provides the same level of operator protection as GB 11291.2-2013.

Implementation of GB 11291.2-2013 requires a comprehensive risk assessment to identify issues related to the manual loading/unloading process of workstations.

All dangers. This document provides guidance on reducing operator risk. Risk assessments need to consider foreseeable misuse and provide mitigation measures.

GB /Z 43065 "Safety Design of Robotic Industrial Robot Systems" aims to provide additional safety for industrial robot system integration

The guidance is intended to consist of two parts.

---Part 1. End effector. The purpose is to provide guidance on safety measures for the design and integration of end-effectors in robotic systems.

---Part 2. Manually load/unload the workstation. The purpose is to provide guidance on the design and safety of manual loading/unloading workstations.

Safety design of robotic industrial robot systems

Part 2. Manually Load/Unload the Workstation

1 Scope

This document applies to the application of manual loading/unloading workstations in robotic systems, providing safety protection by preventing entry into hazardous areas. right

For this type of application, it is important to consider hazardous area access restrictions and ergonomic workplace needs.

This document is a supplement to GB 11291.2-2013 and provides information on the

design and installation of safety protection manual loading/unloading workstation devices.
Additional information and guidance to reduce the risk of intrusion into hazardous areas.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations

For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to

this document.

GB 11291.2-2013 Safety Requirements for Robots and Robot Equipment Industrial Robots Part 2.Robot Systems and Integration

into (ISO 10218-2.2011, IDT)

ISO 10218-1.2011 Robots and robotic equipment Safety requirements for industrial robots Part 1.Robots

Note. GB 11291.1-2011 Safety requirements for robots used in industrial environments Part 1.Robots (ISO 10218-1.2006, ISO 10218-1/

Cor.1.2007,IDT)

ISO 12100 Safety of machinery-General risk assessment and risk reduction (Safetyofmachinery-General

Note. GB/T 15706-2012 General principles for mechanical safety design risk assessment and risk reduction (ISO 12100.2010, IDT)

3 Terms and definitions

The following terms and definitions as defined in GB 11291.2-2013, ISO 10218-1.2011 and ISO 12100 apply to this document.

ISO and IEC maintain the following terminology databases for standardization at the following URL.

3.1

blocking device impedingdevice

Physical obstacles (low barriers, railings, fixtures, etc.) cannot completely prevent people from entering the danger zone, but they can be set up to prevent people from entering the danger zone.

Obstacles block free access and reduce the probability of entering the danger zone.

[Source. GB/T 15706-2012,3.29]

3.2

Manual load/unloadstationmanualload/unloadstation

A part of a robotic system designed for direct human intervention to place and remove parts or components handled by the robotic system

artifact.