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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 1: End-effectors

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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 1 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 R20218-1.2018 "Safety design of robot industrial robot systems Part 1.End execution

Traveling Equipment". The document type was adjusted from ISO technical report to my country's national standardization guiding technical document.

This document has made the following minimal editorial changes.

--- Added statements mentioning Table C.1 and Table D.1.

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

This document applies to industrial robot systems described in GB 11291.2-2013 and GB/T 36008-2018.

This document provides guidance for end effectors in industrial robotic systems, including when the robot system and operator share the same workspace.

collaborative applications. In such collaborative applications, the design of the end effector is very important, especially the shape, surface and application functionality (e.g. clamping

Tightening force, residual material generation, temperature) and other characteristics.

GB 11291.2-2013 requires a comprehensive risk assessment of industrial robot systems. This document provides information on the end effector

Additional guidance may be helpful when conducting risk assessments in accordance with GB 11291.2-2013.

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 1.End Effector

1 Scope

This document provides guidance on safety measures for the design and integration of end-effectors in robotic systems. Integration includes the following.

---Manufacturing, design and integration of end effectors;

---Necessary usage information.

This document provides additional safety guidance regarding robot system integration, as described in GB 11291.2-2013.

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)

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

GB/T 19400-2003 Industrial robot grasping gripper object handling vocabulary and characteristic representation (ISO 14539.

2000,IDT)

GB/T 36008-2018 Robots and robot equipment collaborative robots (ISO /T S15066.2016, 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)

Note. GB/T 17887-1999 Industrial robot end effector automatic replacement system vocabulary and characteristic representation (eqvISO 11593.1996)

3 Terms and definitions

GB 11291.2-2013, GB/T 15706-2012, GB/T 19400-2003, GB/T 36008-2018, ISO 10218-1.

2011, ISO 11593 and the following terms and definitions apply to this document.

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

3.1

compliant

The deformation exhibited by a material or mechanism when a force is applied to it.

Examples. compliant links, compliant surfaces.