

ICS 25.040.30

CCS J28



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

GB 11291.1-2011

**Robots for industrial environments - Safety requirements - Part
1: Robot**

工业环境用机器人 安全要求 第1部分：机器人

(English Translation)

Issued on: May 12, 2011

Implemented on: October 1, 2011

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China;
Standardization Administration of China**

Table of Contents

1 Scope	1
2 Normative references	1

Foreword

All technical content in this section is mandatory.

GB 11291 "Robots for industrial environments - Safety requirements" is divided into the following sections.

--- Part 1.Robot;

--- Part 2.Robot systems and integration.

This is Part 1 GB 11291's.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This Part replaces GB 11291-1997 "industrial robot safety norms."

This section of the main changes compared to GB 11291-1997 are as follows.

--- This section updated some files to make them more in line with GB/T 15706-2007 and comply with the requirements of the use of Class C standard check

Testing requirements and corresponding hazards.

--- This section increased (but not limited to) new technical requirements, including those related to security control system performance, the robot stop work

You can enable the device, program verification, wireless teach pendant guidelines, joint control, collaborative robots guidelines, and the latest design safety

specification.

This section identical with the international standard ISO 10218-1:2006 "Safety requirements for industrial environments - Part 1 robot. robot"

(English version) and ISO 10218-1/Cor.1:2007 (revised English edition).

For ease of use, this part of the editorial changes as follows.

--- Uppercase acronym in English formerly reserved to remove ISO foreword;

--- ISO 10218 will be changed to "GB 11291" and "" Robots for industrial environments - Safety requirements "; will the "international standards" and

ISO 10218-1 words "this section" and "GB 11291.1";

--- The Normative documents have been translated into national standards with international standards Renumber national standard number, and the corresponding national

International standards adopted standard version number placed in parentheses after the number of national standards, ease of use and access; unconverted international standards Approved leave;

--- Deletion of the original text does not meet the standard of written words.

Correspondence between the consistency of the standards of international documents and normative references of the following documents.

--- GB/T 12642-2001 industrial robot performance specifications and test methods (eqvISO 9283.1998);

--- GB 16754-2008 Safety of machinery - Emergency stop design principles (ISO 13850.2006, IDT);

--- GB/T 19876-2005 Safety of machinery and parts of the body close to the speed of the positioning of protective equipment (ISO 13855.

2002, MOD).

This part is proposed by China Machinery Industry Federation.

This part of the automation systems and integration by the National Standardization Technical Committee (SAC/TC159) centralized.

This section is drafted. Beijing Machinery Industry Automation, Beijing University of Aeronautics and Astronautics.

introduction

GB 11291 is based on the recognition of industrial robots and industrial robot systems can lead to specific risks basis.

GB 11291 is GB/T 15706.1-2007 standard Class C said.

Note the machine, the level of risk, hazard and incident involved have been described in the context of GB 11291.

Class C and Class A standard Class B standard or standards are different. For Class C in accordance with the standard design and manufacture of machinery, Class C standard terms

Precedence over other standard terms.

Related dangerous robot has been widely recognized. However, the use of different sources of danger robot system is often different, so the type of risk

The automation process is directly related to the number and complexity of the robot installation. Depending on the type of robot use, purpose of use of the robot,

Risks associated with the robot installation, programming, operation and maintenance of different ways, leading to the danger of these are different.

Note 1: Not all danger described in GB 11291 are applicable to each robot. Similarly, the level of risk of a particular dangerous situations in different machine

It is the world may differ. Thus, the provisions in GB 11291 safety requirements and/or protective measures for different robots may vary

With, then it can carry out a risk assessment to determine what protective measures.

In recognition of industrial robots for different purposes have different hazardous properties, GB 11291 is divided into two parts; Part 1 provides

Security assurances guidance recommends that when designing and manufacturing the robot. Since the industrial robot application security by a particular robotic system integration

Influence in the design and application, Part 2 will provide the robot integration, installation, functional testing, programming, operation, maintenance and repair of the people engaged in

Members of security guidelines.

Note 2: Since the industrial environment, noise is generally considered to be a hazard, in line with the provisions of 3.18 robot can not be considered the final product. The accord

3.20 robot system is defined taking into account noise hazard machine. Thus, in Section 2 GB 11291 of the regulations at the noise hazard

Management measures.

Robots for industrial environments - Safety requirements

Part 1.Robots

1 Scope

GB 11291 of the provisions of this part of the industrial robot (defined in Chapter 3) of the basic security design, protection measures and the use of information

The requirements and guidelines. Describe industrial robots basic hazard related, and proposes to eliminate or substantially reduce the risk of these requirements.

Noise as a potential hazard in this section do not relate, but are included in Section 2 GB 11291's.

GB 11291 This part is suitable for industrial robots. Although the "Robots for industrial environments - Safety requirements" established safety principles can

Other types of robots can be used, but this does not apply to non-industrial robots.

Examples of non-industrial robot including (but not limited to

In). Underwater, military and space robots, robot remote control assistive devices, prosthetics and other physically handicapped persons, micro-robots (displacement range

Wai < 1mm), surgery or rehabilitation robots, and service and consumer robots.

Note 1: The industrial robot system integration and installation requirements are contained in Part 2.

Note 2: The special applications (welding, laser cutting, machining, etc.) may produce additional hazards in these dangerous design of the robot may need to be considered.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein

Member. For undated references, the latest edition (including any amendments) applies to this document.

GB 5226.1-2008 Safety of machinery - Electrical machinery and electrical equipment - Part 1.General requirements (IEC 60204-1.2005,

IDT)

GB/T 15706.1-2007 Safety of machinery - Basic concepts, general principles for design - Part 1.Basic terminology, methodology

(ISO 12100-1.2003, IDT)

GB/T 15706.2-2007 Safety of machinery - Basic concepts, general principles for design - Part 2.Technical principles (ISO 12100-2.

2003, IDT)

GB/T 16855.1-2008 Safety of machinery - Safety-related control system components - Part 1.General principles for design (ISO 13849-1.

2006, IDT)

GB/T 17799.2-2003 Electromagnetic compatibility - Generic standards - Immunity for industrial environments (IEC 61000-6-2.1999,

IDT)