

National Standards of the People's Republic of China

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Safety of Machine Tools - Large Numerically Controlled Turning Machines and
Turning Centres

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Preface

Clauses 5.3.1 and 5.3.3 of this standard are recommended while the others are mandatory.

This standard has been adopted by revising EN 12478: 2000 Safety of Machine Tools - Large Numerically Controlled Turning Machines and Turning Centres (English version).

This standard has been re-drafted on the basis of EN 12478: 2000.

The main technical differences between this standard and EN 12478: 2000 are as follows:

- “This standard can be used as a reference for simple numerically controlled turning machines” has been added in Chapter 1;
- “This standard applies to machines which are manufactured after the implementation date of this standard” has been deleted in Chapter 1;
- Chapter 7 “Concerning GB 15760-2004” has been added.

For convenience of use some editorial changes have been made:

- The term “this European standard” has been changed to “this standard”;
- The foreword of EN 12478:2000 has been deleted;
- For the international and European standards referenced in EN 12478:2000, those adopted in China have been replaced by their corresponding standards in China and those not adopted in China have been quoted directly;
- “Annex ZA” in EN 12478 has been changed to “Annex B” in this standard.

The transition period for products designed and manufactured prior to date/month/200x is 12 months. From date/month/200x products that do not comply with this standard may not be sold on the market.

Appendix A to this standard is a specification appendix and Appendix B is an information appendix.

This standard was proposed by the Machine Industry Association of China.

This standard is under the jurisdiction of the National Metal Cutting Machine Standardisation Technical Committee (SAC/TC22).

The organisation in charge of drafting this standard was the Beijing Machine Tool Research Institute.

The main drafters of this standard were Zhang Wei, Li Xiangwen and Zhao Qinzhi.

This is the first issue of this standard.

Introduction

This standard has been drawn up in accordance with EN 12478: 2000. The European coordinating standard EN 12478: 2000 primarily lays down the basic safety requirements of the compulsory machine directives and the implementation measures of the related EFTA regulations.

This standard is classified as a Category C safety standard as defined by GB/T 15706.2-1995.

The scope of hazards covered by this standard is defined in the Article on Scope. The hazards beyond the consideration of this standard can be dealt with by the safety protection measures in accordance with the relevant regulations in GB/T 15706.1-1995 and GB/T 15706.2-1995.

The users of this standard are machine tool designers, manufacturers, sellers and importers.

This standard also includes the safety information provided by manufacturers for end-users.

Safety of Machine Tools - Large Numerically Controlled Turning Machines and Turning Centres

1 Scope

This standard sets the safety requirements and/or measures for general numerically controlled turning machines and turning centres (hereunder referred to as turning machines) to eliminate hazards and reduce risks.

The hazards identified by this standard are listed in Table 1 of Article 4.

This standard applies to:

- Numerically controlled large vertical turning machines and turning centres with clamping devices with an outside diameter exceeding 500 mm;
- Numerically controlled horizontal spindle turning machines and turning centres with a distance between centres exceeding 2000 mm and clamping devices with an outside diameter exceeding 500 mm.

This standard also applies to the component parts of whole machine tools, such as workpieces, cutting tools, chucks, workpiece loading and unloading devices and scrap discharging devices.

This standard also applies to individual lathes or turning machines in automatic production lines when the hazards and risks they cause are similar to those produced during the individual machine tool's operation.

The additional methods outlined in this standard are based on the reference standards.

This standard does not apply to manually controlled NC turning machines (without programmable controllers) as defined in EN 12840: 2000.

This standard can be used as a reference for simple numerically controlled turning machines.

2 Normative References

The provisions of the following documents become provisions of this standard after being referenced. For dated reference documents, all later amendments (excluding corrigenda) and versions do not apply to this standard; however, the parties to the agreement are encouraged to study whether the latest versions of these documents are applicable. For undated reference documents, the latest versions apply to this standard.

GB/T 3767-1996	Acoustic – Determination of sound power levels of noise sources using sound pressure - engineering method in an essentially free field over a reflecting plane (eqv ISO 3744:1995)
GB/T 3768-1996	Acoustics - Determination of sound power levels of noise sources using sound pressure - survey method using an enveloping measurement surface over a reflecting plane

	(eqv ISO 3746:1995)
GB 4209-1993	Protection Cover Grade (IP code) (eqv IEC 60529□1989)
GB 5226.1-2002	Machinery Safety – Part 1 of Machinery Electrical equipment: General Technical Conditions (IEC 60204-1□2000□IDT)
GB 7247.1:2001	Laser Product – Part 1 of Safety: Equipment Classification, Requirements and User Guidelines (eqv IEC 60825□1□1993)
GB/T 8196-2003	Safety of machinery – Guards - General requirements for the design and construction of fixed and movable guards (ISO 14120:2002□MOD)
GB 12265.1-1997	Safety of machinery - Safety distances to prevent hazardous zones being reached by the upper limbs (eqv EN 294□1992)
GB 12265.3-1997	Safety of machinery - Minimum gaps to avoid crushing of parts of the human body (eqv EN 349□1993)
GB/T 15706.1-1995	Safety of machinery - Basic concept, general principles for design - Part 1: Basic terminology, methodology (eqv ISO/TR 12100-1□1992)
GB/T 15706.2-1995	Safety of machinery - Basic concepts, general principles for design Part 2: Technical principles and specifications (eqv ISO/TR 12100-2□1992)
GB 15760-2004	Metal-cutting machine tools - General safeguarding specification
GB/T 16404-1996	Acoustics - Determination of sound power levels of noise sources using sound intensity Part 1: Measurement at discrete points (eqv ISO 9614-1:1995)
GB 16754-1997	Safety of machinery - Emergency stop - principles for design (eqv ISO/IEC 13850□1995)
GB/T 16855.1-2005	Safety of machinery – Safety related parts of control systems Part1: General principles for design (eqv prEN 954-1□1994)
GB/T 16856-1997	Safety of machinery - Principles for risk assessment (eqv prEN 1050□1994)
GB/T 17248.3-1999	Acoustics - Noise emitted by machinery and equipment - Measurement of emission sound pressure levels at a work station and at other specified positions - Survey method in situ (eqv ISO 11202:1995)
GB/T 17248.5-1999	Acoustics--Noise emitted by machinery and equipment-- Measurement of emission sound pressure levels at a work station and at other specified positions - Method requiring environmental corrections (eqv ISO 11204:1995)
GB/T 17454.1-1998	Safety of machinery - Pressure sensitive protective device Part 1: General principles for design and testing of pressure sensitive mats and pressure sensitive floors (eqv EN 1760-1:1997)

GB 17888.1-1999	Safety of machinery - Permanent means of access to machines and industrial plants Part 1: Choice of fixed means of access between two levels (eqv ISO/DIS 14122-1□1996)
GB 17888.2-1999	Safety of machinery – Permanent means of access to machines and industrial plants Part 2: Working platforms and gangways (eqv ISO/DIS 14122-2□1996)
GB 17888.3-1999	Safety of machinery – Permanent means of access to machines and industrial plants - Part 3: Stairways, stepladders and guard-rails (eqv ISO/DIS 14122-3□1996)
GB 17888.4-1999	Safety of machinery - Permanent means of access to machines and industrial plants - Part 4: Fixed ladders (eqv ISO/DIS 14122-4□1996)
GB/T 18717.1-2002	Ergonomic design for safety of machinery Part 1: Principles for determining the dimensions required for openings for whole-body access into machinery (ISO 15534-1□2000□NEQ)
GB/T 18717.2-2002	Ergonomic design for safety of machinery Part 2: Principles for determining the dimensions required for openings for access of parts of the body into machinery (ISO 15534-2□2000□NEQ)
GB/T 18831-2002	Safety of machinery - Interlocking devices associated with guards - principles for design and selection (ISO 14119□1998, MOD)
GB/T 19670-2005	Safety of machinery - Prevention of unexpected start-up (ISO 14118:2000, MOD)
GB/T 19671-2005	Safety of machinery - Two-hand control devices - functional aspects and design principles (ISO 13851:2002, MOD)
ISO 11688-1:1998	Acoustics - Recommended practice for the design of low-noise machinery and equipment Part 1: Planning
EN 292-2/A1:1995	Machinery safety basic concept and general design rule – Part 2: Technical principles and specifications
EN 614-1:1995	Safety of machinery - Ergonomic design principles - Part 1: Terminology and general principles
EN 614-2:2000	Safety of machinery - Ergonomic design principles - Part 2: Interactions between the design of machinery and work tasks
EN 894-1:1997	Safety of machinery - Ergonomic requirements for the design of displays and control actuators - Part 1: General principles for human interactions with displays and control actuators
EN 894-2:1997	Safety of machinery - Ergonomics requirements for the design of displays and control actuators - Part 2: Displays
EN 894-3:2000	Safety of machinery - Ergonomics requirements for the design of displays and control actuators - Part 3: Control actuators
EN 982:1996	Safety of machinery - Safety requirements for fluid power systems and their components - Hydraulics

EN 983:1996	Safety of machinery - Safety requirements for fluid power systems and their components - Pneumatics
EN 1005□1:2001	Safety of machinery - Human physical performance - Part 1: Terms and definitions
EN 1005□2:2003	Safety of machinery - Human physical performance - Part 2: Manual handling of machinery and component parts of machinery
EN 1005□3:2002	Safety of machinery - Human physical performance - Part 3: Recommended force limits for machinery operation
prEN 1005□4:2002	Safety of machinery - Human physical performance - Part 4: Evaluation of machinery operating posture
EN 1070:1998	Safety of machinery - Terminology
EN 1550:1997	Machine tool safety - Safety requirements for the design and construction of work holding chucks
EN 1837:1999	Safety of machinery - Integral lighting of machines
EN 12840:2000	Machine tool safety - Manually operated turning machines
ENV 26385:1990	Ergonomic principles of the design of work systems

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7 About GB 15760-2004

The content of GB 15760-2004 which has not been included in this standard should still conform to the provisions of GB 15760-2004.