

ICS 25.100.70

CCS C68



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

GB 4674-2009

Replacing GB 4674-1984

Safety code for grinding machines

磨削机械安全规程

Issued on: March 31, 2009

Implemented on: December 1, 2009

**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
- 2 Normative references
- 3 Safety requirements for the design and
 - 3.1 General requirements
 - 3.3 Grinding wheel chuck
- 4 Safety requirements for the use of grinding machines...
- 5 Management and maintenance of grinding machines...
- 8 Fine grinding H13 e

Foreword

All contents of this Standard are compulsory. This Standard is the revision of GB 4674-1984. Compared with GB 4674-1984, the main changes of this Standard are as follows: -- "Foreword" is added; -- "Introduction" is revised to be "Scope" (Chapter 1 of edition-1984; Chapter 1 of this edition); -- The Chapter "Normative reference" is added (see Chapter 2 of this edition); -- The general requirements for design and manufacture of grinding machines are added (

3.1 of this edition); --

2.2.1 of edition-1984 is revised to be "the grinding wheel spindle shall be designed to be able to operate with the maximum allowable load" (

2.2.1 of edition-1984;

3.2.1 of this edition); -- The requirements for clamp nuts of grinding wheel spindle are added (

3.4 of this edition); -- Regulations for marks of grinding machines are added (

3.14 of this edition); -- Regulations of modification, reformation and parts replacement for grinding machines are deleted (

2.13 of edition-1984); -- The requirements for grinding wheel checking are revised. the mark checking is added (

3.1.1 of edition-1984,

4.1.1.1 of this edition); -- Requirements for compaction of grinding wheel and grinding wheel chuck are revised, which stipulates that the pad shall totally cover the contacting surface of the grinding wheel chuck (

3.3.3 of edition-1984,

4.3.2 of this edition); -- The requirements for grinding wheel carrying are revised; add the stipulation that "the marks printed with grinding wheel features and safety speed shall not be smeared or damaged without permission" (

4.1 of edition-1984,

5.1 of this edition); -- The stipulation "changing grinding machines' structure and performance are strictly prohibited without the approval of chief engineer" is deleted (

1 Scope

GB 4674-2009 is the Chinese national standard on safety code for grinding machines, in the field of manufacturing engineering. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 31 March 2009 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 December 2009. Classification: ICS 25.100.70, CCS C68. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This Standard stipulates the safety technical requirements in design and manufacture, use, management and maintenance of grinding machines. This Standard applies to the grinding machines that use grinding wheel or grinding segment to conduce manual, mechanical or automatic process. This Standard does not apply to grinding processing machines that use grinding head with a handle, coated abrasive tools, oilstone and grinding paste.

2 Normative references

The articles contained in the following documents have become part of this Standard when they are quoted herein. For the dated documents so quoted, all the modifications (excluding corrections) or revisions made thereafter shall not be applicable to this Standard. For the undated documents so quoted, the latest editions shall be applicable to this Standard.

GB/T 6171 Hexagon nuts, style 1, with fine pitch thread (eqv ISO 8673.1999)

GB 12348 Emission standard for industrial enterprises noise at boundary

GB/T 16769 Metal-cutting machine tools - Measurement method of sound pressure level (neq ISO/DIS 230-5-2.1996)

JB/T 9878 Measurement of dust concentration of metal-cutting machine tool

3 Safety requirements for the design and

manufacture of grinding machines

3.1 General requirements

3.1.1 The design shall, as possible, eliminate or reduce all potential dangerous factors.

3.1.2 Necessary safety devices shall be adopted, in case of dangers that cannot be avoided or fully restrained through design. Table

1 The matching of grinding wheel hole diameter and the grinding wheel spindle or grinding wheel chuck (mm) Grinding wheel hole diameter Diameter of grinding wheel spindle or grinding wheel chuck Grinding methods H11 f

7 Mirror-surface grinding, thread grinding, and high-speed grinding with running speed >45 m/s H12 e

3.3 Grinding wheel chuck

3.3.1 The diameter of grinding wheel chuck shall not be less than 1/3 of that of the grinding wheel. The diameter of the grinding wheel chuck for cutting-off wheel shall not be less than 1/4 of that of the grinding wheel.

3.3.2 For any form of grinding wheel chuck, the diameter of its left-right sides shall equal the radial width of the compaction surface.

3.3.3 The grinding wheel chuck shall be able to reliably transmit the driving force to the grinding wheel.

3.3.4 The grinding wheel chuck shall have enough stiffness to ensure that the compaction surface is flat and evenly contacted after being compacted.

3.3.5 There shall be enough space at the non-contacting parts between the grinding wheel chuck and the two sides of the grinding wheel; and the minimum size of the space shall be 1.5mm.

3.3.6 Each surface of the grinding wheel chuck shall be smooth and without sharp edges, and have good dynamic balance performance.

3.3.7 Grinding wheel chuck can be divided into.

a) Groove-type (Figure 2a). It is used to install grinding wheel that has a small hole diameter and is directly mounted on the grinding wheel spindle.

b) Sleeve-type (Figure 2b). It is used to install grinding wheel with a large hole diameter.

c) Liner-type (Figure 2c). It is used to install grinding wheel with a large hole diameter and with thickness more than 32cm.

d) Cone-type (Figure 2d). It is used to install double bevel frame grinding wheel. verification. Shield of grinding wheel with operating speed less than or equal to 40 m/s can also select other materials, but their strength shall not be less than the value specified in this Standard.

3.5.11 The upper end of the shield opening shall be equipped with an adjustable guard plate to adjust the clearance between the guard plate and peripheral surface according to the abrasion of the grinding wheel. The guard plate shall be fixed on the grinding wheel shield; the binding strength shall not be lower than that of the components of the grinding wheel shield; the guard plate width shall be larger than that of the outer circle part of the grinding wheel shield. When the shield's opening angle above the level of the grinding wheel spindle center line is less than 30° , the guard plate does not have to be installed.

3.5.12 The clearance between the grinding wheel's peripheral surface and the adjustable guard plate edge shall be less than 6 mm. During the installation of the grinding wheel with the maximum design thickness, the clearance between the outer side surface of the grinding wheel chuck and the opening edge of the grinding wheel shield shall be less than 15 mm. The clearance between the inner wall of the annular-band-type grinding wheel shield and the peripheral surface of the grinding wheel shall not be more than 15 mm. Grinding machines with the grinding wheel rotation center line in the same direction of the operator's facing direction can be exempted from 6-mm clearance regulation. When the shield's opening angle above the level of the grinding wheel spindle center line is less than 30° , the 6-mm clearance does not have to be guaranteed.

3.6 The rotation direction shall be marked on the spindle of the grinding machine, and the mark shall be visible and can remain visible for long-time.