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Flanges for mounting grinding wheels on grinding machine tools —

**Part 2: Specification for dimensions and
materials of flanges for grinding wheels
of less than 76.2 mm bore**

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- Ball and Roller Bearing Manufacturers' Association
- Control and Automation Manufacturers' Association (BEAMA)
- Department of Industry (Mechanical Engineering)
- Federation of British Engineers' Tool Manufacturers
- Health and Safety Executive
- Institution of Production Engineers
- Machine Tool Industry Research Association
- Ministry of Defence
- University of Aston in Birmingham
- University of Manchester Institute of Science and Technology

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Foreword

This Part of this British Standard has been prepared under the direction of the Mechanical Engineering Standards Committee and is based on a draft prepared by the Machine Tool Industry Research Association. The dimensions in this standard take into account the results of tests carried out by MTIRA on steel straight recessed flanges to determine the pressure distribution across the gripping area of the flange. Results obtained with flanges manufactured to “worst-case” dimensions have been similar to the pressure distributions for flanges specified in BS 4581-1 and ISO 666:1975 “*Machine tools — Mounting of plain grinding wheels by means of hub flanges*”, the latter standard having been published by the International Organization for Standardization (ISO).

This standard defines the leading dimensions of flange geometry that are considered consistent with a satisfactory pressure distribution over the clamping annulus (gripping face of a flange).

It cannot be too strongly emphasized that this specification gives certain principal dimensions only. The safe use of grinding wheels depends not only on the correct application of these dimensions in the design and manufacture of machines and of grinding wheels, but also to a very great extent on their proper assembly and use. Attention is drawn to The Abrasive Wheels Regulations (Statutory Instrument 1970 Number 535) published by HMSO. Further advice on the relevant statutory requirements may be obtained from the Health and Safety Executive.

Flanges for mounting grinding wheels of 76.2 mm bore or over are specified in BS 4581-1.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This Part of BS 4581 specifies the principal dimensions of flanges for mounting grinding wheels of less than 76.2 mm bore on grinding machine tools. The flanges are primarily intended for use with grinding wheels selected from BS 4481-2 as listed in Table 1 but criteria for the use of other grinding wheels are given in Appendix A. Requirements for materials are also specified.

The flanges are intended for use with plain wheels for external cylindrical grinding, plain wheels for surface grinding, grinding wheels for tool and cutter grinding, including plain wheels, straight cup wheels, taper cup wheels and dish wheels, and grinding wheels for cutting off.

This Part of this standard is not applicable to the mounting of wheels on hand-held machines nor to the mounting of wheels on bench grinders.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this British Standard, the following definitions apply.

2.1

machine tool

a power-driven machine, not portable by hand while in operation, which works metal by cutting, forming, physico/chemical processing, or a combination of these techniques

NOTE This definition is taken from BS 4640.

2.2

fixed flange

a flange that is secured to the spindle or hub in service in such a way that it need not be removed from the hub for purposes of changing the grinding wheel (see Figure 1 to Figure 4)

NOTE A fixed flange, if a separate item, may be secured to the spindle by means of a key, interference fit, taper or thread, or a combination of these, depending on the design of the flange assembly. Alternatively, the fixed flange may be integral with a hub.

2.3

loose flange

a flange that is removable from the hub or spindle for purposes of changing the grinding wheel (see Figure 1 to Figure 4)

3 Classification

3.1 type 1 assembly. An assembly consisting of a loose flange having a plain bore and a fixed flange, usually manufactured separately from, but fixed to and positively driven by the grinding machine spindle (see Figure 1).

3.2 type 2 assembly. An assembly consisting of a loose flange having a threaded bore, a keyed washer and a fixed flange which is integral with a hub. The hub is threaded externally to accept the loose flange. The hub permits the whole assembly to be mounted on a grinding machine spindle (see Figure 2).

3.3 type 3 assembly. An assembly consisting of a loose flange having a plain bore and a fixed flange, which is integral with a hub (see Figure 3).

3.4 type 4 assembly. An assembly consisting of a loose flange having a threaded bore, a keyed washer and a fixed flange, usually manufactured separately from, but fixed to and positively driven by the grinding machine spindle. The spindle is threaded externally to accept the loose flange (see Figure 4).

Table 1 — Grinding wheels selected from BS 4481-2

Designation of grinding wheel in BS 4481-2			Limitation where applicable
Table number (BS 4481-2:1983)	Wheel type	Description	
3	1	Grinding wheels for cutting off, without reinforcement	Wheel diameters not exceeding 200 mm
4 (d)	5	Grinding wheels with one recess	Wheel diameters not exceeding 200 mm
5 (a)	1	Plain grinding wheels	Wheel diameters not exceeding 200 mm
8 (a)	1	Plain wheels	
8 (b)	6	Straight cup wheels	
8 (c)	11	Taper cup wheels	
8 (d)	12	Dish wheels	