

INTERNATIONAL STANDARD



666

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Machine tools — Mounting of plain grinding wheels by means of hub flanges

Machines-outils — Montage des meules plates par moyeux-flasques

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 39 has reviewed ISO Recommendation R 666 and found it technically suitable for transformation. International Standard ISO 666 therefore replaces ISO Recommendation R 666-1968 to which it is technically identical.

ISO Recommendation R 666 was approved by the Member Bodies of the following countries :

Austria	India	Spain
Belgium	Israel	Sweden
Brazil	Italy	Switzerland
Chile	Japan	Turkey
Czechoslovakia	Korea, Rep. of	United Kingdom
Egypt, Arab Rep. of	Netherlands	U.S.S.R.
France	Poland	Yugoslavia
Hungary	Portugal	

The Member Bodies of the following countries expressed disapproval of the Recommendation on technical grounds :

Germany
U.S.A.

No Member Body disapproved the transformation of ISO/R 666 into an International Standard.

Machine tools — Mounting of plain grinding wheels by means of hub flanges

1 SCOPE AND FIELD OF APPLICATION

This International Standard lays down, having regard to safety requirements, the interchangeability dimensions between hub flanges and grinding wheels, in the case where the grinding wheels are mounted by means of hub flanges.

It is applicable to the following types of plain grinding wheels, having bores between 76,2 and 508 mm (3 and 20 in) :

- fettling and sharpening plain wheels;
- plain wheels for external cylindrical grinding (except centreless);
- surface plain grinding wheels.

The requirements of this International Standard provide for complete interchangeability between the components (grinding wheels and hub flanges), regardless of whether they are manufactured to metric or inch dimensions.

2 GENERAL

The dimensions specified in this International Standard, together with the manufacturing requirements and checks to be made before use given below, have been determined taking into account the conditions necessary for ensuring safe assembly of the grinding wheels and the hub flanges, these conditions being as follows for the external diameter H of the hub flanges and for the radial width R of their gripping rim :

- a) the value of R shall be great enough to ensure a sufficient contact surface, but small enough to maintain a sufficient clamping pressure and to reduce the risks of abnormal stress due to imperfect flatness of the grinding wheel;
- b) the difference between the internal diameter $H - 2R$ of the gripping rim and the bore A of the grinding wheel shall be equal to at least 12 mm (1/2 in);
- c) the difference between the recess diameter of recessed grinding wheels and the diameter H of the hub flanges shall be equal to at least 10 mm (3/8 in).

IMPORTANT NOTE — It is considered essential that the regulations in force at the present time in various countries should be brought into line with the safety requirements thus defined, particularly

with regard to the values of dimensions R and H . The retention of values of H greater than those given in this International Standard, far from improving safety, would have the opposite effect, and would adversely affect both the interchangeability and the satisfactory use of the grinding wheel.

3 MANUFACTURING REQUIREMENTS

3.1 Gripping rim

The value R of the radial width of the gripping rim shall be within $\pm 1,5$ mm (1/16 in).

3.2 Thickness of flanges

The thickness of flanges shall be determined in such a way that the effective thickness of a flange at the point of maximum stress, after allowing in particular for the depth of grooves and slots, will not be below a minimum B , taking into account the nature of metal and the design of the machine.

The values of B , in tables 1 and 2, are given, for guidance only, for use of steel flanges on machines of normal power, of about 7,5 and 11 kW¹⁾ for example, for grinding wheels of 500 and 600 mm (20 and 24 in) diameter, and 15 and 22 kW²⁾ for grinding wheels of 750 and 900 mm (30 and 36 in) diameter; these values should be multiplied by approximately the square root of the power ratio when machines of appreciably higher power are used.

3.3 Dimensions L and Q

The dimensions L , the nominal diameter of the loose flange bore, and Q , the length of the fixed flange hub, are not standardized, as they are a function of the dimensions of the shaft end of the machine.

Nevertheless the following requirements shall be met :

- for dimension L a tolerance of grade 8 or finer, with fit H for the loose flange and f (or even e or d) for the fixed flange;
- for dimension Q a value always at least 6 mm (1/4 in) greater than the greatest thickness of the wheel to be gripped.

1) About 10 and 15 metric horsepower.

2) About 20 and 30 metric horsepower.

3.4 Machining of the loose flange bore

In order to allow a certain freedom of self-orientation of the loose flange during gripping, the bore shall be machined with a cylindrical entry of diameter L , on the side of the wheel, of maximum length 5 mm (3/16 in) followed by a small tapered (see the figure) or cylindrical part.

3.5 Tolerances on A

Loose flange : a11

Fixed flange : f7 (or e7) for plain wheels for external cylindrical grinding and for surface plain grinding wheels,
d8 for fettling and sharpening plain wheels.

4 CHECKS BEFORE USE

4.1 Check, before assembly, that the external diameter of the grinding wheel does not exceed the limits which have been taken into consideration for the determination of the dimensions of the flanges (see tables 1 and 2).

4.2 Check, in the case of recessed grinding wheels, that the recessed diameter is at least 10 mm (3/8 in) greater than the external diameter H of the hub flanges.

4.3 Lastly, check that the clamping torques are in accordance with the safety regulations relating to the use of grinding wheels.

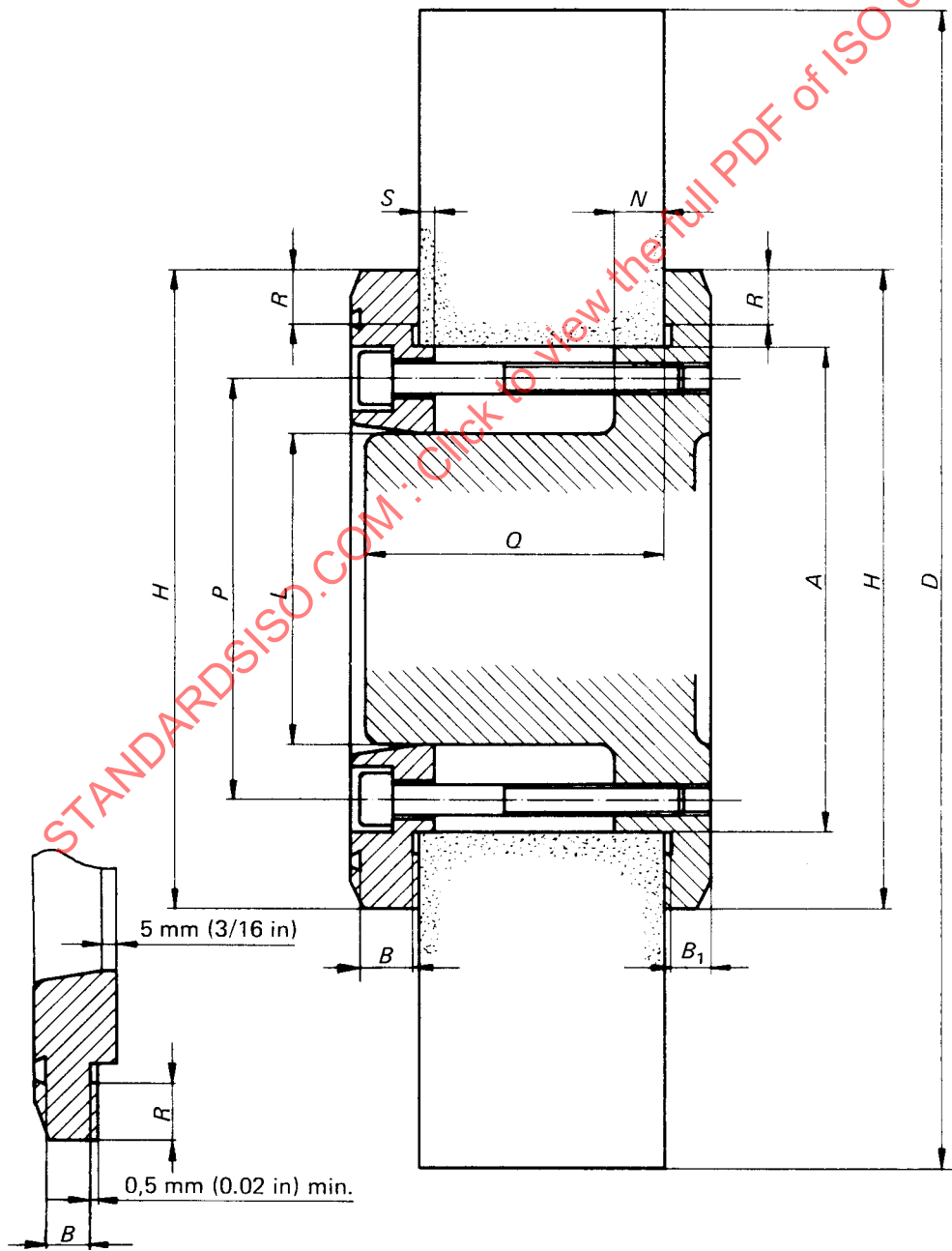


FIGURE — Basic dimensions

TABLE 1 — Dimensions in millimetres

Grinding wheels		Flanges						Screws	
<i>A</i>	<i>D</i>	<i>H</i>	<i>R</i>	$\frac{B}{B_1}$	<i>N</i>	<i>S</i>	<i>V</i> ¹⁾	<i>P</i>	Number and diameters
76,2	250-300	115	12	11	12	4	19	65	6 × M 6
127	250-300	165	12	11	12	4	19	110	6 × M 8
	350-400	175	16	13	16	6	25	110	6 × M 10
	450-500	185	20	16	20	6	29	110	8 × M 10
152,4	400	200	16	13	16	6	25	130	6 × M 10
	450-500	210	20	16	20	6	29	130	8 × M 10
203,2	450-500	260	20	16	20	6	29	180	8 × M 12
	600	260	20	16	25	6	35	180	8 × M 12
304,8	500	365	20	16	20	6	29	280	8 × M 16
	600	365	20	16	25	6	35	280	8 × M 16
	750	380	25	19	25	6	35	280	8 × M 16
	900	380	25	22	25	6	35	280	8 × M 16
	1060	380	25	22	25	6	35	280	10 × M 16
508	1250	600	32	25	25	6	35	480	10 × M 20

1) *V* = Minimum thickness capable of being gripped (minimum web thickness, in the case of recessed grinding wheels).

TABLE 2 — Dimensions in inches

Grinding wheels		Flanges						Screws	
<i>A</i>	<i>D</i>	<i>H</i>	<i>R</i>	$\frac{B}{B_1}$	<i>N</i>	<i>S</i>	<i>V</i> ¹⁾	<i>P</i>	Number and diameters
3	10-12	4 1/2	1/2	7/16	1/2	1/8	3/4	2 1/2	6 × 1/4
5	10-12	6 1/2	1/2	7/16	1/2	1/8	3/4	4 1/4	6 × 5/16
	14-16	6 7/8	5/8	1/2	5/8	1/4	1	4 1/4	6 × 3/8
	18-20	7 1/4	3/4	5/8	3/4	1/4	1 1/8	4 1/4	8 × 3/8
6	16	7 7/8	5/8	1/2	5/8	1/4	1	5 1/8	6 × 3/8
	18-20	8 1/4	3/4	5/8	3/4	1/4	1 1/8	5 1/8	8 × 3/8
8	18-20	10 1/4	3/4	5/8	3/4	1/4	1 1/8	7	8 × 1/2
	24	10 1/4	3/4	5/8	1	1/4	1 3/8	7	8 × 1/2
12	20	14 3/8	3/4	5/8	3/4	1/4	1 1/8	11	8 × 5/8
	24	14 3/8	3/4	5/8	1	1/4	1 3/8	11	8 × 5/8
	30	15	1	3/4	1	1/4	1 3/8	11	8 × 5/8
	36	15	1	7/8	1	1/4	1 3/8	11	8 × 5/8
	42	15	1	7/8	1	1/4	1 3/8	11	10 × 5/8
20	48	23 5/8	1 1/4	1	1	1/4	1 3/8	19	10 × 3/4

1) *V* = Minimum thickness capable of being gripped (minimum web thickness, in the case of recessed grinding wheels).

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