INTERNATIONAL STANDARD

ISO 525

Third edition
1999-10-01

Bonded abrasive products — General requirements

Produits abrasifs agglomérés — Exigences générales

Reference number
ISO 525:1999(E)

Contents

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 525 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 5, *Grinding wheels and abrasives*.

This third edition cancels and replaces the second edition (ISO 525:1986) which has been technically revised.

Bonded abrasive products — General requirements

1 Scope

This International Standard covers bonded abrasive products in general (grinding wheels, segments, sticks and stones) excluding abrasive products with diamond or cubic boron nitride.

It gives:

— the designation;

— the main form and denomination of bonded abrasive products;

— the standard profile of straight wheels;

— the range of outside diameters;

— the range of thicknesses;

— the range of bore diameters;

— specifications;

— the marking.

This International Standard is general and is complemented by ISO 603-1 to ISO 603-16, ISO 6103 and ISO 13942.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 603-1, *Bonded abrasive products — Dimensions — Part 1: Grinding wheels for external cylindrical grinding between centres.*

ISO 603-2, *Bonded abrasive products — Dimensions — Part 2: Grinding wheels for centreless external cylindrical grinding.*

ISO 603-3, *Bonded abrasive products — Dimensions — Part 3: Grinding wheels for internal cylindrical grinding.*

ISO 603-4, *Bonded abrasive products — Dimensions — Part 4: Grinding wheels for surface grinding/peripheral grinding.*

ISO 603-5, *Bonded abrasive products — Dimensions — Part 5: Grinding wheels for surface grinding/face grinding.*

ISO 603-6, *Bonded abrasive products — Dimensions — Part 6: Grinding wheels for tool and tool room grinding.*

ISO 603-7, *Bonded abrasive products — Dimensions — Part 7: Grinding wheels for manually guided grinding.*

ISO 603-8, *Bonded abrasive products — Dimensions — Part 8: Grinding wheels for deburring and fettling/snagging.*

ISO 603-9, *Bonded abrasive products — Dimensions — Part 9: Grinding wheels for high-pressure grinding.*

ISO 603-10, *Bonded abrasive products — Dimensions — Part 10: Stones for honing and superfinishings.*

ISO 603-11, *Bonded abrasive products — Dimensions — Part 11: Hand finishing sticks.*

ISO 603-12, *Bonded abrasive products — Dimensions — Part 12: Grinding wheels for deburring and fettling on straight grinder.*

ISO 603-13, *Bonded abrasive products — Dimensions — Part 13: Grinding wheels for deburring and fettling on a vertical grinder.*

ISO 603-14, *Bonded abrasive products — Dimensions — Part 14: Grinding wheels for deburring and fettling/snagging on an angle grinder.*

ISO 603-15, *Bonded abrasive products — Dimensions — Part 15: Grinding wheels for cutting-off on stationary and mobile cutting-off machines.*

ISO 603-16, *Bonded abrasive products — Dimensions — Part 16: Grinding wheels for cutting-off on hand held power tools.*

ISO 6103, *Bonded abrasive products — Permissible unbalances of grinding wheels as delivered — Testing.*

ISO 8486-1, *Bonded abrasives — Determination and designation of grain size distribution — Part 1: Macrogrits F4 to F220.*

ISO 8486-2, *Bonded abrasives — Determination and designation of grain size distribution — Part 2: Microgrits F230 to F1200.*

ISO 13942, *Bonded abrasive products — Limit deviations and run-out tolerances.*

3 Symbols

See Table 1.

Table 1 — Symbols and their meaning

Symbol	Meaning
A	Smallest width of a trapezoidal segment
B	Width of a segment, stick or stone
C	Thickness of a segment, stick or stone
D	Outside diameter of abrasive products
E	Thickness at bore of cup, dish, recessed and relieved wheels
F	Depth of the 1st recess
G	Depth of the 2nd recess
H	Abrasive product bore diameter, thread diameter of wheels with threaded insert
J	Smallest diameter of tapered cup, dish, tapered and hubbed wheels
K	Internal diameter of recess of tapered cup and dish wheels
L	Length of segments, length of thread bore of wheels with threaded insert, sticks and stones
L_0	Overhang length of mounted wheels and points
L_1	Total length of mounted wheels and points
L_2	Length of the spindle of mounted wheels and points
L_3	Clamping length of the spindle of mounted wheels and points
N	Depth of the relief
P	Recessed diameter
R	Radius of recessed grinding wheels, grinding segments, cones and plugs and mounted wheels and points
S	Diameter of spindle of mounted wheels and points
T	Overall thickness
U	Smallest thickness of tapered, hubbed and depressed centre wheels, e.g. in Type 4 or Type 38
W	Rim width of cups, cylinders and dishes
V	profile angle [a]
X	other profile element [a]
⬇	Symbolizes the grinding face of bonded abrasive products.

[a] For wheel profiles, see 5.1.

4 Types — Designation of shapes and dimensions

See Table 2

Table 2 — Dimensions and characteristics of types

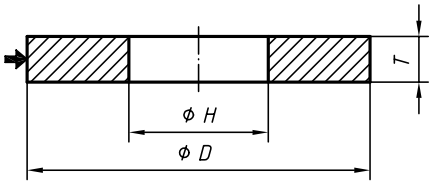
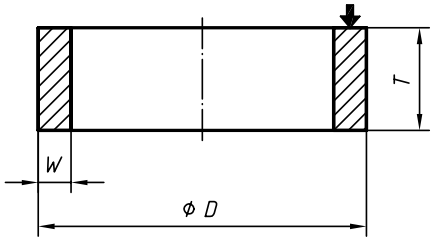
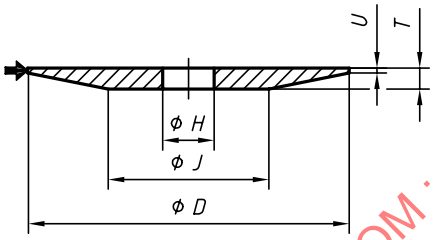
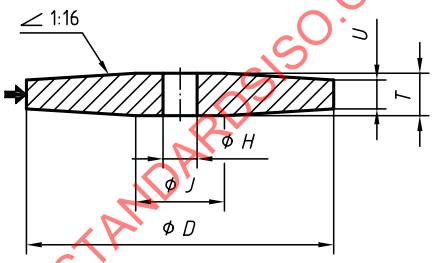
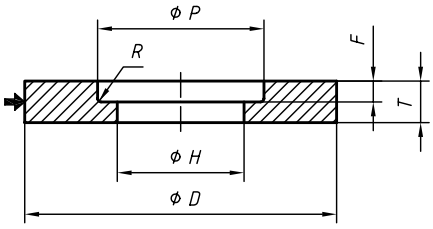
Type	Sketch	Designation of characteristics	Dimensions in ISO
1		Straight grinding wheel Type 1 — Profile [a] — $D \times T \times H$	603-1 603-2 603-3 603-4 603-6 603-7 603-8 603-9 603-12
2		Cylinder wheel, cemented or clamped Type 2 — $D \times T \times W$	603-5
3		Tapered wheel Type 3 — $D/J \times T \times H$	603-6
4		Wheel tapered on both sides Type 4 — $D \times T \times H$	603-12
5		Wheel, recessed one side Type 5 — Profile [a] — $D \times T \times H — P \times F$	603-1 603-2 603-3 603-4 603-6 603-7

Table 2 (*continued*)

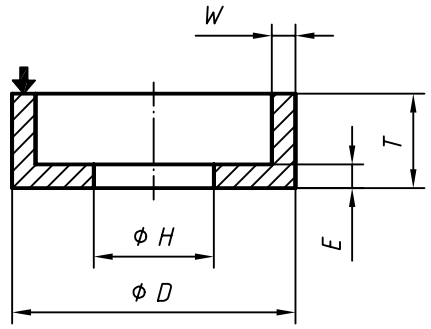
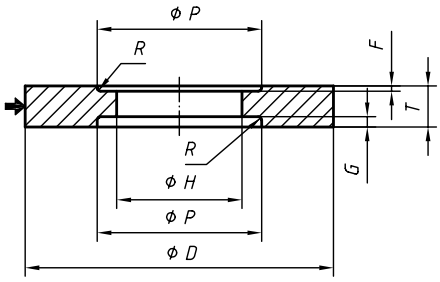
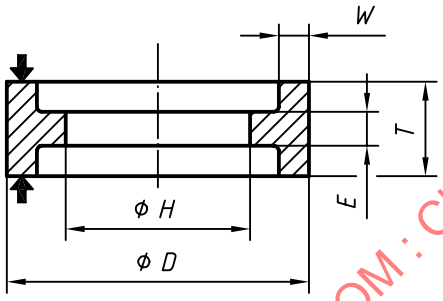
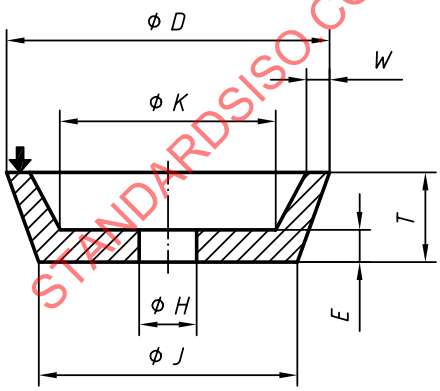
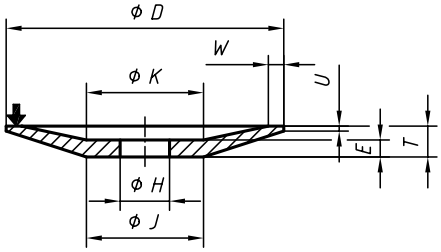
Type	Sketch	Designation of characteristics	Dimensions in ISO
6		Straight cup wheel Type 6 — $D \times T \times H$ — $W \times E$	603-5 603-6 603-7 603-13 603-14
7		Wheel, recessed two sides Type 7 — Profile [a] — $D \times T \times H$ — $P \times F/G$	603-1 603-2 603-4 603-6
9		Double cup wheel Type 9 — $D \times T \times H$ — $W \times E$	—
11		Taper cup wheel Type 11 — $D/J \times T \times H$ — $W \times E$	603-6 603-14
12		Dish wheel Type 12 — $D/J \times T \times H$	603-6

Table 2 (*continued*)

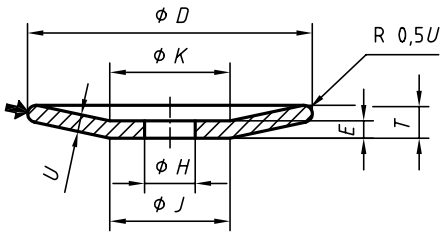
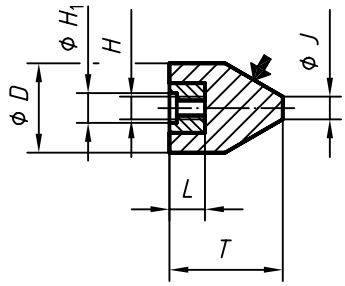
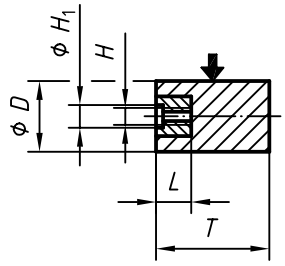
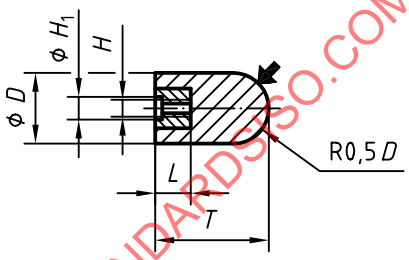
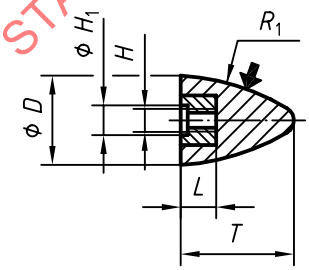
Type	Sketch	Designation of characteristics	Dimensions in ISO
13		Saucer wheel Type 13 — $D/J \times T/U \times H$ — K	—
16		Cones and plugs, tapered Type 16 — $D \times T$ — $H \times L$	603-12
18		Cones and plugs, cylindrical Type 18 — $D \times T$ — $H \times L$	603-12
18R		Cones and plugs, roll shaped Type 18R — $D \times T$ — $H \times L$	603-12
19		Cones and plugs, tapered roll shaped Type 19 — $D \times T$ — $H \times L$	603-12

Table 2 (*continued*)

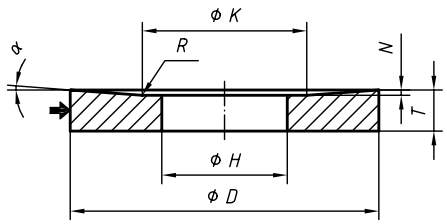
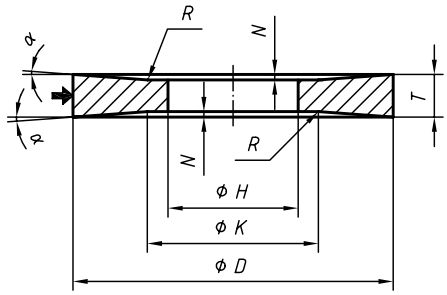
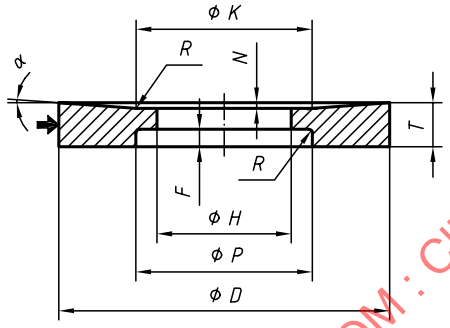
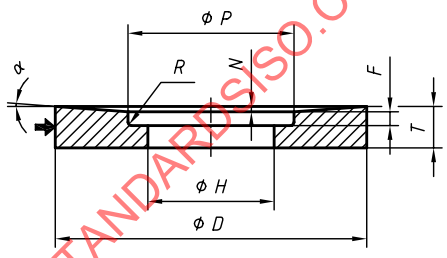
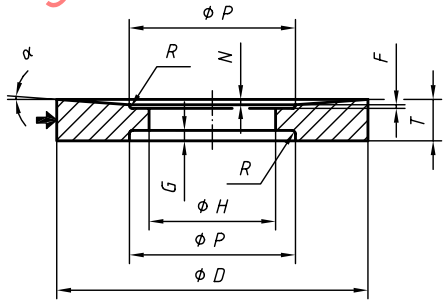
Type	Sketch	Designation of characteristics	Dimensions in ISO
20		Wheel, relieved one side Type 20 — $D/K \times T/N \times H$	603-1 603-4
21		Wheel, relieved two sides Type 21 — $D/K \times T/N \times H$	603-1 603-4
22		Wheel, relieved one side, recessed other side Type 22 — $D/K \times T/N \times H — P \times F$	603-1 603-4
23		Wheel, relieved and recessed same side Type 23 — $D \times T/N \times H — P \times F$	603-1 603-4
24		Wheel, relieved and recessed one side, recessed other side Type 24 — $D \times T/N \times H — P \times F/G$	603-1 603-4

Table 2 (*continued*)

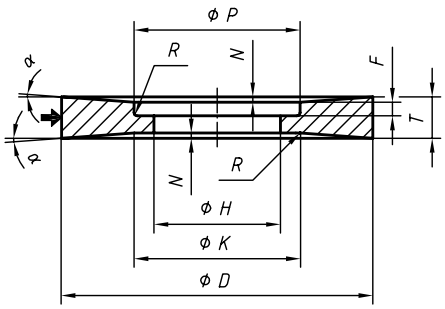
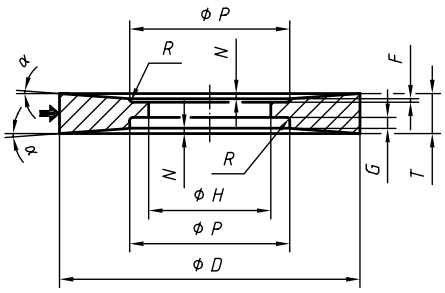
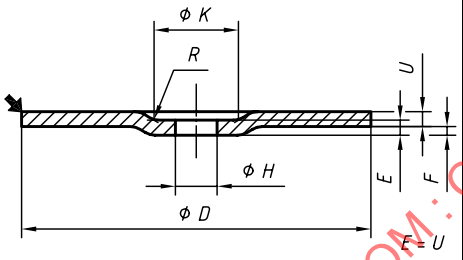
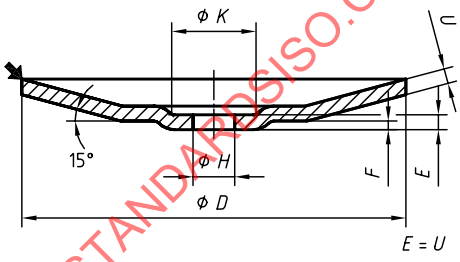
Type	Sketch	Designation of characteristics	Dimensions in ISO
25		Wheel, relieved and recessed one side, relieved other side Type 25 — $D/K \times T/N \times H$ — $P \times F$	603-1 603-4
26		Wheel, relieved and recessed both sides Type 26 — $D \times T/N \times H$ — $P \times F/G$	603-1 603-4
27		Depressed centre grinding wheel Type 27 — $D \times U \times H$	603-14
28		Depressed centre grinding wheel (cone shaped) Type 28 — $D \times U \times H$	603-14

Table 2 (*continued*)

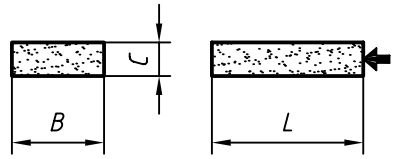
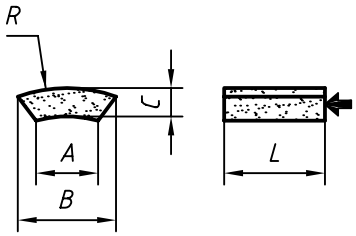
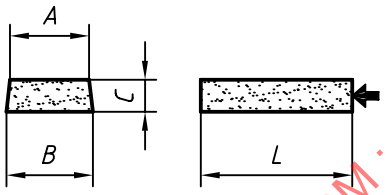
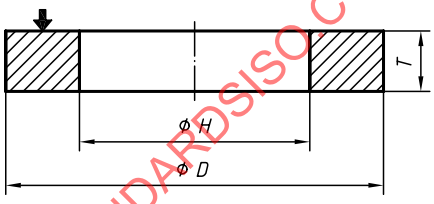
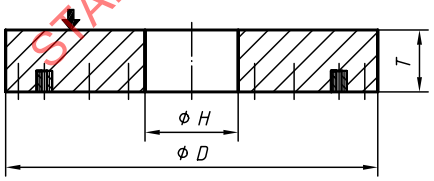
Type	Sketch	Designation of characteristics	Dimensions in ISO
31	EXAMPLES Type 3101  Type 3104  Type 3109  	Segment Type 3101 — $B \times C \times L$ Segment Type 3104 — $B \times A \times R \times L$ Segment Type 3109 — $B \times A \times C \times L$	603-5
35	 	Disc wheel, cemented or clamped Type 35 — $D \times T \times H$	603-5 603-7 603-13
36	 	Disc wheel, with inserted nuts Type 36 — $D \times T \times H$ — inserts [b]	603-5 603-7 603-13

Table 2 (*continued*)

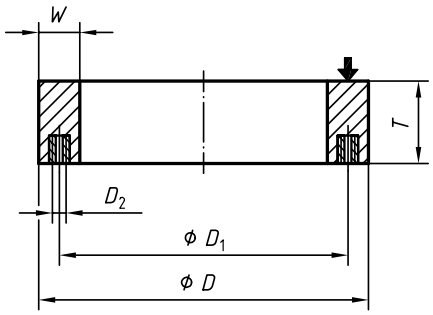
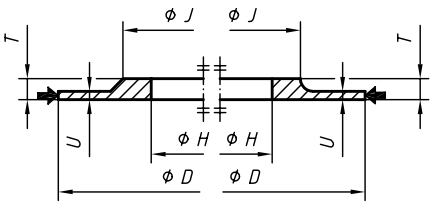
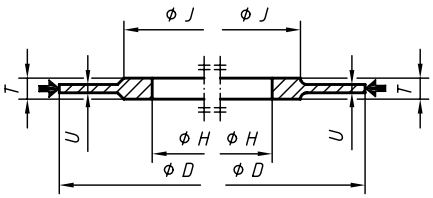
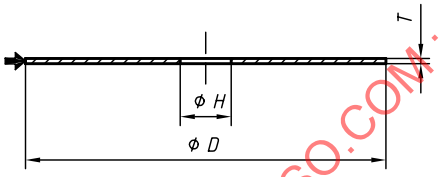
Type	Sketch	Designation of characteristics	Dimensions in ISO
37		Cylinder wheel with inserted nuts ($W \leqslant 0{,}17D$) Type 37 — $D \times T \times W$ — inserts [b]	603-5 603-7
38		Hubbed wheel Type 38 — Profile [a] — $D/J \times T/U \times H$	603-1 603-4
39		Duplex hubbed wheel Type 39 — Profile [a] — $D/J \times T/U \times H$	603-1 603-4
41		Flat cutting-off wheel Type 41 — $D \times T \times H$	603-15 603-16

Table 2 (*continued*)

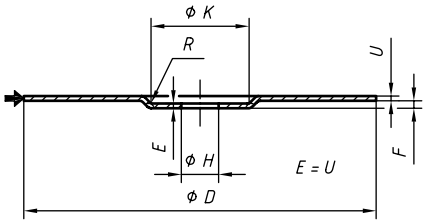
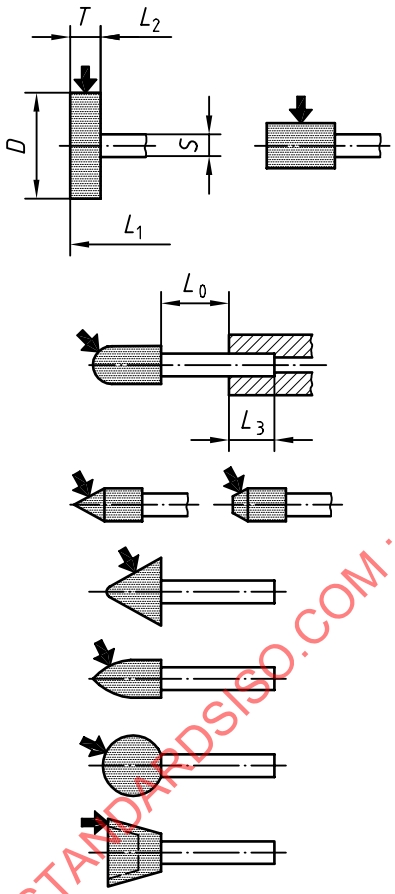
Type	Sketch	Designation of characteristics	Dimensions in ISO
42		Depressed centre cutting-off wheel Type 42 — $D \times U \times H$	603-15 603-16
52	EXAMPLES 	Mounted wheels and points Type 52 — $D \times T \times S$	—

Table 2 (*continued*)

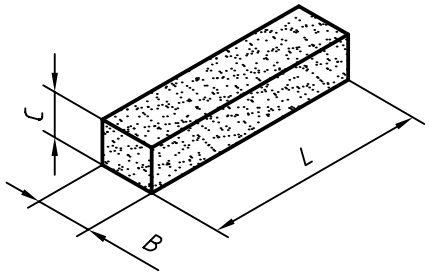
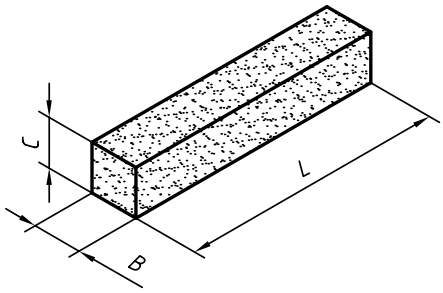
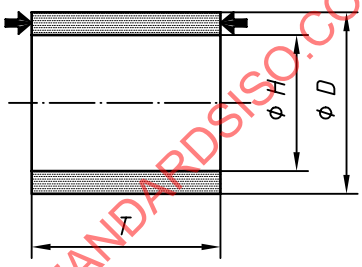
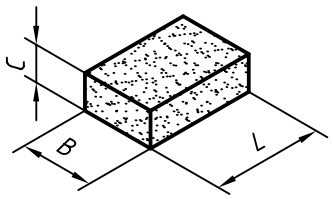
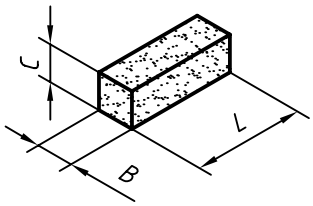
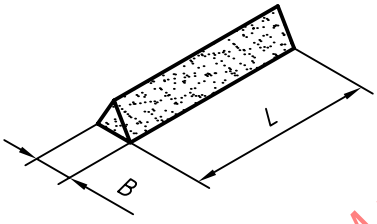
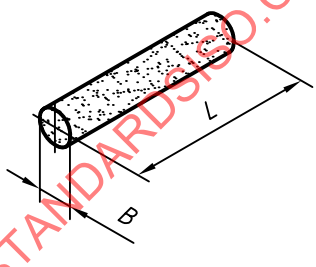
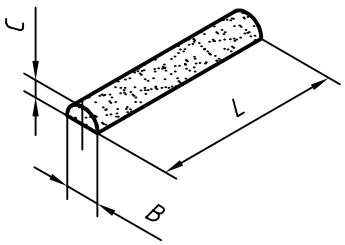
Type	Sketch	Designation of characteristics	Dimensions in ISO
54	EXAMPLES Type 5410  Type 5411  Type 5420  	Honing stone Type 5410 — $B \times C — L$ Honing stone Type 5420 — $D \times T \times H$	603-10

Table 2 (*continued*)

Type	Sketch	Designation of characteristics	Dimensions in ISO
90	EXAMPLES Type 9010  Type 9011  Type 9020  Type 9030  Type 9040  	Sticks and stones Type 9011 — $B \times L$	603-11

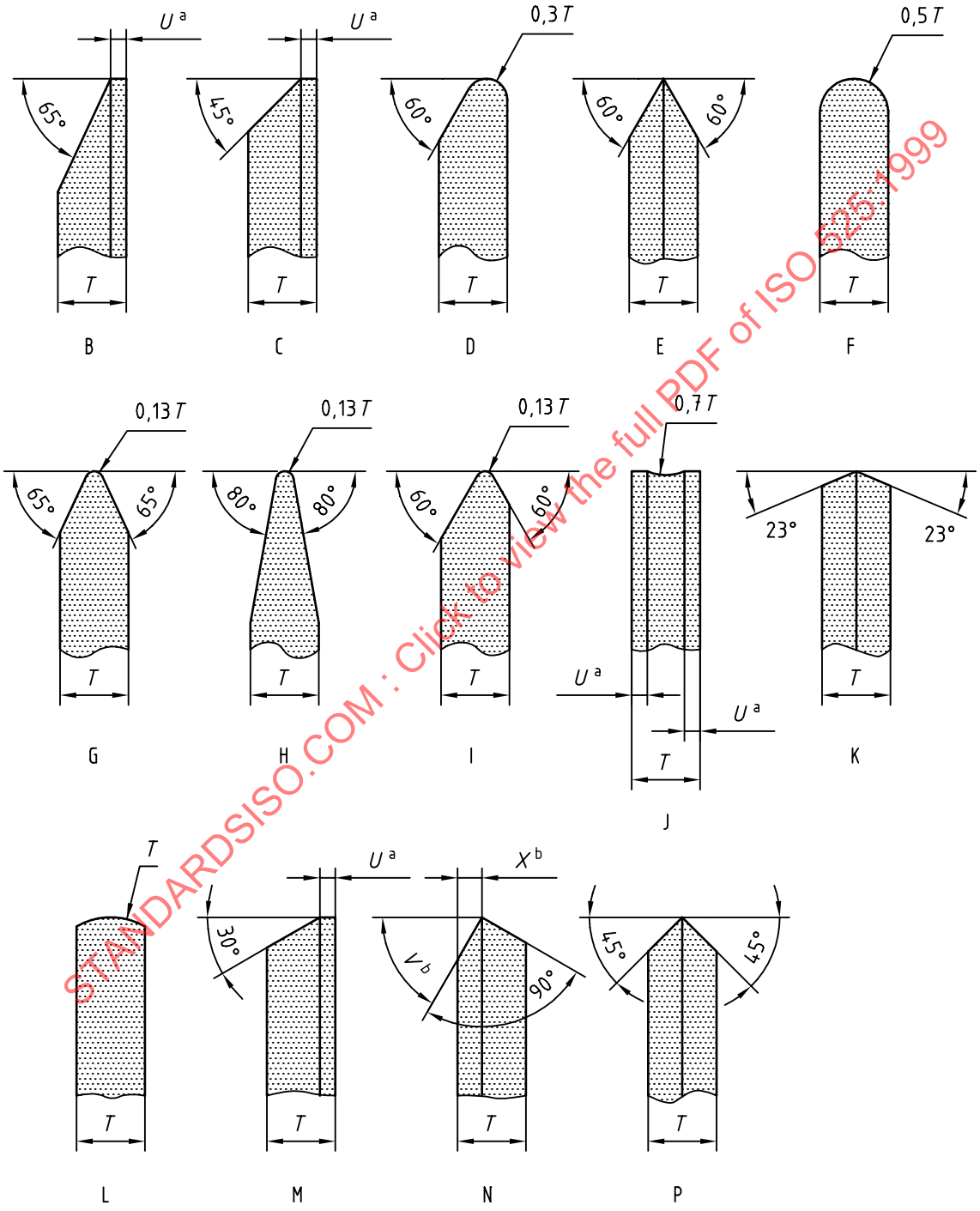
a Profile, where appropriate; see 5.1.

b For inserts size and position, refer to ISO 603-5, ISO 603-7 and ISO 603-13.

5 Requirements

5.1 Profiles

Straight wheels can have a shaped profile on their periphery. Some of those profiles are standardized and are specified by a letter which immediately follows the type number (see Figure 1). For examples of designation, see clause 6.



a U = 3,2 mm unless otherwise ordered.

b For N profile, specify V and X with order.

Figure 1

5.2 Dimensions

See ISO 603-1 to ISO 603-16.

5.2.1 Range of outside diameters

For diameters 350 mm and above Table 3 includes two ranges of dimensions. One shows metric dimensions, the other metric values converted from inch dimensions and rounded off.

Table 3 — Outside diameter

Dimensions in millimetres

D				
6	32	125	350/356	900/914
8	40	150	400/406	1 000/1 015
10	50	180	450/457	1 060/1 067
13	63	200	500/508	1 220
16	80	230	600/610	1 250
20	100	250	750/762	1 500
25	115	300	800/813	1 800

Where diameters below 6 mm are required, they should preferably be chosen from the rounded values of the R10 series of preferred numbers.

5.2.2 Range of thicknesses

See Table 4.

Table 4 — Thickness

Dimensions in millimetres

T			
0,5	3,2	25	160
0,6	4	32	200
0,8	6	40	250
1	8	50	315
1,25	10	63	400
1,6	13	80	500
2	16	100	600
2,5	20	125	—