
**Face and shoulder milling cutters with
indexable inserts — Dimensions**

*Fraises à surfacer et à surfacer et dresser, à plaquettes amovibles —
Dimensions*





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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 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 6462 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 9, *Tools with cutting edges made of hard cutting materials*.

This second edition cancels and replaces the first edition (ISO 6462:1983), which has been technically revised.

Face and shoulder milling cutters with indexable inserts — Dimensions

1 Scope

This International Standard specifies the dimensions of face milling cutters with indexable inserts.

The form and dimensions of the inserts are left to the discretion of the manufacturer.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 240, *Milling cutters — Interchangeability dimensions for cutter arbors or cutter mandrels*

ISO 2780, *Milling cutters with tenon drive — Interchangeability dimensions for cutter arbors — Metric series*

ISO 2940-1, *Milling cutters mounted on centring arbors having a 7/24 taper — Fitting dimensions Centring arbors*

ISO 3365, *Indexable hardmetal (carbide) inserts with wiper edges, without fixing hole — Dimensions*

ISO 11529-2, *Milling cutters — Designation — Part 2: Shank-type and bore-type milling cutters with indexable inserts*

3 Style

Milling cutters with indexable inserts shall have cutting edge angles, κ_r , of 45°, 60°, 75° and 90° and the following styles:

- style A with tenon drive and hexagon socket head cap screw;
- style B with tenon drive and cutter retaining screw with interchangeability dimensions in accordance with ISO 2780;
- style C mounted on centring arbor having a 7/24 taper with interchangeability dimensions in accordance with ISO 2940-1.

NOTE 1 Cutting edge angles other than those listed in this clause are optional as long as they fit into the designation system according to ISO 11529-2.

NOTE 2 The abbreviated terms for the dimensions are taken from ISO/TS 13399-3.

4 Dimensions

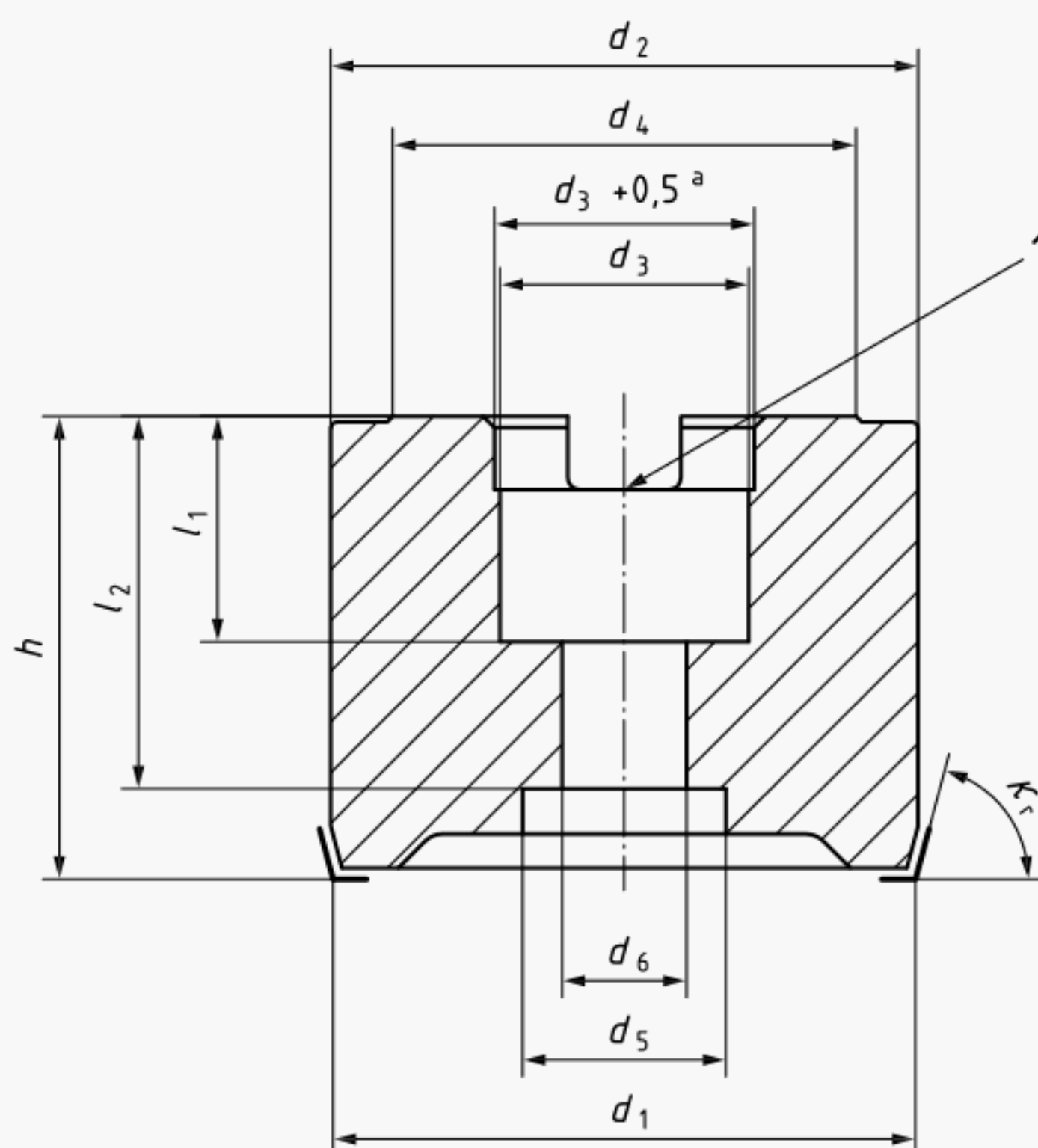
4.1 Holes for lifting devices

For milling cutters of diameter, d_1 , equal to or above 250 mm, threaded holes for lifting devices may be provided at the discretion of the manufacturer. The number of holes and their position is at the discretion of the manufacturer, however their minimum dimensions shall be the following:

- for milling cutters where $d_1 = 250$ mm or 315 mm, threaded holes M12 \times 27;
- for milling cutters where $d_1 = 400$ mm or 500 mm, threaded holes M16 \times 34.

NOTE National safety regulations can be applicable.

4.2 Style A — Tenon drive — Hexagon socket head cap screw



Key

1 slot in accordance with the metric series of ISO 240

^a A conical shape between d_3 and $d_3 + 0,5$, keeping the same depth, is optional.

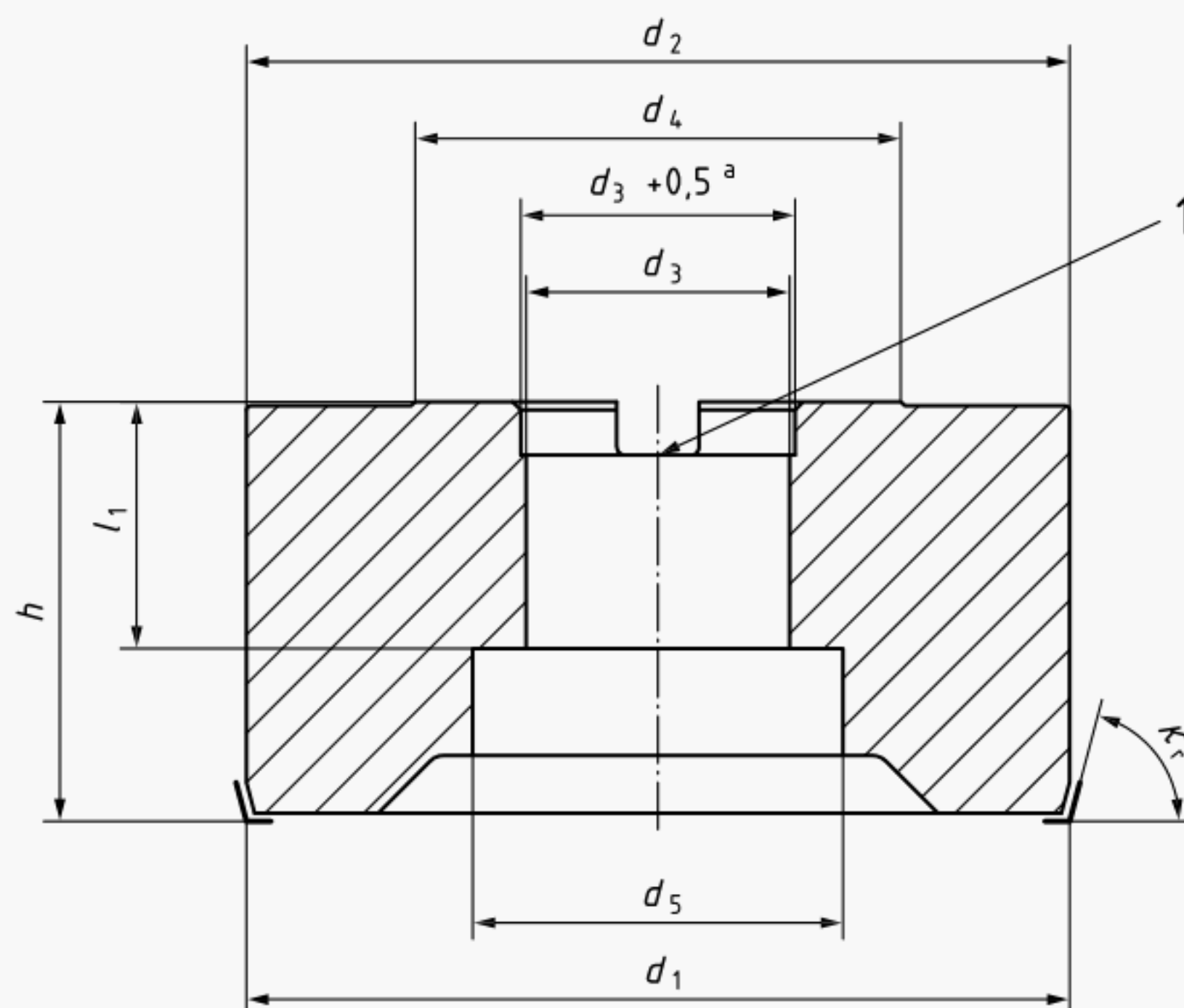
Figure 1 — Style A

Table 1 — Dimensions for style A

Dimensions in millimetres

Designation in accordance with ISO 11529-2 ^a	d_1 js16	κ_r	d_2	d_3 H7	d_4 min.	d_5 min.	d_6 js13	h ±0,15	l_1	l_2 max.	Retaining screw
..45.040R(L).....P16	40	45°	—	16	33	14	9	40	18	31	M8
..60.040R(L).....P16		60°	—								
..75.040R(L).....P16		75°	—								
..90.040R(L).....P16		90°	$d_2 < d_1$								
..45.050R(L).....P22	50	45°	—	22	41	18	11	40	20	33	M10
..60.050R(L).....P22		60°	—								
..75.050R(L).....P22		75°	—								
..90.050R(L).....P22		90°	$d_2 < d_1$								
..45.063R(L).....P22	63	45°	—	22	41	18	11	40	20	33	M10
..60.063R(L).....P22		60°	—								
..75.063R(L).....P22		75°	—								
..90.063R(L).....P22		90°	$d_2 < d_1$								
..45.080R(L).....P27	80	45°	—	27	49	20	14	50	22	37	M12
..60.080R(L).....P27		60°	—								
..75.080R(L).....P27		75°	—								
..90.080R(L).....P27		90°	$d_2 < d_1$								
..45.100R(L).....P32	100	45°	—	32	59	27	18	50	25	33	M16
..60.100R(L).....P32		60°	—								
..75.100R(L).....P32		75°	—								
..90.100R(L).....P32		90°	$d_2 < d_1$								
^a Instead of the points shown in the designation, the letters and numbers shall be placed in accordance with ISO 11529-2.											

4.3 Style B — Tenon drive — Cutter retaining screw



Key

1 slot in accordance with the metric series of ISO 240

^a A conical shape between d_3 and $d_3 + 0,5$, keeping the same depth, is optional.

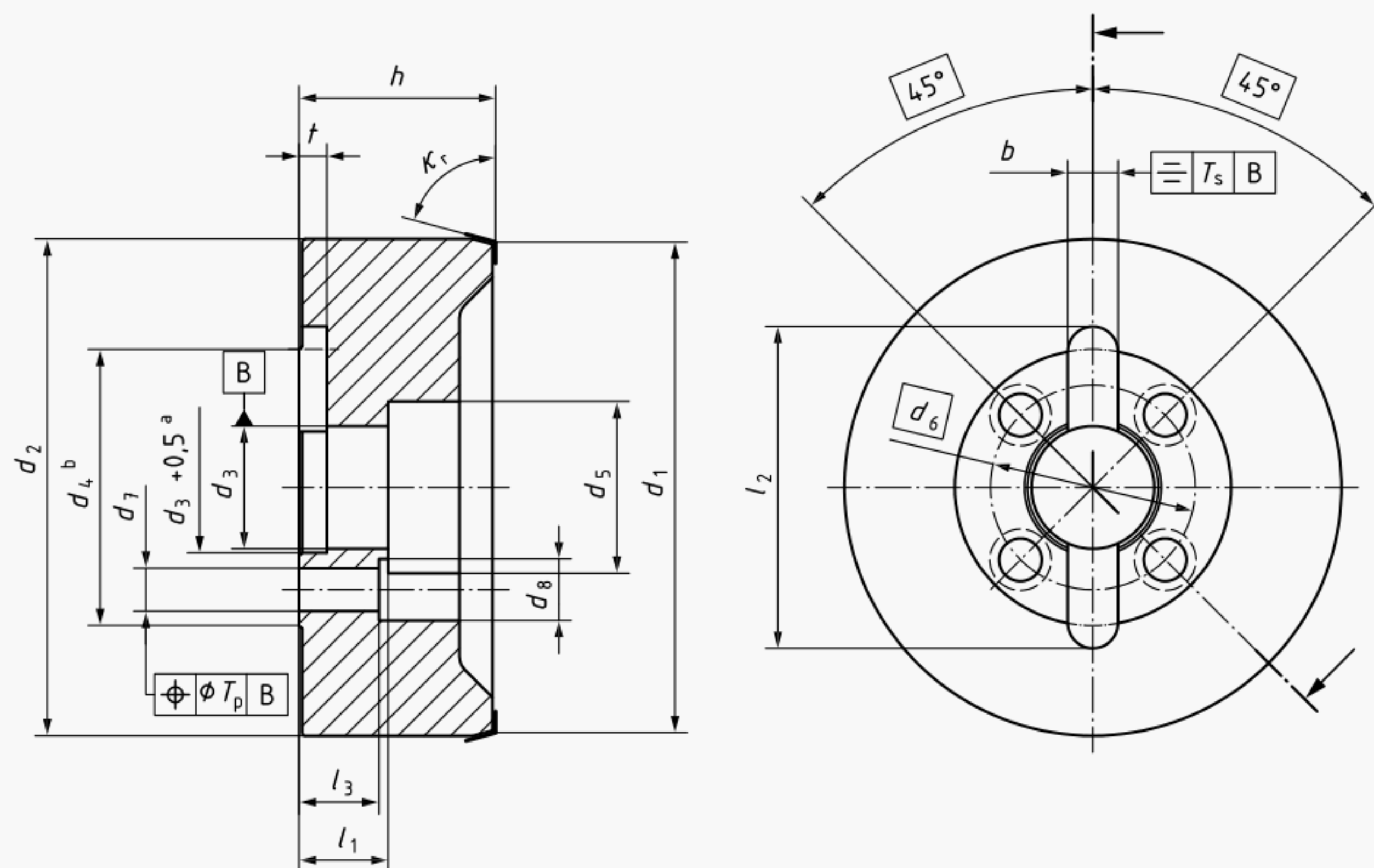
Figure 2 — Style B

Table 2 — Dimensions for style B

Dimensions in millimetres

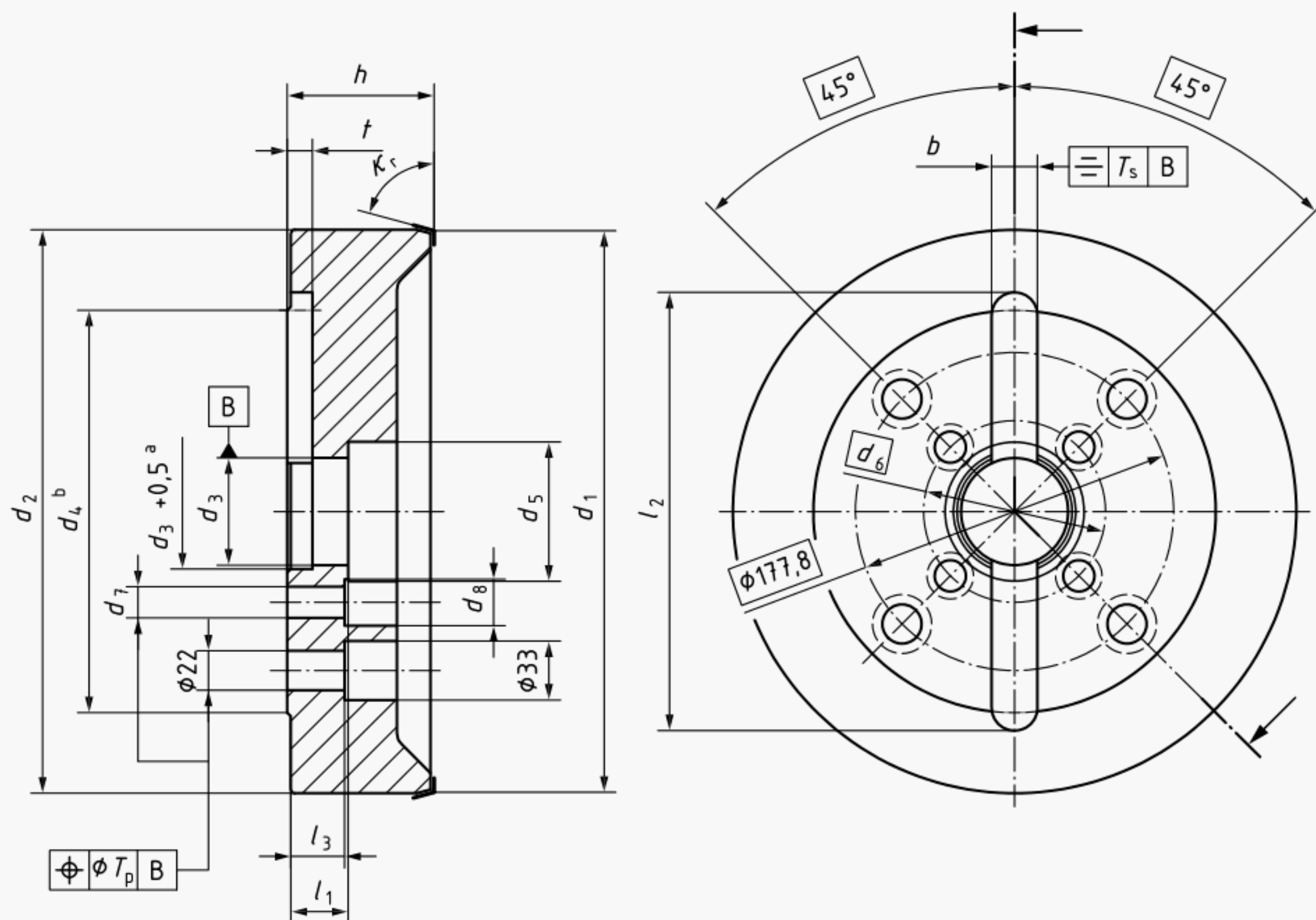
Designation in accordance with ISO 11529-2 ^a	d_1	κ_r	d_2	d_3	d_4	d_5	h	l_1		Retaining screw
	js16			H7	min.	min.	±0,15	min.	max.	
..45.080R(L).....S27	80	45°	—	27	49	38	50	22	30	M12
..60.080R(L).....S27		60°	—							
..75.080R(L).....S27		75°	—							
..90.080R(L).....S27		90°	$d_2 < d_1$							
..45.100R(L).....S32	100	45°	—	32	59	45	50	25	32	M16
..60.100R(L).....S32		60°	—							
..75.100R(L).....S32		75°	—							
..90.100R(L).....S32		90°	$d_2 < d_1$							
..45.125R(L).....S40	125	45°	—	40	71	56	63	28	35	M20
..60.125R(L).....S40		60°	—							
..75.125R(L).....S40		75°	—							
..90.125R(L).....S40		90°	$d_2 < d_1$							
..45.160R(L).....S40	160	45°	—	40	90	56	63	28	35	M20
..60.160R(L).....S40		60°	—							
..75.160R(L).....S40		75°	—							
..90.160R(L).....S40		90°	$d_2 < d_1$							
^a Instead of the points shown in the designation, the letters and numbers shall be placed in accordance with ISO 11529-2.										

4.4 Style C — Mounted on centring arbor having a 7/24 taper



- ^a A conical shape between d_3 and $d_3 + 0,5$, keeping the same depth, is optional.
- ^b Relief with diameter, d_4 , on the back face of the body is optional.

Figure 3 — Style C with $d_2 = 160$ mm, 200 mm and 250 mm



- a A conical shape between d_3 and $d_3 + 0,5$, keeping the same depth, is optional.
- b Relief with diameter, d_4 , on the back face of the body is optional.

Figure 4 — Style C with $d_2 = 315$ mm, 400 mm and 500 mm

Table 3 — Dimensions for style C

Dimensions in millimetres

Designation in accordance with ISO 11529-2 ^a	d_1 js16	κ_r	d_2	d_3 H7	d_4 min.	d_5^b min.	d_6	d_7	d_8	h $\pm 0,15$	l_1^b	l_2 min.	l_3	b H11	t + 0,5	T_p	T_s	Centring arbor no.							
..45.160R(L).....T40	160	45°	—	40	90	56	66,7	14	20	63	29	105	28	16,4	9	0,3	0,12	40							
..60.160R(L).....T40		60°	—																						
..75.160R(L).....T40		75°	—																						
..90.160R(L).....T40		90°	$d_2 < d_1$																						
..45.200R(L).....T60	200	45°	—	60	130	78	101,6	17,5	26		34	155	32	25,7	14	0,4	0,2	50							
..60.200R(L).....T60		60°	—																						
..75.200R(L).....T60		75°	—																						
..90.200R(L).....T60		90°	$d_2 < d_1$																						
..45.250R(L).....T60	250	45°	—																225	80	245	50 or 60			
..60.250R(L).....T60		60°	—																						
..75.250R(L).....T60		75°	—																						
..90.250R(L).....T60		90°	$d_2 < d_1$																						
..45.315R(L).....U60	315	45°	—								500	75°	—	—											
..60.315R(L).....U60		60°	—																						
..75.315R(L).....U60		75°	—																						
..90.315R(L).....U60		90°	$d_2 < d_1$																						
..45.400R(L).....U60	400	45°	—		500										75°	—	—								
..60.400R(L).....U60		60°	—																						
..75.400R(L).....U60		75°	—																						
..90.400R(L).....U60		90°	$d_2 < d_1$																						
..45.500R(L).....U60	500	45°	—															500					75°	—	—
..60.500R(L).....U60		60°	—																						
..75.500R(L).....U60		75°	—																						
..90.500R(L).....U60		90°	$d_2 < d_1$																						

^a Instead of the points shown in the designation, the letters and numbers shall be placed in accordance with ISO 11529-2.

^b Dimensions, d_5 and l_1 , on cutters with cutting diameter, d_1 , equal to and larger than 200 mm are at the manufacturer's discretion.

5 Material

The cutter shall consist of material that applies a minimum tensile strength of 700 N/mm².

Annex A (informative)

Abbreviated terms used related to ISO/TS 13399-3, ISO/TS 13399-4 and ISO/TS 13399-50

A.1 General

A.1.1 Cutting diameter and functional length

Cutting diameter (DC) and functional length (LF) of the milling cutter are taken from point CRP as defined in ISO/TS 13399-50 and shown in Figures A.1 and A.2.

The values of DC and LF and their tolerances, as given in Tables 1 to 3, are related to master indexable inserts with either corner radius or wiper edges, having form and dimensions in accordance with ISO 3365. In cases where other indexable inserts are used, DC and LF vary.

A.1.2 Cutting edge angle

Nominal value of the cutting edge angle, κ_r (KAPR), of the indexable insert.

The effective angle obtained on the workpiece depends on the geometry and the diameter of the milling cutter together with the cutting depth.

A.1.3 Cutting reference point

The definition and designation of the cutting reference point (CRP) is in accordance with ISO/TS 13399-50.

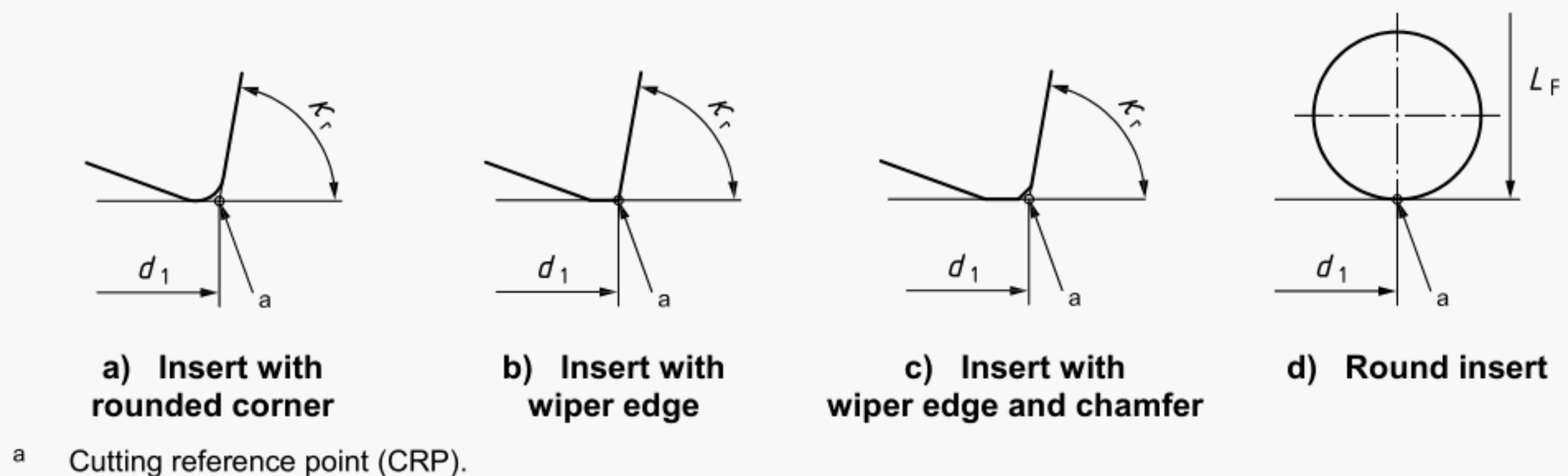


Figure A.1 — Face milling cutter

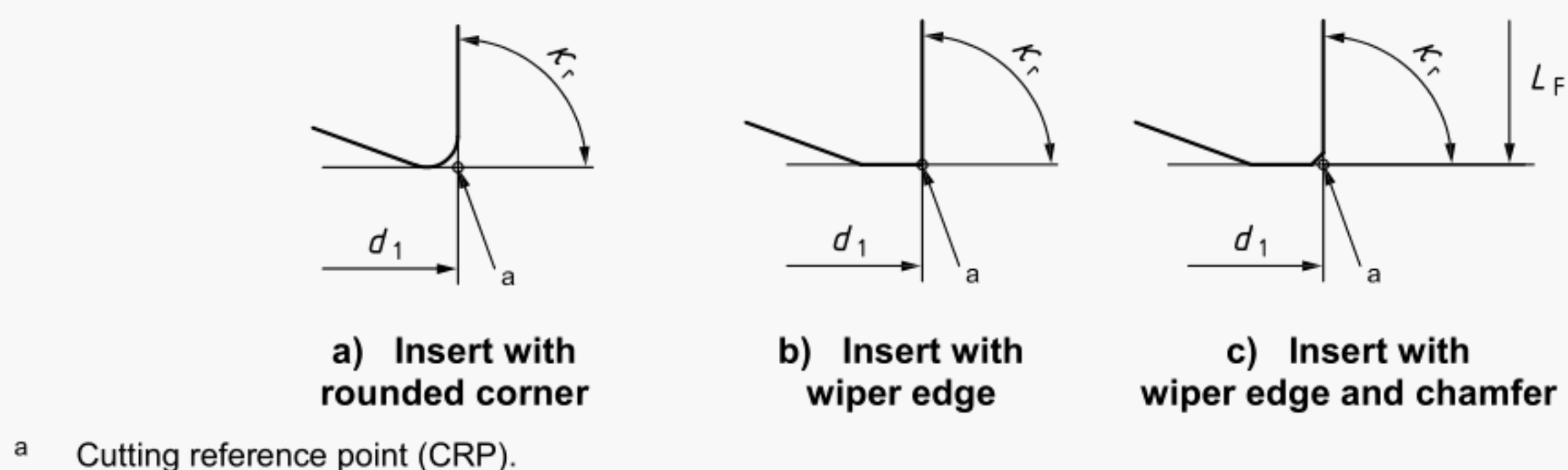


Figure A.2 — Shoulder milling cutter

A.2 Relationship between designations in this International Standard and ISO/TS 13399-3, ISO/TS 13399-4 and ISO/TS 13399-50

For the relationship between designations in this International Standard and preferred abbreviated terms according to ISO/TS 13399-3, ISO/TS 13399-4 and ISO/TS 13399-50, see Table A.1.

Table A.1 — Relationship between designations in this International Standard and ISO/TS 13399-3, ISO/TS 13399-4 and ISO/TS 13399-50

Symbol (in this International Standard)	Reference (in this International Standard)	Property name in ISO/TS 13399-3, ISO/TS 13399-4 and ISO/TS 13399-50	Abbreviated term in ISO/TS 13399-3, ISO/TS 13399-4 and ISO/TS 13399-50	Reference in ISO/TS 13399-3, ISO/TS 13399-4 and ISO/TS 13399-50
b	Figure 3, Figure 4	Key way width	KWW	ISO/TS 13399-3
d_1	Figure 1, Figure 2, Figure 3, Figure 4	Cutting diameter	DC	ISO/TS 13399-3
d_2	Figure 1, Figure 2, Figure 3, Figure 4	Body diameter	BD	ISO/TS 13399-3
d_3	Figure 1, Figure 2, Figure 3, Figure 4	Connection bore diameter	DCB	ISO/TS 13399-3
d_4	Figure 1, Figure 2, Figure 3, Figure 4	Contact surface diameter machine side	DCSFMS	ISO/TS 13399-3
d_5	Figure 1, Figure 2, Figure 3, Figure 4	Connection counter bore diameter	Not available	
d_6	Figure 1	Diameter access hole	DAH	ISO/TS 13399-3
	Figure 3, Figure 4	Diameter bolt circle	DBC	ISO/TS 13399-4
d_7	Figure 3, Figure 4	Diameter access hole	DAH	ISO/TS 13399-50
d_8	Figure 3, Figure 4	Diameter access counterbore	Not available	
h	Figure 1, Figure 2, Figure 3, Figure 4	Functional length	LF	ISO/TS 13399-3
l_1	Figure 1, Figure 2, Figure 3, Figure 4	Connection bore depth	CBDP	ISO/TS 13399-4
l_2	Figure 1	Access hole depth	Not available	
l_2	Figure 3, Figure 4	Key way length	KWL	ISO/TS 13399-3
l_3	Figure 3, Figure 4	Access hole depth	Not available	
κ_r	Figure 1, Figure 2, Figure 3, Figure 4	Tool cutting edge angle	KAPR	ISO/TS 13399-3
t	Figure 3, Figure 4	Key way depth	Not available	
T_p	Figure 3, Figure 4	Position tolerance of access hole	Not available	
T_s	Figure 3, Figure 4	Symmetry tolerance of key way	Not available	

Bibliography

- [1] ISO/TS 13399-3, *Cutting tool data representation and exchange — Part 3: Reference dictionary for tool items*
- [2] ISO/TS 13399-4, *Cutting tool data representation and exchange — Part 4: Reference dictionary for adaptive items*
- [3] ISO/TS 13399-50, *Cutting tool data representation and exchange — Part 50: Reference dictionary for reference systems and common concepts*

