

INTERNATIONAL STANDARD

ISO
5609

Fourth edition
1998-11-15

Boring bars for indexable inserts — Dimensions

Porte-plaquette de tournage intérieur — Dimensions



Reference number
ISO 5609:1998(E)

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.

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 5609 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 9, *Tools with cutting edges made of hard cutting materials*.

This fourth edition cancels and replaces the third edition (ISO 5609:1995), clause 5 (table 3) of which has been technically revised (addition of boring bars style L for W-shape indexable inserts).

Annex A of this International Standard is for information only.

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Boring bars for indexable inserts — Dimensions

1 Scope

This International Standard specifies the general dimensions of solid steel boring bars with cylindrical shank for indexable inserts, and specifies preferred boring bars (see clause 5).

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreement based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3002-1:1982, *Basic quantities in cutting and grinding — Part 1 : Geometry of the active part of cutting tools — General terms, reference systems, tool and working angles, chip breakers.*

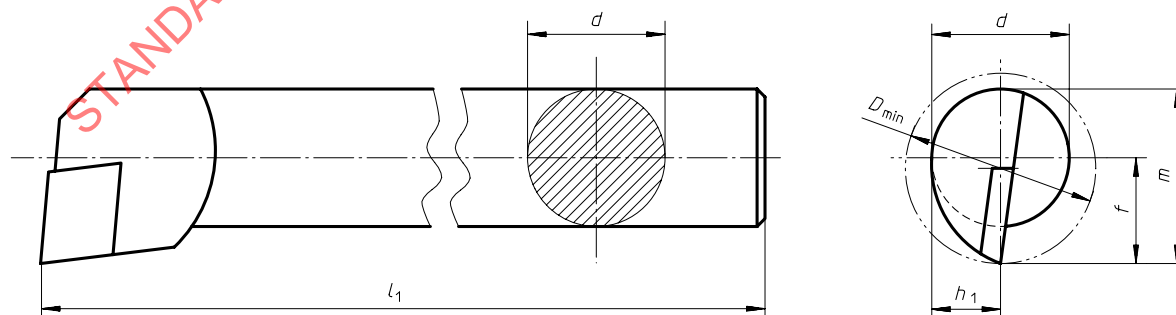
3 Remark

The designation system for boring bars is given in ISO 6261.

4 Dimensions

4.1 General dimensions

See figure 1 and table 1.



$$h_1 = \frac{d}{2}$$

$$m = f + \frac{d}{2}$$

Figure 1

Table 1

Dimensions in millimetres

Shank diameter, d g7	08	10	12	16	20	25	32	40	50	60
Shank length, l_1 k16	preferred series	80	100	125	150	180	200	250	300	400
	secondary series	100	125	150	200	250	300	350	400	500
Dimension, f $\begin{smallmatrix} 0 \\ -0,25 \end{smallmatrix}$	6	7	9	11	13	17	22	27	35	43
Minimum diameter of bore, $D_{\min}$	11	13	16	20	25	32	40	50	63	80
NOTE — One or more flats on the shank may be provided at the manufacturer's option.										

4.2 Identification of dimensions l_1 and f

4.2.1 The length dimension l_1 is the distance from the specified point K (see figures 2 to 5) to the end of the shank.

Dimension f is the distance between the specified point K and the axis of the boring bar.

The values of both l_1 and f , as specified in 4.1, are given for boring bars equipped with master insert having corner radii in accordance with 4.2.3.

4.2.2 The specified point K is defined as follows:

Consider planes P_f (assumed working plane) and P_s (tool cutting edge plane) according to ISO 3002-1 for a selected point on the major cutting edge (for example point of tangency of major cutting edge with inscribed circle).

- For $\kappa_r \leq 90^\circ$, point K is defined as the intersection of plane P_s , a plane parallel to plane P_f tangent to the corner radius and a plane containing the tool face A_γ (see figures 2 and 3).
- For $\kappa_r > 90^\circ$, point K is defined as the intersection of a plane parallel to plane P_f , tangent to the corner radius, a plane perpendicular to plane P_f tangent to the corner radius and a plane containing the tool face A_γ (see figures 4 and 5).

4.2.3 The corner radius r_ϵ of the master inserts used for the definition of dimensions l_1 and f is a function of the diameter of the inscribed circle of the insert, as indicated in table 2.

Table 2

Dimensions in millimetres

Diameter of the inscribed circle	6,35	7,94	9,525	12,7	15,875	19,05
Corner radius r_ϵ (nominal)	0,4		0,8		1,2	

4.2.4 Boring bars may be equipped with inserts of sizes as specified in clause 5 and any corner radius r_ϵ .

For corner radii r_ϵ other than those specified in 4.2.3, dimensions l_1 and f shall be corrected by using the values x and y (see figures 2 to 5), which are the distances from the specified point K to the theoretical corner T.

The new dimensions l_1 and f are found from the differences between x and y corresponding to the corner radius according to 4.2.3, and x and y corresponding to the real corner radius.

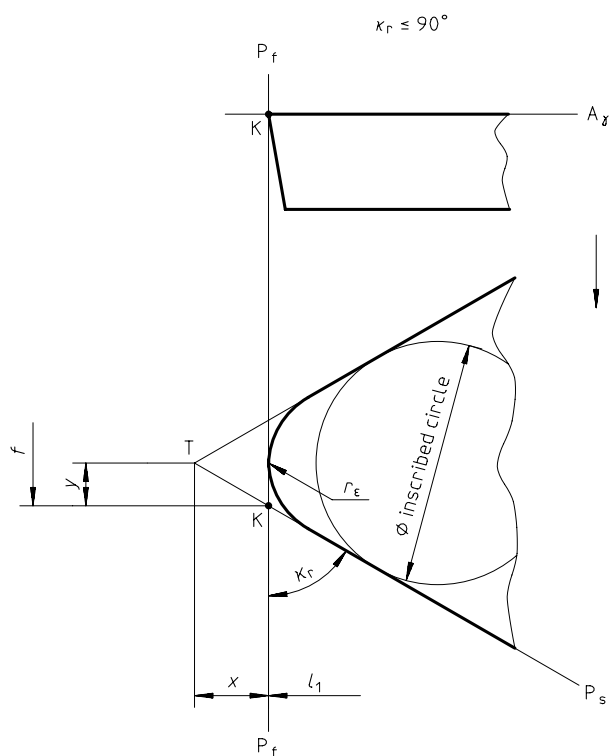


Figure 2

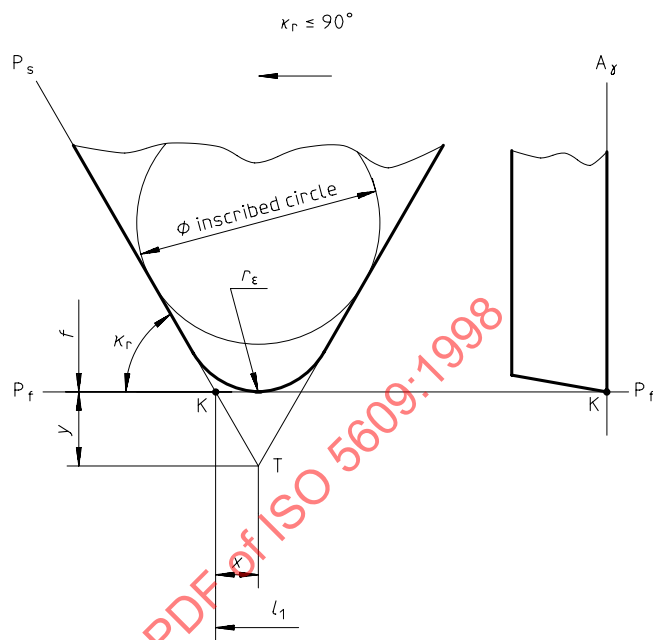


Figure 3

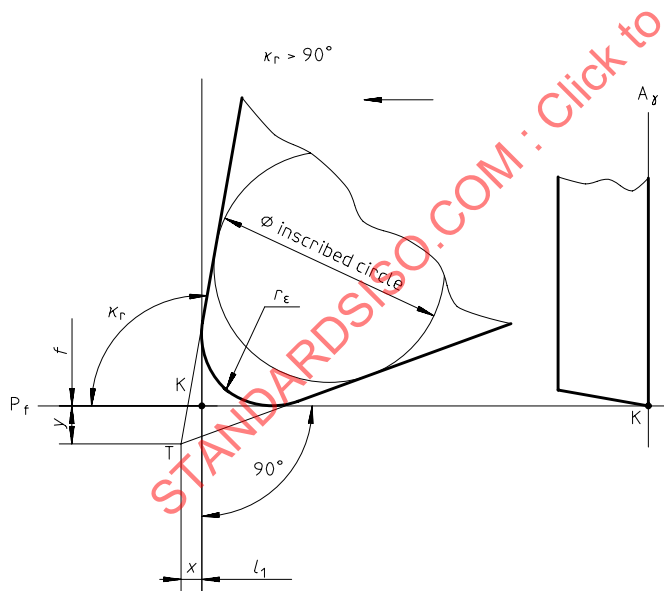


Figure 4

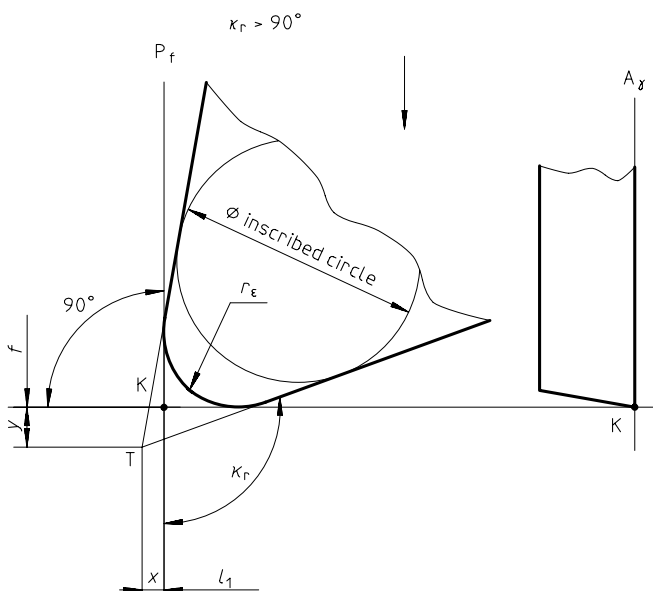


Figure 5

5 Preferred boring bars

See table 3.

Table 3

Dimensions in millimetres

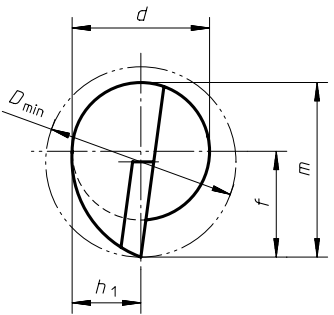
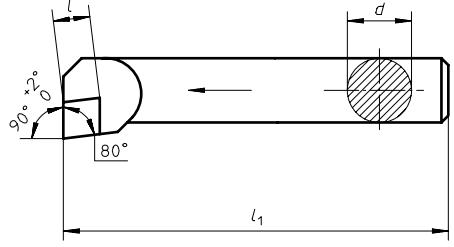
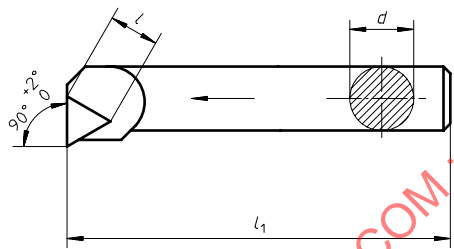
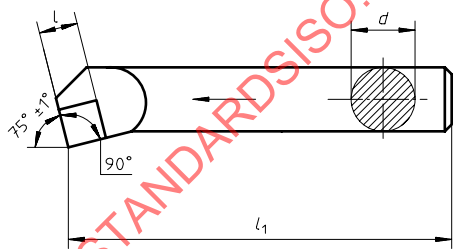
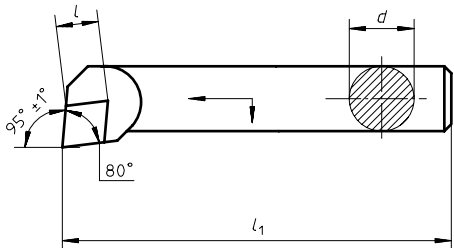
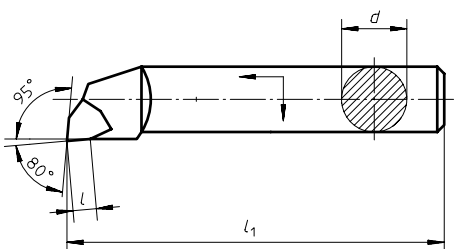
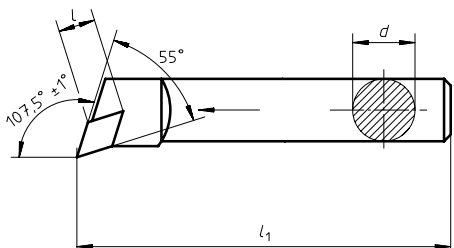
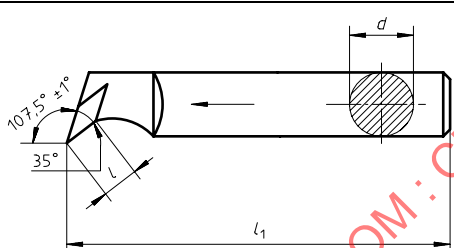
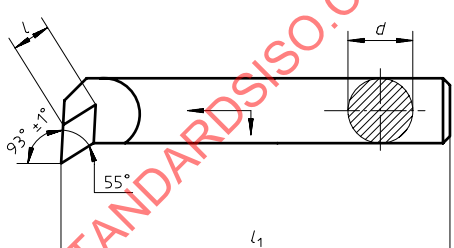
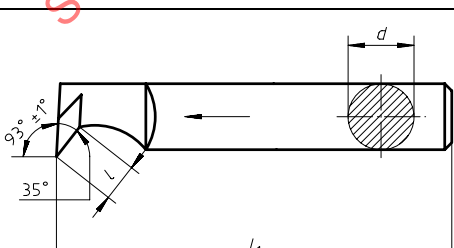
Style		d g7	08	10	12	16	20	25	32	40	50	60
		l_1 k16	80	100	125	150	180	200	250	300	350	400
		f $\begin{smallmatrix} 0 \\ -0,25 \end{smallmatrix}$	6	7	9	11	13	17	22	27	35	43
		D_{min}	11	13	16	20	25	32	40	50	63	80
F		l (design- nation)	06	06	—	—	—	—	—	—	—	—
		l (design- nation)	—	11	11	11	11/16	16	16	16/22	22	22/27
K		l (design- nation)	—	—	—	09	09	09/12	12	12/15	15/19	15/19

Table 3 (continued)

L		<i>l</i> (design- nation)	06	06	06	09	09	12	12	12	16/19	16/19
		<i>l</i> for inserts style W (design- nation)	L3	04	04	04/06	06	06/08	06/08	06/08	—	—
Q		<i>l</i> (design- nation)	—	—	07	07	11	11/15	11/15	15	15	—
		<i>l</i> (design- nation)	—	—	—	11	11/13	13/16	16	16	—	—
U		<i>l</i> (design- nation)	—	—	07	07	11/15	11/15	15	15	15/19	15/19
		<i>l</i> (design- nation)	—	—	—	11	11/13	13	16	—	—	—

Annex A (informative)

Bibliography

- [1] ISO 883:1985, *Indexable hardmetal (carbide) inserts with rounded corners, without fixing hole — Dimensions*.
- [2] ISO 3364:1997, *Indexable hardmetal (carbide) inserts with rounded corners, with cylindrical fixing hole — Dimensions*.
- [3] ISO 6261:1995, *Bring bars (tool holders with cylindrical shank) for indexable inserts — Designation*.
- [4] ISO 6987:1998, *Indexable hard material inserts with rounded corners, with partly cylindrical fixing hole — Dimensions*.

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