

TC 29

INTERNATIONAL
STANDARD

ISO
5609

Third edition
1995-09-01

**Boring bars for indexable inserts —
Dimensions**

Porte-plaquette de tournage intérieur — Dimensions

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Reference number
ISO 5609:1995(E)

Foreword

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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 third edition cancels and replaces the second edition (ISO 5609:1989), subclause 4.2 and clause 5 of which have been technically revised (addition of figures 4 and 5 and boring bars style Q and U with rhombic V-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 agreements 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.*

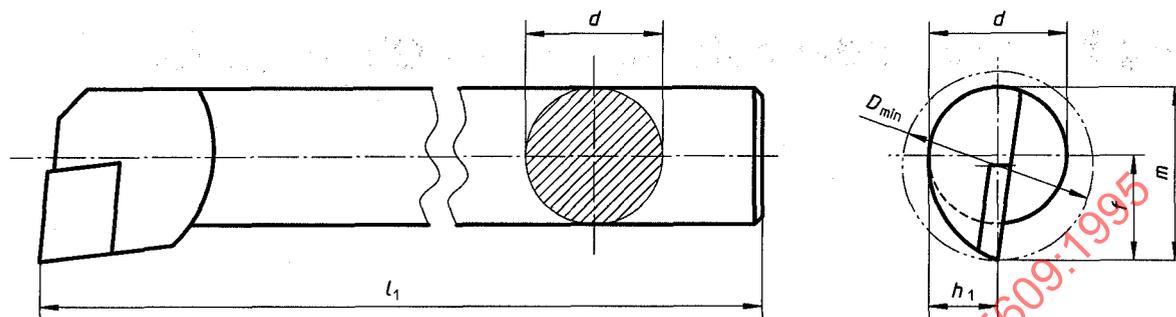
3 Remark

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	350	400
	secondary series	100	125	150	200	250	300	350	400	450	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 inserts 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).

- a) 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_y (see figures 2 and 3).
- b) 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_y (see figures 4 and 5).

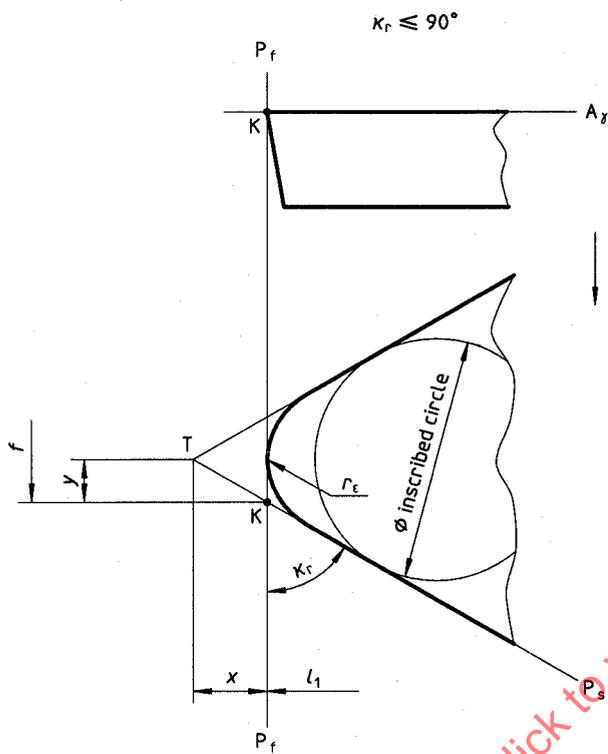


Figure 2

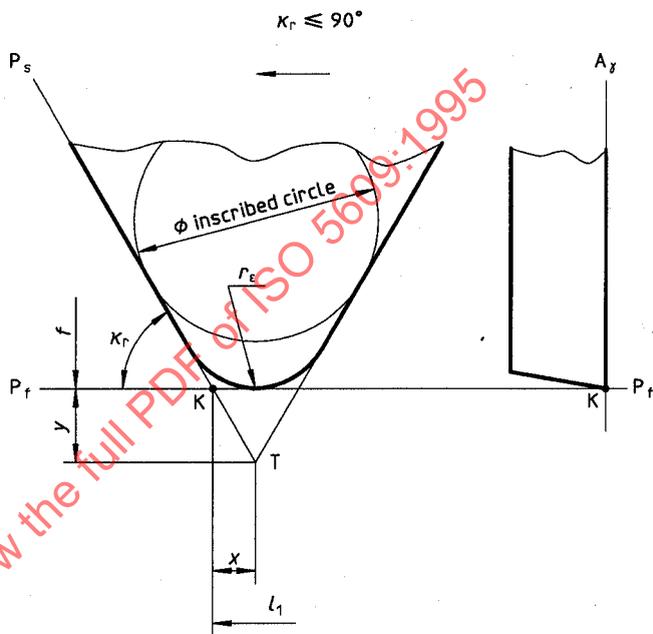


Figure 3

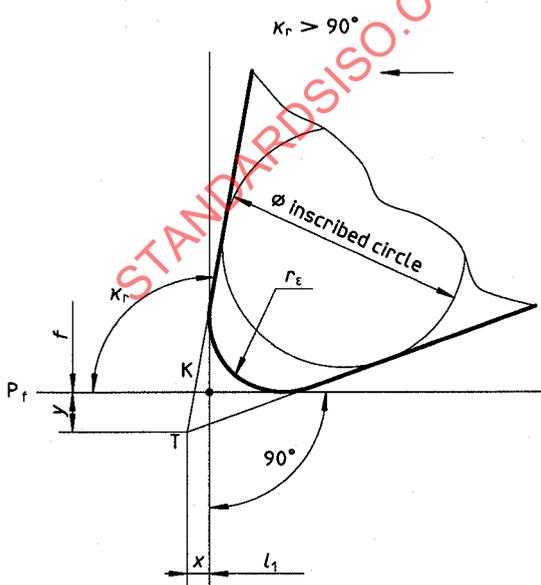


Figure 4

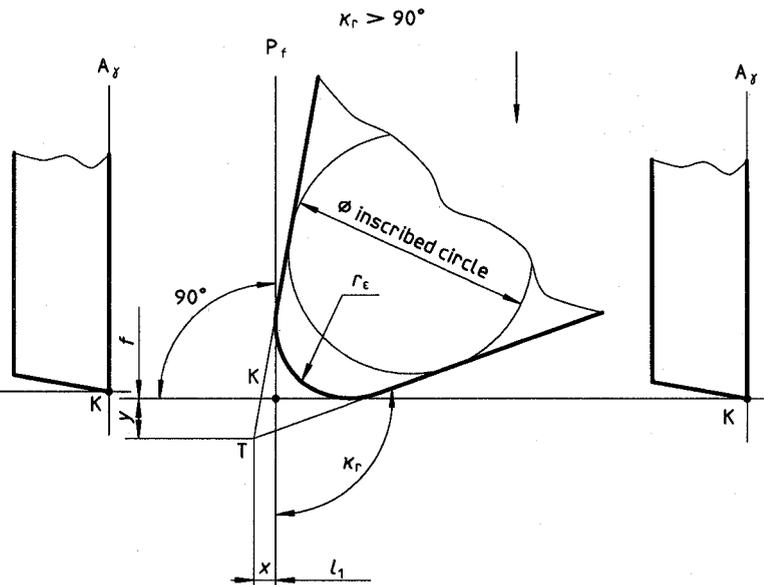


Figure 5

4.2.3 The corner radius r_c 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_c (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_c .

For corner radii r_c 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.

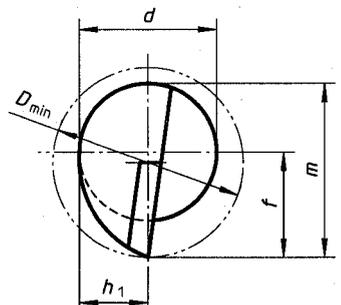
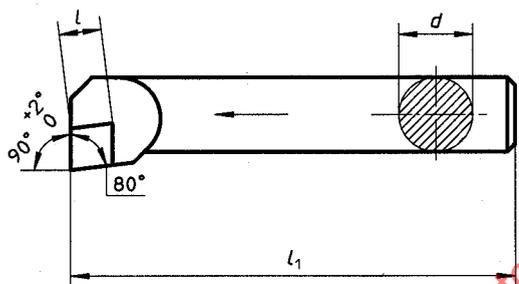
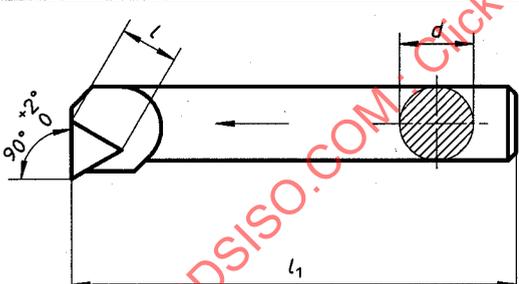
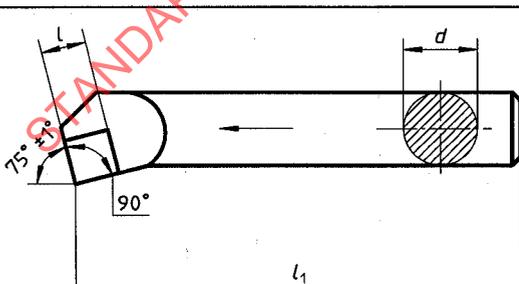
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5 Preferred boring bars

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 (designa- tion)	06	06	—	—	—	—	—	—	—	—	
		l (designa- tion)	—	11	11	11	11/16	16	16	16/22	22	22/27	
K		l (designa- tion)	—	—	—	09	09	09/12	12	12/15	15/19	15/19	

L		l (design- na- tion)	06	06	06	09	09	12	12	12	16/19	16/19
Q		l (design- na- tion)	—	—	07	07	11	11/15	11/15	15	15	—
		l (design- na- tion)	—	—	—	11	11/13	13/16	16	16	—	—
U		l (design- na- tion)	—	—	07	07	11/15	11/15	15	15	15/19	15/19
		l (design- na- tion)	—	—	—	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 3364:1985, *Indexable hardmetal (carbide) inserts with rounded corners, with cylindrical fixing hole — Dimensions.*
- [3] ISO 6261:1995, *Boring bars (tool holders with cylindrical shank) for indexable inserts — Designation.*
- [4] ISO 6987-1:1983, *Indexable hardmetal (carbide) inserts with rounded corners, with partly cylindrical fixing hole — Part 1: Dimensions of inserts with 7 degrees normal clearance.*

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