INTERNATIONAL STANDARD

ISO 7388-3

First edition
2007-08-01

Tool shanks with 7/24 taper for automatic tool changers —

Part 3: Retention knobs for shanks of forms AC, AD, AF, UC, UD, UF, JD and JF

Queues d'outils à conicité 7/24 pour changement automatique d'outils —

Partie 3: Tirettes pour queues de formes AC, AD, AF, UC, UD, UF, JD et JF

Reference number
ISO 7388-3:2007(E)

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Published in Switzerland

Foreword

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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 7388-3 was prepared by Technical Committee ISO/TC 29, *Small tools*.

ISO 7388 consists of the following parts, under the general title *Tool shanks with 7/24 taper for automatic tool changers*:

— *Part 1: Dimensions and designation of shanks of forms A, AD, AF, U, UD and UF*

— *Part 2: Dimensions and designation of shanks of forms J, JD and JF*

— *Part 3: Retention knobs for shanks of forms AC, AD, AF, UC, UD, UF, JD and JF*

Introduction

The aim of ISO 7388 is to integrate existing standards which are most commonly used as an industrial standard. In addition, the different developments for cooling and data chip have been taken into account.

Tool shanks with 7/24 taper for automatic tool changers —

Part 3:
Retention knobs for shanks of forms AC, AD, AF, UC, UD, UF, JD and JF

1 Scope

This part of ISO 7388 specifies the dimensions of retention knobs for tool shanks with a 7/24 taper of shank forms A, AD, AF, UC, UD, UF, JD and JF, for automatic tool changers, used on machines having an automatic gripping system for feeding tools from the magazine to the spindle and vice-versa. These tools are designed with the most important dimensions for use in spindle noses according to ISO 9270.

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 1629, *Rubber and latices — Nomenclature*

ISO 2768-1, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*

ISO 2768-2, *General tolerances — Part 2: Geometrical tolerances for features without individual tolerance indications*

ISO 8015, *Technical drawings — Fundamental tolerancing principle*

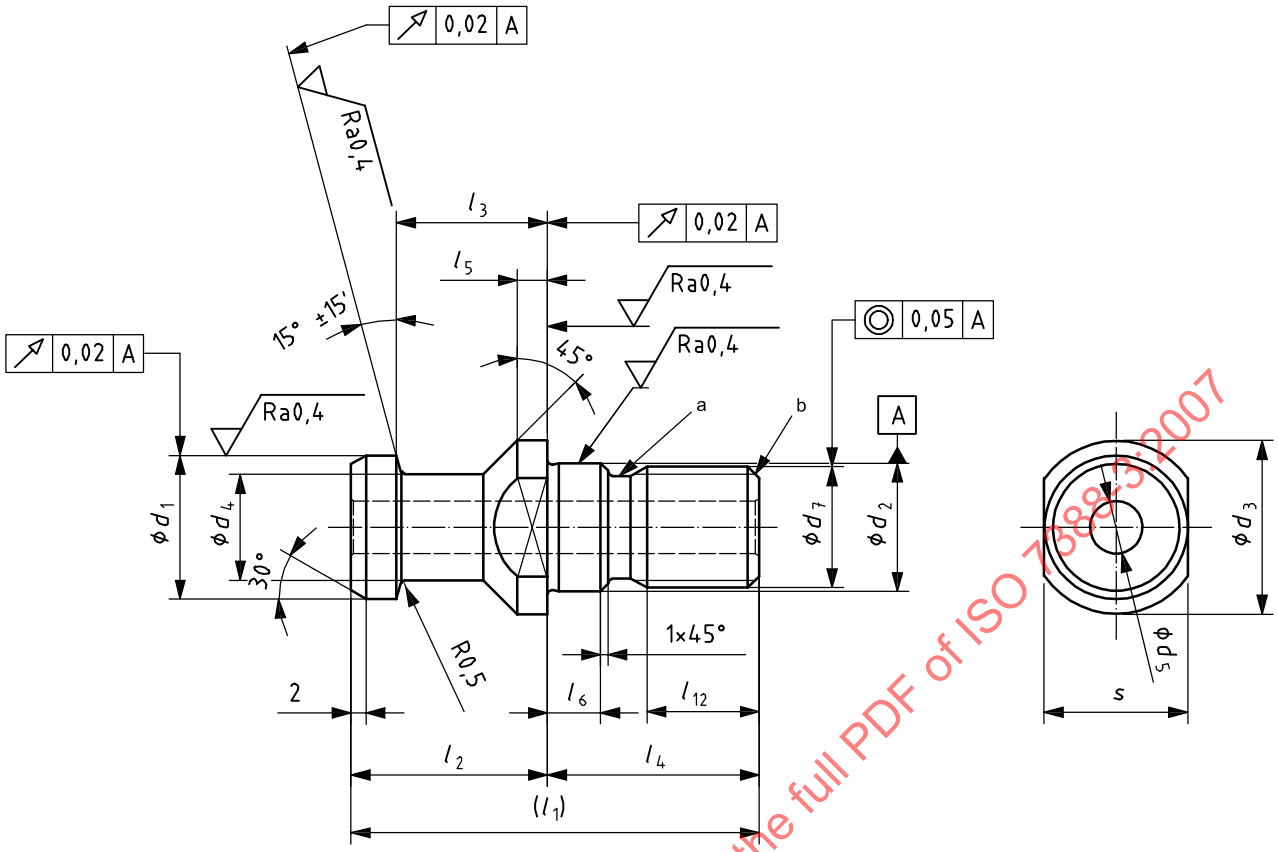
3 Dimensions

3.1 General

All dimensions and tolerances are given in millimetres; tolerancing is according to ISO 8015. Tolerances not specified shall be of tolerance class “m” in accordance with ISO 2768-1 and of class “k” in accordance with ISO 2768-2.

3.2 Retention knobs, shank form AD, for centric inner cooling lubricant supply

See Figure 1 and Table 1.



a Thread undercut, at the manufacturer's discretion.

b Chamfered end (CH), according to ISO 4753.

Figure 1 — Retention knob — Form AD — Centric inner cooling supply

Table 1 — Retention knobs — Form AD — Dimensions

Shank no.	Dimension													
	d_1 f7	d_2 f7	d_3 $^{0}_{-0,2}$	d_4 $^{0}_{-0,1}$	d_5 $^{+0,1}_{0}$	d_7	l_1	l_2 ± 0,1	l_3 ± 0,1	l_4 $^{+0,5}_{0}$	l_5	l_6	l_{12} min.	s $^{0}_{-0,1}$
30	13	13	17	9	—	M12	44	24	19	20	4	5	10	14
40	19	17	23	14	7	M16	54	26	20	28	4	7	13	19
45	23	21	30	17	9,5	M20	65	30	23	35	5	8	16	24
50	28	25	36	21	11,5	M24	74	34	25	40	5	10	19	30
60	40	32	52	30	14	M30	90	40	30	50	6	12	24	46

3.3 Retention knobs, shank form AF, without cooling lubricant supply

See Figure 2 and Table 2. Other dimensions are as for shank form AD.

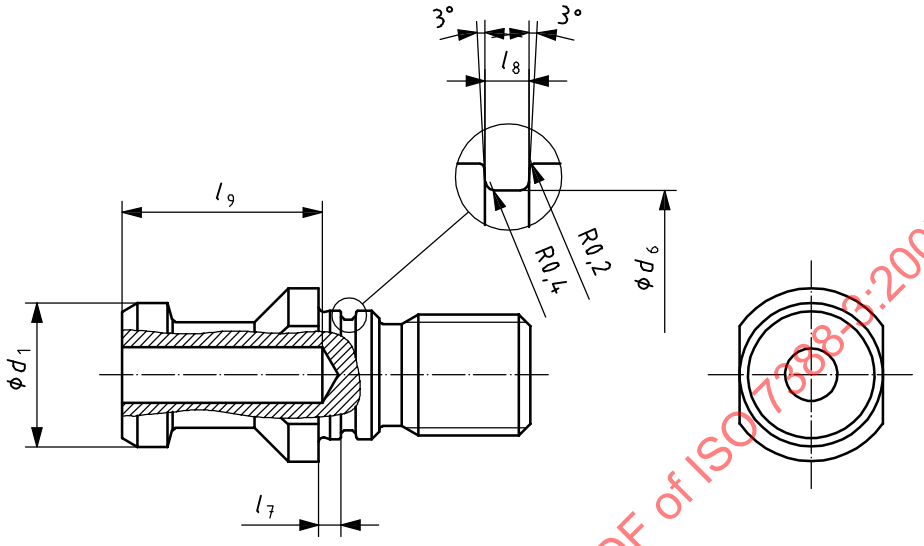


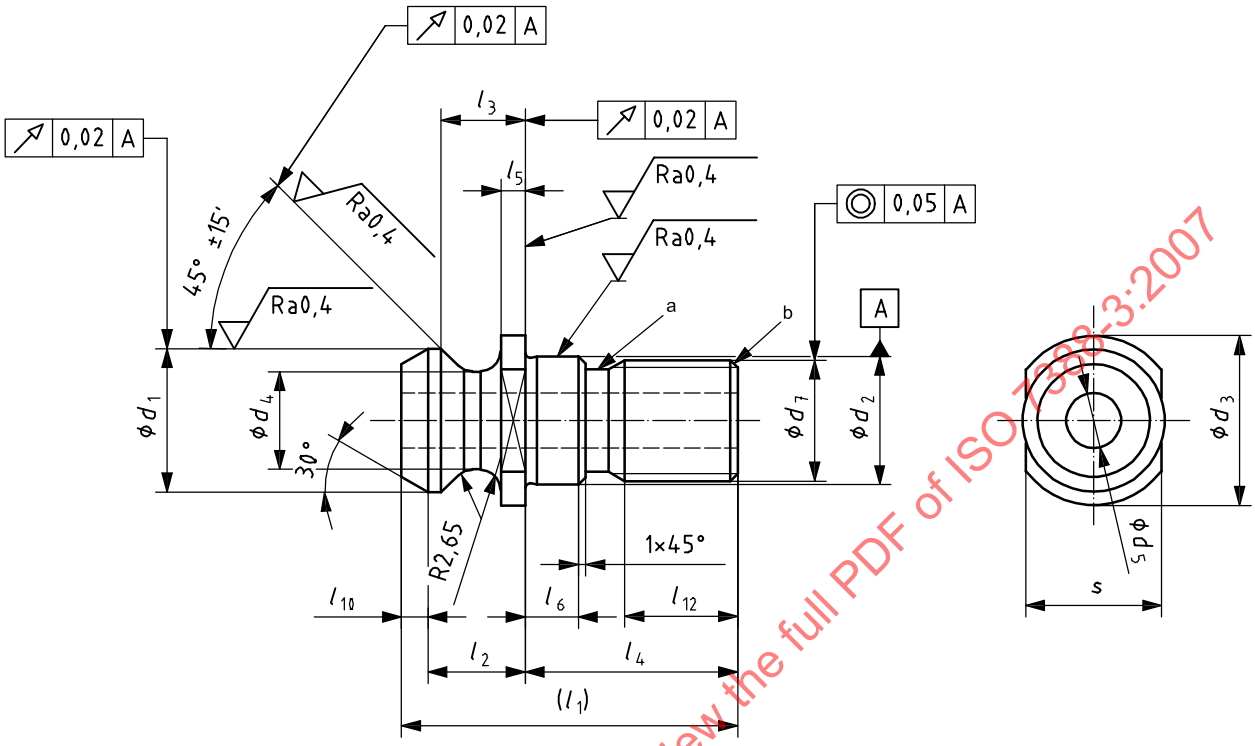
Figure 2 — Retention knob — Form AF — Without cooling lubricant supply

Table 2 — Retention knobs — Form AF — Dimensions

Shank no.	Dimension					O-ring
	d_1 f7	d_6 h11	l_7 $^{0}_{-0,1}$	l_8 $^{+0,2}_{0}$	l_9 $^{+1}_{0}$	
30	13	11,5	2,3	1,4	—	11 × 1,0
40	19	14,6	3,0	1,9	27	14 × 1,5
45	23	17,8	3,3	2,5	33	17 × 2,0
50	28	20,8	4,5	3,0	37	20 × 2,5
60	40	27,8	5,5	3,0	45	27 × 2,5

3.4 Retention knobs, shank form UD, for centric inner cooling lubricant supply

See Figure 3 and Table 3.



a Thread undercut, at the manufacturer's discretion.

b Chamfered end (CH), according to ISO 4753.

Figure 3 — Retention knob — Form UD — Centric inner cooling lubricant supply

Table 3 — Retention knobs — Form UD — Dimensions

Shank no.	Dimension																
	d_1 $^{0}_{-0,3}$	d_2 h6	d_3 nom.	d_3 tol.	d_4 $^{0}_{-0,3}$	d_5 $^{+0,1}_{0}$	d_7	l_1	l_2 $^{0}_{-0,2}$	l_3 $^{0}_{-0,3}$	l_4	l_5 $^{0}_{-0,5}$	l_6 $^{0}_{-0,5}$	l_{10} $^{0}_{-0,5}$	s nom.	s tol.
30	13,35	13	16,5	$^{0}_{-0,5}$	9,3	4,15	M12	31,8	11,8	8,15	20	2,75	5	2,4	13	$^{0}_{-0,27}$
40	18,95	17	22,5	$^{0}_{-1}$	12,95	7,35	M16	44,4	16,4	11,15	28	3,25	7	3,5	18	$^{0}_{-0,33}$
45	24,05	21	30	$^{0}_{-2}$	16,3	9,25	M20	55,95	20,95	14,85	35	4,25	8	3,85	24	$^{0}_{-0,39}$
50	29,1	25	37		19,6	11,55	M24	65,55	25,55	17,95	40	5,25	10	4,85	30	$^{0}_{-0,65}$
60	37,25	32	50		24,95	13,85	M30	88,15	38,15	27,65	50	7,75	12	6,75	36	$^{0}_{-0,75}$

3.5 Retention knobs, shank form UF, without cooling lubricant supply

See Figure 4 and Table 4. Other dimensions are as for shank form UD.

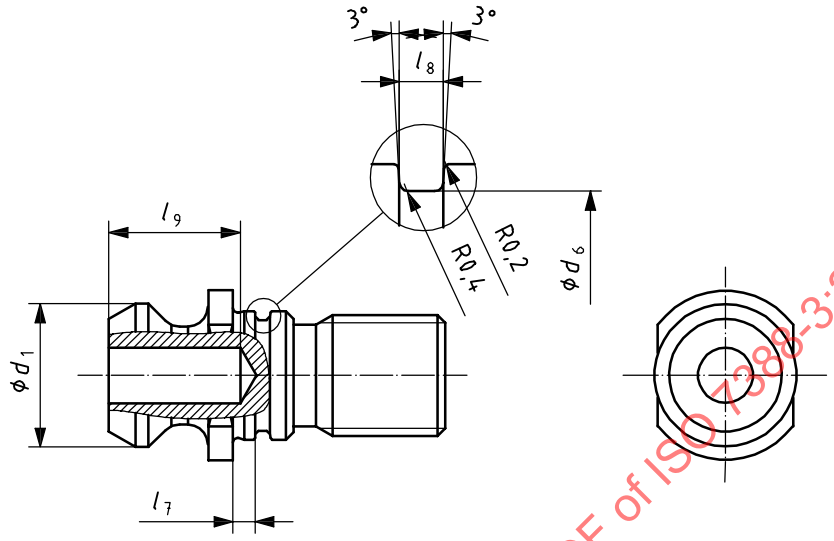


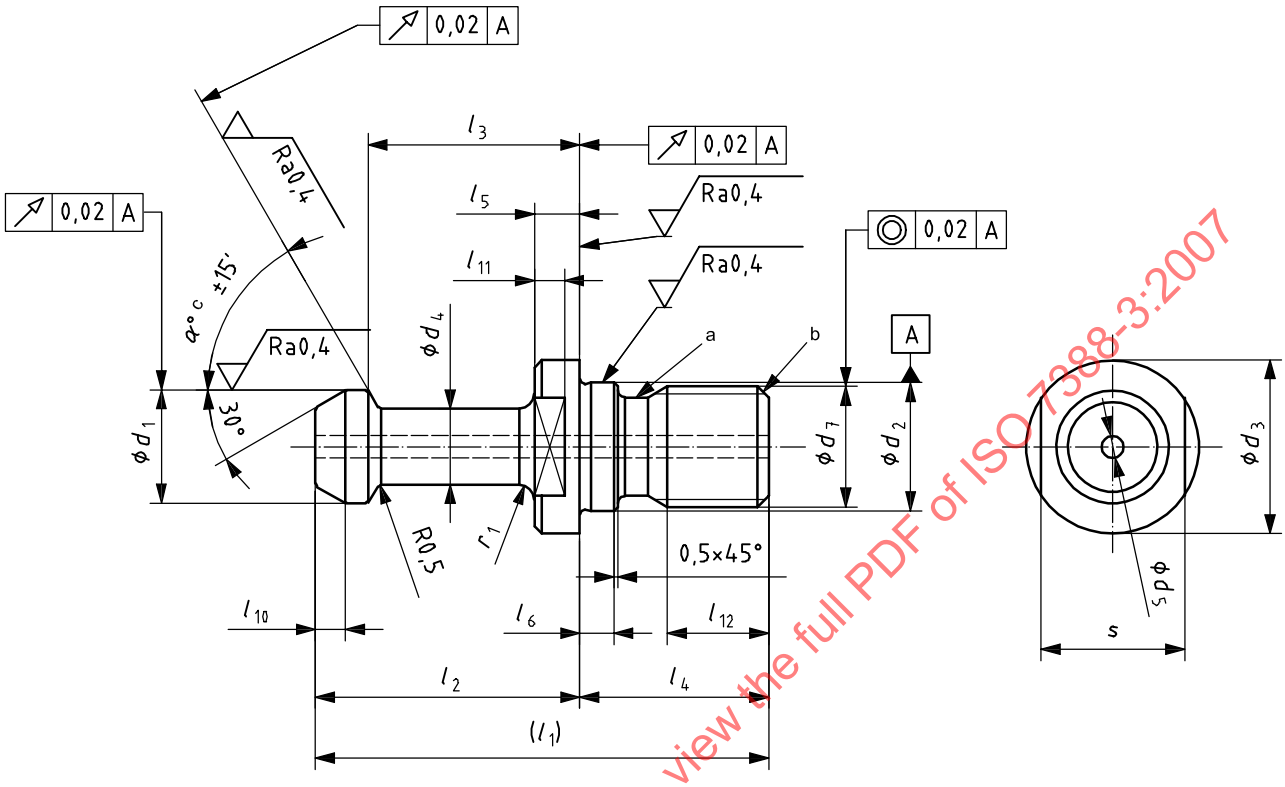
Figure 4 — Retention knob — Form UF — Without cooling lubricant supply

Table 4 — Retention knob — Form UF — Dimensions

Shank no.	Dimension					O-ring
	d_1 $^{0}_{-0,3}$	d_6 h11	l_7	l_8 $^{+0,2}_{0}$	l_9	
30	13,35	11,5	2,3	1,4	—	11 × 1,0
40	18,95	14,6	3,0	1,9	27	14 × 1,5
45	24,05	17,8	3,3	2,5	33	17 × 2,0
50	29,1	20,8	4,5	3,0	37	20 × 2,5
60	37,25	27,8	5,5	3,0	45	27 × 2,5

3.6 Retention knobs for shank form JD with centric inner cooling supply

See Figure 5 and Table 5.



a Thread undercut, at the manufacturer's discretion.

b Chamfered end (CH), according to ISO 4753.

c $\alpha = 45°$ or $\alpha = 60°$. This information should be given and taken over in the designation (see Clause 6).

Figure 5 — Retention knob — Form JD — Centric inner cooling supply

Table 5 — Retention knobs — Form JD — Dimensions

Shank no.	Dimension																
	d_1 $^{0}_{-0,1}$	d_2 h7	d_3 $^{0}_{-0,2}$	d_4 $^{0}_{-0,1}$	d_5 $^{+0,1}_{0}$	d_7 6h	l_1	l_2 $^{0}_{-0,1}$	l_3 $^{0}_{-0,1}$	l_4	l_5 $^{0}_{-0,1}$	l_6	l_{10} $^{0}_{-0,5}$	l_{11}	l_{12}	r_1	s $^{0}_{-0,35}$
30	11	12,5	16,5	7	—	M12	43	23	18	20	5	4	2,5	3,5	10	2	13
40	15	17	23	10	—	M16	60	35	28	25	6	5	4	4	13	3	19
45	19	21	31	14	7	M20	70	40	31	30	8	6	5	6	16	4	24
50	23	25	38	17	8,5	M24	85	45	35	40	10	8	5	8	19	5	30
60	32	31	56	24	12	M30	115	65	53	50	14	10	7	11	24	5	46

3.7 Retention knobs, shank form JF, without cooling lubricant supply

See Figure 6. Other dimensions are as for shank form JD.

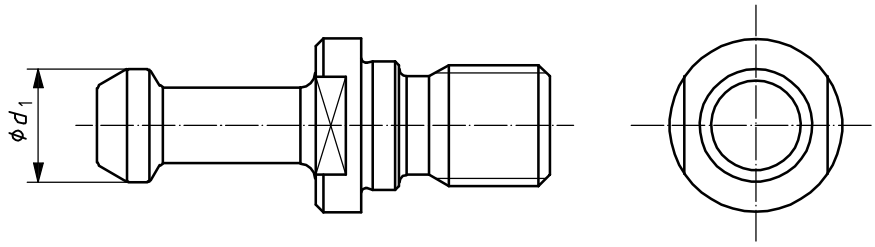


Figure 6 — Retention knob, Form JF without cooling lubricant supply

3.8 Retention knobs with data medium, forms AC and UC

For shank forms AF and UF without a hole, it is possible to install a data medium hole: AF then becomes AC and UF becomes UC.

If a data medium hole is needed for form JF, the dimensions shall be defined by the manufacturer according to the data medium used. The location shall be as shown in Figure 7.

See Figures 2 and 4 and Tables 2 and 4.

The general dimensions are given in Table 6.

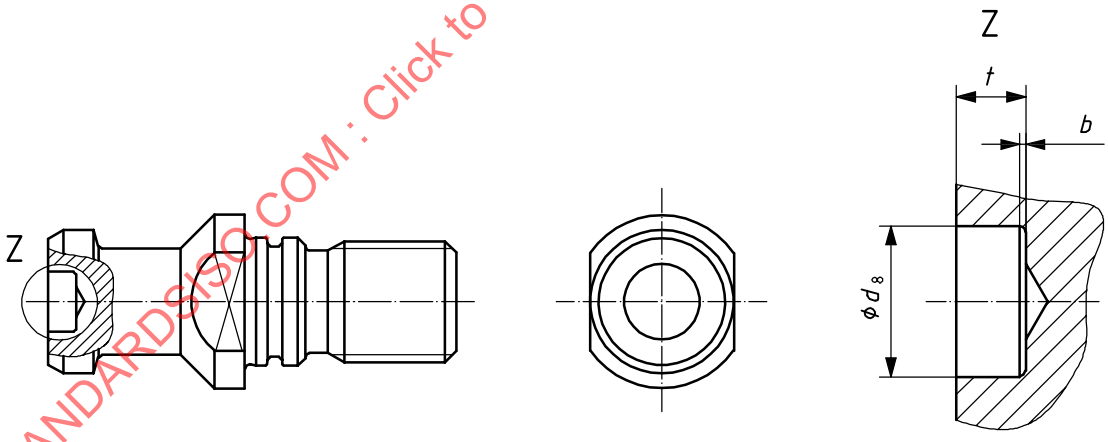


Figure 7 — Retention knob with data medium

Table 6 — Fitting dimension of the data medium

b_{max}	0,3 × 45° or R 0,3 [a]
d_8	$10\ ^{+0,09}_{0}$
t	$4{,}6\ ^{+0,2}_{0}$
[a] At the manufacturer's discretion.	