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

**Part 3:
Retention knobs of forms AD, AF, UD,
UF, JD and JF**

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

Partie 3: Tirettes de formes AD, AF, UD, UF, JD et JF

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 29, *Small tools*, Subcommittee SC 2, *Holding tools, adaptive items and interfaces*.

This third edition cancels and replaces the second edition (ISO 7388-3:2013), of which it constitutes a minor revision with the following changes:

- in the title and in all the text, “retention knobs for shanks of form” was changed to “retention knobs of form”;
- forms AC and UC have been deleted from the title and from the designation ([Clause 6](#));
- a footnote was added to [Tables 1](#) and [5](#).

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 of forms AD, AF, 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.

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

Part 3:

Retention knobs of forms AD, AF, UD, UF, JD and JF

1 Scope

This part of ISO 7388 specifies the dimensions of retention knobs of forms AD, AF, UD, UF, JD and JF for tool shanks with a 7/24 taper 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 (all parts).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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, *Geometrical product specifications (GPS) — Fundamentals — Concepts, principles and rules*

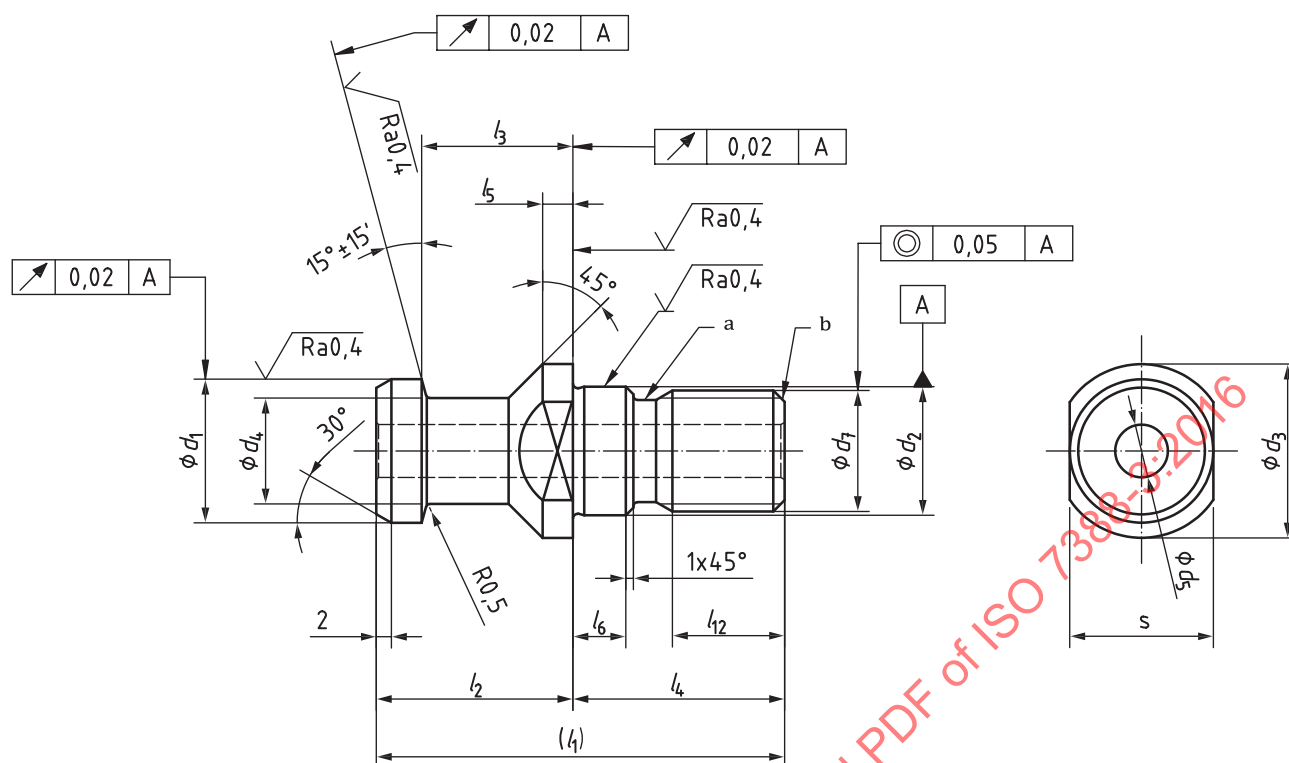
3 Dimensions

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 of form AD, for centric inner cooling lubricant supply

The dimensions of retention knobs of form AD shall be in accordance with the dimensions shown in [Figure 1](#) and given in [Table 1](#).



Key

- 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 lubricant supply

Table 1 — Retention knobs — Form AD — Dimensions

Shank no.	Dimension													
	d_1	d_2	d_3	d_4	d_5	d_7	l_1	l_2	l_3	l_4	l_5	l_6	l_{12}	s
	f7	f7	0 -0,2	0 -0,1	+0,1 0			$\pm 0,1$	$\pm 0,1$	+0,5 0			min.	0 -0,1
30 ^a	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

^a Dimensions only for form AF.

3.3 Retention knobs of form AF, without cooling lubricant supply

The dimensions of retention knobs of form AF shall be in accordance with the dimensions shown in [Figure 2](#) and given in [Table 2](#). Other dimensions are the same as form AD.

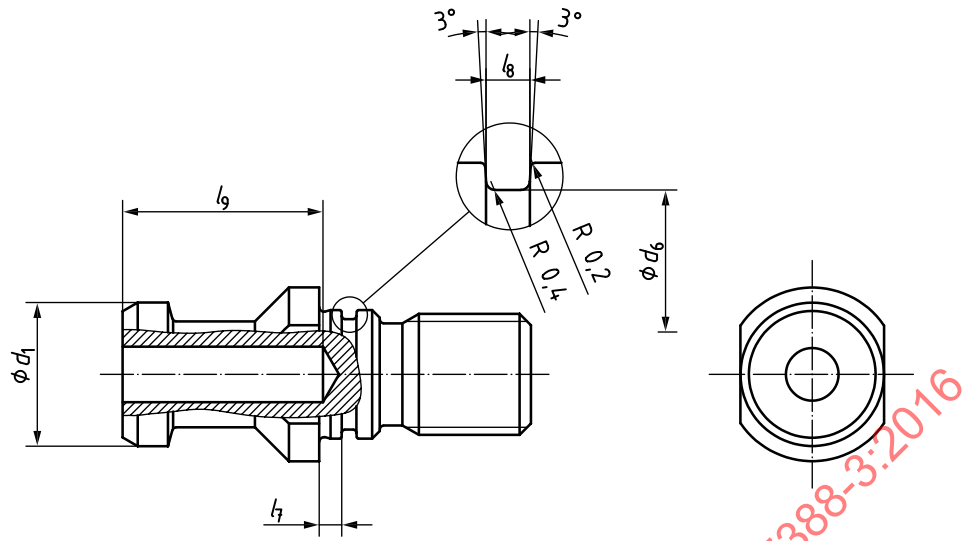


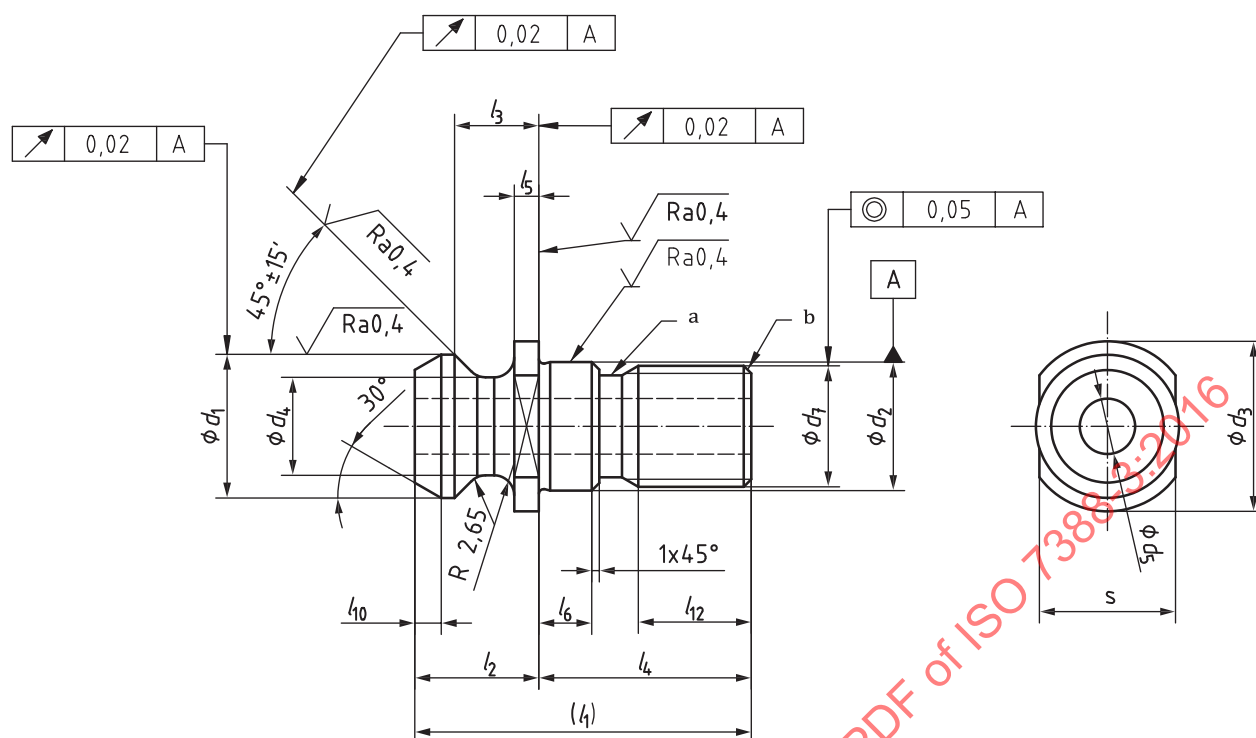
Figure 2 — Retention knob — Form AF — Without cooling lubricant supply

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 of form UD, for centric inner cooling lubricant supply

The dimensions of retention knobs of form UD shall be in accordance with the dimensions shown in [Figure 3](#) and given in [Table 3](#).



Key

- 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	d_2	d_3		d_4	d_5	d_7	l_1	l_2	l_3	l_4	l_5	l_6	l_{10}	s	
	0 −0,3	h6	nom.	tol.	0 −0,3	+0,1 0		0 −0,2	0 −0,3		0 −0,5	0 −0,5	0 −0,5	nom.	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 of form UF, without cooling lubricant supply

The dimensions of retention knobs of form UF shall be in accordance with the dimensions shown in [Figure 4](#) and given in [Table 4](#). Other dimensions are as for form UD.

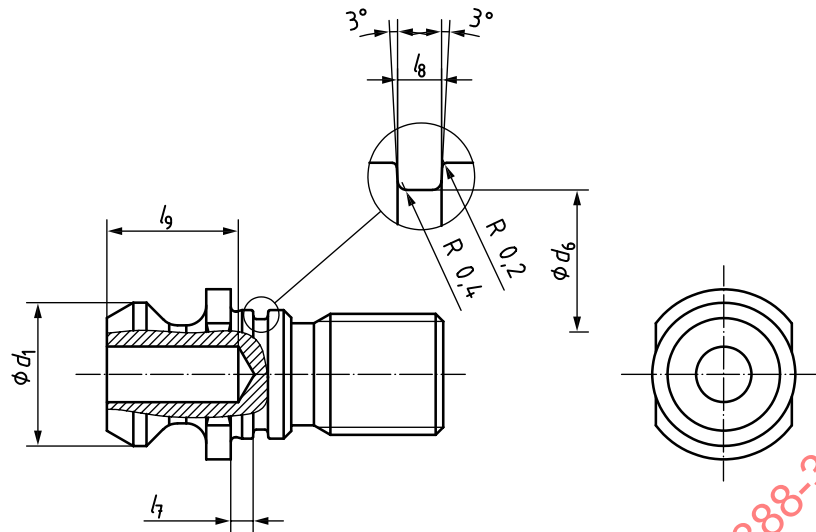


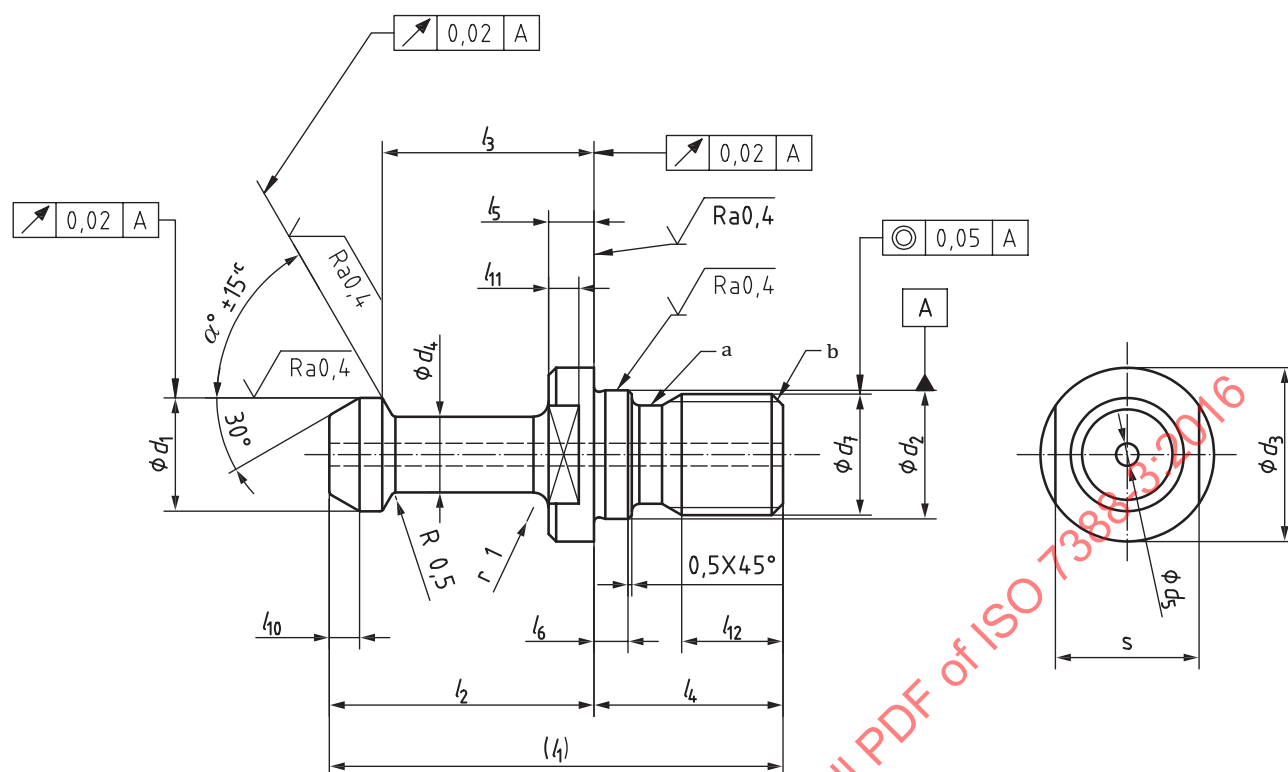
Figure 4 — Retention knob — Form UF — Without cooling lubricant supply

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 of form JD with centric inner cooling lubricant supply

The dimensions of retention knobs of form JD shall be in accordance with the dimensions shown in [Figure 5](#) and given in [Table 5](#).



Key

- a Thread undercut, at the manufacturer's discretion.
- b Chamfered end (CH), according to ISO 4753.
- c $\alpha = 45^\circ$ or $\alpha = 60^\circ$. This information should be given and taken over in the designation (see [Clause 6](#)).

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

Table 5 — Retention knobs — Form JD — Dimensions

Shank no.	Dimension																
	d_1	d_2	d_3	d_4	d_5	d_7	l_1	l_2	l_3	l_4	l_5	l_6	l_{10}	l_{11}	l_{12}	r_1	s
	0 -0,1	h7	0 -0,2	0 -0,1	+0,1 0	6h		0 -0,1	0 -0,1		0 -0,1		0 -0,5				0 -0,35
30 ^a	11	12,5	16,5	7	—	M12	43	23	18	20	5	4	2,5	3,5	10	2	13
40 ^a	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

^a Dimensions only for form JF.

3.7 Retention knobs of form JF, without cooling lubricant supply

The dimensions of retention knobs of form JF shall be in accordance with the dimensions shown in [Figure 6](#). Other dimensions are as for form JD.