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**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*



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Published in Switzerland

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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](http://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](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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.

This second edition cancels and replaces the first edition (ISO 7388-3:2007), which has been technically revised.

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.

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# 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 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*

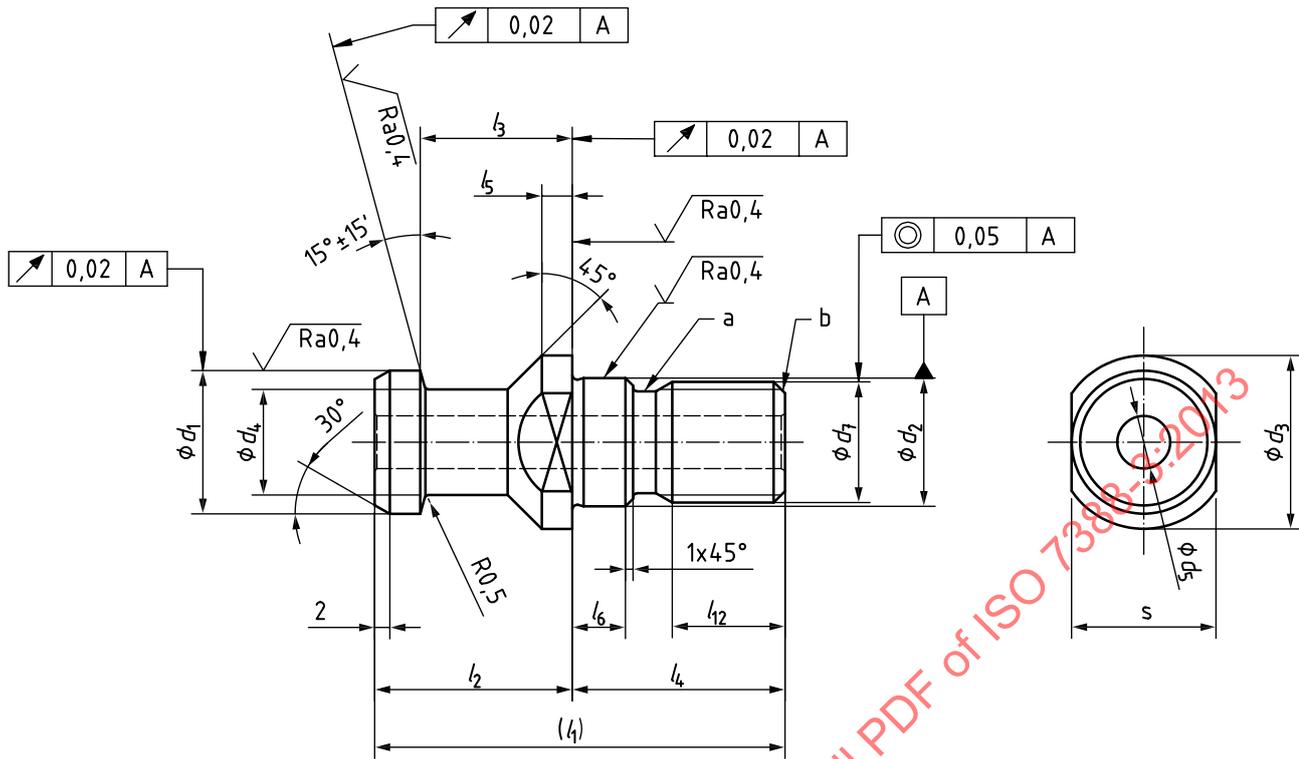
## 3 Dimensions

### 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, shank form AD, for centric inner cooling lubricant supply

The dimensions of retention knobs for shanks 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 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	$\begin{matrix} 0 \\ -0,2 \end{matrix}$	$\begin{matrix} 0 \\ -0,1 \end{matrix}$	$\begin{matrix} +0,1 \\ 0 \end{matrix}$			$\pm 0,1$	$\pm 0,1$	$\begin{matrix} +0,5 \\ 0 \end{matrix}$			min.	$\begin{matrix} 0 \\ -0,1 \end{matrix}$
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**

The dimensions of retention knobs for shanks 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 that of shank form AD.

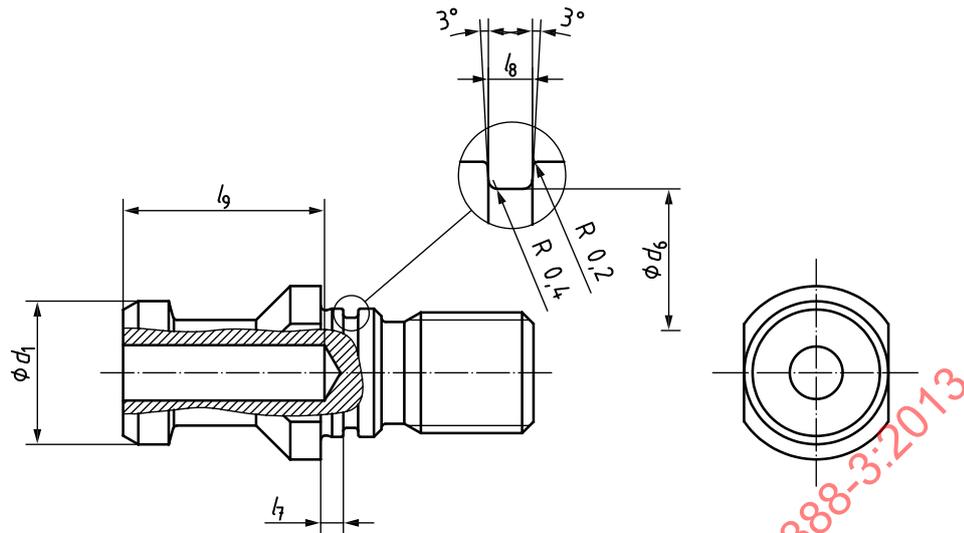


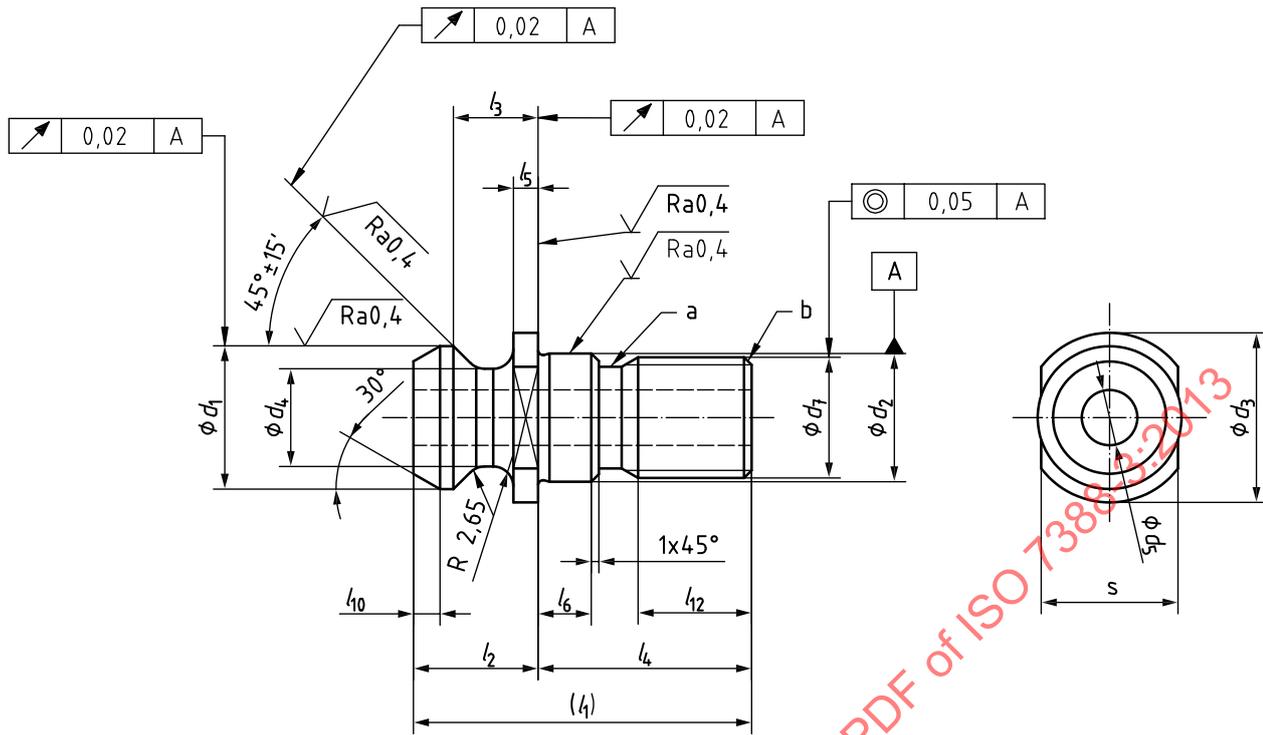
Figure 2 — Retention knob — Form AF — Without cooling lubricant supply

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

The dimensions of retention knobs for shanks 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															
	$d_1$	$d_2$	$d_3$		$d_4$	$d_5$	$d_7$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$l_{10}$	$s$	
	$\begin{matrix} 0 \\ -0,3 \end{matrix}$	h6	nom.	tol.	$\begin{matrix} 0 \\ -0,3 \end{matrix}$	$\begin{matrix} +0,1 \\ 0 \end{matrix}$			$\begin{matrix} 0 \\ -0,2 \end{matrix}$	$\begin{matrix} 0 \\ -0,3 \end{matrix}$		$\begin{matrix} 0 \\ -0,5 \end{matrix}$	$\begin{matrix} 0 \\ -0,5 \end{matrix}$	$\begin{matrix} 0 \\ -0,5 \end{matrix}$	nom.	tol.
30	13,35	13	16,5	$\begin{matrix} 0 \\ -0,5 \end{matrix}$	9,3	4,15	M12	31,8	11,8	8,15	20	2,75	5	2,4	13	$\begin{matrix} 0 \\ -0,27 \end{matrix}$
40	18,95	17	22,5	$\begin{matrix} 0 \\ -1 \end{matrix}$	12,95	7,35	M16	44,4	16,4	11,15	28	3,25	7	3,5	18	$\begin{matrix} 0 \\ -0,33 \end{matrix}$
45	24,05	21	30	$\begin{matrix} 0 \\ -2 \end{matrix}$	16,3	9,25	M20	55,95	20,95	14,85	35	4,25	8	3,85	24	$\begin{matrix} 0 \\ -0,39 \end{matrix}$
50	29,1	25	37		19,6	11,55	M24	65,55	25,55	17,95	40	5,25	10	4,85	30	$\begin{matrix} 0 \\ -0,65 \end{matrix}$
60	37,25	32	50		24,95	13,85	M30	88,15	38,15	27,65	50	7,75	12	6,75	36	$\begin{matrix} 0 \\ -0,75 \end{matrix}$

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

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

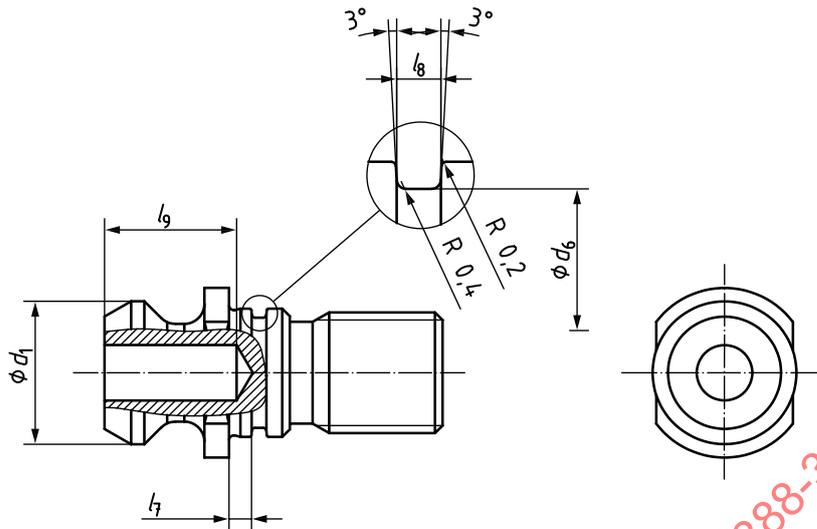


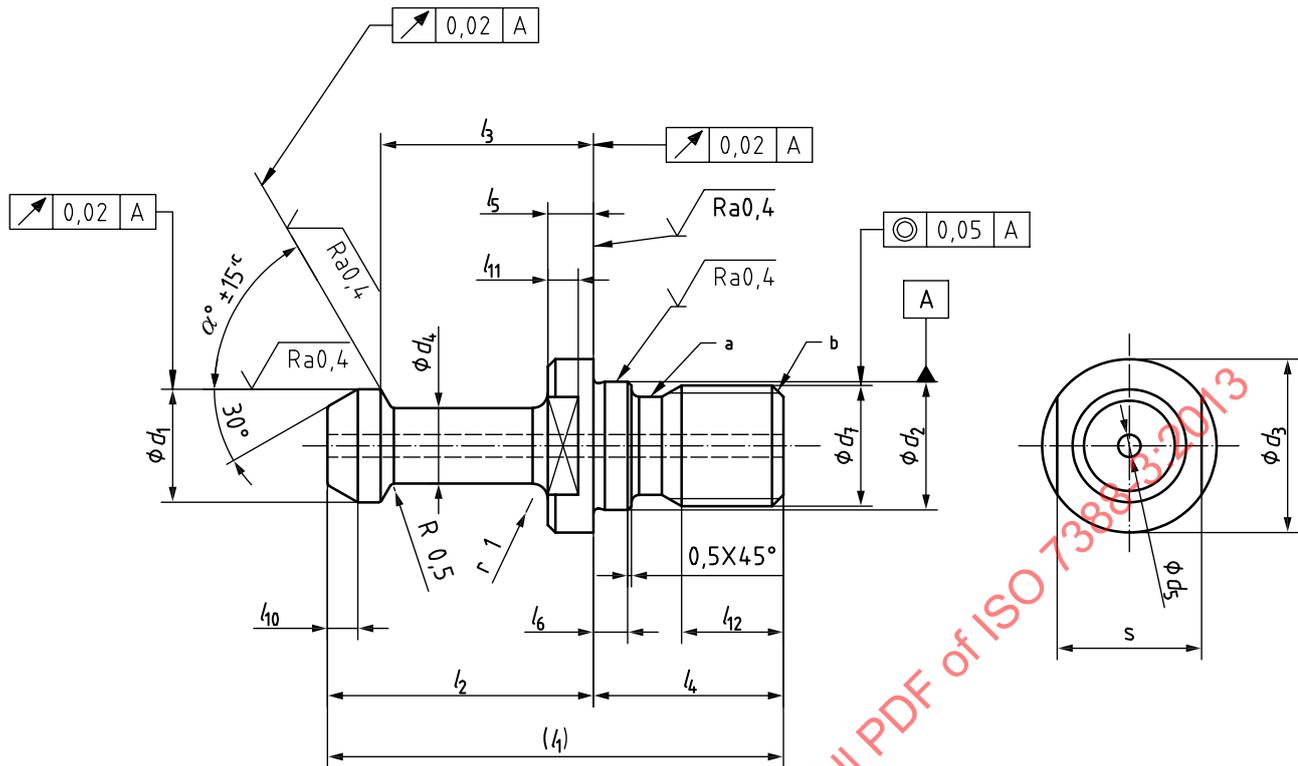
Figure 4 — Retention knob — Form UF — Without cooling lubricant supply

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

The dimensions of retention knobs for shanks 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 supply**

**Table 5 — Retention knobs — Form JD — Dimensions**

Shank no.	Dimension																
	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	$d_7$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$l_{10}$	$l_{11}$	$l_{12}$	$r_1$	$s$
	$\begin{smallmatrix} 0 \\ -0,1 \end{smallmatrix}$	h7	$\begin{smallmatrix} 0 \\ -0,2 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0,1 \end{smallmatrix}$	$\begin{smallmatrix} +0,1 \\ 0 \end{smallmatrix}$	6h		$\begin{smallmatrix} 0 \\ -0,1 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0,1 \end{smallmatrix}$		$\begin{smallmatrix} 0 \\ -0,1 \end{smallmatrix}$		$\begin{smallmatrix} 0 \\ -0,5 \end{smallmatrix}$				$\begin{smallmatrix} 0 \\ -0,35 \end{smallmatrix}$
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**

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