INTERNATIONAL STANDARD

ISO 5414-2

Second edition
2002-11-01

Tool chucks (end mill holders) with clamp screws for flatted cylindrical shank tools —

Part 2: Connecting dimensions of chucks and designation

Mandrins porte-outils, à vis de blocage, pour outils à queue cylindrique à méplat —

Partie 2: Dimensions d'encombrement des mandrins et désignation

Reference number
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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 part of ISO 5414 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 5414-2 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 2, *Drills, reamers, milling cutters and milling machine accessories*.

This second edition cancels and replaces the first edition (ISO 5414-2:1982), which has been technically revised (in particular by the addition of shanks with diameters 14 mm and 18 mm, and of chucks with 7/24 taper shanks for automatic changers).

ISO 5414 consists of the following parts, under the general title *Tool chucks (end mill holders) with clamp screws for flatted cylindrical shank tools*:

— *Part 1: Dimensions of the driving system of tool shanks*

— *Part 2: Connecting dimensions of chucks and designation*

Tool chucks (end mill holders) with clamp screws for flatted cylindrical shank tools —

Part 2:
Connecting dimensions of chucks and designation

1 Scope

This part of ISO 5414 specifies the dimensions of tool chucks (end mill holders) with clamp screws for tools with flatted cylindrical shanks in accordance with ISO 3338-2. It also specifies the designations of these chucks.

Two types of connection are defined:

— chucks with 7/24 taper shanks in accordance with ISO 297 for manual changers and with ISO 7388-1 for automatic changers, for tool shanks with either single flat or a double flat for manual and automatic changers;

NOTE 1 This part of ISO 5414 specifies the dimensions of tool chucks with 7/24 taper shanks No. 30 for automatic changers although these are not standardized.

— chucks with Morse taper shanks in accordance with ISO 296 and ISO 5413 for tool shanks with a single flat only.

NOTE 2 The dimensions of the driving system of the tool shanks are dealt with in ISO 5414-1.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 5414. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 5414 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 296, *Machine tools — Self-holding tapers for tool shanks*

ISO 297, *7/24 tapers for tool shanks for manual changing*

ISO 3338-2, *Cylindrical shanks for milling cutters — Part 2: Dimensional characteristics of flatted cylindrical shanks*

ISO 5413, *Machine tools — Positive drive of Morse tapers*

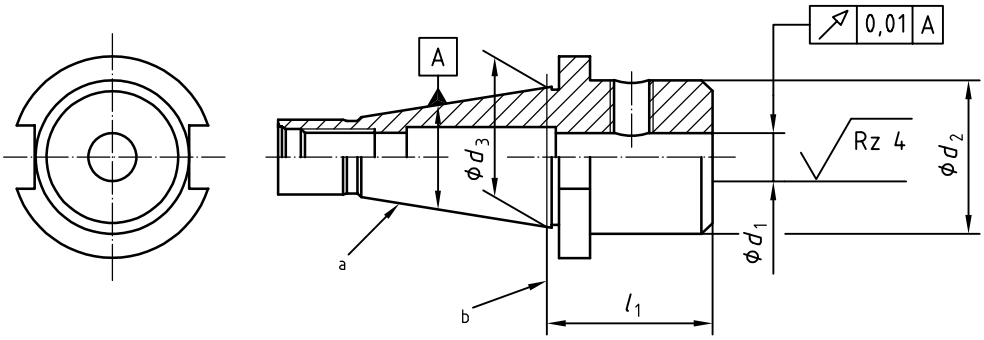
ISO 7388-1, *Tool shanks with 7/24 taper for automatic tool changers — Part 1: Shanks Nos. 40, 45 and 50 — Dimensions*

3 Chucks with 7/24 taper shanks for manual changers

3.1 Chucks for tool shanks with single flat

See Figure 1 and Table 1.

Dimensions in millimetres,
surface roughness value in micrometres



a 7/24 taper shank in accordance with ISO 297

b Gauge plane

Figure 1

Table 1

Dimensions in millimetres

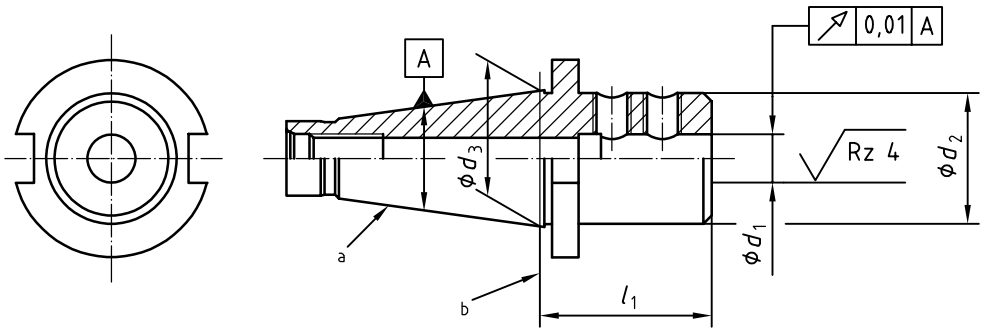
7/24 taper shank No.	d_3	d_1 H5	d_2 $^{0}_{-1}$	l_1[a]
30	31,75	6	25	40
		8	28	
		10	35	
		12	42	
		14	44	50
		16	48	
		18	50	63
		20	52	
40	44,45	6	25	50
		8	28	
		10	35	
		12	42	
		14	44	
		16	48	63
		18	50	
		20	52	
45	57,15	6	25	50
		8	28	
		10	35	
		12	42	
		14	44	
		16	48	63
		18	50	
		20	52	
50	69,85	6	25	
		8	28	
		10	35	
		12	42	
		14	44	
		16	48	
		18	50	
		20	52	

[a] For some special devices for tool holders, others lengths, l_1, can be determined.

3.2 Chucks for tool shanks with double flat

See Figure 2 and Table 2.

Dimensions in millimetres,
surface roughness value in micrometres



a 7/24 taper shank in accordance with ISO 297

b Gauge plane

Figure 2

Table 2

Dimensions in millimetres

7/24 taper shank No.	d_3	d_1 H5	d_2		l_1[a]
40	44,45	25	65	$^{0}_{-1}$	90
		32	72		100
45	57,15	25	65	$^{0}_{-1}$	80
		32	72		80
		40	80	max.	90
		50	90		115
50	69,85	25	65	$^{0}_{-1}$	80
		32	72		80
		40	80	max.	90
		50	90		115
		63	130		

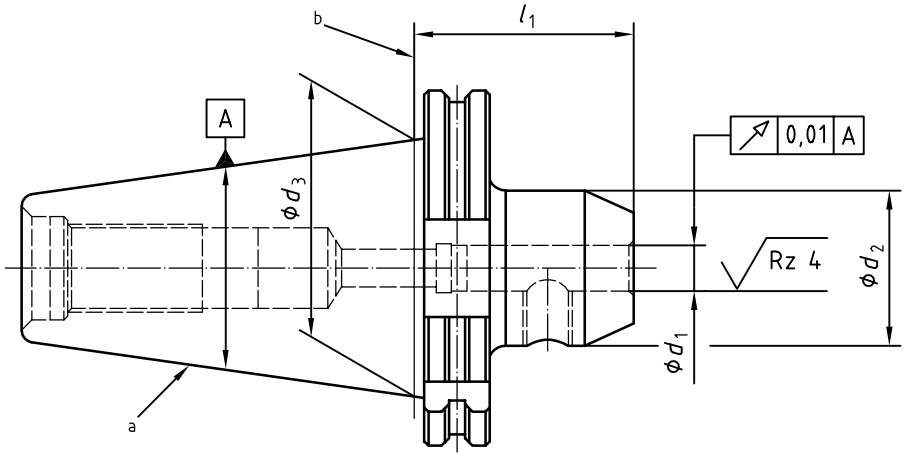
a For some special devices for tool holders, other lengths, l_1, can be determined.

4 Chucks with 7/24 taper shanks for automatic changers

4.1 Chucks for tool shanks with single flat

See Figure 3 and Table 3.

Dimensions in millimetres,
surface roughness value in micrometres



a 7/24 taper shank in accordance with ISO 7388-1, except for taper shanks No. 30

b Gauge plane

Figure 3

Table 3

Dimensions in millimetres

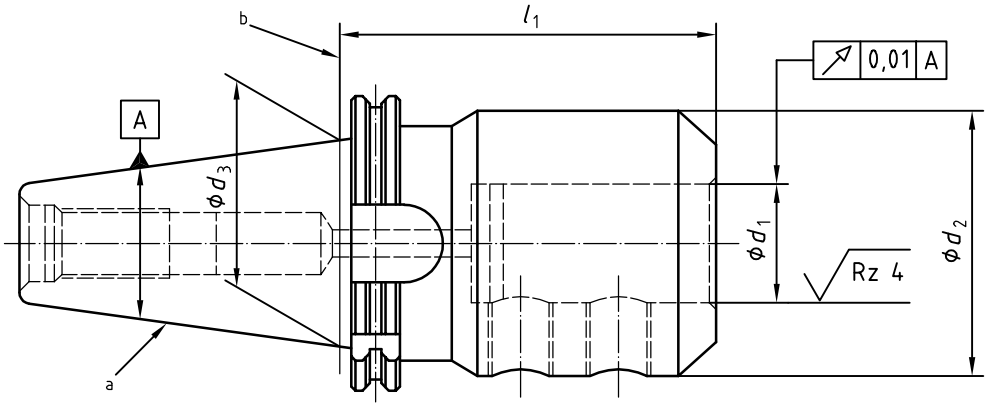
7/24 taper No.	d_3	d_1 H 5	d_2 $^{0}_{-1}$	l_1[a]
30	31,75	6	25	50
		8	28	
		10	35	
		12	42	
		14	44	
		16	48	63
40	44,45	6	25	50
		8	28	
		10	35	
		12	42	
		14	44	
		16	48	63
		18	50	
		20	52	
45	57,15	6	25	50
		8	28	
		10	35	
		12	42	
		14	44	
		16	48	63
		18	50	
		20	52	
50	69,85	6	25	63
		8	28	
		10	35	
		12	42	
		14	44	
		16	48	
		18	50	
		20	52	

[a] For some special devices for tool holders, other lengths, l_1, can be determined.

4.2 Chucks for tool shanks with double flat

See Figure 4 and Table 4.

Dimensions in millimetres,
surface roughness value in micrometres



a 7/24 taper shank in accordance with ISO 7388-1

b Gauge plane

Figure 4

Table 4

Dimensions en millimetres

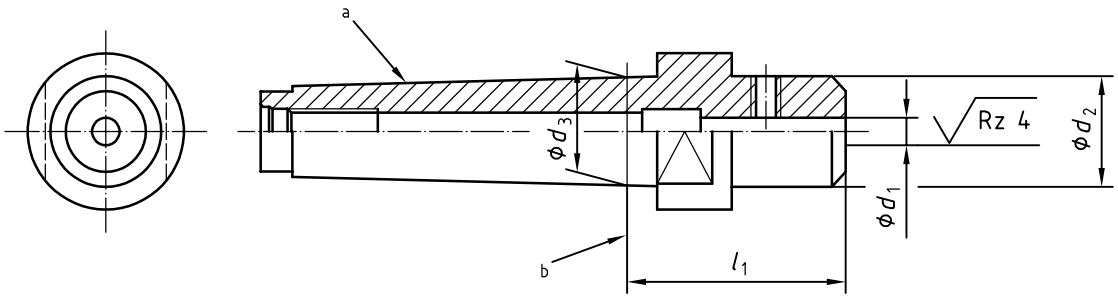
7/24 taper No.	d_3	d_1 H5	$d_2{}^{0}_{-1}$	l_1[a]
40	44,45	25	65	100
		32	72	
45	57,15	25	65	80
		32	72	100
50	69,85	25	65	80
		32	72	100

a For some special devices for tool holders, other lengths, l_1, can be determined.

5 Chucks with Morse taper shanks for tool shanks with single flat

See Figure 5 and Table 5.

Surface roughness value in micrometres



a Morse taper shanks in accordance with ISO 296 and ISO 5413

b Gauge plane

NOTE With the exception of chucks with Morse taper shank No. 2, these chucks have Morse taper shanks with positive drive.

Figure 5

Table 5

Dimensions in millimetres

Morse taper No.	d_3	d_1 H5	d_2 $^{0}_{-1}$	l_1[a]
2	17,780	10	35	50
3	23,825	10	35	45
		12	42	50
		16	48	71
4	31,267	10	35	50
		12	42	56
		16	48	56
		20	52	71
5	44,399	10	35	56
		12	42	63
		16	48	63
		20	52	63

a For some special devices for tool holders, other lengths, l_1, can be determined.

6 Designation

A tool chuck (end mill holder) for either manual or automatic tool changers in accordance with this International Standard shall be designated by:

a) the designation “Tool chuck”;

b) reference to this part of ISO 5414, i.e. ISO 5414-2;

c) the letter A in the case of manual tool changers (in accordance with ISO 297) followed by the figure 1 or 2 depending on if the chuck is with single flat or with double flat;

d) the letter B in the case of automatic tool changers (in accordance with ISO 7388-1) followed by the figure 1 or 2 depending on if the chuck is with single flat or with double flat;

e) the letter M in the case of a chuck with Morse taper shank;

f) the taper size number;

g) the clamping diameter d_1;

h) the size of the clamp screw.

EXAMPLE A tool chuck for manual tool changers, form A (in accordance with ISO 297) with single flat, with taper size 45 and a clamping diameter $d_1 = 10$ mm and a clamp screw of M10 is designated as follows:

Tool chuck ISO 5414-2 - A1 - 45 × 10 - M10

EXAMPLE A tool chuck for automatic tool changers, form B (in accordance with ISO 7388-1) with double flat, with taper size 45 and a clamping diameter $d_1 = 25$ mm and a clamp screw of M18 × 2 is designated as follows:

Tool chuck ISO 5414-2 - B2 - 45 × 25 - M18 × 2

EXAMPLE A tool chuck with Morse taper shank with taper size 3 and a clamping diameter $d_1 = 16$ mm and a clamp screw of M14 is designated as follows:

Tool chuck ISO 5414-2 - M - 3 × 16 - M14

Bibliography

[1] ISO 5414-1, *Tool chucks (end mill holders) with clamp screws for flatted cylindrical shank tools — Part 1: Dimensions of the driving system of the tool shanks*

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