INTERNATIONAL STANDARD

ISO 10897

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Collets for tool holders with taper ratio 1:10 — Collets, holders, nuts

Pinces de serrage pour mandrins à conicité 1:10 — Pinces, mandrins à pinces, écrous de serrage

Reference number
ISO 10897:1996(E)

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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.

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 10897 was prepared by Technical Committee ISO/TC 29, *Small tools.*

Annex A forms an integral part of this International Standard.

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Collets for tool holders with taper ratio 1:10 — Collets, holders, nuts

1 Scope

This International Standard specifies the dimensions, materials and manufacturing requirements, and designation of collets for tools with cylindrical shanks and their corresponding holders and nuts. For non-standardized clamping devices, such as clamping devices specified in drawings, these holders can be agreed upon between customer and supplier.

Form A applies where a clamping range of h10 is sufficient.

Form B can be used for any application without lateral cutting load.

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 2768-1:1989, *General tolerances - Part 1: Tolerances for linear and angular dimensions without individual tolerance indications.*

3 Dimensions

Collets, holders and nuts need not correspond to figures 1 to 4; only the given dimensions shall be complied with.

General tolerances: ISO 2768-1 - m

3.1 Collets

See figures 1 and 2 and table 2.

Tolerances in millimetres,
surface roughness in micrometres

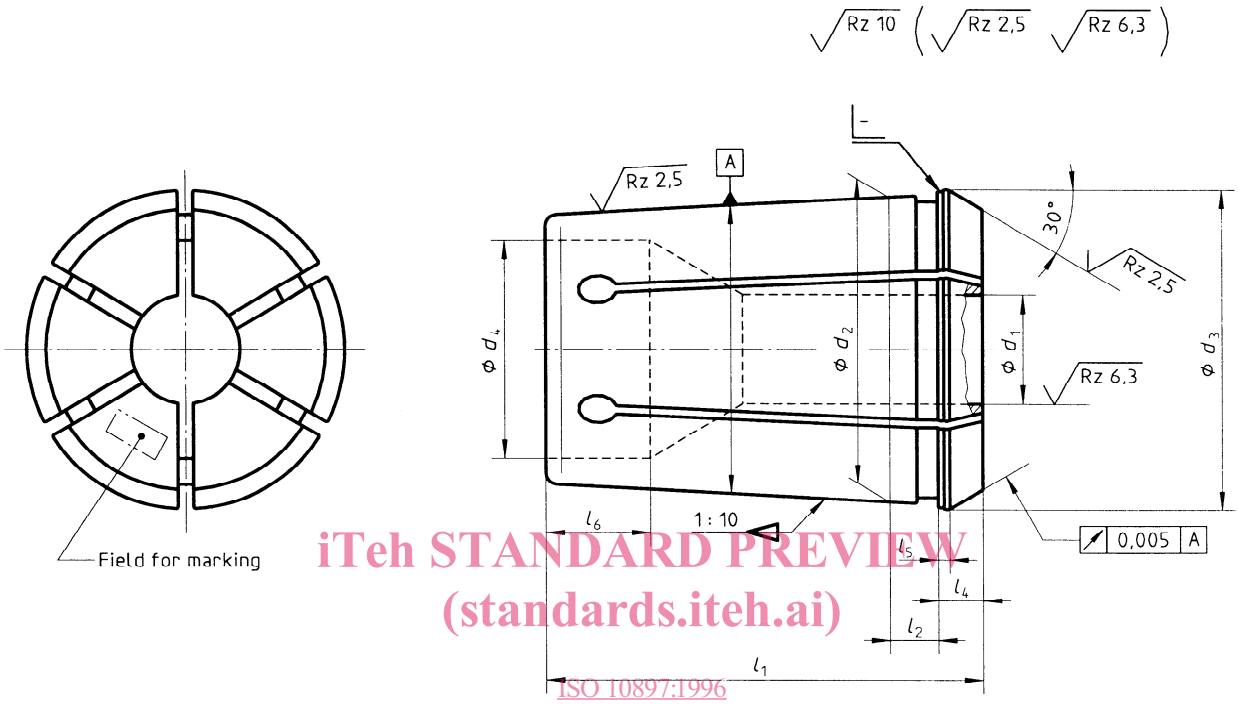
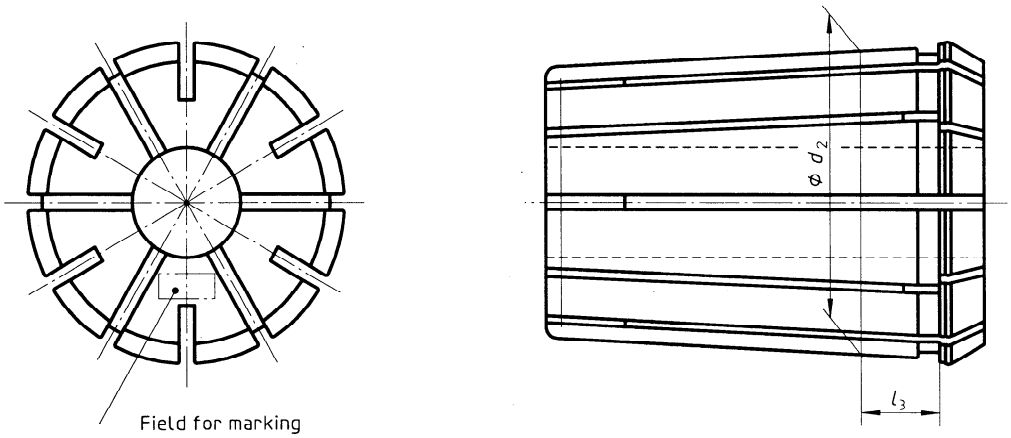


Figure 1 — Collet form A, unilaterally slotted, with short clamping bore for cylindrical shanks



NOTE - Other dimensions and tolerances as form A.

Figure 2 — Collet form B, bilaterally slotted, with continuous clamping bore for cylindrical shanks

Table 1 — Collet dimensions

Dimensions in millimetres

Nominal size	d_1 H7 Form A [1] / Form B [2] Nominal diameter from (incl.)	d_1 up to (incl.)	d_1 from (incl.)	d_1 up to (incl.)	d_2	d_3 $^{0}_{-0,05}$	d_4 $^{+0,1}_{0}$	l_1	l_2	l_3	l_4 $^{0}_{-0,1}$	l_5	l_6 ± 0,2
6	1	6	-	-	10,0	11,5	7	21	4	-	3,5	0,5	6
8	1	8	-	-	12,65	14,5	8,8	26	4,5	-	4	0,8	7
10	1	10	-	-	15,15	17,2	10,2	30	4,5	-	4,5	0,8	6,5
12	1	12	-	-	17,75	19,8	12,3	34	4,5	-	5	1,1	8
16	2	16	5	16	22,65	25,5	16,1	40	5,5	9,5	5,5	1,2	10
20	2	20	6	20	27,4	29,8	20,3	45	6	10	6	1,35	10
25	2	25	6	25	32,9	35,05	25,1	52	6	10	6	1,4	11
32	4	32	10	32	41,3	43,7	32,1	60	7	11	6	1,45	12
40	6	29,5	30	40	49,7	52,2	39,5	68	8	12	6	1,45	13,5
50	8	29,5	30	50	61,1	63,8	49,5	80	9	13	7	1,55	17

1) For clamping range h10.

2) For clamping range $^{0}_{-0,5}$.

3.2 Holder

See figure 3 and table 2.

Tolerances in millimetres,
surface roughness in micrometres

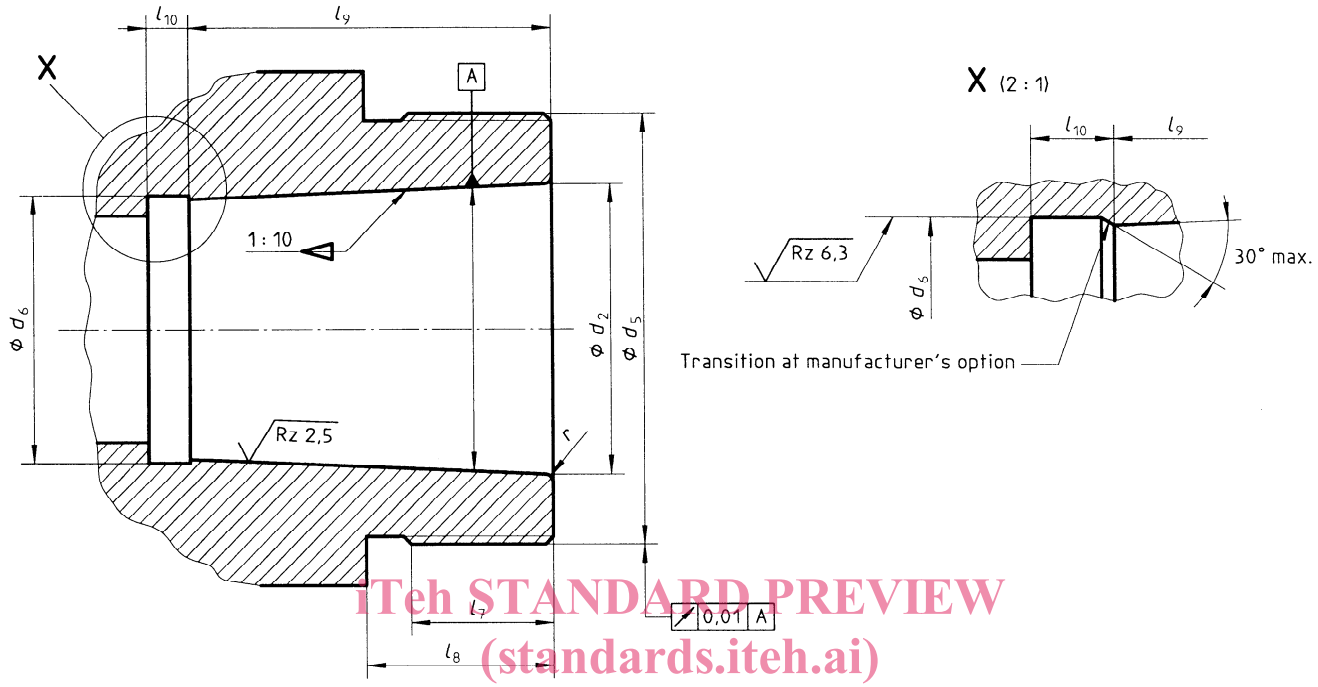


Figure 3 — Holder form C

Table 2 — Holder dimensions

Dimensions in millimetres

Nominal size		6	8	10	12	16	20	25	32	40	50
d_2	H7	10	12,65	15,15	17,75	22,65	27,4	32,9	41,3	49,7	61,1
d_5	6g	M14×1	M20×1,5	M22×1,5	M27×1,5	M33×1,5	M42×2	M48×2	M60×2,5	M68×2,5	M80×2,5
d_6	$^{+0,5}_{0}$	8,5	10,8	12,9	15,1	19,6	23,9	28,7	36,4	44,1	54,5
l_7		8	10	10	11	15	16	18	21	24	27
l_8		11	15	15	16	18	22	24	27	30	33
l_9		16	20	24	28	32	36	43	51	59	69
l_{10}	min.	3	3	4	4	5	5	5	6	6	6
r		0,5	0,5	0,6	0,6	1	1	1	1,6	1,6	1,6

3.3 Nut

See figure 4 and table 3.

Tolerances in millimetres,
surface roughness in micrometres

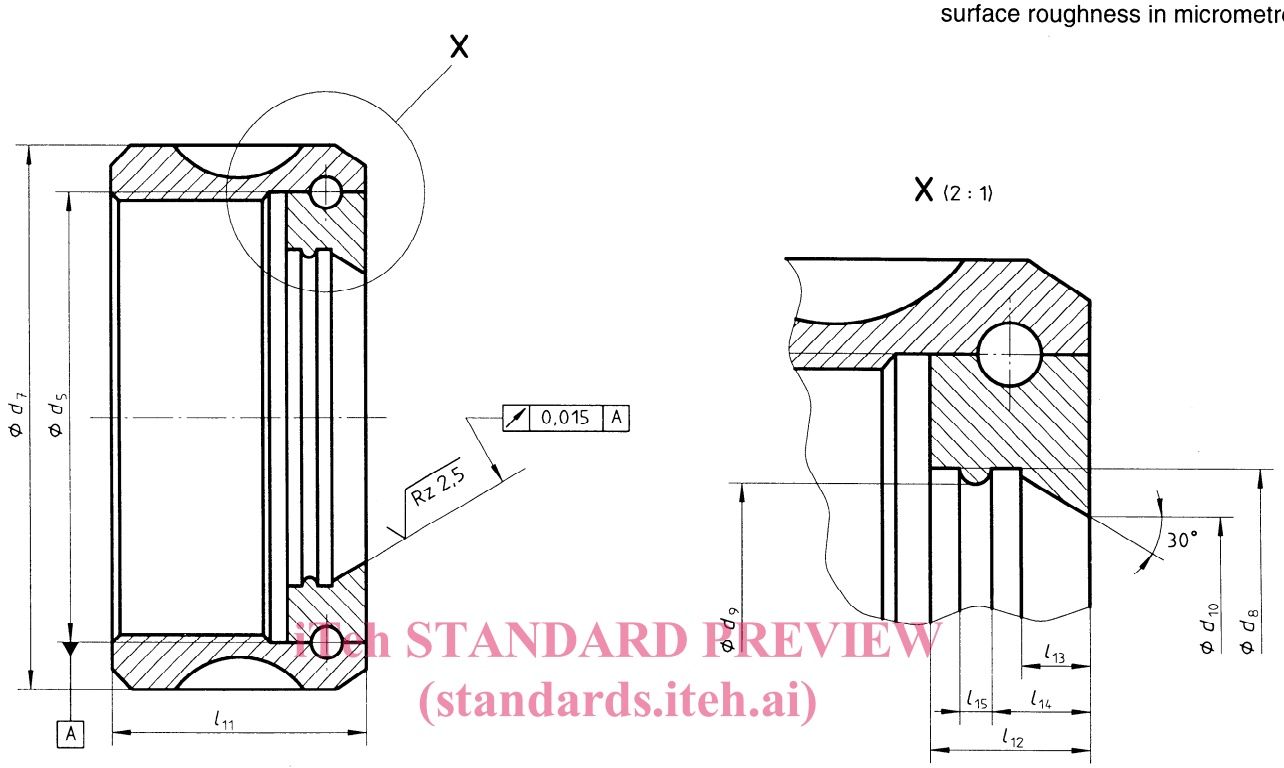


Figure 4 — Nut form D

Table 3 — Nut dimensions

Dimensions in millimetres

Nominal size	6	8	10	12	16	20	25	32	40	50
d_5 6H	M14×1	M20×1,5	M22×1,5	M27×1,5	M33×1,5	M42×2	M48×2	M60×2,5	M68×2,5	M80×2,5
d_7	18	26	30	35	43	50	60	72	85	100
d_8 $^{+0,1}_{0}$	11,6	15,1	18	20,3	25,8	30,2	35,6	44,3	53,1	64,7
d_9 $^{+0,1}_{0}$	10,9	13,85	16,4	19,0	24,6	28,7	33,8	42,5	51,0	62,6
d_{10}	7,7	10,7	12,8	15,2	20,2	24,1	29,7	38,5	46,6	57
l_{11}	14	19	19	20	24	28	30	33,5	37	43
l_{12}	5,2	5,75	6,05	6,75	9	10	10,5	10,5	11	13
l_{13}	2,5	2,5	2,8	3	4	4,5	4,5	4,5	4,5	5
l_{14} $^{+0,1}_{0}$	4	4,25	4,55	5,25	5,65	6,35	6,3	6,3	7	8,25
l_{15} $^{+0,05}_{0}$	1,2	1,5	1,5	1,5	1,5	1,5	2	2	2	2,5

3.4 Collet run-out tolerances

Table 4 specifies collet run-out tolerances. These tolerances are checked as is shown in figure 5 by the introduction of a test mandrel into the collet.

The diameter of the test mandrel is the nominal diameter of the collet.

For the test mandrel the following specifications apply:

a) diameter tolerance: h6;

b) cylindricity: 0,002 mm;

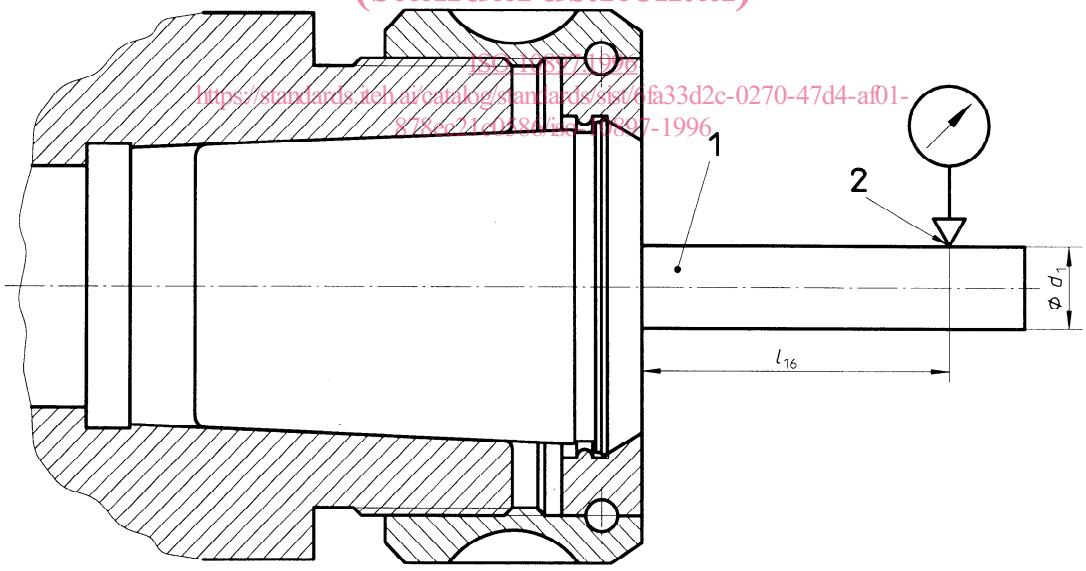
c) parallelism: 0,002 mm;

d) roundness: 0,002 mm;

e) surface without longitudinal marks;

f) maximum surface roughness Rz = 4 µm;

g) surface hardness: (58 $^{+3}_{0}$) HRC.



Key

1) Test mandrel
2) Test point

Figure 5 — Testing of run-out

Table 4 — Collet run-out tolerance values

Dimensions in millimetres

d_1 H7 Nominal diameter		l_{16}	Run-out tolerance [1]	
above	up to (included)		Class 1	Class 2
1 (included)	1,6	6	0,01	0,015
1,6	3	10		
3	6	16		
6	10	25		
10	18	40	0,015	0,02
18	24	50		
24	30	60		
30	50	80	0,02	0,03
NOTE - In the case of applications where run-out tolerances class 1 are required the accuracy of the whole system (machine tool spindle, holder, collet and tool) shall be observed.				
1) Normal style collets are designed with run-out tolerance class 2. If class 1 is required, it shall be given separately, see 5.1.				

4 Material

4.1 Collet

Steel at manufacturer's discretion with a tensile strength of at least 700 N/mm^2.

4.2 Nut

Steel at manufacturer's discretion.