INTERNATIONAL STANDARD

ISO 15488

First edition
1996-12-15

Collets with 8° setting angle for tool shanks — Collets, nuts and fitting dimensions

Pinces de serrage avec angle de réglage de 8° pour queues d'outil — Pinces, écrous de serrage et dimensions d'assemblage

Reference number
ISO 15488:1996(E)

Contents

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X.400 c=ch; a=400net; p=iso; o=isocs; s=central

Printed in Switzerland

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 ISO 15488 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 with 8° setting angle for tool shanks — Collets, nuts and fitting dimensions

1 Scope

This International Standard specifies the dimensions, materials and manufacturing requirements, and designation of collets for tools with parallel 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 to milling and any other application where a hard collet bore is required, provided that the clamping range of h10 be sufficient.

Form B applies for general purpose where an extended clamping range is required.

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 3 ; only the given dimensions shall be complied with.

General tolerances: ISO 2768-1 - m

3.1 Collets

See figure 1 and table 1.

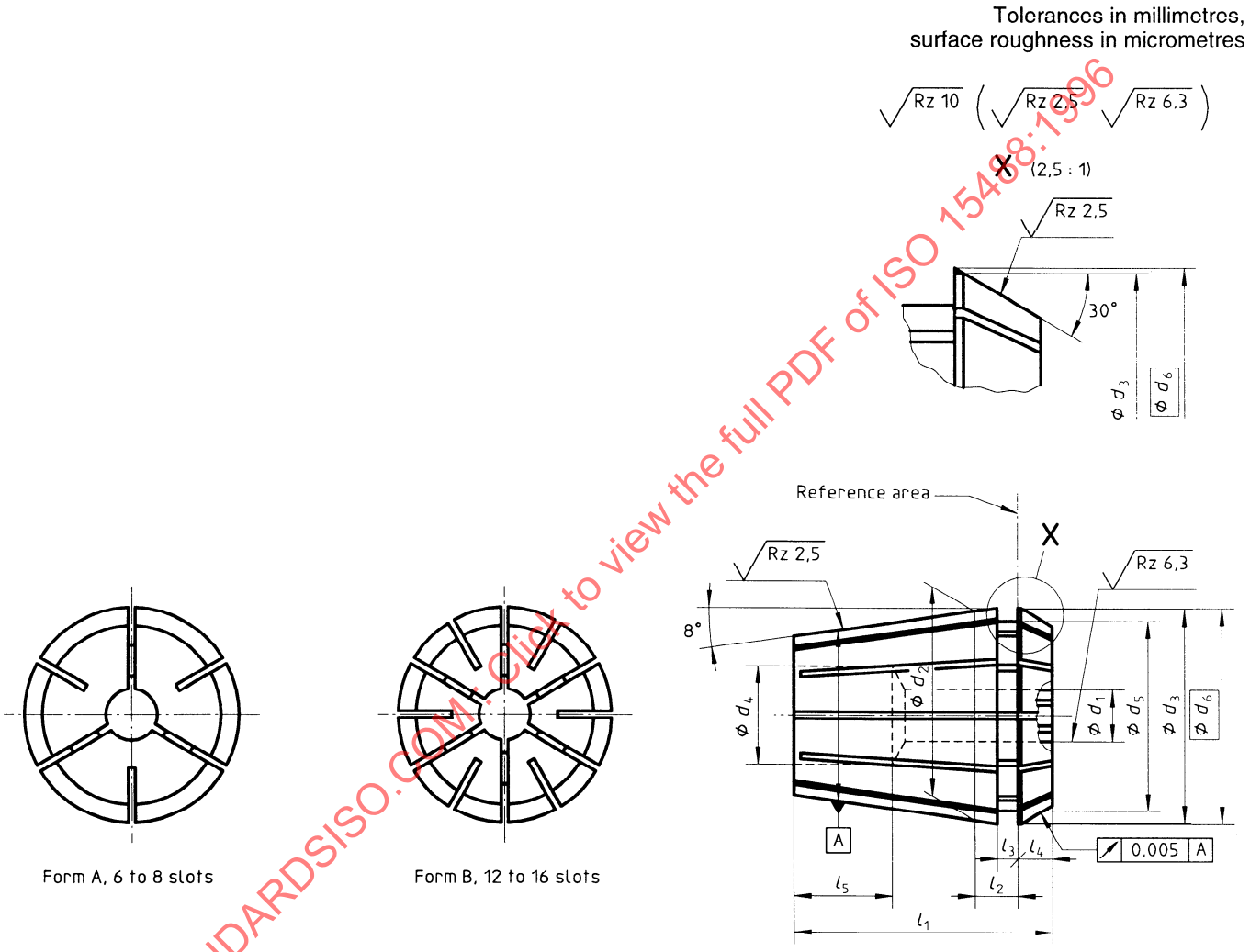


Figure 1 — Collets form A and form B

Table 1 — Collet dimensions

Dimensions in millimetres

Nominal size	d_1 H7 Form A [1] Nominal diameter from (incl.)	d_1 H7 Form A [1] Nominal diameter up to (incl.)	d_1 H7 Form B [2] Nominal diameter from (incl.)	d_1 H7 Form B [2] Nominal diameter up to (incl.)	d_2	d_3 $^{0}_{-0,2}$ Form A	d_3 $^{0}_{-0,2}$ Form B	d_4 Form A	d_4 Form B	d_5	d_6 Form A	d_6 Form B	l_1 max.	l_2 Form A	l_2 Form B	l_3 Form A	l_3 Form B	l_4 ± 0,2	l_5 min.
11	1	< 3	1	2,5	11	11,3	11,5	5	5	9,5	11,6	11,7	18	2	3,8	2	2	2,5	9
	3	6	3	7				-	-										-
16	1	< 5	1	4	16	16,74	17	7	7,5	13,8	17,1	17,25	27,5	2,3	6,26	2,3	2,7	4	9
	5	10	5	10				-	-										-
20	1	< 7	1	6	20	20,74	21	9	10	17,4	21,1	21,3	31,5	2,4	6,36	2,4	2,8	4,8	12
	7	13	7	13				-	-										-
25	1	< 8	2	7	25	25,74	26	10	12	22	26,1	26,3	34	2,5	6,66	2,5	3,1	5	13
	8	16	8	16				-	-										-
32	2	< 8	3	7	32	32,74	33	12	15	29,2	33,1	33,35	40	2,7	7,16	2,7	3,6	5,5	15
	8	20	8	20				-	-										-
40	3	< 9	4	8	40	40,74	41	14	20	36,2	41,1	41,4	46	3,5	7,66	3,5	4,1	7	18
	9	26	9	26				-	-										-

1) For clamping range h10.

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

Nominal size 16 to 40, clamping range $^{0}_{-1}$ or, upon agreement, $^{0}_{-0,5}$

3.2 Holder

See figure 2 and table 2.

Tolerances in millimetres,
surface roughness in micrometres

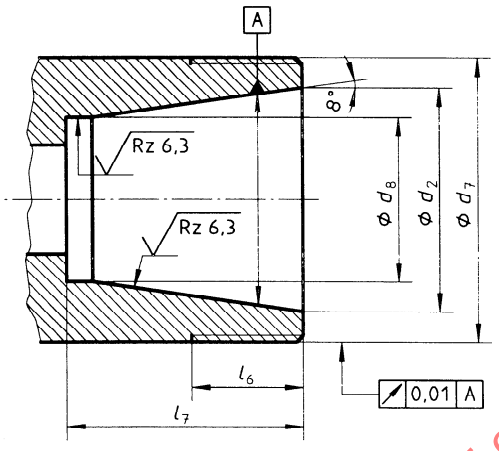


Figure 2 — Holder form C

Table 2 — Holder dimensions

Dimensions in millimetres

Nominal size		11	16	20	25	32	40
d_2	± 0,05	11	16	20	25	32	40
d_7	6g	M14×0,75	M22×1,5	M25×1,5	M32×1,5	M40×1,5	M50×1,5
d_8	+ 0,5 0	7,5	10,5	13,5	18	23,5	30,5
l_6	min.	10	13	13,5	14	16	17
l_7 (Form A or B)	min.	17	22	26,5	29	34	38

3.3 Nut

See figure 3 and table 3.

Tolerances in millimetres,
surface roughness in micrometres

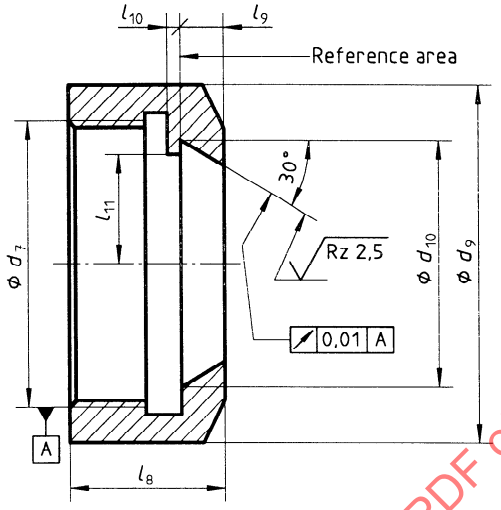


Figure 3 — Nut form D

Table 3 — Nut dimensions

Dimensions in millimetres

Nominal size	d_7 6H	d_9	d_{10}	l_8	l_9	l_{10} 0 −0,2	l_{11} max.
11	M14×0,75	19	12,1	11,3	3,1	1	5
16	M22×1,5	32	17,71	17,5	4,7	1,1	7,2
20	M25×1,5	35	21,76	19	5,5	1,2	9,2
25	M32×1,5	42	26,76	20	5,7	1,4	11,5
32	M40×1,5	50	33,81	22,5	6,2	1,7	14,9
40	M50×1,5	63	41,86	25,5	7,7	2,2	18,5

3.4 Collet run-out tolerances

Table 4 specifies collet run-out tolerances. These tolerances are checked as is shown in figure 4 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;

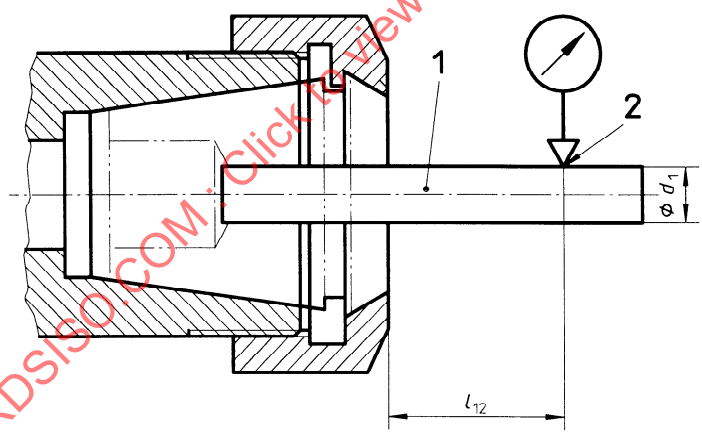
c) parallelism: 0,002 mm;

d) roundness: 0,002 mm;

e) surface without longitudinal marks;

f) maximun surface roughness $Rz = 4$ µm;

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



Key

1) Test mandrel
2) Test point

Figure 4 — Testing of run-out tolerance

Tableau 4 — Collet run-out tolerance values

Dimensions in millimetres

d_1 H7 Nominal diameter		l_{12}	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	0,020
18	26	50		
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.

5 Manufacturing requirements

5.1 Collet

Collets form A and form B: bore and taper hardened, hardness ($44\ ^{+4}_{0}$) HRC.

Tolerances of taper: AT3 in accordance with table A.1.

Run-out tolerance: class 2, for normal styles.

5.2 Holder

Taper bore hardened, hardness ($60\ ^{+2}_{0}$) HRC.

Tolerances of taper: AT4 in accordance with table A.2.

5.3 Nut

Design at manufacturer's discretion.

6 Designation

6.1 Collet

A collet in accordance with this International Standard shall be designated by

a) "Collet";

b) reference to this International Standard;

c) form (A or B);

d) nominal size;

e) nominal diameter, d_1 in millimetres;

f) run-out tolerance in the case of class 1.

EXAMPLES

A collet of form B, nominal size 32 and nominal diameter d_1 = 10 mm is designated as follows:

Collet ISO 15488 - B 32 x 10

A collet of form B, nominal size 32, nominal diameter d_1 = 10 mm and of run-out tolerance class 1 is designated as follows:

Collet ISO 15488 - B 32 x 10 Cl1