INTERNATIONAL STANDARD

ISO 10887

First edition
1999-11-01

Key type three-jaw drill chucks — Specification

Mandrins de perceuse trois mors à clé — Spécifications

Reference number
ISO 10887:1999(E)

Contents

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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.

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

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 10887 was prepared by Technical Committee ISO/TC 29, *Small tools*.

Key type three-jaw drill chucks — Specification

1 Scope

This International Standard specifies the dimensional characteristics and concentricity tolerance requirements for key type three-jaw drill chucks with taper bore or internal thread mounts.

Three classes of chucks are specified, namely:

— Heavy (H)

— Medium (M)

— Light (L)

for use in various fields of activity.

Basic dimensions for three-jaw drill chuck keys are also specified.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard 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 normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 239:1999, *Drill chuck tapers.*

ISO 263:1973, *ISO inch screw threads — General plan and selection for screws, bolts and nuts — Diameter range 0.06 to 6 in.*

ISO 725:1978, *ISO inch screw threads — Basic dimensions.*

ISO 5864:1978, *ISO inch screw threads — Allowances and tolerances.*

3 Classes

For the purposes of this International Standard the following classes of use are defined:

Class	Type	Use
H	Heavy duty chucks	for use on machine tools and heavy duty portable machines
M	Medium duty chucks	primarily for use on light industrial and portable tools
L	Light duty chucks	for use on light industrial and the do-it-yourself (D.I.Y.) range of tools, corded or cordless

4 Keyed three-jaw drill chucks

4.1 Dimensions

4.1.1 Taper mount type

See Figure 1 and Table 1.

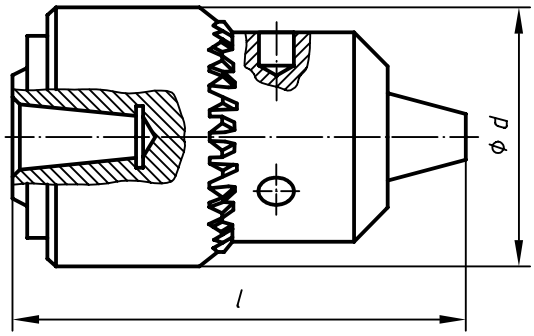


Figure 1 — Three-jaw drill chuck — Taper mount type

Table 1 — Three-jaw drill chucks — Taper mount type — Overall dimensions

Dimensions in millimetres

Class		4H	6,5H	8H	10H	13H	16H	20H	26H
Heavy (H)	Capacity (from/to)	0,5/4	0,8/6,5	0,8/8	1/10	1/13	1/16	5/20	5/26
	l max.[a]	50	60	62	80	93	106	120	148
	d max.	26	38	38	46	55	60	65	93
Class		—	6,5M	8M	10M	13M	16M	—	—
Medium (M)	Capacity (from/to)	—	0,8/6,5	0,8/8	1/10	1.5/13	3/16	—	—
	l max.[a]	—	58	58	65	82	93	—	—
	d max.	—	35	35	42.9	47	52	—	—
Class		—	6,5L	8L	10L	13L	—	—	—
Light (L)	Capacity (from/to)	—	0,8/6,5	1/8	1,5/10	2,5/13	—	—	—
	l max.[a]	—	56	56	65	82	—	—	—
	d max.	—	30	30	34	42,9	—	—	—

[a] *l* max.: chucks with closed jaws.

4.1.2 Internal thread mount type

See Figure 2 and Table 2.

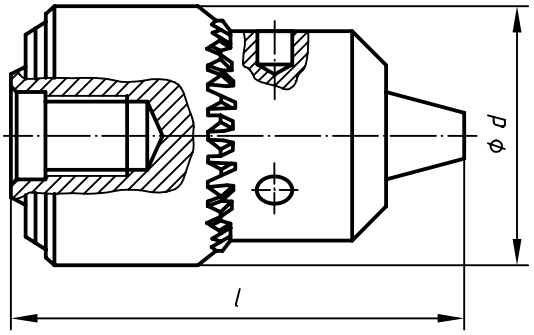


Figure 2 — Three-jaw drill chuck — Internal thread mount type

Table 2 — Three-jaw drill chucks — Internal thread mount type — Overall dimensions

Dimensions in millimetres

Class		4H	6,5H	8H	10H	13H	16H	20H
Heavy (H)	Capacity (from/to)	0,5/4	0,8/6,5	0,8/8	1/10	1/13	1/16	5/20
	l max.[a]	50	60	62	80	90	100	110
	d max.	26	34	38	46	55	60	65
Class		—	6,5M	8M	10M	13M	16M	—
Medium (M)	Capacity (from/to)	—	0,8/6,5	0,8/8	1/10	1,5/13	3/16	—
	l max.[a]	—	56	56	65	82	90	—
	d max.	—	35	35	42,9	46	52	—
Class		—	6,5L	8L	10L	13L	—	—
Light (L)	Capacity (from/to)	—	0,8/6,5	1/8	1,5/10	2,5/13	—	—
	l max.[a]	—	56	56	65	82	—	—
	d max.	—	30	30	34	42,9	—	—

[a] *l* max.: chucks with closed jaws

4.2 Drill chuck mounts

4.2.1 Taper mount type

See Figure 3 and Table 3.

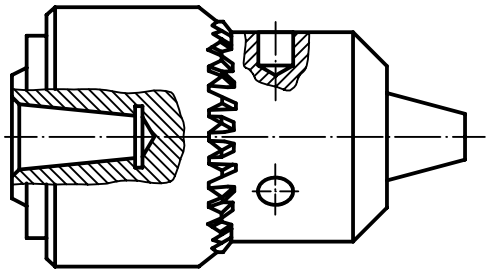


Figure 3 — Three-jaw drill chuck — Taper mount type

Table 3 — Three-jaw drill chucks — Taper mount designation

Class		**Capacity** max.	**Morse taper mount** Designation No.						**Jacobs taper mount** Designation No.								
		mm	B10	B12	B16	B18	B22	B24	0	1	2s[a]	2	33	6	(3)	(4)	(5)
Heavy (H)	4H	4	×						×								
	6,5H	6,5		×						×							
	8H	8		×							×						
	10H	10			×						×	×	×				
	13H	13			×								×	×			
	16H	16				×									×		
	20H	20					×								×		
	26H	26						×								×	×
Medium (M)	6,5M	6,5	×							×							
	8M	8		×						×							
	10M	10		×							×	×	×				
	13M	13			×							×	×	×			
	16M	16			×									×			
Light (L)	6,5L	6,5	×							×							
	8L	8	×							×							
	10L	10		×							×	×	×				
	13L	13		×	×							×	×	×			

NOTE For dimensional details of tapers, see ISO 239.

[a] Short Jacobs taper mount.

4.2.2 Internal thread mount type

See Figure 4 and Table 4.

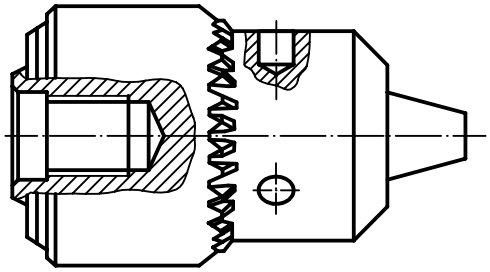


Figure 4 — Three-jaw drill chuck — Internal thread mount type

Table 4 — Three-jaw drill chucks — Internal thread mount designation

Class		**Capacity** max. mm	**Thread — inch series** Designation				
			5/16 x 24	3/8 x 24	1/2 x 20	5/8 x 16	3/4 x 16
			Minimum depth mm				
			12	14,5	16	19	20
Heavy (H)	4H	4	×				
	6,5H	6,5		×	×		
	8H	8		×	×		
	10H	10			×		
	13H	13			×	×	
	16H	16			×	×	
	20H	20					×
Medium (M)	6,5M	6,5	×	×			
	8M	8		×	×		
	10M	10		×	×		
	13M	13			×		
	16M	16			×	×	
Light (L)	6,5L	6,5		×			
	8L	8		×	×		
	10L	10		×	×		
	13L	13		×	×		

NOTE Only ISO inch screw threads in accordance with ISO 263, ISO 725 and ISO 5864 are presented as industrial practice is to use and specify the inch screw threads.

5 Concentricity tolerances

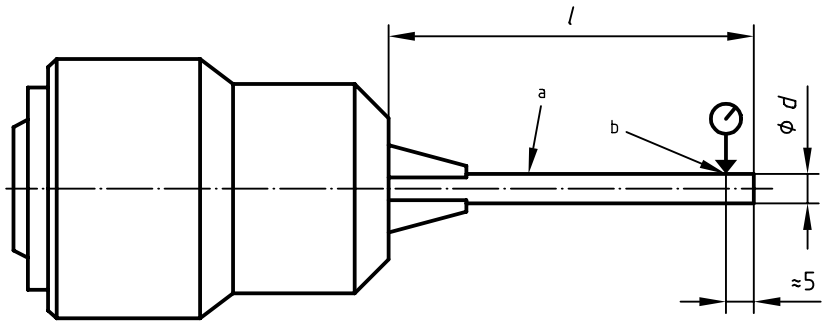
The accuracy of the drill chuck shall be determined by measuring the concentricity tolerance of a test mandrel at a specified distance from the chuck body (see Figure 5).

The measurement taken shall be the Full Indicator Movement (FIM).

For chucks of class H and M, the measurement shall be carried out on two mandrel sizes corresponding to approximately one half the chuck capacity and the maximum chuck capacity respectively (see Table 5).

For chucks of Class L the measurement shall be carried out on a test mandrel size corresponding to the maximum chuck capacity only.

Dimensions in millimetres



a Test mandrel

b Test point

Figure 5 — Testing of concentricity tolerance

Table 5 — Concentricity tolerance

Dimensions in millimetres

Test Mandrel diameter		d = cap. max.	4	6,5	8	10	13	16	20	26
		l	50	50	50	75	100	100	125	125
		d = cap. 1/2max.	2	3	4	5	6	8	10	13
		l	25	25	25	37,5	50	50	62,5	62,5
FIM	**Class H**	Thread	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25
		Taper	0,20	0,20	0,20	0,20	0,20	0,20	0,25	0,25
	Class M	Thread		0,30	0,30	0,30	0,30	0,30		
		Taper		0,25	0,25	0,25	0,25	0,25		
	Class L	Thread		0,35	0,35	0,35	0,35			
		Taper		0,35	0,35	0,35	0,35			
NOTE The term FIM thread/taper refers to thread and taper mounting types.										

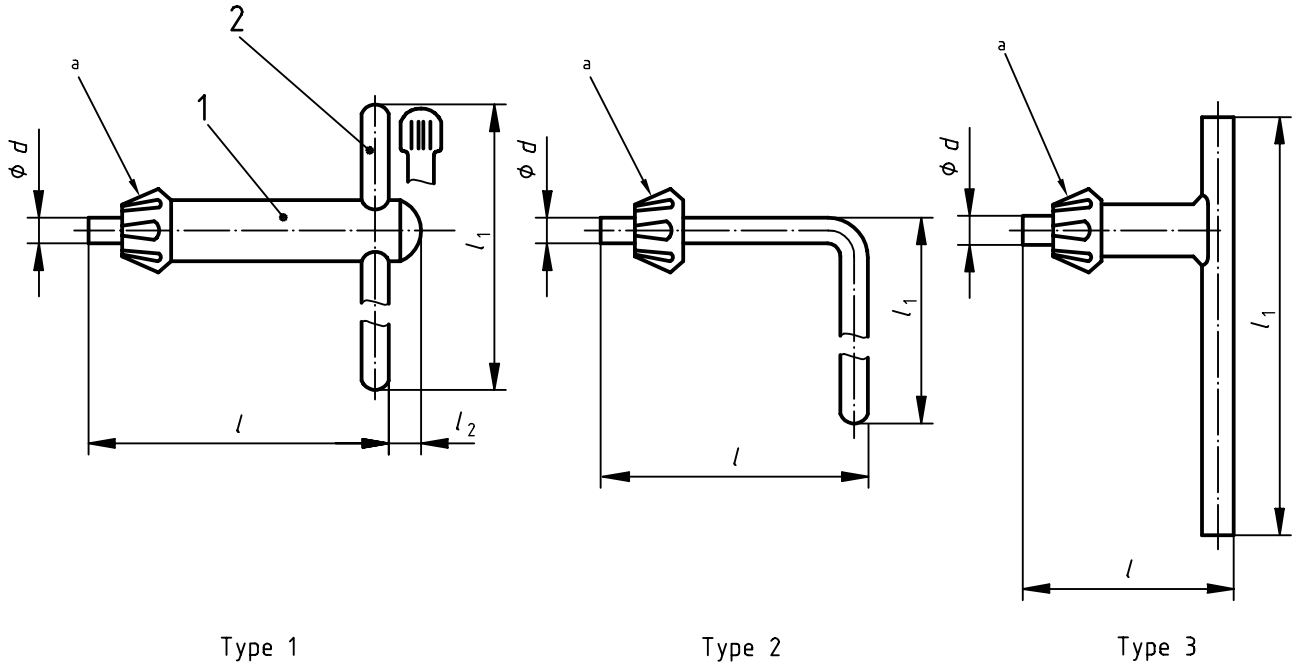
6 Chuck keys — Key types

Three types are defined (see Figure 6):

— type 1: tee for use with heavy, medium and light duty chucks;

— type 2: 90° bend for use with light duty chucks;

— type 3: welded design for use with heavy, medium and light duty chucks.



Key

1 Body
2 Handle
a Cogged ferrule

Figure 6 — Key types

Table 6 — Chuck key — Overall dimensions and class of application

Dimensions in millimetres

Size No.	d	Number of teeth	Length					Applicable to chucks of the following classes																	
			Types 1 and 3			Type 2		Heavy (H)								Medium (M)					Light (L)				
			l min.	l_2 +10	l_1 min.	l min.	l_1 min.	4	6,5	8	10	13	16	20	26	6,5	8	10	13	16	6,5	8	10	13
1	4	10	30	2	60			×	×							×	×				×	×		
2	4	12	37,5	2	65											×					×			
3	5,5	12	40	3	75				×									×					×	
4	6	12	41	3	80					×	×							×	×				×	×
5	6,5	12	47	3	90						×								×					×
6	8	12	50	3	90							×	×							×				
7	9	12	55	5	120								×											
8	9	14	56	5	110									×	×									
9	3,175	11	27	1,5	55			×																
10	3,968	11	28	4	55											×								
11	5,556	11	33	1	60				×															
12	5,953	10	36	2	70					×								×						
13	6,35	11	39	1,8	70													×						
14	6,35	10	40	2	80						×								×					
15	6,096	11	29	3,8	55																×	×	×	
16	6,096	11				33	39,7														×	×	×	
17	6,985	10	35	2,8	70																		×	×
18	6,985	10				38	55																×	×
19	7,937	11	40	3	90							×	×											
20	9,525	12	50	2	110									×										
21	11,112	12	92	3	200										×									

7 Designation

7.1 Three-jaw drill chucks

A keyed drill chuck conforming to this International Standard shall be designated by:

a) "Keyed chuck" ;

b) reference to this International Standard i.e. ISO 10887;

c) capital letter

1) either T, if designated as taper mount type followed by J and Jacobs taper number if designated as Jacobs taper mount type, or number of Morse taper mount type;

2) or I, if designated as internal thread (inch) mount type followed by the size of the appropriate thread mount;

d) the value of the chuck capacity, in millimetres;

e) class of chuck (H, M or L).

EXAMPLE 1

A keyed chuck, taper mount type , with Morse taper mount B12, capacity of 6,5 mm, heavy type, is designated as follows:

Keyed chuck ISO 10887 - T - B12 - 6,5H

EXAMPLE 2

A keyed chuck, taper mount type, with Jacobs taper mount 2 short, capacity of 10 mm, medium type, is designated as follows:

Keyed chuck ISO 10887 - T - J2 s - 10M

EXAMPLE 3

A keyed chuck, internal thread mount type, with thread inch series 1/2 $\times$ 20, capacity of 13 mm, light type, is designated as follows:

Keyed chuck ISO 10887 - I - 1/2 x 20 - 13L

7.2 Chuck keys

A chuck key conforming to this International Standard shall be designated by:

a) "Chuck key";

b) reference to this International Standard i.e. ISO 10887;

c) capital letter T;

d) type of key (1, 2 or 3);

e) capital letter N;

f) key size number (according to Table 6).

EXAMPLE 1

A chuck key, type 1, key size number 4 (N4) is designated as follows:

Chuck key ISO 10887 - T1 - N4

EXAMPLE 2

A chuck key, type 3, key size number 19 (N19) is designated as follows:

Chuck key ISO 10887 - T3 - N19

8 Marking

8.1 General

The chuck and key marking shall be of a permanent nature, and the manufacturing origin of the product shall be clearly identified either on the packaging or on the chuck and the key.

8.2 Three-jaw drill chucks

Each chuck shall be marked with the:

— manufacturer's name or mark and model number;

— capacity range;

— taper symbol number or thread designation.

8.3 Chuck keys

Each key shall be marked with the:

— manufacturer's name or mark;

— key or model number.

ICS 25.100.30

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