INTERNATIONAL STANDARD

ISO 9904

Second edition
2000-03-15

Textile machinery and accessories — Steel pins for spinning preparatory and spinning machinery

Matériel pour l'industrie textile — Pointes en acier pour les matériels de préparation de filature et de filature

Reference number
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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 734 10 79
E-mail copyright@iso.ch
Web www.iso.ch

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Foreword

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

International Standard ISO 9904 was prepared by Technical Committee ISO/TC 72, *Textile machinery and machinery for dry-cleaning and industrial laundering*, Subcommittee SC 1, *Spinning preparatory, spinning, twisting and winding machinery and accessories*.

This second edition cancels and replaces the first edition (ISO 9904:1989), which has been technically revised.

Textile machinery and accessories — Steel pins for spinning preparatory and spinning machinery

1 Scope

This International Standard specifies the dimensions, characteristics and designations of steel pins recommended for spinning preparatory and spinning machinery.

2 Basic dimensions

The basic dimensions of the pins are given in Table 1.

Table 1 — Basic dimensions of pins (see Figures 1 to 4)

Number	d, a or b mm
1	7,62
2	7,01
3	6,35
4	5,97
5	5,39
6	4,88
7	4,47
8	4,06
9	3,76
10	3,35
11	2,95
12	2,62
13	2,34
14	1,98
15	1,79
16	1,63
17	1,42
18	1,22
19	1,07
20	0,99
21	0,88
22	0,79
23	0,71
24	0,62
25	0,535
26	0,5
27	0,44
28	0,38
29	0,355
30	0,33
31	0,3
32	0,28
33	0,25

3 Round pins

3.1 Dimensions

Round pins are divided into the following three types:

— Type A: Round pins for spinning preparatory machinery, in which

$l_2 = \frac{2}{3} l_1$ for 5,56 mm < l_1 < 17,46 mm

$l_2 = \frac{3}{4} l_1$ for 19,05 mm < l_1 < 50,8 mm

— Type B: Hackle pins for bast fibre spinning machinery, in which

$l_2 = \frac{1}{2} l_1$

— Type C: Card pins, in which

$l_2 = \frac{1}{4} l_1$

Figure 1 shows round pin dimensions, using Type A, $l_2 = \frac{2}{3} l_1$, as an example. The dimensions of the various round pin types are given in Table 2.

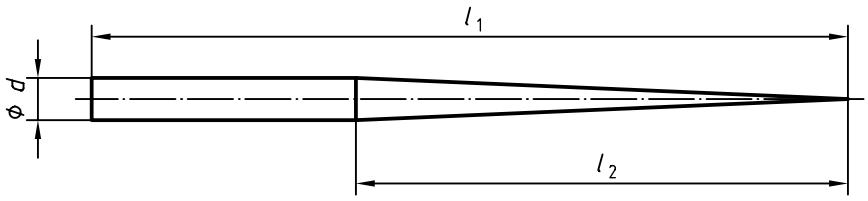


Figure 1 — Round pin

3.2 Characteristics

Material:	Steel (quality at the choice of the manufacturer)
Vickers hardness:	Diameter Nos. 1 to 20: 620 HV2 to 750 HV2 Diameter Nos. 21 to 33: 700 HV2 to 800 HV2
Surface roughness:	Types A and B: $Ra \leqslant 0{,}1$ μm Type C: $Ra \leqslant 0{,}8$ μm

Table 2 — Dimensions and types of round pins

Diameter			Round pin type (A, B or C)																										
			Code number																										
			7/32	1/4	9/32	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1	1 1/16	1 1/8	1 3/16	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	1 7/8	2
			Length l_1, mm																										
			5,56	6,35	7,14	9,53	11,11	12,7	14,29	15,88	17,46	19,05	20,64	22,23	23,81	25,4	26,99	28,58	30,16	31,75	34,93	38,1	41,28	44,45	47,63	50,8
			l_1 tolerances																										
No.[a]	d mm	d tol. mm	0 − 0,2									0 − 0,3																	
7	4,47	+ 0,005 − 0,025																		B									
8	4,06																			B					A				
9	3,76																		C	B C	C	C	C	C					
(9 1/2)	3,56																		C	C	C	C	C	C					
10	3,35																	B	C	B C	C	A C	A C	C	A				
(10 1/2)	3,15	+ 0,003 − 0,018																	C	C	C	C	C	C					
11	2,95												C			B C		B C	C	B C	C	A C	A C	C		A			
(11 1/2)	2,78															C		C	C	C	C	C	C	C					
12	2,62									C						B C		B C	C	A B C	C	C	C	A		A			
(12 1/2)	2,48															C		C	C	C	C	C	C						
13	2,34									C				C	C	B C		B C	C	A B C	C	A B C	A C	A C		A			
(13 1/2)	2,16													C	C	C		C	C	C	C	C							
14	1,98								A	A C	C		C	C	C	B C		B C	C	A B C	A B C	B C	A C	A C					
14 1/2	1,88													C	C	C		C	C	C	C								
15	1,79								A	A C	C	A C	C	C	C	A B C	A	A B C	A C	A B C	A B C	A B	A	A	A				
(15 1/2)	1,72										C		C	C	C	C		C	C	C	C								

Table 2 *(continued)*

Diameter			Round pin type (A, B or C)																										
			Code number																										
			7/32	1/4	9/32	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1	1 1/16	1 1/8	1 3/16	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	1 7/8	2
			Length l_1, mm																										
			5,56	6,35	7,14	9,53	11,11	12,7	14,29	15,88	17,46	19,05	20,64	22,23	23,81	25,4	26,99	28,58	30,16	31,75	34,93	38,1	41,28	44,45	47,63	50,8
			l_1 tolerances																										
No.[a]	d mm	d tol. mm	0 – 0,2									0 – 0,3																	
16	1,63							A	A	A C	C	A C	A C	A C	A C	A B C	A C	A B C	A C	A B C	A B C	A B	A		A				
(16 1/2)	1,52									C	C			C	C	C		C	C	C	C								
17	1,42	+ 0,003 – 0,018						A	A	C	C	C	A C	A C	A C	A B C	A C	A B C	A	A B	A B	A B	A						
18	1,22							A	A	A C	C	A C	C	A C	A C	A B C	A C	A B C	A	A B	A B	A B							
19	1,07							A	A	C	C	C	C	A C	A C	A B C	A C	A B C		A B		A							
20	0,99					A	A	A		A C	C	A C	C	C	A C	A B C	A C	A B C		B									
21	0,88		A	A		A	A	A	A			A C	A C	A C	C	B		A B		B									
22	0,79	+ 0,003 – 0,015	A	A	A	A	A	A		A		A	A	A C		B		A B		B									
23	0,71		A	A	A	A	A	A				A	A	A		B		A B		B									
24	0,62		A	A	A	A	A	A		A		A				B		A B		B									
25	0,535		A	A	A	A	A	A		A	A	A				B		A B											
26	0,5		A	A	A	A	A	A		A	A					B		B											
27	0,44	+ 0,002 – 0,01	A	A		A	A	A		A	A					B													
28	0,38					A	A			A	A					B													
29	0,355					A	A																						

Table 2 *(continued)*

Diameter			**Round pin type** (A, B or C)																										
			Code number																										
			7/32	**1/4**	**9/32**	**3/8**	**7/16**	**1/2**	**9/16**	**5/8**	**11/16**	**3/4**	**13/16**	**7/8**	**15/16**	**1**	**1 1/16**	**1 1/8**	**1 3/16**	**1 1/4**	**1 3/8**	**1 1/2**	**1 5/8**	**1 3/4**	**1 7/8**	**2**
			Length l_1, mm																										
			5,56	**6,35**	**7,14**	**9,53**	**11,11**	**12,7**	**14,29**	**15,88**	**17,46**	**19,05**	**20,64**	**22,23**	**23,81**	**25,4**	**26,99**	**28,58**	**30,16**	**31,75**	**34,93**	**38,1**	**41,28**	**44,45**	**47,63**	**50,8**
			l_1 tolerances																										
No.[a]	d mm	d tol. mm	0 – 0,2									0 – 0,3																	
30	0,33	+ 0,002 – 0,01				A	A																						
31	0,3					A																							
32	0,28					A																							
33	0,25					A																							

[a] Pins with numbers shown in parentheses shall be used for repair purposes only.

3.3 Designation

The designation of a round pin shall include the following information in the order given:

a) “round pin”;

b) reference to this International Standard;

c) type (A, B or C);

d) diameter number;

e) length, l_1.

EXAMPLE Round pin ISO 9904 – B 16 – 25,4

4 Round pins with notch

4.1 Dimensions

These are round pins for spinning preparatory machinery in which $l_2 = \frac{3}{4} l_1$, as shown in Figure 2. Their dimensions are given in Table 3.

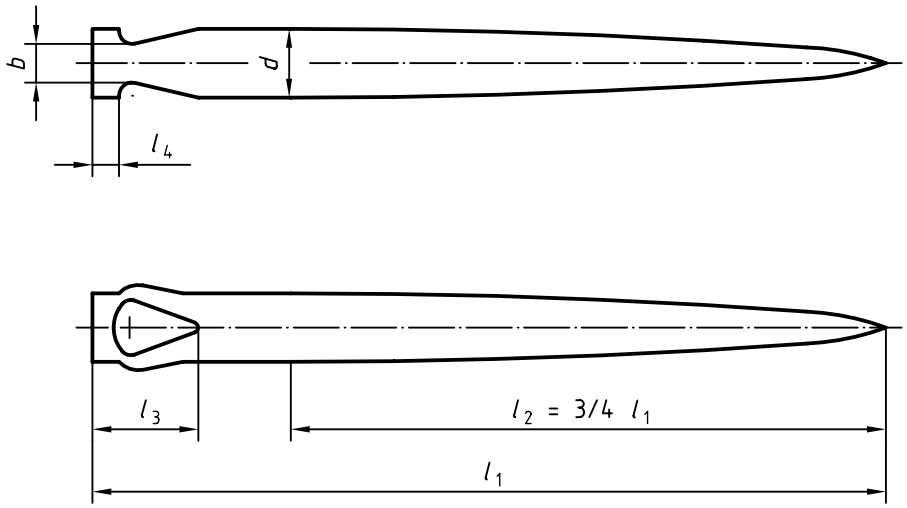


Figure 2 — Round pin with notch

Table 3 — Dimensions of round pins with notch

Diameter			Code number				Length l_3	Length l_4	Length b
			7/8	15/16	1	1 1/16			
			Length l_1, mm 0 −0,3						
No.	d mm	d tol. mm	22,23	23,81	25,4	26,99	mm	mm	mm
15	1,79	+ 0,003 − 0,018		X	X	X	6,4 +0,5 0	2 +0,5 0	0,90
16	1,63		X	X	X	X			0,86
17	1,42		X	X	X	X			0,78
18	1,22		X	X	X	X			0,70

4.2 Characteristics

Material: Steel (quality at the choice of the manufacturer)

Vickers hardness: 620 HV2 to 750 HV2

Surface roughness: $Ra \leqslant 0{,}1\ \mu m$

4.3 Designation

The designation of a round pin with notch shall include the following information in the order given:

a) "round pin with notch";

b) reference to this International Standard;

c) diameter number;

d) length, l_1;

e) letter "K" for notch.

EXAMPLE Round pin with notch ISO 9904 – 16 – 25,4 – K

5 Flat pins

5.1 Dimensions

There are two types of flat pin:

— Type A: $l_2 = \frac{2}{3} l_1$ for $9{,}53 \leqslant l_1 \leqslant 17{,}46$ (shown in Figure 3)

— Type B: $l_2 = \frac{3}{4} l_1$ for $19{,}05 \leqslant l_1 \leqslant 28{,}58$

Their dimensions are given in Table 4.

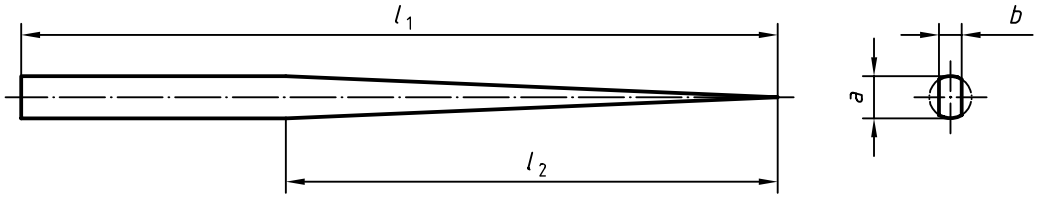


Figure 3 — Flat pin

Table 4 — Dimensions and types of flat pins

Cross-section No.	Diameter mm			Flat pin type (A or B)												
				Code number												
				3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1	1 1/16	1 1/8
				Length l_1, mm												
				9,53	11,11	12,7	14,29	15,88	17,46	19,05	20,64	22,23	23,81	25,4	26,99	28,58
				l_1, tolerances												
	a	b	tol. for a and b	0 – 0,2						0 – 0,3						
15 x 19	1,79	1,07	0 – 0,03							B	B	B	B	B	B	B
15 x 21	1,79	0,88								B	B	B	B	B	B	B
16 x 22	1,63	0,79								B	B	B	B	B	B	B
17 x 23	1,42	0,71								B	B	B	B	B	B	B
18 x 24	1,22	0,62								B	B	B	B	B	B	B
20 x 26	0,99	0,5	0 – 0,02							B	B	B	B	B	B	B
21 x 27	0,88	0,44						A	A							
22 x 28	0,79	0,38					A	A	A							
23 x 29	0,71	0,35				A	A	A	A							
24 x 30	0,62	0,33				A	A	A	A							
22 x 32	0,79	0,28		A	A											

NOTE Those pins currently in use are shown shaded.

5.2 Characteristics

Material: Steel (quality at the choice of the manufacturer)

Vickers hardness: 670 HV2 to 735 HV2

Surface roughness (on flat side): $R_{max} \leqslant 1$ μm; $Ra \leqslant 0{,}1$ μm

5.3 Designation

The designation of the flat pin shall include the following information in the order given:

a) “flat pin”;

b) reference to this International Standard;

c) Type (A or B);

d) cross-section number;

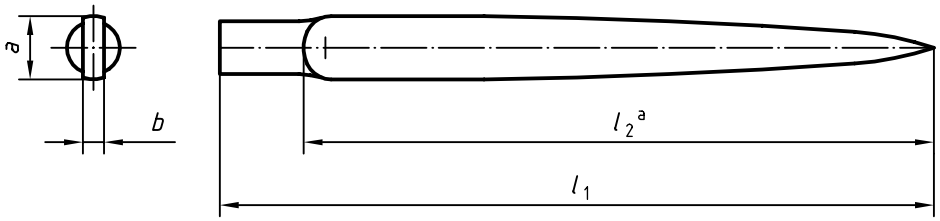
e) length, l_1.

EXAMPLE Flat pin ISO 9904 – B 17 × 23 – 22,23

6 Flat pins with foot

6.1 Dimensions

Flat pin dimensions are shown in Figure 4 and given in Table 5.



a Dimension should be agreed between manufacturer and user.

Figure 4 — Flat pin with foot

Table 5 — Dimensions of flat pins with foot

Cross-section No.	Diameter mm			Code number						
				7/16	3/4	7/8	15/16	1	1 1/16	1 1/8
				Length l_1, mm						
				11,11	19,05	22,23	23,81	25,4	26,99	28,58
	a	b	tol. for a and b	l_1, tolerances 0 – 0,3						
15 x 19	1,79	1,07	0 – 0,03							
15 x 21	1,79	0,88								
16 x 22	1,63	0,79								
17 x 23	1,42	0,71								
18 x 24	1,22	0,62								
20 x 26	0,99	0,5								
NOTE Those pins currently in use are shown shaded.										

6.2 Characteristics

Material: Steel (quality at the choice of the manufacturer)

Vickers hardness: 670 HV2 to 735 HV2

Surface roughness (on flat side): $R_{max} \leqslant 1$ μm; $Ra \leqslant 0{,}1$ μm

6.3 Designation

The designation of a flat pin with foot shall include the following information in the order given:

a) “flat pin with foot”;

b) reference to this International Standard;

c) cross-section number;

d) length, l_1;

e) letter “F” for foot.

EXAMPLE Flat pin with foot ISO 9904 – 17 × 23 – 25,4 – F

Bibliography

[1] ISO 6507-1:1997, *Metallic materials — Vickers hardness test — Part 1: Test method.*

[2] ISO 6507-2:1997, *Metallic materials — Vickers hardness test — Part 2: Verification of testing machines.*

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