# **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 ISO 9904:2000(E)

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Printed in Switzerland

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ISO 9904:2000(E)

#### **Foreword**

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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)

### **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.

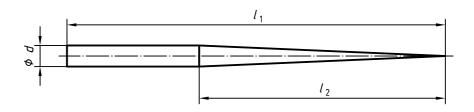


Figure 1 — Round pin

#### 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

Types A and B:  $Ra \leq 0.1 \mu m$ Surface roughness:

> Type C:  $Ra \leq 0.8 \, \mu m$

Table 2 — Dimensions and types of round pins

											Ro					(A, I		C)								
				1	١	l	ا ۔۔ ا			]	9	l	ı	l		ber		~	9	۱	_		٦	۱	۱	
			7/32	1/4	6/3	3/8	7/16	1/2	9/16	2/8	11/16	3/4	13/16	2/8	15/16	1	1 1/16	1 1/8	1 3/16	1 1/4	1 3/8	1 1/	1 5/8	1 3/4	1 7/8	2
	Diameter				l	l				<u> </u>		l		gth		mm				l		l		<u> </u>	<u> </u>	
			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
									u u				$l_1$ t	olei	and	ces										
No. <sup>a</sup>	d mm	d tol. mm			T	-	0 - 0,2	2		<u> </u>			T	T				-	0 - 0,3	3		T	1	T	T	
7	4,47																			В						
8	4,06																			В					Α	
9	3,76	+ 0,005 - 0,025																	С	B C	С	С	С	С		
(9 1/2)	3,56																		С	С	С	С		С		
10	3,35																	В	С	ВС		A C	Α		Α	
(10 1/2)	3,15																							С		
11	2,95															В		В		C B		Α	Α	С		Α
(11 1/2)	2,78												С			С		С	С	С	С	С	С	С		
	,															С		С	С	C A	С	С	С	C A		Α
12	2,62									С						B C		B C	С	B C	С	С	С	^		^
(12 1/2)	2,48															С		С	С		С					
13	2,34	+ 0,003 - 0,018								С				С	С	ВС		ВС	С	A B C	С	A B C	A C	A C		Α
(13 1/2)	2,16													С	С	С		С	С	С	С	С				
14	1,98								Α	A C	С		С	С	С	ВС		ВС	С	A B C	Α		A C	A C		
14 1/2	1,88													С	С	С		С	С							
15	1,79								Α	A C	С	A C	С	С	С	A B C	A C	A B C	Α	A B	A B	A B	Α	Α	Α	
(15 1/2)	1,72										С		С	С	С	С		С	С							

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								•			Ro	unc	l pi	n ty	ре	(A, I	3 oı	· C)								
														de n												
	Diameter		7/32	1/4	9/32	3/8	2//16	1/2	9/16	2/8	11/16	3/4	13/16	8//	15/16		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
	Diameter		5,56	6,35	7,14	9,53	11	7,	14,29	15,88	46	19,05		22,23 gth			26,99	28,58	30,16	31,75	34,93	<u> </u>	41,28	44,45	47,63	50,8
			5,	<b>,</b>	7,	6	11,11	12,7	14,	15,	17,						26,	28,	30,	3,	34,	38,1	4,	44,	47,	20
No. <sup>a</sup>	d mm	d tol. mm				-	0 - 0,2	2					l <sub>1</sub> t	oleı	rand	ces		-	0 - 0,3	3						
16	1,63							A	A	A C	С	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									С	С			С	С	С		С	С	С	С					
17	1,42	+ 0,003 - 0,018						Α	Α	С	С	С	A C	A C	A C	A B C	A C	A B C	A	A B	A B	A B	Α			
18	1,22							Α	Α	A C	C	A C	С	A C	A C	A B C	A C	A B C	Α	A B	A B	A B				
19	1,07							A	Α	С	С	С	С	A C	A C	A B C	A C	A B C		A B		Α				
20	0,99					Α	Α	Α		A C	С	A C	С	С	A C	A B C	A C	A B C		В						
21	0,88		Α	Α		Α	Α	A	Α			A C	A C	A C	С	В		A B		В						
22	0,79	+ 0,003	Α	Α	Α	Α	Α	A		Α		Α	Α	A C		В		A B		В						
23	0,71	- 0,015	Α	Α	Α	Α	Α	Α				Α	Α			В		A B		В						
24	0,62		Α	Α	Α	Α	Α	Α		Α		A				В		A B		В						
25	0,535		Α	Α	Α	Α	A	Α		Α	A	A				В		A B								
26	0,5		Α	Α	Α	Α	Α	Α		Α	A					В		В								
27	0,44	+ 0,002	+ 0,002 - 0,01	Α		A	Α	Α		Α	A					В										
28	0,38					A	Α			Α	A					В										
29	0,355				A	Α																				

Table 2 (continued)

										Rou	unc	l pir	ı typ	pe (	Ά, Ε	3 or	· C)								
												Cod	le n	um	ber										
			7/32	1/4	9/32	3/8	1/2	9/16	2/8	11/16	3/4	13/16	2/8	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
	Diameter											Len	gth	l <sub>1</sub> ,	mm									•	
			5,56	6,35	7,14	9,53	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
							ı					$l_1$ to	oler	and	es										
No. <sup>a</sup>	d mm	d tol. mm				– C	,2										-	0 - 0,3	3						
30	0,33					A A																			
31	0,3	+ 0,002				A																			
32	0,28	- 0 <u>,</u> 01				A																			
33	0,25					A																			
<sup>a</sup> Pins wit	h numbers sho	own in parenth	nese	s sh	all b	e use	ed fo	r re	oair	purp	oos	es o	nly.												

## 3.3 Designation

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

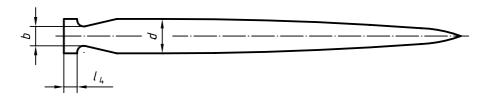
- a) "round pin";
- b) reference to this International Standard;
- c) type (A, B or C);
- d) diameter number;
- e) length, l<sub>1</sub>.

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

# Round pins with notch

#### **Dimensions** 4.1

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.



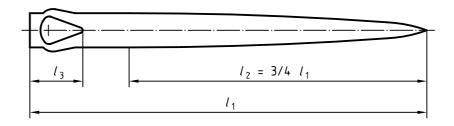


Figure 2 — Round pin with notch

Table 3 — Dimensions of round pins with notch

	Diameter		8//	15/16	1 l <sub>1</sub> , m	1 1/16	<b>Length</b> $l_3$	<b>Length</b> $l_4$	<b>Length</b>
No.	d mm	d tol. mm	22,23	23,81	25,4	26,99	mm	mm	mm
15	1,79			Х	Х	Х			0,90
16	1,63	+ 0,003	Х	Х	Х	Х	0.4 + 0.5	0 + 0,5	0,86
17	1,42	- 0,018	Х	Х	Х	Х	6,4 + 0,5	2 + 0,5	0,78
18	1,22		Х	Х	Х	Х			0,70

#### 4.2 Characteristics

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

Vickers hardness: 620 HV2 to 750 HV2

Surface roughness:  $Ra \le 0.1 \mu m$ 

#### 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  $9,53 \le l_1 \le 17,46$  (shown in Figure 3)

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

Their dimensions are given in Table 4.

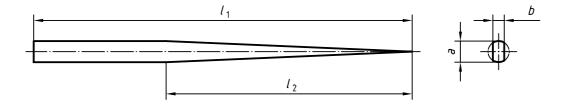


Figure 3 — Flat pin

Table 4 — Dimensions and types of flat pins

				Flat pin type (A or B)													
									Cod	e nun	nber						
Cross-section		Diameter	-	3/8	7/16	1/2	9/16	2/8	11/16	3/4	13/16	8//	15/16	1	1 1/16	1 1/8	
No.		mm							Len	gth $l_1$ ,	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	
									ices								
	а	b	tol. for $a$ and $b$			_ (	) ),2						0 - 0,3			Ï	
15 x 19	1,79	1,07								В	В	В	В	В	В	В	
15 x 21	1,79	0,88	_							В	В	В	В	В	В	В	
16 x 22	1,63	0,79	0 - 0,03							В	В	В	В	В	В	В	
17 x 23	1,42	0,71								В	В	В	В	В	В	В	
18 x 24	1,22	0,62								В	В	В	В	В	В	В	
20 x 26	0,99	0,5								В	В	В	В	В	В	В	
21 x 27	0,88	0,44						Α	Α								
22 x 28	0,79	0,38	0				Α	Α	Α								
23 x 29	0,71	0,35	- 0,02			Α	Α	Α	Α								
24 x 30	0,62	0,33				Α	Α	Α	Α								
22 x 32	0,79	0,28		Α	Α												
NOTE Those	e pins curre	ntly in use a	are shown sha	aded.													

#### 5.2 Characteristics

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

Vickers hardness: 670 HV2 to 735 HV2

Surface roughness (on flat side):  $R_{\text{max}} \leq 1 \text{ } \mu\text{m}; Ra \leq 0,1 \text{ } \mu\text{m}$ 

#### 5.3 Designation

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

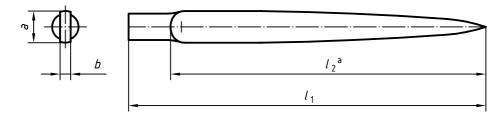
- "flat pin"; a)
- b) reference to this International Standard;
- Type (A or B);
- cross-section number; d)
- length, l<sub>1</sub>.

**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

						Cod	e nur	nber								
				7/16	3/4	8//	15/16	-	1 1/16	1 1/8						
Cross-section		Diameter		Length l <sub>1</sub> , mm												
No.		mm		11,11	19,05	22,23	23,81	25,4	26,99	28,58						
					ı	l <sub>1</sub> , to	olerar	nces		l .						
	а	b	tol. for $a$ and $b$				0 - 0,3									
15 x 19	1,79	1,07														
15 x 21	1,79	0,88														
16 x 22	1,63	0,79	0													
17 x 23	1,42	0,71	- 0,03													
18 x 24	1,22	0,62														
20 x 26	0,99	0,5														
NOTE Those	pins curren	tly in use are	shown shade	ed.		•			•	•						

#### 6.2 Characteristics

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

Vickers hardness: 670 HV2 to 735 HV2

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

#### ISO 9904:2000(E)

#### 6.3 Designation

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

- "flat pin with foot"; a)
- reference to this International Standard; b)
- cross-section number; c)
- length, l<sub>1</sub>; d)
- letter "F" for foot. e)

**EXAMPLE** Flat pin with foot ISO  $9904 - 17 \times 23 - 25,4 - F$ 

# **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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ICS 59.120.10

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