
वस्त्रादि — ड्राफ्टिंग सिस्टम के लिए बॉटम
रोलर्स — विशिष्टि
(चौथा पुनरीक्षण)

**Textiles — Bottom Rollers for
Drafting Systems — Specification**
(*Fourth Revision*)

ICS 59.120.10

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FOREWORD

This Indian Standard (Fourth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Textile Machinery and Accessories Sectional Committee had been approved by the Textiles Division Council.

This standard was first published in 1963 and subsequently revised in 1966, 1971 and 1976. This revision has been brought out to incorporate the following changes:

- a) Reference clause has been incorporated; and
- b) Marking clause has been modified.

In a drafting system, bottom rollers are used in conjunction with leather, rubber or synthetic rubber covered top rollers as a medium for drafting cotton sliver or roving before being finally spun into yarn.

This standard contains [5.1](#) and [6.2](#) which call for an agreement between the concerned parties.

The composition of the Committee responsible for the formulation of this standard is given in [Annex A](#).

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard***TEXTILES — BOTTOM ROLLERS FOR DRAFTING
SYSTEMS — SPECIFICATION***(Fourth Revision)***1 SCOPE**

1.1 This standard prescribes requirements for both plain and antifriction bearing bottom rollers having fluted, knurled or saw-toothed bosses for use in drafting systems.

1.2 This standard does not lay down details of flutes, knurls and saw-teeth.

2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards:

<i>IS No.</i>	<i>Title</i>
IS 1586 (Part 1) : 2018/ISO 6508 -1 : 2016	Metallic materials — Rockwell hardness test: Part 1 Test method (<i>fifth revision</i>)
IS 3190 : 1993 / ISO 92 : 1976	Textile machinery and accessories — Spinning machinery — Definition of side (left or right) (<i>second revision</i>)
IS 4474 : 2003	Textile machinery — Glossary of terms relating to drafting in spinning machinery (<i>first revision</i>)
IS 4905 : 2015/ ISO 24153 : 2009	Random sampling and randomization procedures (<i>first revision</i>)

3 NOMENCLATURE AND TERMINOLOGY

For the purpose of this standard, the nomenclature relating to bottom rollers shall be as indicated in [Fig. 1](#) and definitions as given in IS 4474.

4 MANUFACTURE**4.1 Material**

A suitable steel shall be chosen according to the

method employed in the generation of flutes, knurls or saw-teeth and according to the hardening process utilized.

4.2 Layout of Rollers

The layout of bottom rollers shall be as illustrated in [Fig. 1](#).

4.3 Workmanship and Finish

In the case of fluted rollers, the flutes shall not have any burrs or broken edges. However, at the edges of the boss broken flutes of less than 2 mm shall be permitted. In case of knurled and saw-toothed rollers, the knurls and saw-teeth shall be free from sharp edges.

5 REQUIREMENTS**5.1 Dimensions**

Recommended dimensions of bottom rollers and antifriction bearings are given in [Table 1](#). The width and diameter of neck for plain bearing bottom rollers shall be as agreed to between the buyer and the seller.

5.1.1 The dimensions of rollers shall be subject to the following tolerances:

Roller diameter	± 0.05 mm	—
Staff length	± 0.1 mm	—
Width of neck	± 0.2 mm	For plain bearing only and in case of antifriction bearing as per recommendations of the bearing manufactures
Diameter of neck	$+ 0.00$ mm $- 0.05$ mm	

NOTES

1 In conversion and modernization, it is preferable to keep the tolerance on staff length and overall length on the minus side only.

2 When assembled, deviation of centre of flutes from centre of spindle shall not be more than 3 mm.

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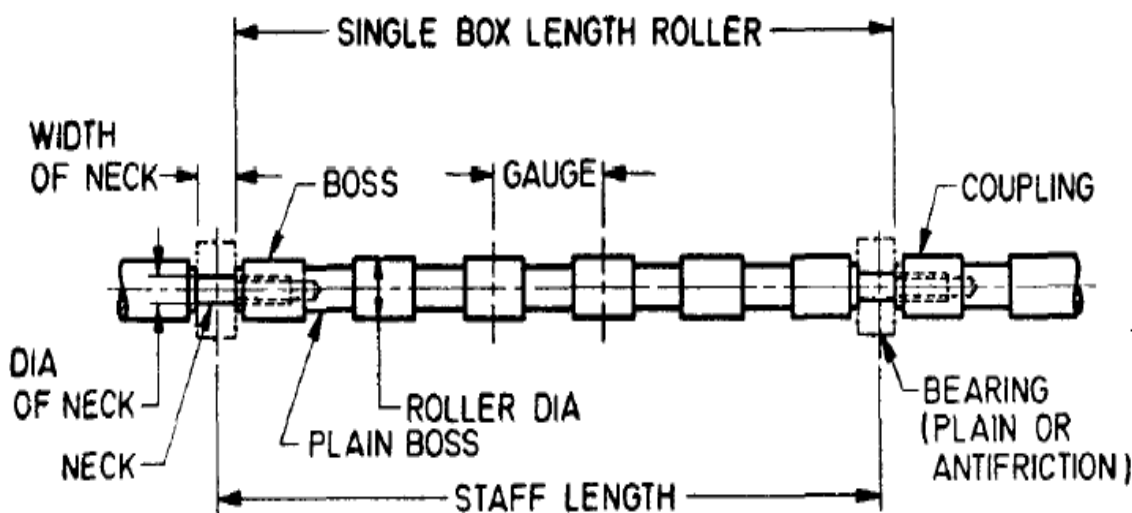


FIG. 1 TYPICAL LAYOUT OF A BOTTOM ROLLER

Table 1 Dimensions of Bottom Rollers

(Clause 5.1)

All dimensions in millimeters.

SI No.	Machine	Bottom Roller Diameter	Antifriction Bearing (see Note)		
			Neck Couple Diameter	Outside Diameter of Bearing	Width of Bearing
(1)	(2)	(3)	(4)	(5)	(6)
i)	Ring and speed frames	25	16.5/19.0	28	19
		27	19.0	32	20
		32	19.0	32	20
		35	23.0	40	23.5
ii)	Cotton draw frames	20	—	—	—
		25	16.5/19.0	28	21
		27	16.5	28	21
		35	—	—	—
iii)	Worsted ring frame	32	—	—	—
		40	—	—	—
iv)	Jute spinning frames	50	—	—	—
		32	—	—	—
		40	—	—	—

NOTE — Fit of coupling shall be as per recommendations of the bearing manufacturers.

5.1.2 Screw threads for coupling shall be as under:

- a) For rollers up to 35 mm diameter M 16 × 1.5 and M 16 × 2
- b) For rollers above 35 mm and up to 40 mm diameter M 20 × 2.5
- c) For rollers above 40 mm diameter M 24 × 3

5.2 Hardness, depth of case and run-out of the rollers shall be as given in [Table 2](#).

6 SAMPLING

6.1 Lot

All the rollers of same type, set of dimensions and manufactured from the same material under

essentially similar conditions delivered to one buyer against one dispatch note shall constitute a lot.

6.2 Unless otherwise agreed to between the buyer and the seller, the number of rollers to be selected

for inspection shall be according to col (1) and col (2) of [Table 3](#). To ensure the randomness of selection, the methods given in IS 4905 shall be followed.

Table 2 Requirements of Bottom Rollers

(Clause [5.2](#))

SI No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Hardness:		IS 1586 (Part 1)
	a) Plain bearing		
	Neck and boss (<i>see</i> Note 4) of bottom roller	50 HRC to 63 HRC	
	b) Anti-friction bearing		
	1) Neck		
	i) With inner race	30 HRC, <i>Min</i>	
	ii) Without inner race	60 HRC, <i>Min</i>	
	2) Boss (<i>see</i> Note 4) of bottom roller	50 HRC to 63 HRC	
ii)	Depth of case after grinding and polishing, mm	0.3, <i>Min</i>	Using a suitable microscope with a magnifying power of $\times 10$ and capable of measuring the depth of case to an accuracy of 0.05 mm.
iii)	Run-out (TIR) (<i>see</i> Note 1 and Note 2)		With a suitable micrometer dial gauge.
	a) Fluted roller	0.05 mm	
	b) Knurled roller		
	1) Neck portion (plain bearing)	0.05 mm	
	2) Boss	0.08 mm	

NOTES

1 Run-out after assembly on bosses shall be within the limit prescribed as under:

- a) For anti-friction bearing 0.06 mm
- b) For plain bearing 0.10 mm

2 After 3 years from the date of adoption of the standard the run-out requirement will stand amended as under:

- a) For anti-friction bearing 0.03 mm
- b) For plain bearing 0.05 mm

3 It should be the responsibility of the manufacturer to ensure 'run-out' of rollers within the prescribed limits at the time of erection in the mills.

4 Hardness on boss is not applicable for knurled rollers.

Table 3 Sample Size and Criteria for Conformity

(Clauses [6.2](#) and [6.3](#))

SI No.	Lot Size	Sample Size	Acceptance No.
(1)	(2)	(3)	(4)
i)	Up to 100	13	0
ii)	101 to 150	20	0
iii)	151 to 300	32	1
iv)	301 and above	50	1

6.3 The number of rollers to be inspected for various characteristics and the criteria for conformity shall be as follows:

<i>Sl No.</i>	<i>Characteristic</i>	<i>No. of Rollers to be Inspected</i>	<i>Criteria for Conformity</i>
(1)	(2)	(3)	(4)
i)	Dimensions and tolerance, threads for coupling, hardness and run-out	According to co1 (2) of Table 3	Non-conforming rollers not to exceed the corresponding number given in co1 (3) of Table 3

For depth of case one roller from each lot shall be tested and shall meet the requirement specified.

7 MARKING

7.1 Each roller shall be marked with the following:

- a) A number to distinguish rollers of one line from those of the other;

- b) A number out of a series of consecutive numbers beginning with '1' (*see Note*); and
- c) Either 'R' or 'L' depending upon whether the line is to be fitted on the right side or the left side of the frame (*see also IS 3190*).

NOTE — '1' shall be marked on the gear-end roller and '1' to be marked on the adjacent roller at the female end, whilst '2' at the other end of the same roller and '2' on the third roller at the female end with '3' at the other end of the same roller and so on.

7.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

8 PACKING

The drafting rollers shall be coated with rust-preventive agent and shall be packed as agreed between the buyer and the seller.

ANNEX A

(Foreword)

COMMITTEE COMPOSITION

Textile Machinery and Accessories Sectional Committee, TXD 14

<i>Organization</i>	<i>Representative(s)</i>
Central Manufacturing Technology Institute, Bengaluru	DR NAGAHANUMAIAAN (<i>Chairperson</i>)
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Indian Jute Mills Association, Kolkata	SHRI BHUDIPTA SAHA SHRI TANMOY SINGHA (<i>Alternate</i>)
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