

**BUREAU OF INDIAN STANDARDS**

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**भारतीय मानक मसौदा**

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**( दूसरा पुनरीक्षण )**

***DRAFT Indian Standard***

**SEWING MACHINE NEEDLES FOR  
HOUSEHOLD PURPOSES — SPECIFICATION**

**( *Second Revision of IS 2181* )**

**ICS 61.080**

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**Sewing Machines Sectional  
Committee, MED 29**

**Last date for receipt of  
comments is 28 May 2022**

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**FOREWORD**

*(Formal clauses to be added later)*

This standard was first published in 1962 and subsequently revised in 1973.

Major changes in this revision are as follows:

- a) Amendment 1 has been incorporated;
- b) Reference standards have been updated; and
- c) Dimensions for sewing machine needles have been modified.

Comparisons of designation in various systems for household sewing machines needles are given in Annex A.

The composition of the Committee, responsible for the formulation of this standard is given at Annex B *(To be added later)*.

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.

**DRAFT Indian Standard**

**SEWING MACHINE NEEDLES FOR  
HOUSEHOLD PURPOSES — SPECIFICATION**

*(Second Revision)*

**1 SCOPE**

This standard covers the requirements of sewing machine needles for household purposes.

**2 REFERENCES**

The standards listed below contain provisions which, through reference in this text, constitute provisions 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 the standards listed below. In case the standards are to be referred in this clause they are to be listed as follows:

<i>IS Number</i>	<i>Title</i>
1101: 1981	Specification for handloom cotton cellular shirting ( <i>first revision</i> )
IS 1501 (Part 1) : 2020 / ISO 6507-1 : 2018	Metallic materials — Vickers hardness test Part 1 Test method ( <i>first revision</i> )
IS 1586 (Part 1) : 2018/ ISO 6508-1 : 2016	Metallic materials — Rockwell hardness test Part 1 Test method ( <i>first revision</i> )
1720: 1978	Specification for cotton sewing threads ( <i>first revision</i> )

**3 NOMENCLATURE**

**3.1** For the purpose of this standard, the nomenclature of the various parts of the needle shall be as given in Fig. 1.

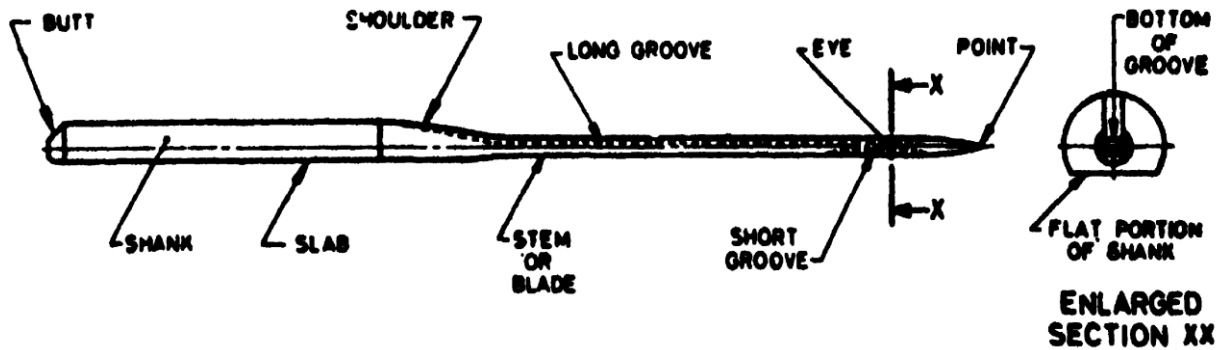


FIG. 1 NOMENCLATURE OF SEWING MACHINE NEEDLE

## 4 MATERIAL

4.1 The needles shall be manufactured from high carbon needle wire recommended for the needle manufacture.

4.1.1 Typical compositions of two types of steel suitable for needle manufacture are given in table 1.

**Table 1 Typical Material Composition**  
(Clause 4.1.1)

SI No.	Constituent (Elements)	Percentage (%)	
		Type 1	Type 2
(1)	(2)	(3)	(4)
i)	Carbon	0.95 to 1.04	0.75 to 0.85
ii)	Silicon	0.10 to 0.25	0.12 to 0.32
iii)	Manganese	0.25 to 0.60	0.30 to 0.60
iv)	Chromium	0.10 to 0.30	—
v)	Sulphur	0.05 Max	0.035 Max
vi)	Phosphorus	0.05 Max	—

## 5 HARDNESS

The hardness of the needle near the stem or centre of flat portion of shank shall be more than 615 *HV* when tested as per IS 1501 (Part 1) / ISO 6507-1 or 56 *HRC* when tested as per IS 1586 (Part 1) / ISO 6508-1.

## 6 DIMENSIONS

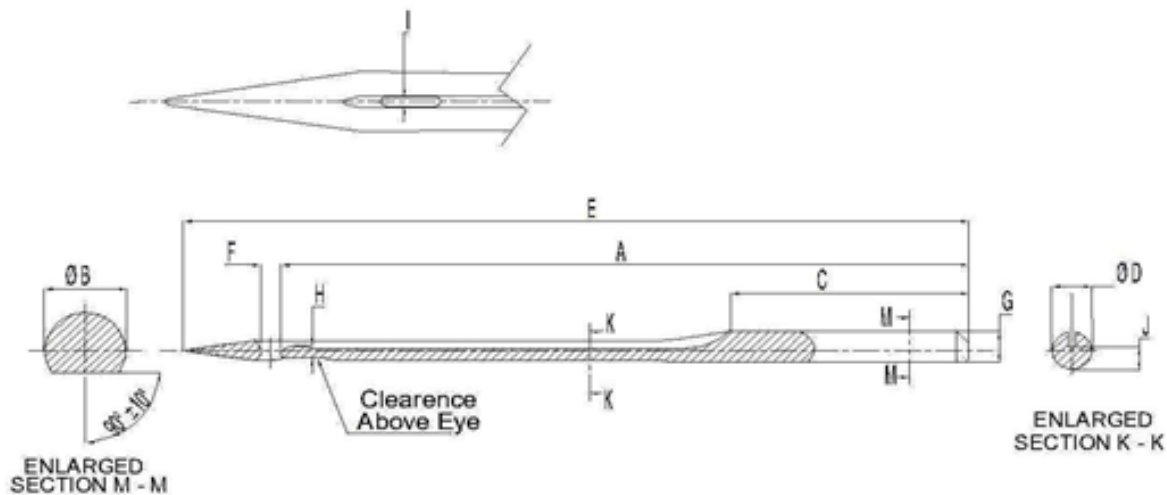
**6.1** The dimensions and tolerance for various sizes of needles covered under 2020 as defined in **8.2** shall be as given in Table 2.

**6.2** The dimensions and tolerances covered under 2020N and 2045 as defined in **8.2** shall be as given in Table 3.

**Table 2 Dimensions for Sewing Machine Needles**

(Clause 6.1)

All dimensions in millimetres.



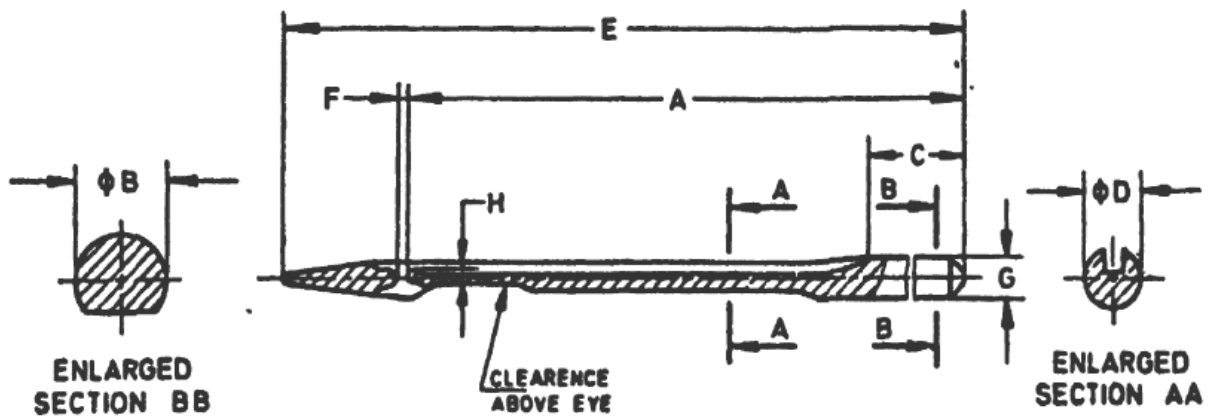
SI No.	Parameters	Needle Size					Tolerance
		9	11	14	16	18	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	A	33.8	33.8	33.8	33.8	33.8	± 0.2
ii)	B	2.02	2.02	2.02	2.02	2.02	± 0.03
iii)	C	11.7	11.7	11.7	11.7	11.7	-
iv)	D	0.67	0.77	0.92	1.02	1.12	± 0.02
v)	E	38.10	38.20	38.50	38.80	39.20	± 0.2
vi)	F	0.80	0.90	1.05	1.15	1.25	-
vii)	G	1.45	1.50	1.57	1.62	1.67	± 0.05 -0

viii)	H	0.18	0.21	0.23	0.26	0.33	±0.02
ix)	I	0.26	0.30	0.36	0.40	0.44	-
x)	J	0.32	0.37	0.50	0.56	0.62	-
xi)	Bend	0.08	0.20	0.30	0.35	0.28	-
xii)	Hardness (HV)	615	615	615	615	615	-

**Table 3 Dimensions of Sewing Machine Needles**

(Clause 6.2)

All dimensions in millimetres.



NOTE — Recess above the short groove is known as clearance above eye (CAE). Additional features in 2020N and 2045 needles as defined under 8.2.

SI No.	Dimensions	Needle Size					Tolerance
		9	11	14	16	18	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	A	33.8	33.8	33.8	33.8	33.8	± 0.20
ii)	B	2.03	2.03	2.03	2.03	2.03	± 0.020
iii)	C	11.7	11.7	11.7	11.7	11.2	± 0.30
iv)	D	0.7	0.8	0.9	1.0	1.1	Up to including No. 14

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							± 0.020 above No. 14 ± 0.03.
v)	E	38 1	38.6	38.6	38.6	39 4	± 0.20
vi)	F	0.65	0.75	0.85	0.98	1.10	± 0.15
vii)	G	1.42	1.45	1.50	1.85	1.60	± 0.03
viii)	H	0 18	0.21	0.23	0.26	0.33	± 0.02

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## 7 DESIGNATION

7.1 Needles shall be designated by the appropriate needle size and number as per this standard.

*Example:*

Needle 14, IS 2181

## 8 WORKMANSHIP AND FINISH

**8.1 General** — The needles shall be nickel plated. The surface shall be free from perceptible defects such as sharp edges and burrs specially in the way of the eye.

**8.2 Point** — The point of the needle shall be symmetrical to the centre line of the needle and shall be sharp and well-rounded so that it punches the cloth smoothly without tearing.

The shape of the needles shall be as under:

- For 2020 needles — it shall be sharp set point, designation as ‘SS’;
- For 2020N needles — it shall be rounded sharp set point, designation as ‘RS’; and
- For 2045 needles — it shall be light ball point, designation as ‘LB’.

## 9 PERFORMANCE TESTS

**9.1 Performance** — A needle conforming to this standard when worked with a good quality sewing machine under the sewing conditions as indicated in Table 4 shall meet the following requirements:

- There shall be no breakage of the thread;
- There shall be no skipped stitches;
- Needle shall not get bent; and
- Needle shall not get blunt at the point.

Table 4 shows the test conditions for one typical needle size, namely needle No. 14. For different size of needles, however, the size and kind of thread, the type of cloth and the number of layers shall be suitably selected.

**Table 4 Sewing Conditions**  
(Clause 9.1)

Sl No.	Item	Stitching Parameters						
		Needle size	Kind of Thread	Cloth	Number of Layers	Stitch Length Approx. (mm)	Sewing Speed (rev/m)	Sewing Length Approx. (mm)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
i)	Common sewing test	14	Cotton sewing thread <sup>1)</sup> 15 tex × 3	Shirting <sup>2)</sup>	2 layers	1.5 3	300 600 1 000	500
ii)	Sewing test on steps	14	Cotton sewing thread <sup>1)</sup> 15 tex × 3	Shirting <sup>2)</sup>	From 4 to 12 layers and from 12 to 4 layers	1.5 3	300 600	250
iii)	Sewing test on thicker material	14	Cotton sewing thread <sup>1)</sup> 15 tex × 3	Shirting <sup>2)</sup>	6 layers	3	600	500

<sup>1)</sup>IS 1720 Specification for cotton sewing threads.  
<sup>2)</sup>IS 1101 Specification for handloom cotton cellular shirting, bleached or dyed.

**9.2 Bend Test** — A needle conforming to this standard shall withstand satisfactorily the test given in **9.2.1**.

**9.2.1** The needle shall be held on its shank in a suitable damp. A gradual load shall be applied at the eye of needle in a direction that the needle bends towards the flat portion of the shank. The application of the load shall be continued till the eye deflects by 4 mm from its original position (see Fig. 2). This position shall be maintained for three seconds after which the load shall be removed. The permanent set, measured at the eye shall not exceed the following limits:

Sl No.	Needle Size	Permanent Set, mm
(1)	(2)	(3)
i)	9	0.08
ii)	11	0.20



iii)	14	0.30
iv)	16	0.35
v)	18	0.38
vi)	19	0.40
vii)	21	0.40

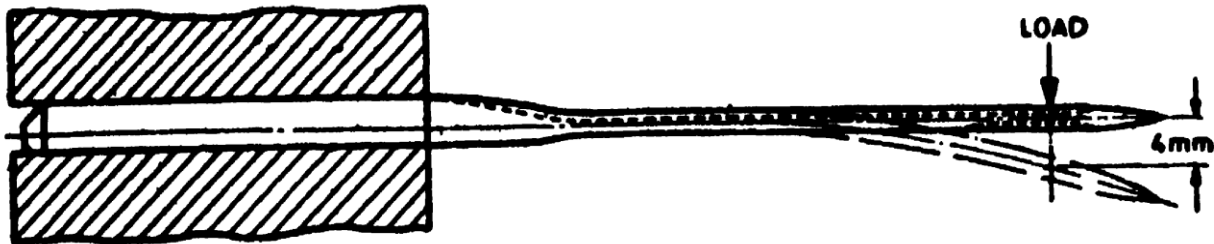


FIG. 2 BEND TEST

## 10 PRESERVATION AND PACKING

**10.1** Needles shall be packed either in oiled paper with a thin foil after being treated with suitable preventive or in vapour phase inhibitor paper (commonly known as VPI paper) or otherwise in accordance with the best prevalent trade practice to prevent exposure to air.

## 11 MARKING

**11.1** Each needle shall be marked with the needle size (as given in Table 2) and the manufacturer's name or trade-mark. The packets shall also be marked similarly.

### 11.1.1 BIS Certification Marking

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

**ANNEX A**  
*(Foreword)*

**COMPARISON OF DESIGNATIONS OF SEWING  
MACHINE NEEDLES**

<i>Sl No.</i>	<i>Class 15 × 1 System</i>	<i>Numbering Metric System (International System 705)</i>
(1)	(2)	(3)
i)	9	65
ii)	11	75
iii)	14	90
iv)	16	100
v)	18	110
vi)	19	120
vii)	21	130