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वस्त्रादि — फ्लैट्स और फ्लैट्स के पेंच —  
विशिष्टि  
( दूसरा पुनरीक्षण )

**Textiles — Flats and Flats' Screws —  
Specification**  
( *Second Revision* )

ICS 59.120.10

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## FOREWORD

This Indian Standard (Second 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.

The flat revolves or rotates along with the cylinder in the revolving flat card. The flat does not rotate and covers one fourth of the cylinder in stationary flat card. Opening to individual fibers and neps removal is done by the action of flat in carding.

This standard was originally published in 1964 subsequently revised in 1982. This revision has been made in the light of experience gained since its publication and to incorporate the following major changes:

- a) Title of the standard has been modified;
- b) Marking, packing and sampling clauses have been modified; and
- c) References to Indian Standards have been updated.

The composition of the committee responsible for the formulation of this standard is listed in Annex B.

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 or analysis, 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 — FLATS AND FLATS' SCREWS —  
 SPECIFICATION**

( *Second Revision* )

## 1 SCOPE

1.1 This standard prescribes the requirements for bare flats and flats' screws for revolving flat card.

1.2 This standard does not cover the requirements of fillets to be mounted on the flats.

## 2 REFERENCES

The standards listed in Annex A 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 in Annex A.

## 3 REQUIREMENTS

### 3.1 Flats

#### 3.1.1 Material

The flats shall be made of grey iron casting conforming to Grade FG 200 of IS 210 subject to the condition that maximum limit of sulphur and phosphorus in the composition of the casting shall be as under:

Sulphur	0.09 percent
Phosphorus	0.04 percent

#### 3.1.2 Freedom from Defects

The flats shall be free from casting defects, such as blow holes, distortion, hard spots and cold shuts.

#### 3.1.3 Dimensions

The dimensions of flats shall conform to the requirements of Fig. 1.

#### 3.1.4 Surface finish

The four toes of flat and other surfaces shall have surface finish as indicated in Fig. 1 (*see IS 3073*).

## 3.2 Flats' Screws

#### 3.2.1 Property Class

Flats' screws shall conform to property class 4.6 of IS 1367 (Part 3).

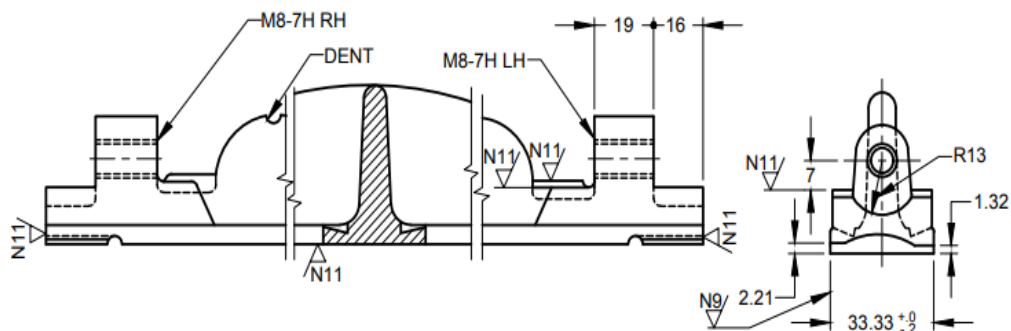
#### 3.2.2 Dimensions

The dimensions of flats' screw shall conform to the requirements of Fig. 2.

#### 3.2.3 Hand of Screw Threads

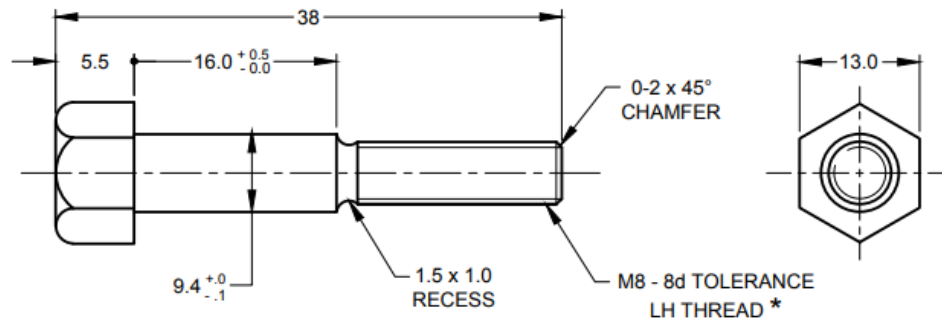
The collar and the screw of the right-hand side of flat shall have right-hand thread, and the collar and the screw of the left-hand side of flat shall have left-hand thread.

NOTE — The side of flat corresponds to the side of carding engine. If an observer stands at the delivery and of the carding engine and faces the flow of material, the side on his right is called the right-hand side, and the side on his left is called the left-hand side of the carding engine.



All dimensions in millimetres

FIG. 1 A TYPICAL FLAT



NOTE — Screw for right-hand side shall have same dimensions but right-hand screw threads.

All dimensions in millimetres

FIG. 2 FLATS' SCREW FOR LEFT-HAND SIDE

### 3.2.4 Site of Screw Threads

The flats' screw and inside of the collars of the flats shall conform to IS 4218 (Part 4).

### 3.2.5 Hardness

The flats' screws shall be hardened and polished. The hardness when measured by the method prescribed in IS 1586 (Part 1) shall be within 40 to 45 HRC.

**3.2.5.1** In case of flats' screws made of case-hardened steel, depth of case shall be 0.1 mm minimum.

## 4 MARKING

**4.1** Each flat and flat screw shall be marked, at a suitable place, with the following information:

- Manufacturer's name, initials and trade-mark, if any;
- A dent to indicate the side of the flat (the dent shall be cast in the top surface of the left hand side of the flat);
- Number of flats and flat screws in the case;
- Gross and net mass;
- Lot/batch number;
- Country of origin; and
- Any other information required by the law in force and/or by the buyer.

## 4.2 BIS Certification Marking

The flats and flats' screws 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.

## 5 PACKING

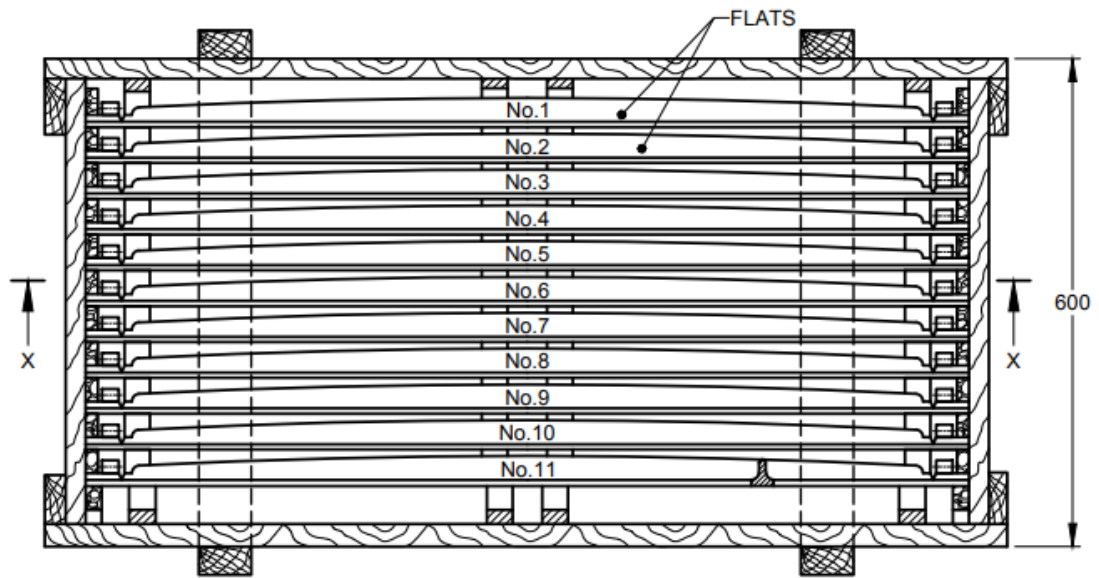
The flats with flats' screws after being coated with grease shall be packed in wooden cases. In the wooden case: they shall be laid horizontally and supported on two wooden slats on either end near the collars. Each layer of flats shall be separated from the next layer by wooden slats. A case shall generally contain 55 flats. The wooden case shall generally be as shown in Fig. 3.

## 6 SAMPLING

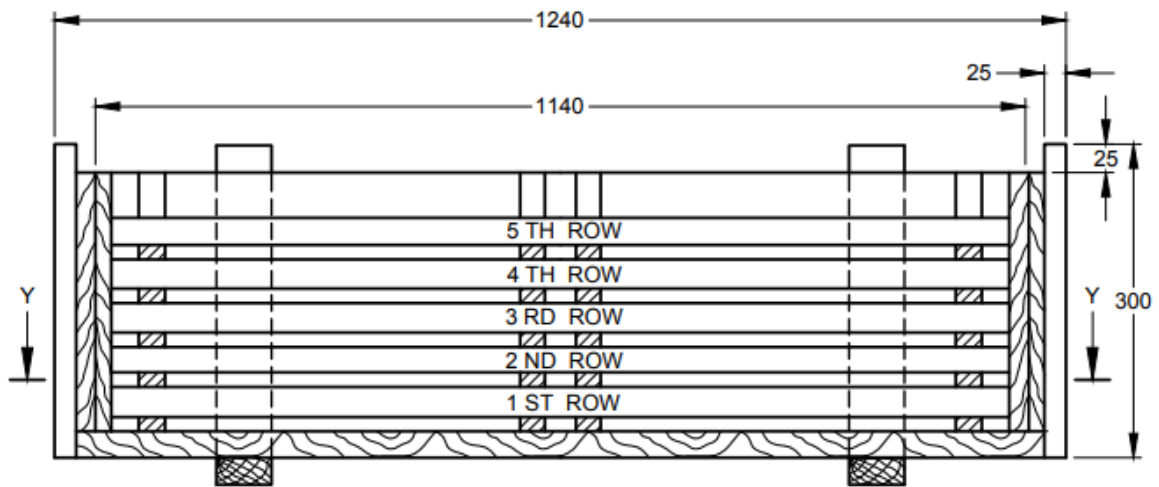
### 6.1 Lot

In any consignment, the number of flats and flats' screws delivered to a buyer against a dispatch note, shall constitute a lot.

**6.2** Unless otherwise agreed to between the buyer and the seller, the number of flats and flats' screws to be selected for inspection, shall be according to col (2) and (3) of Table 1. The flats and flats' screws shall be selected at random. To ensure the randomness of selection, methods given in IS 4905 shall be followed.



SECTION Y-Y



SECTION X-X

NOTE — Five rows of flats, 11 in each row.

All dimensions in millimetres

FIG. 3 PACKING BOX FOR 55 FLATS (BARE)

**Table 1 Sample Size and Permissible Number of Defectives**  
(Clauses 6.2 and 6.3)

Sl No.	Lot Size	Sample Size	Permissible Number of Defectives	Sub - Sample Size
(1)	(2)	(3)	(4)	(5)
i)	Up to 150	8	1	3
ii)	151 - 280	13	1	3
iii)	281 - 500	20	2	3
iv)	501 and above	32	3	5

### 6.3 Criteria for Conformity

The lot shall be considered conforming to the requirements if the following conditions are satisfied:

<i>Characteristic</i>	<i>Number of Samples</i>	<i>Criteria for Conformity</i>
Dimensions and freedom from defects	According to col (3) of Table 1	Number of defective flats or screws shall not exceed the corresponding number given in col (4) of Table 1
All other requirements	According to col (5) of Table 1	All flats meet the relevant requirements

**ANNEX A**  
(Clause 2)

**LIST OF REFERRED INDIAN STANDARDS**

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
IS 210 : 2009	Grey iron castings — Specification ( <i>first revision</i> )	IS 3073 : 1967	Assessment of surface roughness
IS 1367 (Part 3) : 2017	Technical supply conditions for threaded steel fasteners: Part 3 Mechanical properties of fasteners made of carbon steel and bolts, screws and studs ( <i>fifth revision</i> )	IS 4218 (Part 4) : 2001	ISO general purpose metric screw threads: Part 4 Selected sizes for screws, bolts and nuts ( <i>second revision</i> )
IS 1586 (Part 1) : 2018	Metallic materials — Rockwell hardness test: Part 1 Test method ( <i>fifth revision</i> )	IS 4905 : 2015	Random sampling and randomization procedures ( <i>first revision</i> )

**ANNEX B**  
(Foreword)

**COMMITTEE COMPOSITION**

Textile Machinery and Accessories Sectional Committee, TXD 14

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Central Manufacturing Technology Institute, Bengaluru	DR NAGAHANUMAIAAN ( <b>Chairperson</b> )
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### Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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