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*भारतीय मानक मसौदा*

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**समुच्चय — विशिष्टि**

*( आई एस 13806 का पहला पुनरीक्षण )*

**DRAFT Indian Standard**

**Household Sewing Machine —**

**Closed-Type Shuttle Race Assembly —**

**Specification**

*( First Revision of IS 13806)*

ICS 61.080

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**Sewing Machines**  
**Sectional Committee, MED 29**

**Last date for receipt of**  
**comments is 24 June 2022**

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**FOREWORD**

*(Adoption clauses to be added later)*

This standard was first published in 1993.

Major changes in this revision are as follows:

- a) The dimensions of the Type A closed-type shuttle race assembly have been modified;
- b) The references have been updated; and
- c) The marking clause has been revised.

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.

**DRAFT *Indian Standard***  
**HOUSEHOLD SEWING MACHINE — CLOSED-TYPE SHUTTLE RACE**  
**ASSEMBLY — SPECIFICATION**  
( *First Revision* )

**1 SCOPE**

This standard covers the requirements of closed-type shuttle race assembly for the sewing machine 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 subjected 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:

<i>IS No.</i>	<i>Title</i>
210: 2009	Grey iron castings — Specification ( <i>fifth revision</i> )
1068 : 1993	Electroplated coatings of nickle plus chromium and copper plus nickel plus chromium on iron and steel ( <i>third revision</i> )
1501 (Part 1) : 2020/ ISO 6507-1:2018	Metallic materials — Vickers hardness test Part 1 Test method ( <i>fifth revision</i> )
IS 2500 (Part 1) : 2000/ ISO 2859-1:1999	Sampling procedures for inspection by attributes: Part 1 Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection ( <i>third revision</i> )
2507 : 1975	Cold-rolled steel strips for springs ( <i>first revision</i> )
4432 : 1988	Case hardening steels ( <i>first revision</i> )
IS 4905 : 2015/ ISO 24153: 2009	Random sampling and randomization procedures ( <i>first revision</i> )
10878 (Part 1) : 1984	Flat form springs: Part 1 Design and calculation for springs made from rectangular cold-rolled strips
10878 (Part 2) : 1984	Flat form springs: Part 2 Specification for springs made from rectangular cold-rolled strips.

**3 TERMINOLOGY**

For the purpose of this standard, the definitions given in IS 6903 shall apply.

## 4 NOMENCLATURE

Nomenclature shall be as indicated in Fig. 1

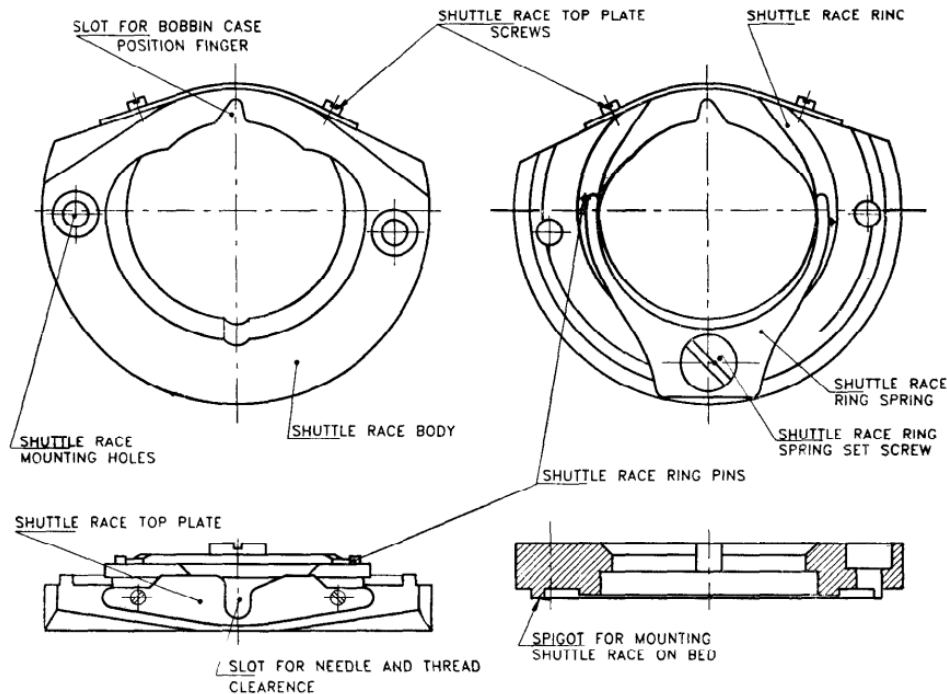


FIG.1 NOMENCLATURE OF CLOSED-TYPE SHUTTLE RACE

## 5 MATERIALS

5.1 The material for the closed type shuttle race is specified as follows.

5.1.1 The shuttle race body shall be made from cast iron of suitable grade such as FG 150 of IS 210.

5.1.2 The shuttle race ring shall be made from case hardening steel designation 20MnXr5 of IS 4432 so as to achieve a hardness of 450 HV in the finished state [see 1501 (Part 1)/ ISO 6507-1].

5.1.3 The shuttle race ring spring and top plate may be designed as per IS 10878 (Part 1) and IS 10878 (Part 2). Material used for spring shall conform to IS 2507. These shall be hardened and tempered.

5.1.4 The pins and all screws to be used for closed type shuttle race assembly shall be made of mild steel and shall be case hardened.

## 6 DIMENSIONS AND TOLERANCES

The fitting dimensions and tolerances of shuttle race as indicated in Fig. 2 shall conform to values as given in Table 1.

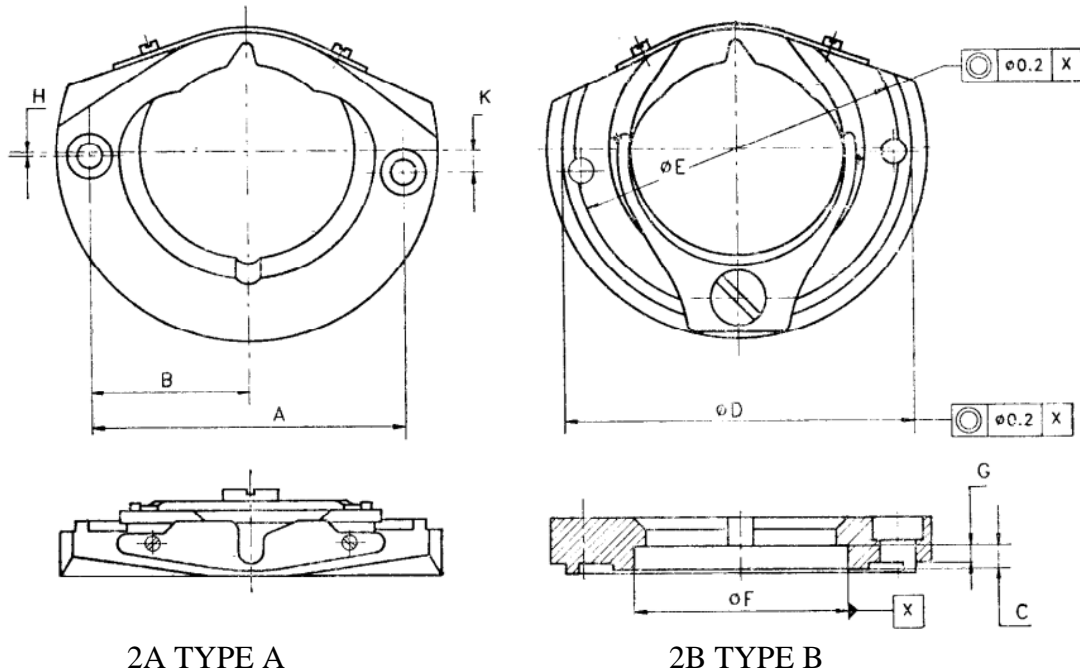


FIG.2 DIMENSIONS OF CLOSED-TYPE SHUTTLE RACE

**Table 1 Dimensions and Tolerances of Closed-Type Shuttle Race Assembly**  
( Clause 6 )

All dimensions in millimeter.

SI No.	Dimension	A	B	C	D	E	F	G	H	K
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
i)	Type A	62.35	31.363	4.582	69.5	64.584	42.672	4.013	0.038	4.331
ii)		62.45	31.337	4.600	69.4	64.554	42.647	3.988	0.013	4.301
iii)	Type B	63.55	31.775	4.60	69.83	64.72	42.722	4.064	2.311	1.311
iv)		63.45	31.725	4.58	67.792	64.57	42.672	4.014	2.261	2.261

## 7 WORKMANSHIP AND FINISH

**7.1** Surface on sliding parts and thread passage for shuttle race shall be polished to smooth surface/edges to avoid breakage/damage to threads, while stitching.

**7.2** The external visible surface shall have bright nickle/chromium plated finish. All other components of race assembly including screws, pins and ring etc. shall have nickle plated/blackened surface finish conforming to at least Service Condition No. 1 with designation Fe/Nil0bCrr of IS 1068.

**7.3** Shuttle groove diameter ‘*F*’ shall be concentric to diameter ‘*D*’ and ‘*E*’ of spigot for mounting shuttle race on bed within 0.3 mm (TIR).

## **8 SAMPLING**

Unless otherwise agreed to between the supplier and the purchaser the sampling plan as given in Annex A shall be followed. For further information reference may be made to IS 2500 (Part 1)/ ISO 2859-1.

## **9 MARKING**

**9.1** The shuttle race shall be marked with the manufacturer's name or trade-mark.

### **9.2 BIS Certification Mark**

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 product(s) may be marked with the Standard Mark.

## **10 PACKING**

Each closed type shuttle race assembly shall be given a suitable antirust coating, packed in a polyethylene bag and then put in a card board carton bearing manufacturer’s name or trade mark, type and description of contents. The wrapped, closed type shuttle race shall be securely packed in accordance with best prevalent trade practice.

## ANNEX A

( Clause 8 )

## SCALE OF SAMPLING AND CRITERIA FOR CONFORMITY

## A-1 SCALE OF SAMPLING

**A-1.1** In any consignment all the shuttle races of the same type and manufactured from the same material under essentially similar conditions of manufacture shall be grouped together to constitute a lot.

**A-1.2** For ascertaining the conformity of the lot to the requirements of specification, tests shall be carried out for each lot separately. The number of shuttle races to be selected at random for this purpose shall be in accordance with column (2) and (3) of Table 2.

**Table 2 Scale of Sampling and Permissible Number of Defectives**

( Clause A-1.2 )

SI No.	No. of Shuttles Races in the Lot <i>N</i>	For Dimensions, Tolerances and Workmanship and Finish Sample Size <i>n</i>	Permissible No. of Defectives*
(1)	(2)	(3)	(4)
i)	Up to 15	5	0
ii)	16 to 40	8	0
iii)	41 to 110	13	0
iv)	111 to 300	20	1
v)	301 to 500	32	1
vi)	501 to 800	50	2
vii)	801 to 1 300	80	3
viii)	1 301 and above	125	5

\*This ensures that lots containing one and a half percent or less defective will be accepted most of the time

**A-1.3** If the shuttle races are packed individually, in order to ensure the randomness of selection IS 4905/ ISO 24153 shall be used.

**A-1.4** If the shuttle races are packed in different cartons, a suitable number of cartons (not less than 20 percent of the total in the lot subject to a minimum of 2) shall be chosen at random. From each of the cartons so chosen, an approximately equal number of shuttle races shall be picked up from its different parts so as to obtain the required number of shuttle races specified in column (3) of Table 2.

## A-2 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

**A-2.1** The shuttle races selected according to A-1.2 and A-1.3 or A-1.4 shall be examined for dimensions and tolerances (*see 6*) and workmanship and finish (*see 7*). If the number of shuttle races failing to meet one or more of the requirements mentioned above is less than or equal to the

permissible number of defectives given in column (4) of Table 2, the lot shall be declared as conforming to the requirements of these characteristics.