For BIS Use Only

BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY

(*Not to be reproduced without the permission of BIS or used as an Indian Standard*)

भारतीय मानक मसौदा
घरेलू सिलाई मशीन — खुला टाइप शटल रेस उप-समुच्य — विशिष्टि

(आई एस 14207 का *प्रथम पुनरीक्षण*)

DRAFT *Indian Standard*

Household Sewing Machines — Open Type Shuttle Race Sub-Assembly — Specification

(*First Revision* of IS 14207)

ICS 61.080

Sewing Machines Sectional Committee, MED 29	**Last date for receipt of comments is 12 Aug 2022**

FOREWORD

(*Adoption clause to be added later on*)

This standard was first published in 1994.

Major changes in this revision are as follows:

a) The dimension of the centre of the shuttle race sub-assembly has been revised; and
b) The dimension of the depth of the shuttle race sub-assembly has been revised.

The standard has been prepared to standardize the open type shuttle race to ensure correct fitting and functioning with other mating components of sewing machine.

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 MACHINES — OPEN TYPE SHUTTLE RACE SUB-ASSEMBLY — SPECIFICATION

(*First Revision*)

1 SCOPE

This standard covers the requirements of two types of open type shuttle race for sewing machines 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:

IS / ISO No.	*Title*
210 : 2009	Grey iron castings — Specification (*fifth revision*)
1068 : 1993	Electroplated coatings of nickel plus chromium and copper plus nickel plus chromium on iron and steel
1366 : 2002	Slotted cheese head screws (*second revision*)
1501 (Part 1) : 1984	Method for vickers hardness test for metallic materials: Part 1 HV 5 to HV 100 (*second revision*)
IS 2500 (Part 1) : 2000/ ISO 2859-1:1999	Sampling inspection procedure: Part 1 Attributes sampling plan indexed by acceptance quality level (AQL) for lot by lot inspection (*second revision*)
2507 : 1975	Cold rolled steel strips for springs (*first revision*)
4432 : 1988	Case hardening steels (*first revision*)
4905 : 1968	Methods for random sampling
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 NOMENCLATURE

3.1 The nomenclature for the open type shuttle race shall be as indicated in Fig. 1.

4 TYPES

The two types of open type shuttle race for sewing machines for household purposes based on dimension is as follows:

a) Type A; and
b) Type B.

See Fig. 2 for the details of Type A and Type B open type shuttle race.

5 MATERIAL

5.1 The material for the open 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 20Mn5Cr5 of IS 4432 so as to achieve a hardness of 450 HV in the finished state (*see* IS 1501).

5.1.3 The shuttle race ring spring and top plate may be designed as per IS 10878 (Part 1) and shall conform to the requirements of IS 10878 (Part 2). The 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 open type shuttle race sub-assembly shall be made of carbon steel and shall be case hardened.

6 DIMENSIONS AND TOLERANCES

The fitting dimensions and tolerances of open type shuttle race shall be as given in Fig. 2.

7 WORKMANSHIP AND FINISH

7.1 Surface on sliding part and thread passage shall be finely polished to avoid damage or breakage of thread when working with the shuttle.

7.2 Surface of casting shall be treated by plating or other adequate surface treatment.

7.3 Fitting parts such as springs, screws, knobs, and pins shall have nickel-plated/blackened surface finish conforming to at least service condition number 1 with designation Fe/Ni l0b Cr r of IS 1068.

8 SAMPLING

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

9 MARKING

9.1 Each piece of the shuttle race shall be legibly and indelibly marked with the following:

a) Source of manufacture and trade-mark, if any; and
b) Type of shuttle race.

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

10 PACKING

Each shuttle race shall be given a suitable antirust coating and wrapped in polyethylene bags. The wrapped shuttle race shall be securely packed in accordance with best prevalent trade practices. Each package shall bear the manufacturer's name or trade-mark, type and description of contents.

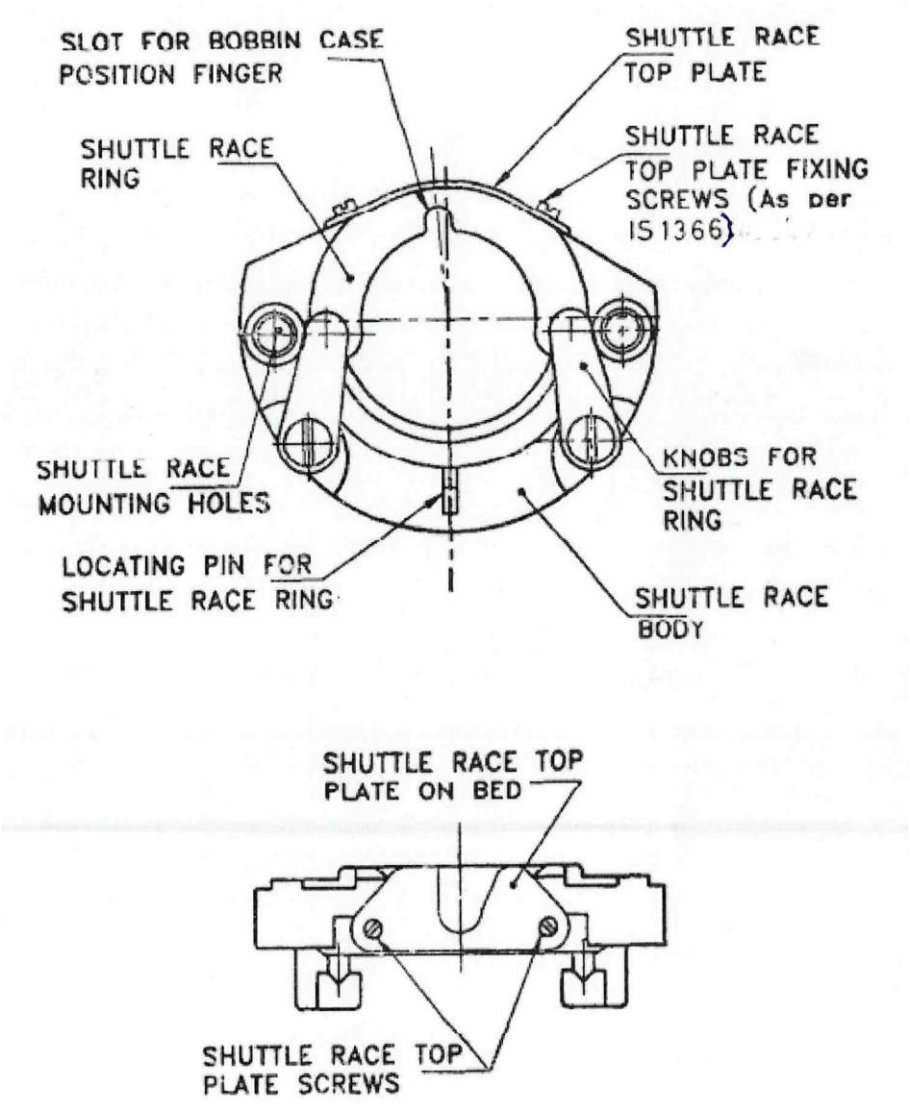
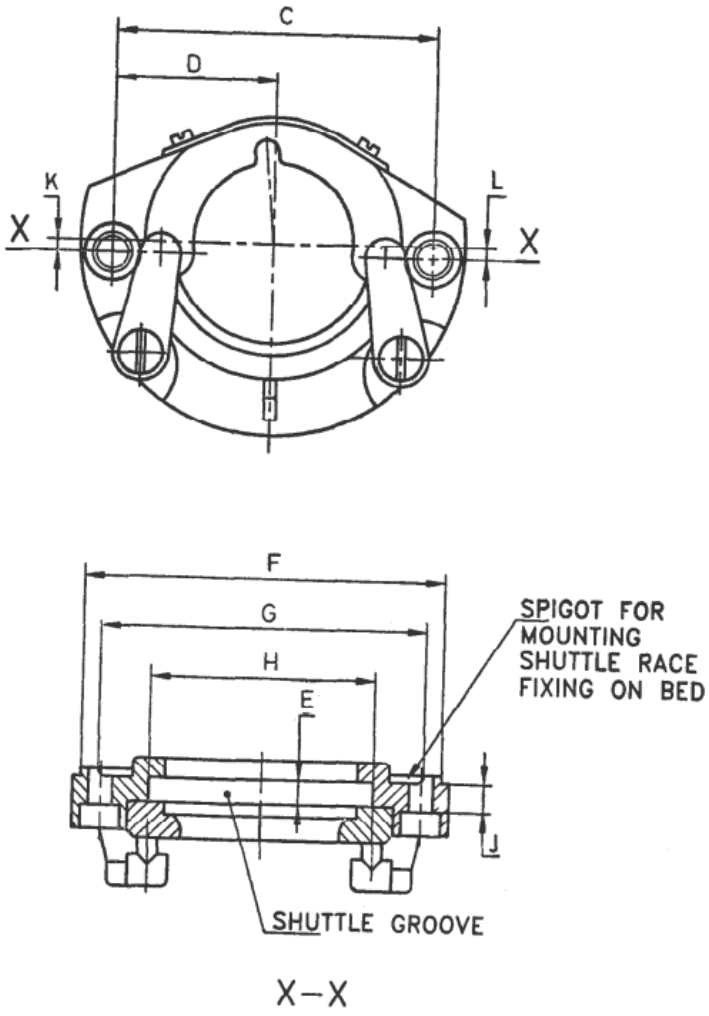


FIG. 1 NOMENCLATURE FOR OPEN TYPE SHUTTLE RACE SUB-ASSEMBLY



All dimensions in millimetres

Sl No.	Dimensions	*C*	*D*	*E*	*F*	*G*	*H*	*J*	*K*	*L*
(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	4.305
iii)	Type B	63.550	31.775	4.600	69.830	64.720	42.722	4.064	2.311	2.311
iv)		63.450	31.725	4.580	69.792	64.570	42.672	4.014	2.261	2.261

FIG. 2 DIMENSIONS FOR OPEN TYPE SHUTTLE RACE SUB-ASSEMBLY

ANNEX A
(*Clause* **7**)
SCALE OF SAMPLING AND CRITERIA FOR CONFORMITY

A-1 SCALE OF SAMPLING

A-1.1 ln any consignment, all 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 the 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 co1umn (2) and (3) of Table 1.

A-1.3 If the shuttle races are packed unindividual, in order to ensure the randomness of selection, IS 4905 shall be used.

A-1.4 If the shuttle races are packed ii1 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 co1umn (3) of Table 1.

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 1, the lot shall be declared as conforming to the requirements of these characteristics.

Table 1 Scale of Sampling and Permissible Number of Defectives
(*Clauses* **A-1.2**, **A-1.4**, *and* **A-2.1**)

Sl No.	**No. of Shuttles Races in the Lot**	**For Dimensions, Tolerances and Workmanship and Finish**	
	N	Sample Size *n*	Permissible No. of Defectives[1)]
(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

[1)]This ensures that lots containing one and a half percent or less defective will be accepted most of the time.