Doc: MHD 09(25807) WC
June 2024

BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY

भारतीय मानक मसौदा

मॉड्यूलर निचले अंग ऑर्थोटिक घटकों के लिए विशिष्टि

भाग 2 स्टीरप्स, विभाजित

[IS 9471 (Part 2): 1980 का पहला पुनरीक्षण]

Draft Indian Standard

Specification for Modular Lower Limb Orthotic Components

Part 2 Stirrups, Split

[First revision of IS 9471 (Part 2): 1980]

ICS 11.180.10

Artificial Limbs, Rehabilitation Appliances and Equipment for the Persons with Disability Sectional Committee, MHD 09

Last date for comments: **03 July 2024**

FOREWORD

(Formal clauses will be added later)

This standard was originally published in 1980. The first revision of this standard has been brought out to incorporate the revised cross references and align the standard with the latest style and format of Indian Standards. This revision incorporates Amendment No.1 issued in June 1993. Also, cross-references to Indian Standards have been updated.

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 (s*econd revision*)’. The number of significant places retained in the rounded off value should be same as that of the specified value in this standard.

1 SCOPE

This standard specifies dimensional and other requirements of split stirrups for modular lower limb braces.

2 REFERENCES

The standards given 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 these standards.

IS No.	***Title***
IS 513 (Part 1): 2016	Cold reduced carbon steel sheet and strip Part 1 Cold forming and drawing purpose *(sixth revision)*
IS 1079: 2017	Hot rolled carbon steel sheet, plate and strip – Specification *(seventh revision)*
IS 6911: 2017	Stainless steel plate, sheet and strip – Specification *(second revision)*
IS 1573: 1986	Specification for electroplated coatings of zinc on iron and steel *(second revision)*
IS 1068: 1993	Electroplated coatings of nickel plus chromium and copper plus nickel plus chromium – Specification *(third revision)*

3 TYPES

Four types of spilt stirrups (according to their lobe configurations) shall be as follows:

a. Type 1 — Free motion,
b. Type 2 — Limited motion,
c. Type 3 — Foot drop, and
d. Type 4 — Double action.

3.1 The general configurations of stirrup lobes for the types given in **3** shall be as indicated in Fig. 1.

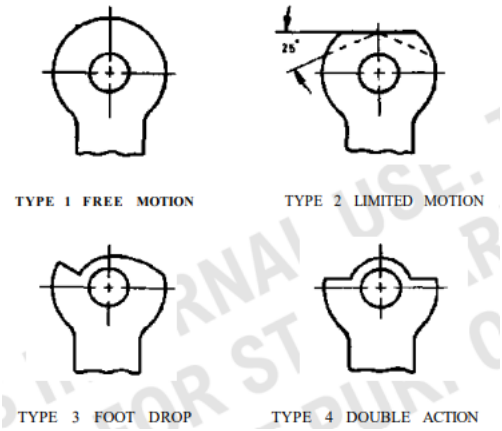


FIG. 1 TYPES OF STIRRUP LOBES

4 MATERIAL

Mild steel sheet strip, cold rolled annealed Grade CR0 of IS 513 (Part 1) or hot rolled annealed Grade HR0 of IS 1079. Finished thickness of components shall be not less than 3.0 mm.

Alternatively, stirrups may be manufactured from stainless steel sheet strip 3.0 mm thick cold hot rolled annealed conforming to designation 04Cr18Ni10 or 07Cr18Ni9 of IS 6911.

5 SHAPE AND DIMENSIONS

5.1 Shape

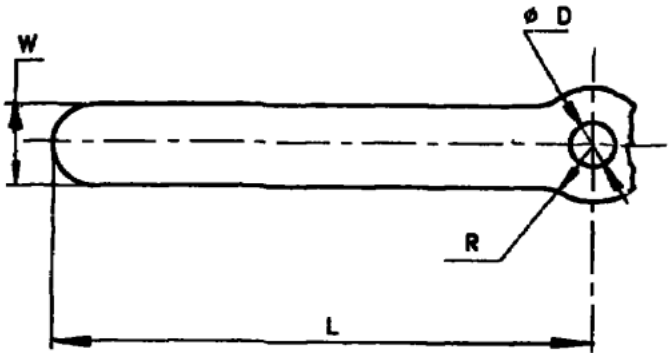
The typical shape of split stirrup (other than lobe configurations) shall be as given in Fig. 2.

5.2 Overall Dimensions

The overall dimensions of the stirrups shall be as given in Fig. 2. These dimensions shall apply to all types of split stirrups.

5.3 Dimensions of Lobes

The general lobe configurations for different types are given in Fig. 1. The lobe dimensions of each type shall be subject to performance considerations as given in 5.3.1 to 5.3.4. The detailed dimensions shall be arrived at depending on their individual designs when matched with their ankle joints.



Size	*L ± 2*	*Width* W, ± 0.25	Lobe radius R ± 0.25	*Hole* Dia D, H 8
1	80,100	12	10	7
2	100,120	16	12	9
3	140	20	15	9

All dimensions in mm

FIG. 2 STIRRUP, SPLIT

5.3.1 Free motion (Type 1)

The stirrup shall provide an unrestricted movement of at least 45° in both Plantar flexion and Dorsi flexion when assembled with the ankle joint unit.

5.3.2 Limited motion (Type 2)

The stirrup end shall be finished as shown in Fig. 1. Further shaping (as indicated in dotted lines) at the time of fitting should provide 0 to 25° in plantar or and dorsi-flexion as required.

5.3.3 Foot drop (Type 3)

The lobe shall be so contoured as to provide the following maximum flexion when assembled with its ankle joints at the time of its manufacture:

Plantar flexion	30°
Dorsi flexion	15°

Additional flexion of 10° either way should be obtainable by further manual finishing at the time of fitting.

5.3.4 Double action (Type 4)

The lobe shall be so contoured as to provide equal plantar-flexion and dorsi flexion of 25° when used with the appropriate ankle joint.

6 WORKMANSHIP AND FINISH

All sharp edges shall be deburred. Stirrups shall be free from tool marks, scales, surface flaws and pittings. The stirrups shall be buffed clean and zinc plated to Grade 1 (FeZn5) of IS 1573.

Alternatively, the stirrups may be plated in nickel-chromium and the plating shall conform to Service Condition No.2 of IS 1068. Holes rendered undersize in plating shall be acceptable and be reamed to size at the time of fitting if required. In the case of stainless steel stirrups they shall be buffed smooth, passivated and polished bright.

7 MARKING

7.1 The stirrups shall be marked by putting a label or otherwise with the following:

a) Manufacturer’s name, initials or recognized trademark
b) Proper identification of the type, size and material

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

8 PACKING

The stirrups shall be packed in polyethylene bags and ends heat-sealed. The stirrup may also be packed as agreed to between the manufacturer and the purchaser.