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मानक

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IS 14723 (1999): Artificial Limbs - Knee Shin Assembly [MHD
10: Medical Laboratory Instruments]



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भारतीय मानक
कृत्रिम अंग – घुटने शिन समुच्चय – विशिष्टि

Indian Standard

ARTIFICIAL LIMBS — KNEE SHIN ASSEMBLY —
SPECIFICATION

ICS 11.040.40

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Artificial Limbs, Rehabilitation Appliances and Equipment for the Disabled Sectional Committee had been approved by the Medical Equipment and Hospital Planning Division Council.

The formulation of this standard on knee shin assembly, an artificial limb, has been taken up at the instance of ALIMCO, Kanpur which is the largest and the only public sector undertaking engaged in manufacture of artificial limbs appliances and equipment for rehabilitation of the physically handicapped.

Knee shin assembly is used by the physically impaired persons to control the mobility of the knee joint. The standard will help in rationalizing the quality and dimensions of this appliance. The device is fixed as an aid to the amputee to perform some of the normal functions of the knee and shin.

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 : 1960 'Rules for rounding off numerical values (*revised*)'. 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

ARTIFICIAL LIMBS — KNEE SHIN ASSEMBLY — SPECIFICATION

1 SCOPE

This standard specifies the requirement of knee shin assembly.

2 REFERENCE

The Indian Standard IS 4835 'Specification for polyvinyl acetate dispersion based adhesives for wood (*first revision*)' contains provisions which through reference in this text, constitute provision of this standard. At the time of publication, the edition indicated above was valid. The standard is subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standard.

3 TYPES

The knee shin assembly shall be of the following types:

- a) *Type 1* — Knee free mechanism,
- b) *Type 2* — Knee constant friction mechanism, and
- c) *Type 3* — Knee stabilized mechanism.

4 SHAPE AND DIMENSIONS

4.1 The shape of the knee shin assembly shall be as shown in Fig. 1. The dimensions of the knee shin assembly for all types of mechanisms shall be as shown in Fig. 1.

4.2 The internal mechanism may be of Types 1, 2 or 3.

5 MATERIAL

5.1 The knee and shin may be made of any of the following species of wood:

- a) Willow (*Salix* spp.)
- b) Alder (*Alnus* spp.)
- c) Poplar (*Populus* spp.)
- d) Toon (*Toona ciliata* Roem)
- e) Chemically treated rubber wood (*Hevea brasiliensis* Muell. Arg)
- f) Balsa wood (*Ochroma pyramidale* Urban), and
- g) Shivan.

5.1.1 The wood shall be seasoned with a maximum moisture content of 15 percent.

5.2 The material used for other components shall be as follows:

- a) Knee bolts : Mild steel
- b) Bushing : Brass/bronze
- c) Side bars : Mild steel sheet, 3.15 mm thick
- d) Knee stopper : Aluminium casting

6 MECHANISMS

6.1 Mechanism for Type 1

During swing/stance phase, no control is exercised in this type of mechanism. Stabilization of mechanism is obtained by offsetting the knee axis posteriorly by 10 to 15 mm.

6.2 Mechanism for Type 2

During swing phase, the motion is controlled by providing friction with the help of clamp. The friction can be adjusted according to the requirements of the individual.

6.3 Mechanism for Type 3

During stance phase, mechanism gets locked under weight bearing conditions within the angulatory movement of 150, *Min* between knee and shin, when not weight bearing, the knee movement becomes free.

6.4 The knee and shin may be made from laminated blocks and the maximum number of laminations shall be 5.

6.5 Wood based adhesives conforming to the requirements of IS 4835 shall be used for lamination.

6.6 The knee and shin block shall have appropriate cavities to accommodate the mechanism.

7 WORKMANSHIP AND FINISH

7.1 The knee and shin pieces shall have smooth surfaces and shall be free from any surface defect, such as cracks, etc.

7.2 All the hardwares shall be firmly tightened.

8 MARKING

8.1 Each knee shin assembly shall be marked indelibly and clearly on its surface with the indication of the source of manufacture and its type.

8.2 BIS Certification Marking

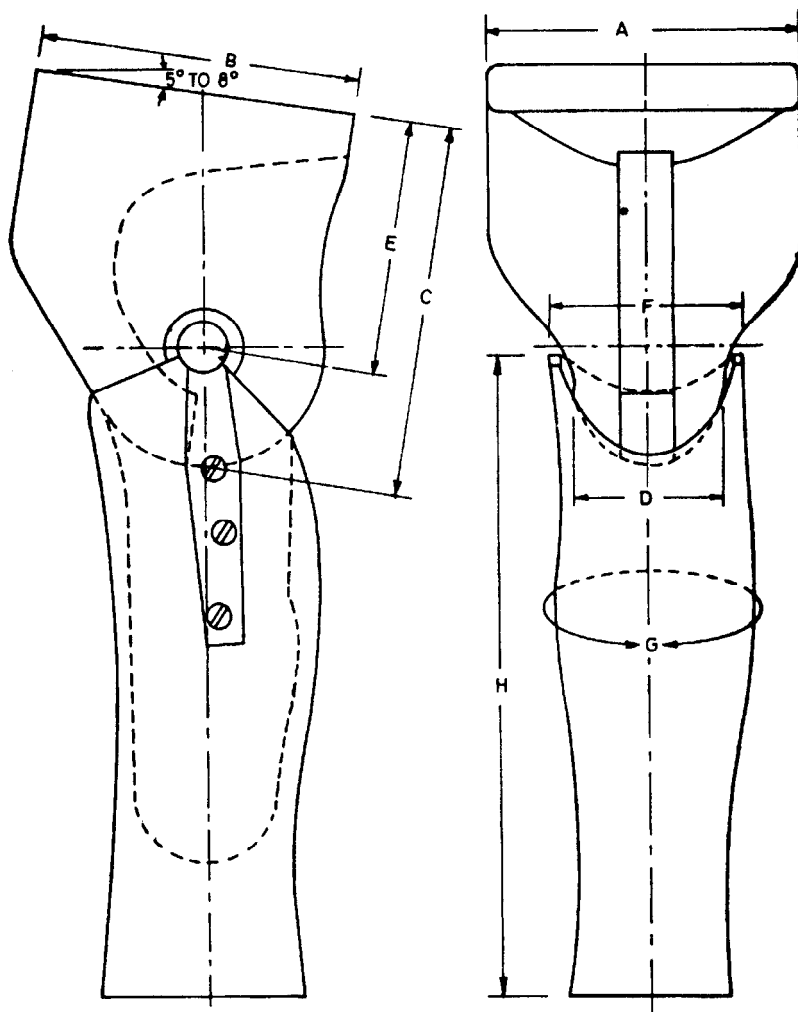
The knee shin assembly may also be marked with the Standard Mark.

8.2.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for

the use of Standard Mark may be granted to manufacturers or producers, may be obtained from the Bureau of Indian Standards.

9 PACKING

The knee shin assembly shall be packed in accordance with the prevalent trade practices as agreed to between the purchaser and the supplier.



All dimensions in millimetres.

Size	Knee Piece				Shin Piece			
	A	B	C	D	E	F	G	H
I	100 ⁺² ₋₀	115 ⁺² ₋₀	134	44 ⁺² ₋₀	92.5	72 ⁺² ₋₀	240 ⁺⁶ ₋₀	240 ± 3
II	132 ⁺² ₋₀	145 ⁺² ₋₀	150	56 ⁺² ₋₀	97	72 ⁺² ₋₀	276 ⁺⁶ ₋₀	240 ± 3
III	—	—	—	—	—	92 ⁺² ₋₀	300 ⁺⁶ ₋₀	340 ± 3
IV	—	—	—	—	—	92 ⁺² ₋₀	350 ⁺⁶ ₋₀	340 ± 3

NOTES

- 1 Size I Knee piece is used for Size I and II Shin pieces.
- 2 Size II Knee piece is used for Size III and IV Shin pieces.

FIG. 1 KNEE SHIN ASSEMBLY

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