

IS : 8330 - 1986

Indian Standard
SPECIFICATION FOR
TRIPODS FOR SURVEYING INSTRUMENTS
(*First Revision*)

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

Indian Standard

SPECIFICATION FOR TRIPODS FOR SURVEYING INSTRUMENTS (First Revision)

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Indian Standard
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(First Revision)

0. FOREWORD

0.1 This standard was adopted by the Indian Standards Institution on 23 October 1986, after the draft finalized by the Optical and Mathematical Instruments Sectional Committee, had been approved by the Engineering Division Council.

0.2 Surveying tripod, commonly known as stand, is an essential accessory required for mounting of surveying instruments, such as theodolites, levels, electro-magnetic distance measuring (EDM) instruments, etc. These are of two kinds, viz. telescopic and fixed leg type. The telescopic tripod is used for theodolites and EDM instruments where accurate centring is required while the fixed leg type is generally used for levels where more stability is required. This standard first published in 1977 has been revised to include the requirements of the fixed leg type of tripod.

0.3 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, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements of telescopic and fixed leg type tripods for surveying instruments.

*Rules for rounding off numerical values (*revised*).

2. MATERIAL

2.1 The surveying tripods shall be made from one of the following species of timber:

TRADE NAME	BOTANICAL NAME
Teak	<i>Tectona grandis</i> Linn. f.
Sissoo	<i>Dalbergia sissoo</i> Roxb.
Aini	<i>Artocarpus hirsuta</i> Lamk
Mulberry	<i>Morus</i> sp.
Birch	<i>Betula</i> sp.
Silver oak	<i>Grevillea robusta</i> A. Cunn.

2.2 The timber used for the tripods shall be thoroughly seasoned, radially sawn, and shall conform to the requirements of IS : 287-1973*. It shall be free from defects, such as knots, cracks, shakes, insect attack, decay, etc.

2.3 The material for the metallic portion shall be hard and preferably aluminium alloy conforming to Grade SIC-H of IS : 737-1974†. The thickness of the aluminium sheet for metallic strips and bands shall be about 2 mm. Brass and gunmetal of non-magnetic variety may also be used.

3. GENERAL REQUIREMENTS

3.1 The legs of the tripods shall be telescopic or fixed type, as applicable.

3.2 The maximum and minimum height, as measured vertically from the top of the tripod head to shoe, shall be approximately 1.6 m and 1.0 m respectively, in case of telescopic tripod and between 1.5 m and 1.6 m in case of fixed leg type.

3.3 The tripods shall be rigid, robust and as light as possible.

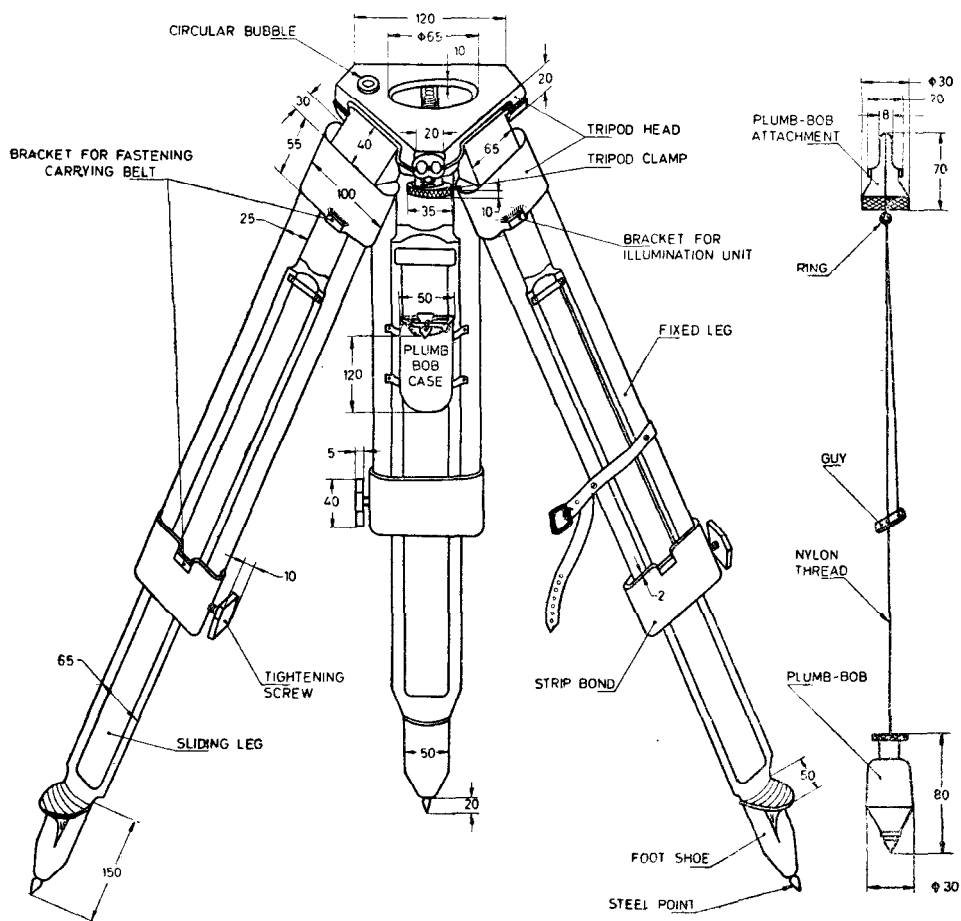
4. DIMENSIONAL AND CONSTRUCTIONAL REQUIREMENTS

4.1 The main dimensions and the various parts of the tripods shall be as shown in Fig. 1 and 2. The other dimensions shall be at the discretion of the manufacturers.

4.2 The tripod clamp shall be fitted into the tripod head in a manner which would prevent it from being lost. The dimensions of the tripod clamp shall be as shown in Fig. 3.

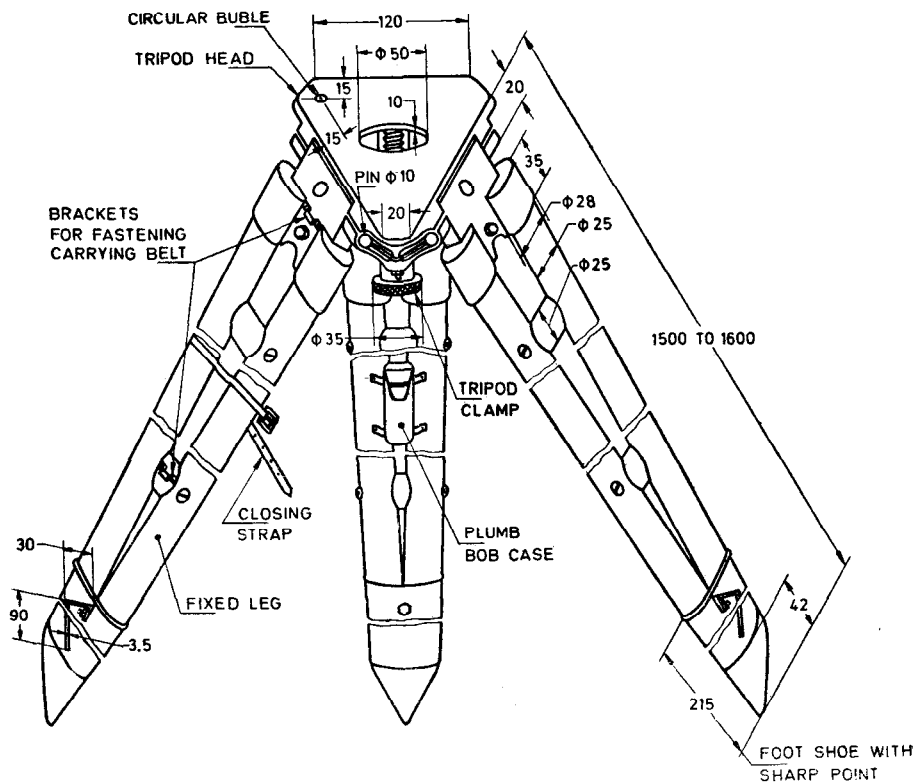
*Recommendations for maximum permissible moisture content for timber used for different purposes (*second revision*).

†Specification for wrought aluminium and aluminium alloys, sheet and strip (for general engineering purposes) (*second revision*).



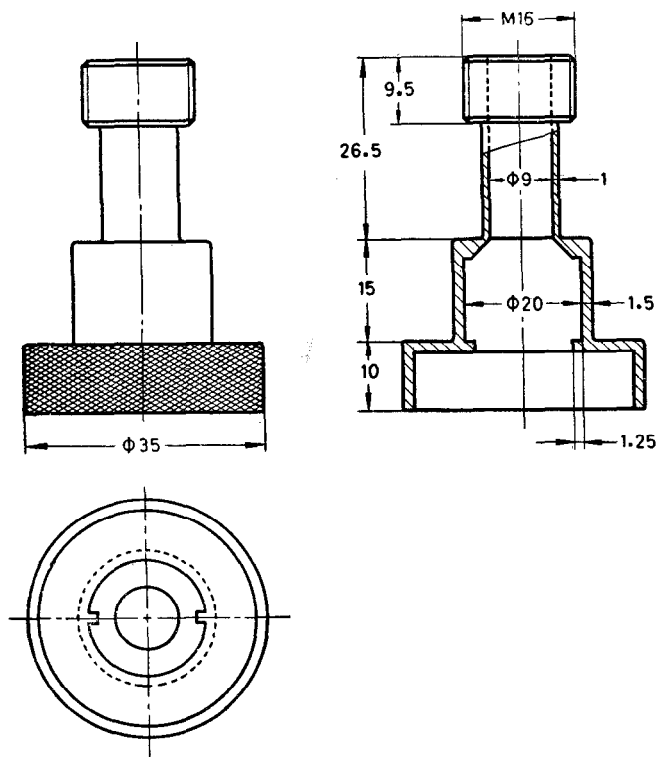
All dimensions in millimetres.

FIG. 1 DIMENSIONS AND NOMENCLATURE OF TRIPOD FOR SURVEYING INSTRUMENTS



All dimensions in millimetres.

FIG. 2 DIMENSIONS AND NOMENCLATURE FOR FIXED LEG TRIPOD FOR SURVEYING INSTRUMENTS



All dimensions in millimetres.

FIG. 3 DIMENSIONS FOR TRIPOD CLAMP

4.2.1 Optional — If agreed to between the manufacturer and the user, the following threads may also be provided in the tripod clamps in addition to M 16 threads as specified in Fig. 3.

- a) Diameter 14 mm, pitch 2 mm
- b) Diameter 15 mm, pitch 1.5 mm

4.3 A protecting cap made of plastic or metal shall be fastened to the tripod head by means of the tripod clamp.

4.4 The tripod clamp shall have a hole of about 9 mm in diameter in order to make use of optical plummets.

4.5 The plumb-bob attachment shall be able to be fitted into tripod clamp for centering the instrument.

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4.6 The telescopic tripod may be fitted with a metal plate or bracket to hold illuminating device.

4.7 A circular bubble conforming to IS : 1632-1960* shall be provided on the tripod head. The sensitivity of the circular bubble shall be 25 ± 5 minutes over 2 mm run.

4.8 The legs shall be made of wood. In case of telescopic tripod, the fixed portion of the legs shall be approximately 80 cm.

4.9 The shoes of tripod stands shall be made of steel and shall be sharply pointed out at the end so that the tripod legs are firmly inserted into the ground.

4.10 The different bands and strips fitted with the legs of telescopic tripod shall be of aluminium or brass.

4.11 A long leather belt shall be provided with one of the legs for carrying the tripods. Rotproof canvas of any shade may also be used as an alternative.

4.12 A leather or rotproof canvas strap shall also be provided with one of the legs for closing the tripods.

4.13 The tripods shall be stable against strong winds.

4.14 A leather or canvas case shall be provided on the inner side of one of the legs for keeping the accessories supplied with the tripods.

5. ACCESSORIES

5.1 Key for tightening the screws of the tripod stand, shall be supplied with every unit.

5.2 Plumb-bob (as shown in Fig. 1) made of brass or leaded brass having a mass of 100 gm with a hard tip may also be supplied with the tripod stand if desired by the purchaser.

6. FINISH

6.1 The tripods shall be painted with weather-resistant varnish or paint.

7. TESTS

7.1 The tripod shall be tested to conform to the requirements given in 2 to 6.

*Specification for bunnies

8. MARKING

8.1 The tripods shall be marked with the manufacturer's name or trade-mark and the year of manufacture.

8.1.1 The tripods may also be marked with the Standard Mark.

NOTE — 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 Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

9. PACKING

9.1 The tripods shall be suitably packed for transit.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pasca ¹	Pa	1 Pa = 1 N/m ²