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Indian Standard

SPECIFICATION FOR PLANE TABLES

(Incorporating Amendment No. 1)

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

Price Group 3

Indian Standard

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(*Continued from page* 1)

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Indian Standard

SPECIFICATION FOR PLANE TABLES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 12 November 1963, after the draft finalized by the Optical and Mathematical Instruments Sectional Committee had been approved by the Engineering Division Council.

0.2 Plane table is an instrument with which land surveys are carried out to plot maps. It consists of a plane wooden board clamped horizontally on a wooden tripod stand. Drawing paper is mounted on the upper surface of this board. For sighting purposes a sight rule is employed. When the sight rule is used, it is laid on the plane table; the vanes are lifted to the upright position and the instrument sighted at the object. Details and contours are then surveyed and plotted on the drawing paper.

0.3 Taking into consideration the views of producers and consumers, the Sectional Committee responsible for the preparation of this standard felt that it should be related to the manufacturing practices followed in the country in this field.

0.4 Wherever a reference to any Indian Standard appears in this specification, it shall be taken as a reference to the latest version of the standard.

0.5 This edition 1.1 incorporates Amendment No. 1 (June 1978). Side bar indicates modification of the text as the result of incorporation of the amendment.

0.6 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 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.

0.7 This standard is intended chiefly to cover the technical provisions relating to plane tables, and it does not include all the necessary provisions of a contract.

1. SCOPE

1.1 This standard deals with the requirements of plane table boards, plane table stands and sight rules.

2. PLANE TABLE BOARDS

2.1 Dimensions

2.1.1 The plane table boards shall be designated as large, medium and small, and shall be of the following sizes (*see* Fig. 1):

Designation	*Dimensions* (mm)		
	A	*B*	*C*
Large	750	600	15
Medium	600	500	15
Small	500	400	15

2.1.2 The length and width *A* and *B* of the boards shall be subject to a tolerance of ±5 mm and the thickness *C* to that of ±2 mm.

2.2 Material

2.2.1 The plane table boards and battens shall be made from the material specified in IS : 1444-1963 Engineers' Pattern Drawing Boards (*Revised*).

2.2.2 The washers with slots and the clamping assembly shall be made of non-magnetic rolled brass sheet. The wood screws used shall also be of brass [*see* IS : 451-1961 Specification for Wood Screws (*Revised*)].

2.2.3 All the metallic parts used in the manufacture of plane tables shall be non-magnetic.

2.3 Construction

2.3.1 The plane table boards and battens shall he constructed in conformity with the requirements specified in IS : 1444-1963.

2.3.2 The edges of the boards shall be square and their corners shall be protected with brass or anodized aluminium strips. The strips shall be fixed with brass countersunk screws (*see* Fig. 1).

2.4 Clamping Assembly

2.4.1 The brass clamping assembly shall have an annular ring of not less than 160 mm diameter and of minimum thickness 4 mm. It shall be fixed at the centre of the back of the board with four cheese-head brass screws passing through the four spokes (*see* Fig. 1). The other end of the brass screw shall be fitted with a hexagonal brass nut held in a recess of the working surface. No part of the screw or the nut shall project out on the working surface of the board (*see* Fig. 2).

2.4.2 The brass circular disc (*see* Fig. 1) which firmly secures the clamping assembly to the board, shall similarly be held in a recess at the centre of the working surface by three brass countersunk wood screws. The diameter of the circular disc shall be 30 mm. The wing screw shall be

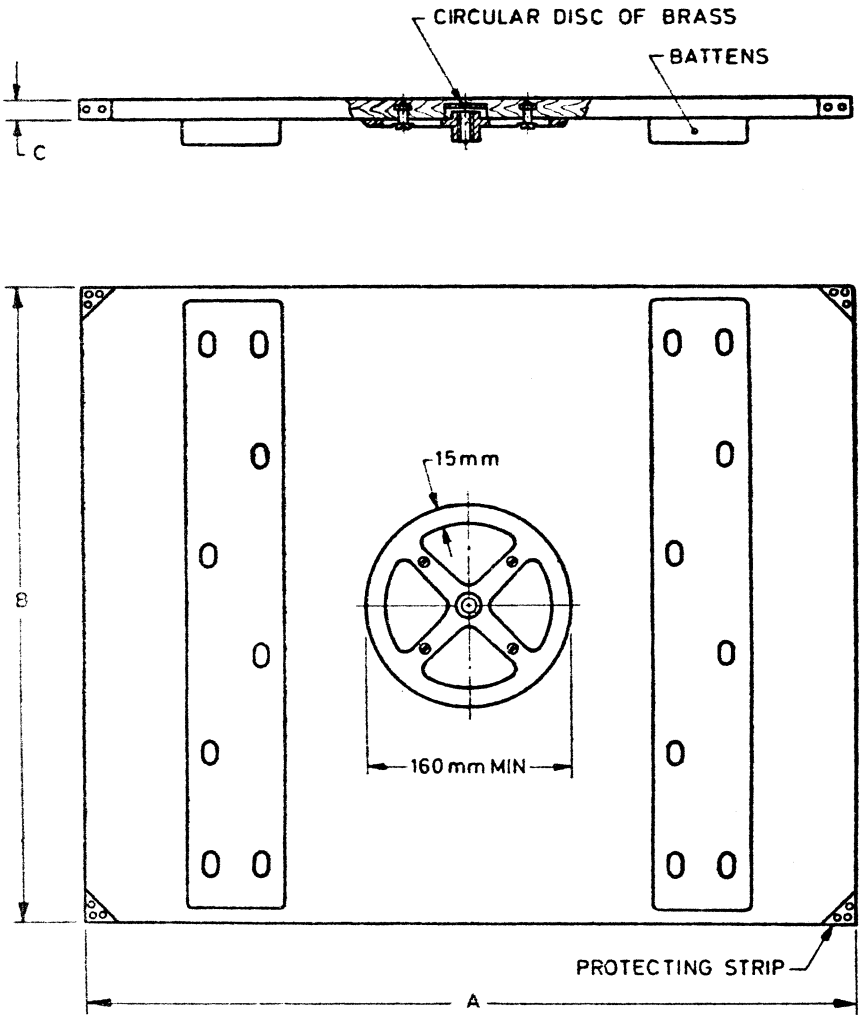


FIG. 1 PLANE TABLE BOARD

of size M12 and housed in the clamping head. The wing screw shall be provided with a suitable washer.

2.5 Accuracy

2.5.1 The difference between the two diagonals of the board shall not exceed 5 mm.

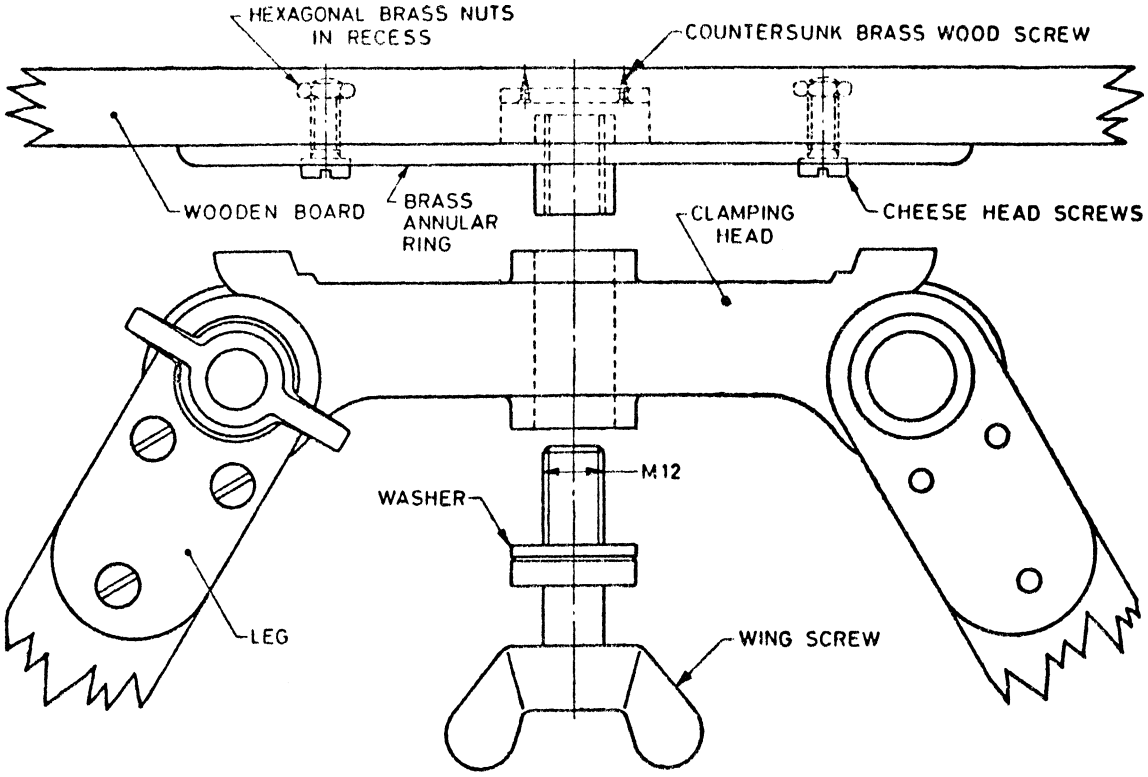


FIG. 2 CLAMPING ASSEMBLY

2.5.2 The working surface of the board shall not vary from a true flat plane by more than 0.2 mm at any point.

3. PLANE TABLE STANDS

3.1 Size — The plane table stands shall be 1 250 mm in height measured from the top of the clamping head to the shoe.

3.2 Material — The legs of the stand shall be made from any one of the following species of timber:

TRADE NAME	BOTANICAL NAME
aini	*Artocarpus hirsuta* Lamk.
ash	*Fraxinus* sp
mulberry	*Morus* sp
teak	*Tectona grandis* Linn. f.

3.3 Construction — The stand shall be rigid, robust and as light as possible. The legs shall be provided with non-magnetic metal shoes. One of the legs may be provided with a leather strap to tie all the legs.

3.4 Clamping Head — The clamping head shall be either of cast brass or of cast aluminium. The clamping head shall be of such dimensions as may accommodate the annular rings of the three sizes of plane table boards. The annular ring shall fit the circular depression 'lunes' on the clamping head.

4. SIGHT RULES (ALIDADE)

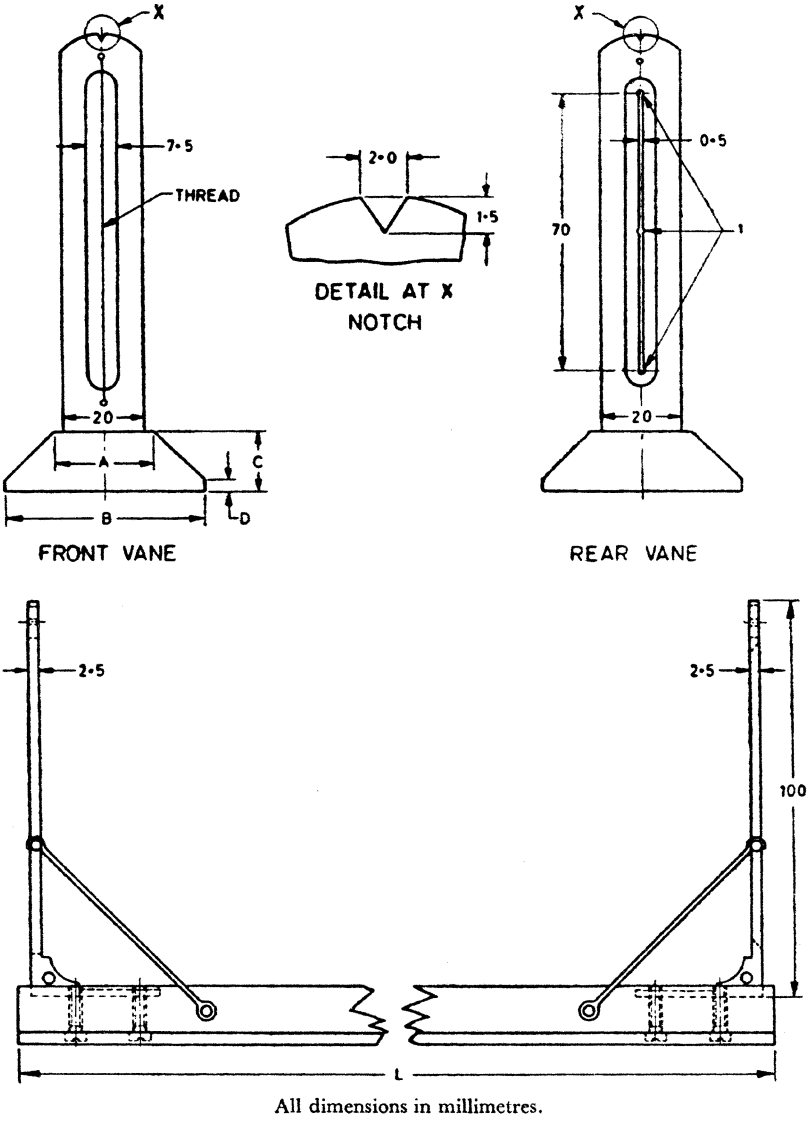
4.1 Dimensions — The dimensions of sight rules shall be as given in Table I read with Fig. 3.

TABLE I MATERIAL AND DIMENSIONS OF SIGHT RULES

(*Clauses* 4.1 *and* 4.2, and *Fig.* 3)

All dimensions in millimetres.

DESIGNATION	*L*	*A*	*B*	*C*	*D*	MATERIAL
Large	750	25	50	15	3	Brass or aluminium alloy
Medium	600	25	50	15	3	Brass or aluminium alloy
Small	500	20 or 25	30 or 40	10 or 15	2 or 3	Wood, brass or aluminium alloy



All dimensions in millimetres.

FIG. 3 SIGHT RULE (ALIDADE)

4.2 Material — The sight rules may be made of wood or metal (*see* Table I), but the sight vanes shall be of metal only. The wooden sight rules shall be made of either **sissoo** (*Dalbergia sissoo* Roxb.) or **teak** (*Tectona grandis* Linn. f.).

4.3 Construction

4.3.1 The front or object vane and the rear or sight vane shall be of folding type. A suitable arrangement preferably with hinges, to clamp them in vertical position shall be provided (*see* Fig. 3).

4.3.2 The front vane shall have arrangement to stretch a thread across its length and the rear vane shall have a fine slit to view through it (*see* Fig. 3). The two vanes shall be linked through a thread, when required for sighting at high elevations or depressions.

4.3.3 The stretched thread, object vane thread and the sight vane vertical slit shall be co-planar and this plane shall be parallel to the edge of the sight rule and normal to the plane table board when levelled.

4.3.4 The bottom surface of the sight rule shall be truly plane and shall have bevelled edges.

4.3.5 When made of aluminium, the sight rules shall be anodized.

5. TESTS

5.1 Table Surface — The surface of the table shall be a perfect plane. The table surface shall be tested by applying a straight-edge in different directions (*see* **2.5.2**).

5.2 Perpendicularity of Board to Vertical Axis — The surface of the table should be perpendicular to the vertical axis of rotation. Test by placing a spirit level on the table and level the latter to bring the bubble to the centre of its run. Turn the table about its vertical axis through 180° and see if the bubble remains in the centre position. Keep on repeating the test in both positions until the bubble is central in all directions, when reversed.

5.3 Straightness of Edge of Alidade — Using the ruling edge of the alidade, draw a straight line on a flat surface. Reverse the alidade end for end and put the two ends against the ends of the line. Draw a straight line between them. If the line does not coincide with the one previously drawn, the alidade is not straight.

5.4 Perpendicularity of Sight Vanes — The sight vane should be perpendicular to the base of the alidade. Test by levelling the plane table or set the alidade on a flat surface which is known to be level. Sight a plumb-bob string or the vertical edge of a building, a short distance away, and note if the vertical line so defined appears to be parallel to the hair and sight vane.

6. MARKING

6.1 Each plane table board, stand and sight rule shall be marked with the manufacturer's name or trade-mark. In addition, the plane table board and the sight rule shall be marked with their size at a suitable place.

6.1.1 The plane table board, stand and sight rule may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI 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 ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

7. CARRYING CASE

7.1 Suitable protective waterproof canvas case shall be provided with each board and with a suitable pocket for housing the sight rule.

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This Indian Standard has been developed by Technical Committee : EDC 36

Amendments Issued Since Publication

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