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Indian Standard

SPECIFICATION FOR EQUIPMENT FOR SUBSURFACE SOUNDING OF SOILS

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
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SPECIFICATION FOR EQUIPMENT FOR SUBSURFACE SOUNDING OF SOILS

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(*Continued on page* 17)

Indian Standard

SPECIFICATION FOR EQUIPMENT FOR SUBSURFACE SOUNDING OF SOILS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 28 February 1983, after the draft finalized by the Soil Engineering and Rock Mechanics Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 The Indian Standards Institution has already published a series of standards on methods of testing soils. It has been recognized that reliable and intercomparable test results can be obtained only with standard testing equipment capable of giving the desired level of accuracy. The Sectional Committee has, therefore, decided to bring out a series of specifications covering the requirements of equipment used for testing soils to encourage its development and manufacture in the country.

0.3 The equipment covered in this standard is used for determination of the resistance of soil strata to dynamic penetration as covered in IS : 4968 (Part 1)-1976* and IS : 4968 (Part 2)-1976†.

0.4 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‡. 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 specification of the equipment used for determining the subsurface sounding property of soil using cone with the dynamic method.

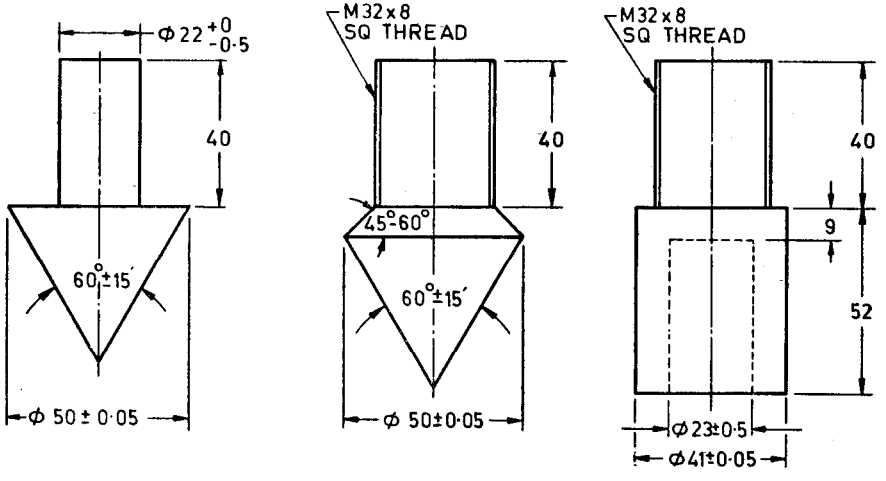
*Method for subsurface sounding for soils: Part 1 Dynamic method using 50 mm cone without bentonite slurry (*first revision*).

†Method for subsurface sounding for soils: Part 2 Dynamic method using cone and bentonite slurry (*first revision*).

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

2. TYPES, DIMENSIONS AND CONSTRUCTION

2.1 There shall be two types A and B of equipment, the dimensions and tolerances of their parts shall be as detailed in Fig. 1 to 6 as applicable. Except where tolerances are especially mentioned all dimensions should be taken as nominal dimensions and tolerances shall be as given for medium class in IS : 2102 (Part 1)-1980*.



1A PLAIN CONE 1B THREADED CONE 1C ADAPTER

All dimensions in millimetres.

FIG. 1 CONE AND ADAPTER

3. MATERIALS

3.1 Materials for construction of various parts of this equipment shall be given as in Table 1.

4. MARKING

4.1 The following information shall be clearly and indelibly marked on each equipment:

a) Name of the manufacturer or his registered trade-mark or both,
b) Date of manufacture, and
c) The type of equipment.

*General tolerances for dimensions and form and position: Part 1 General tolerances for linear and angular dimensions (*second revision*).

TABLE 1 MATERIALS FOR CONSTRUCTION OF EQUIPMENT PART

(*Clause* 3.1)

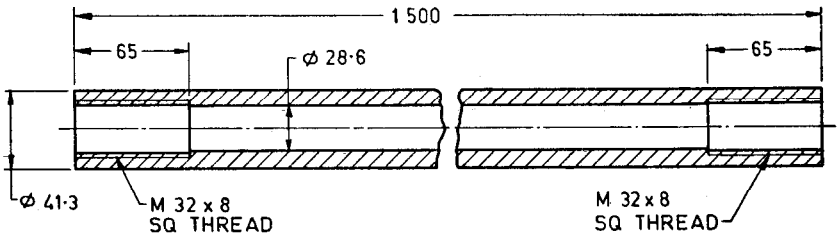
Sl No.	Equipment Part	Material	Special Requirement	Relevant Indian Standard or Reference
i)	Threaded cone or plain cone with adapter	Steel	Hardened to 50-55 *HRC* and conical surface shall be machined smooth	IS : 5517-1978*
ii)	Driving rod, guide rod (for Type A), coupling and driving head (for Type B)	Steel	—	IS : 5517-1978*
	Note 1 — For Type B a driving rod with driving head shall be used as guide rod.			
	Note 2 — The number of driving rod and coupling shall be as required.			
iii)	Hammer	Steel	The weight shall be 65 kg and tensile strength of wire rope shall be 1 400 kg/cm^2 minimum	IS : 1875-1978†
iv)	Hoisting equipment:			
	a) Tripod legs	Mild Steel	—	IS : 1239 (Part I)-1979‡ or IS : 226-1975§
	b) Pulley	Steel	—	IS : 1875-1978†
	c) Other parts like winch connecting pins, hook, axle, etc	Steel	—	IS : 1875-1978†

*Specification for steels for hardening and tempering (*first revision*).

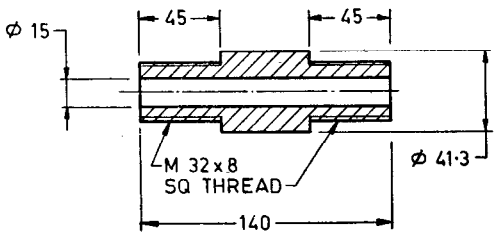
†Specification for carbon steel billets, blooms, slabs and bars for forgings (*fourth revision*).

‡Specification for mild steel tubes, tubulars and other wrought steel fittings: Part 1 Mild steel tubes (*fourth revision*).

§Specification for structural steel (standard quality) (*fifth revision*).



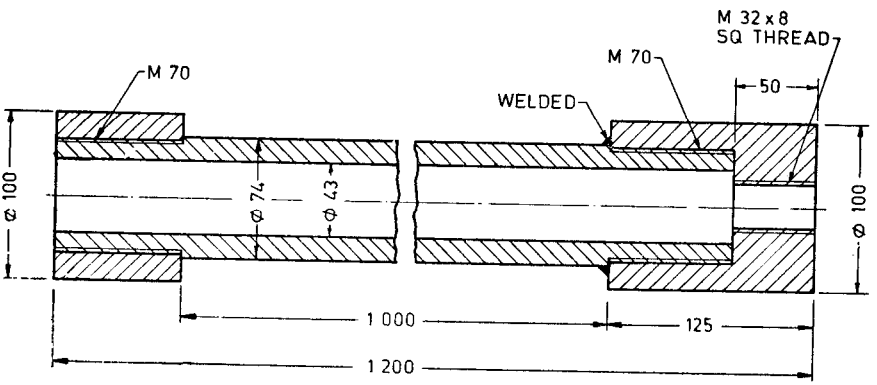
2A ROD



2B COUPLING

All dimensions in millimetres.

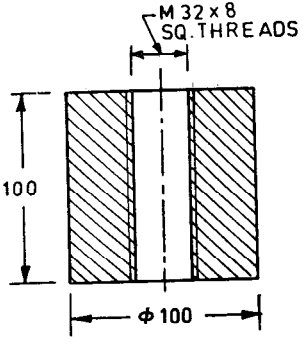
FIG. 2 DRIVING ROD



3A Guide Rod for Type A Equipment

All dimensions in millimetres.

FIG. 3 GUIDE ROD — *Contd*

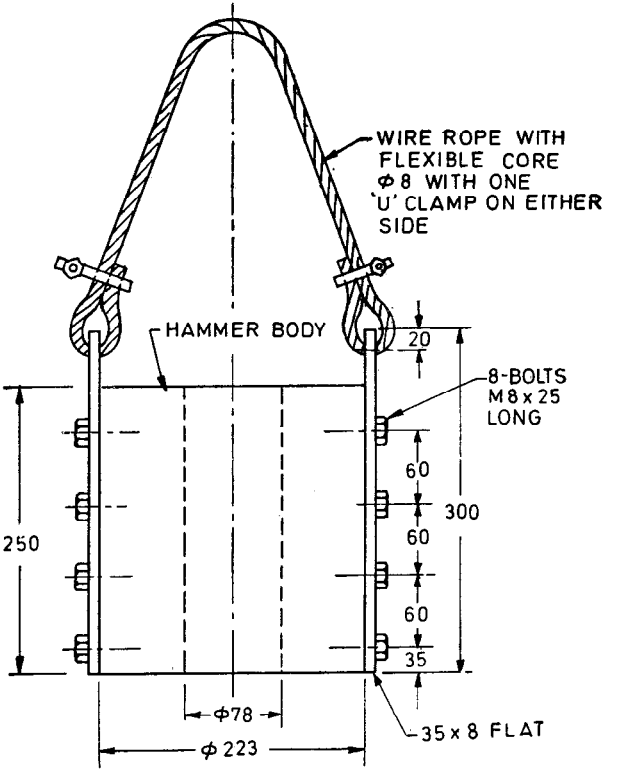


3B Driving-Head for Type B Equipment

NOTE — The guide rod for Type B shall be ordinary driving rod given in Fig. 2A fixed with this driving head.

All dimensions in millimetres.

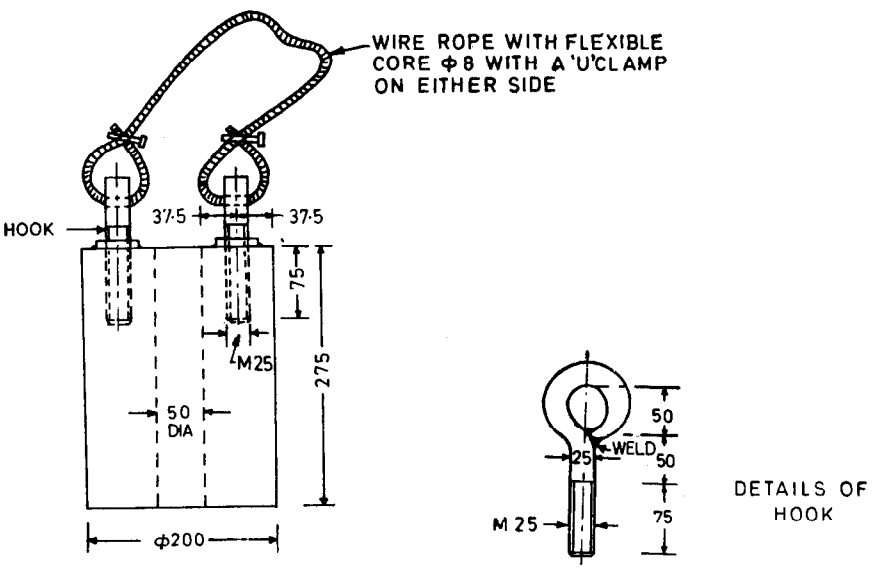
FIG. 3 GUIDE ROD



4A For Type A Equipment

All dimensions in millimetres.

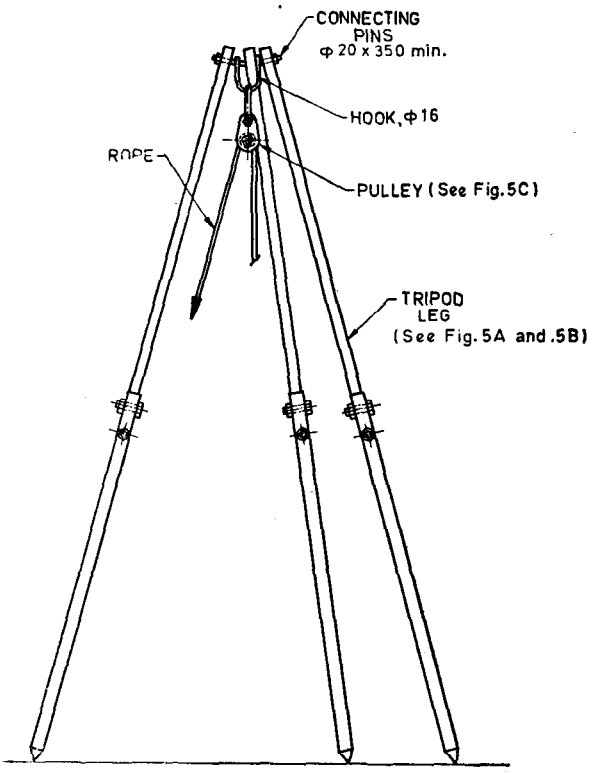
FIG. 4 HAMMER — *Contd*



4B For Type B Equipment

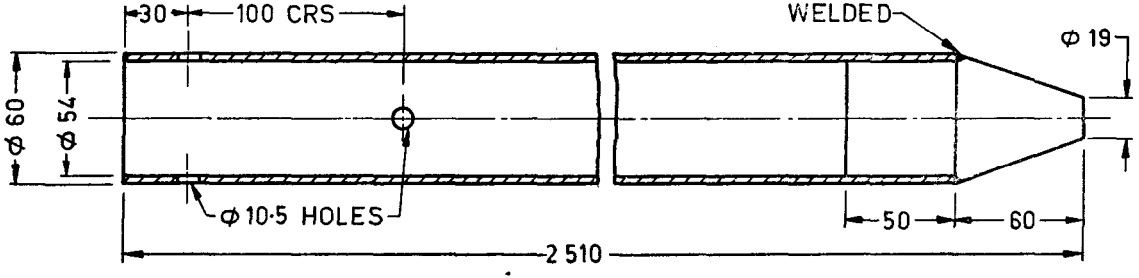
All dimensions in millimetres.

FIG. 4 HAMMER

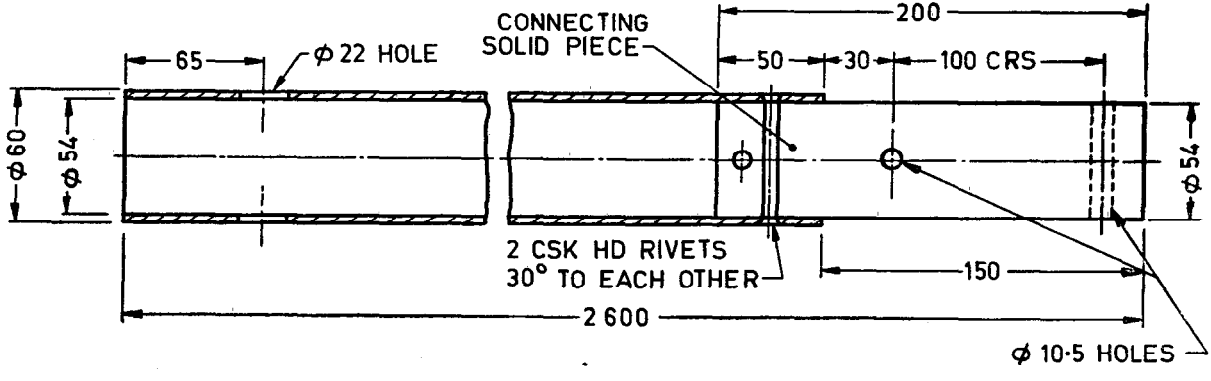


General Assembly of Hoisting Equipment for Type A Equipment

FIG. 5 DETAILS OF HOISTING EQUIPMENT TYPE A — *Contd*



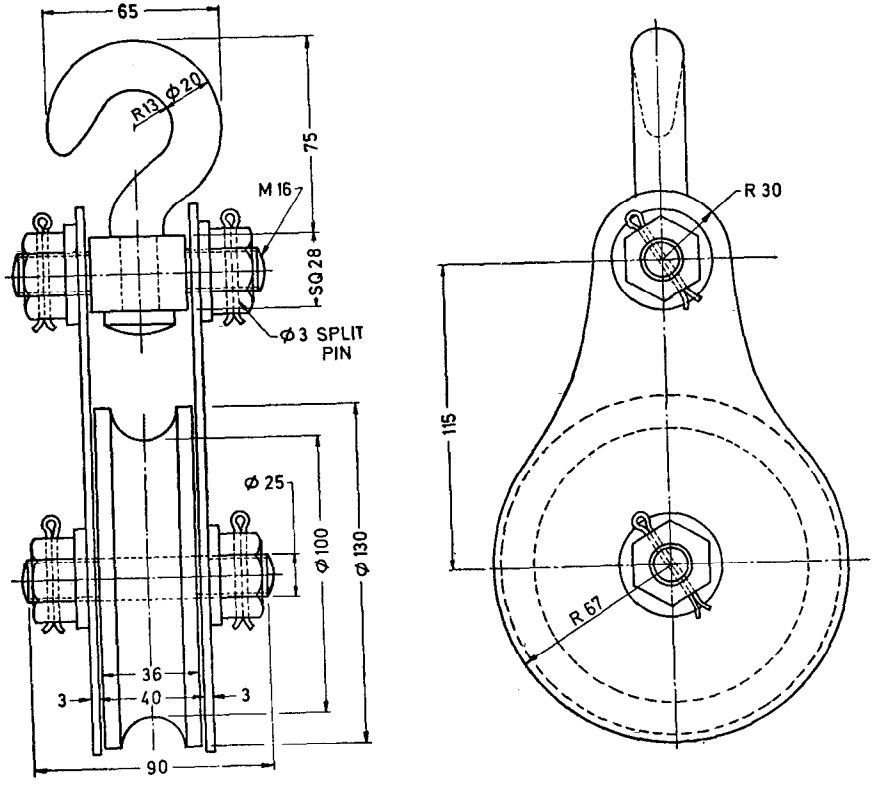
5A Tripod Leg (End Piece) of Type A Equipment



5B Tripod Leg of Type A Equipment

All dimensions in millimetres.

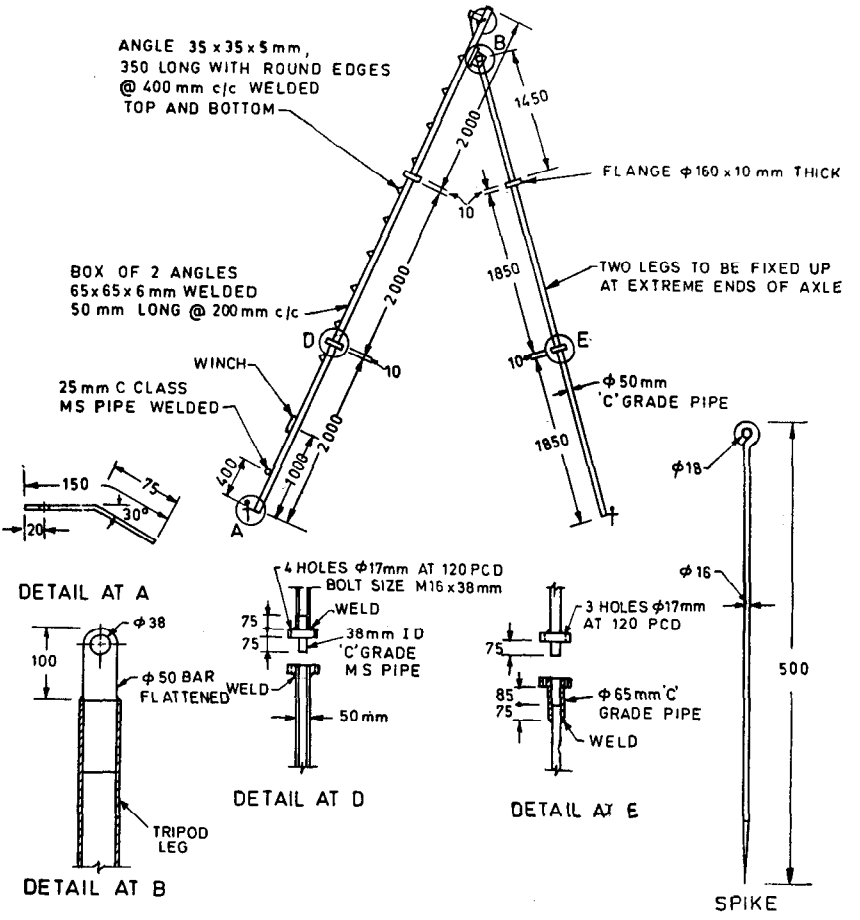
FIG. 5 DETAILS OF HOISTING TYPE A — *Contd*



5C Pulley for Type A Equipment

All dimensions in millimetres.

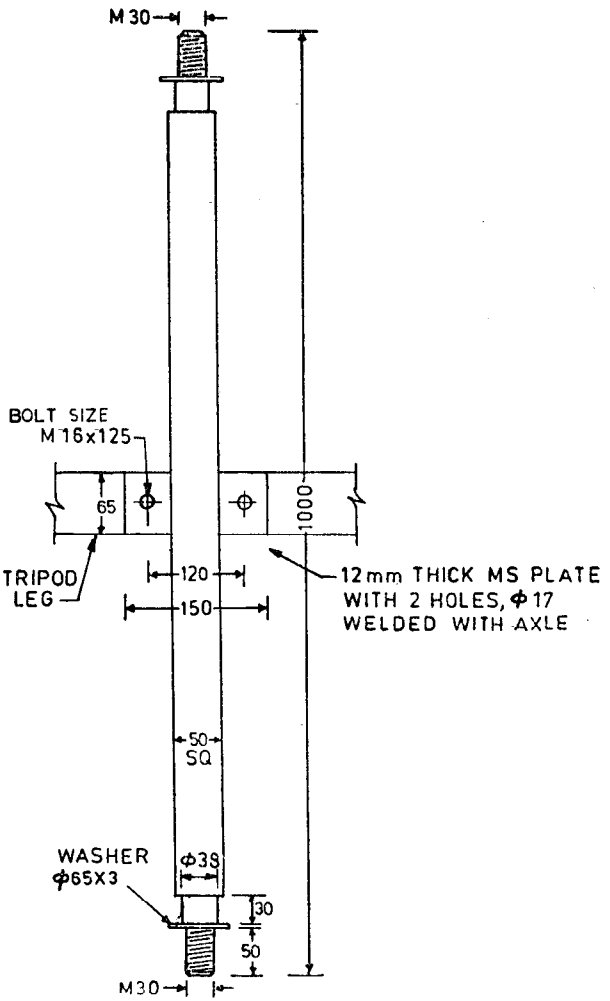
FIG. 5 DETAILS OF HOISTING EQUIPMENT TYPE A



6A Details of Tripod

All dimensions in millimetres.

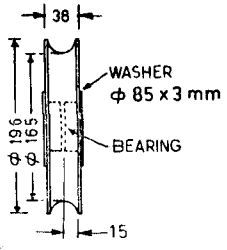
FIG. 6 DETAILS OF HOISTING EQUIPMENTS TYPE B — *Contd*

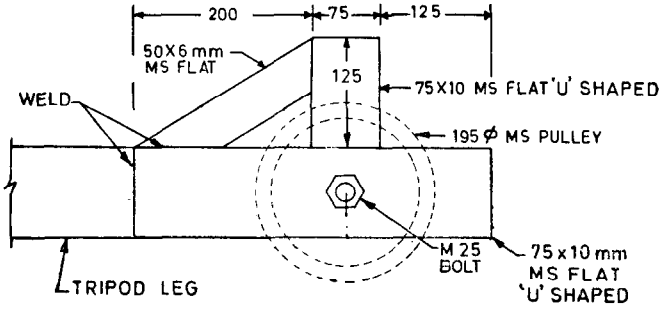


6B Details of Axle and Fixing Arrangement for Type B Equipment

All dimensions in millimetres.

FIG. 6 DETAILS OF HOISTING EQUIPMENTS TYPE B — *Contd*

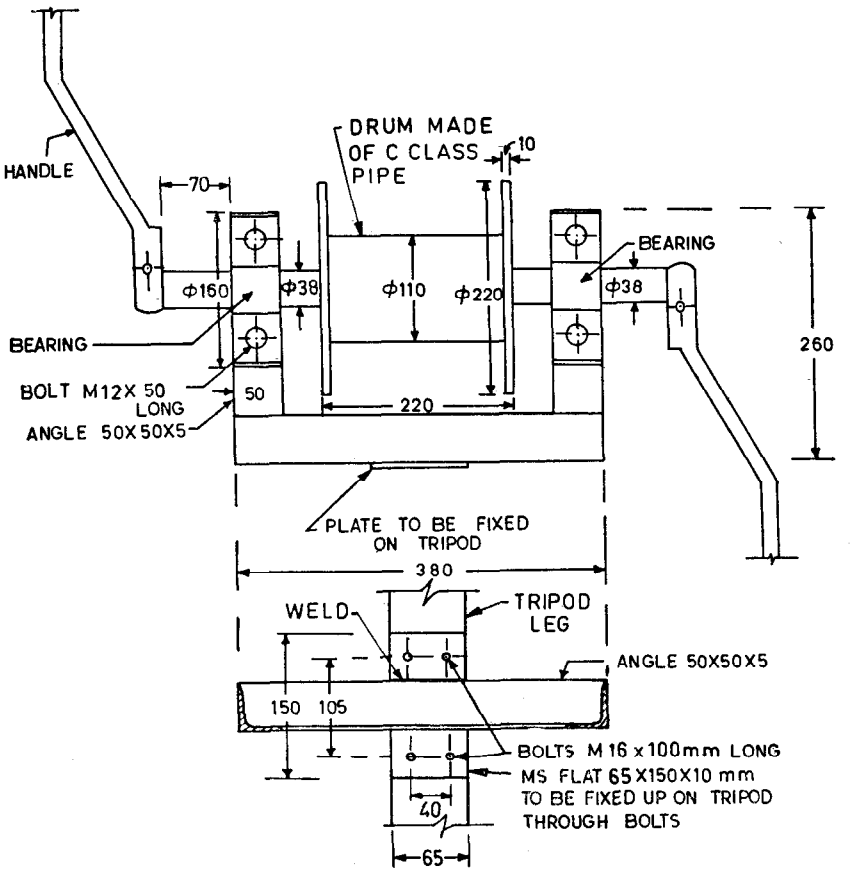




6C Details of Pulley Fixture at Tripod for Type B Equipment

All dimensions in millimetres.

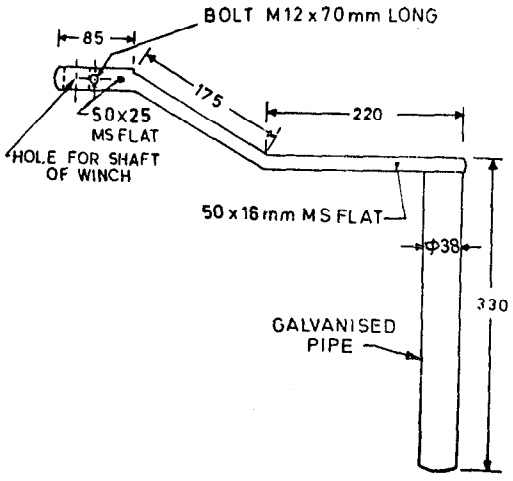
FIG. 6 DETAILS OF HOISTING EQUIPMENTS TYPE B — *Contd*



6D Details of Winch for Type B Equipment

All dimensions in millimetres.

FIG. 6 DETAILS OF HOISTING EQUIPMENTS TYPE B — *Contd*



6E Handle for Winch for Type B Equipment

All dimensions in millimetres.

FIG. 6 DETAILS OF HOISTING EQUIPMENTS TYPE B

4.1.1 The equipment 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.

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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
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	pascal	Pa	1 Pa = 1 N/m^2