

Indian Standard
SPECIFICATION FOR
COMPACTION RAMMER FOR SOIL TESTING

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SPECIFICATION FOR COMPACTION RAMMER FOR SOIL TESTING

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Indian Standard

SPECIFICATION FOR COMPACTION RAMMER FOR SOIL TESTING

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 5 June 1979, after the draft finalized by the Soil Engineering and Rock Mechanics Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 A series of Indian Standards on methods of test for soils has already been published by ISI. It has been recognized that reliable and inter-comparable 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 standards 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 the determination of water content dry density relation of soil covered in IS : 2720 (Part VII)-1974* and IS : 2720 (Part VIII)-1974†.

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 requirements of compaction rammer both for light and heavy compaction used for the determination of the water content dry density relation of soils.

*Methods of test for soils: Part VII Determination of water content: dry density relation using light compaction (*first revision*).

†Methods of test for soils: Part VIII Determination of water content: dry density relation using heavy compaction (*first revision*).

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

2. MATERIALS

2.1 The materials of construction of the different component parts of the compaction rammer both light and heavy shall be as given in Table 1.

TABLE 1 MATERIALS OF CONSTRUCTION OF DIFFERENT COMPONENT PARTS OF COMPACTION RAMMER (LIGHT AND HEAVY)

| PART | MATERIAL | SPECIFIC REQUIREMENTS IF ANY | REF TO INDIAN STANDARD |
|-------------|--------------------------|---------------------------------|------------------------------------|
| (1) | (2) | (3) | (4) |
| Rammer foot | Mild steel or Brass | Smooth finish and chrome plated | IS : 226-1975* and IS : 4170-1967† |
| Shaft | Mild steel | — | IS : 226-1975* |
| Handle knob | Mild steel | — | IS : 226-1975* |
| Guide pipe | Mild steel drawn pipe | — | IS : 1239 (Part I)-1973‡ |
| Washer | Gasket rubber vulcanized | — | Vulcanized Rubber IS : 5382-1969§ |

*Specification for structural steel standard quality (*first revision*).

†Specification for brass rods for general engineering purposes.

‡Specification for mild steel tubes (*third revision*).

§Specification for rubber sealing rings for gas mains, water mains and sewers.

3. DIMENSIONS

3.1 Dimensions with tolerances of different component parts of compaction rammer shall be as detailed in Fig. 1 to Fig. 4. Except where tolerances are specifically mentioned against the dimensions, all dimensions shall be taken as nominal dimensions and tolerances as given in IS : 2102-1969* shall apply.

4. COMPACTION RAMMER, LIGHT

4.1 The light compaction rammer shall be as shown in Fig. 1 to 3. The mass of the moving parts of the rammer shall be $2.6 \text{ kg} \pm 25 \text{ gm}$. The length of guide pipe shall be such so as to give a fall of $310 \pm 0.5 \text{ mm}$. The free end of the rammer foot shall be square with the sides and shall be finished smooth. Provision shall also be made to secure this to the shaft with a pin to prevent it from unscrewing while on use. It shall be chrome plated. It shall be provided with air vents at both ends as shown in Fig. 3 and a suitable guide for the shaft of the rammer shall be screwed on to the pipe at the top end. The washer shall be as shown in Fig. 2. It shall be of minimum 1.5 mm thick.

*Specification for allowable deviations for dimensions without specified tolerances (*first revision*).

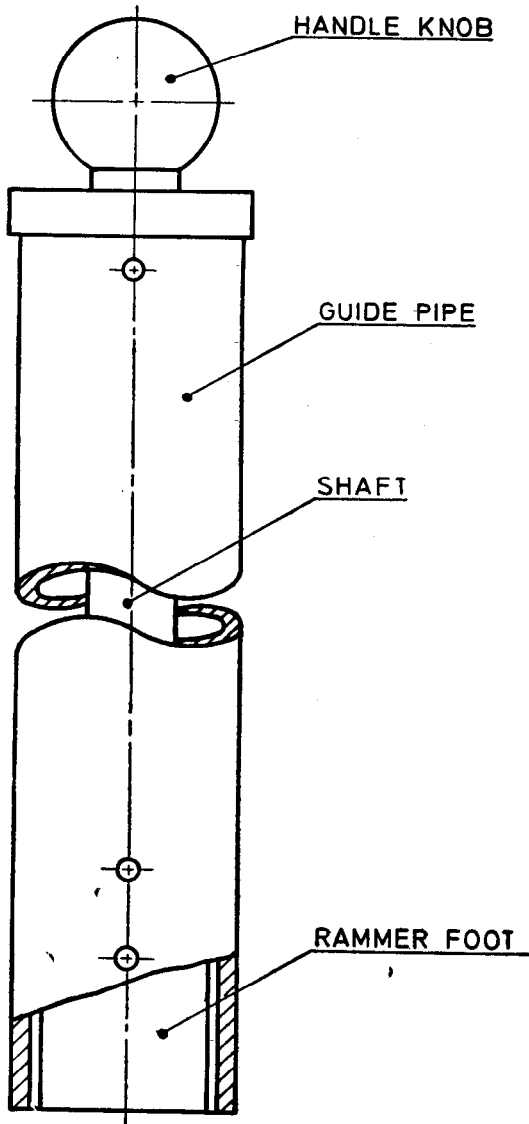
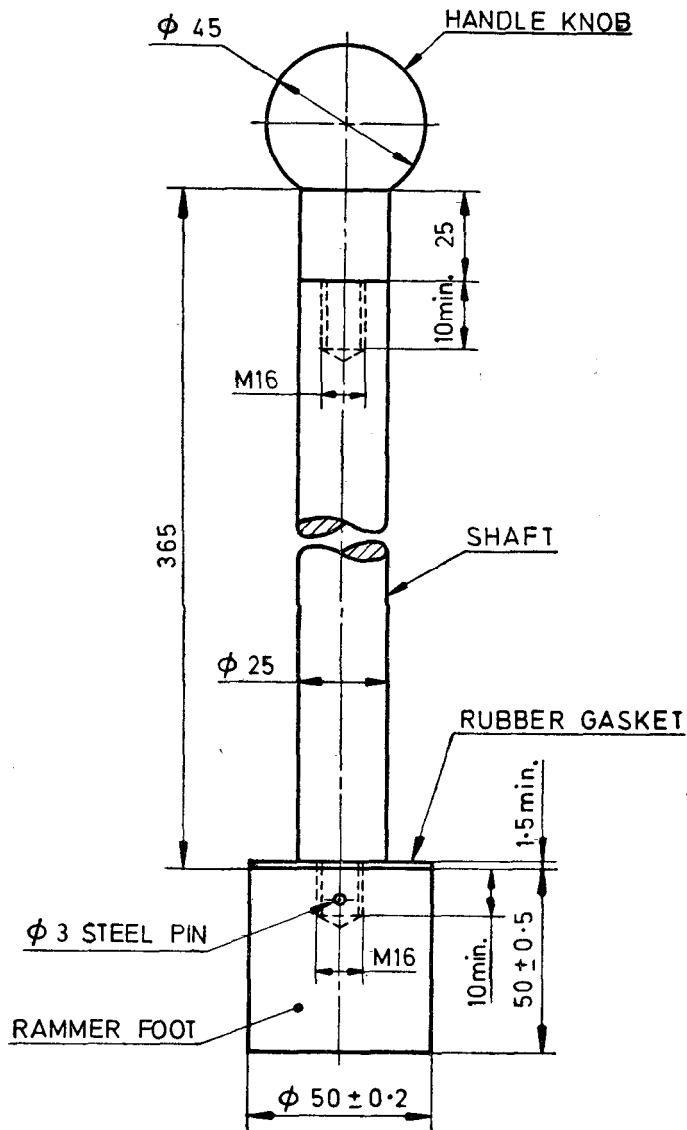
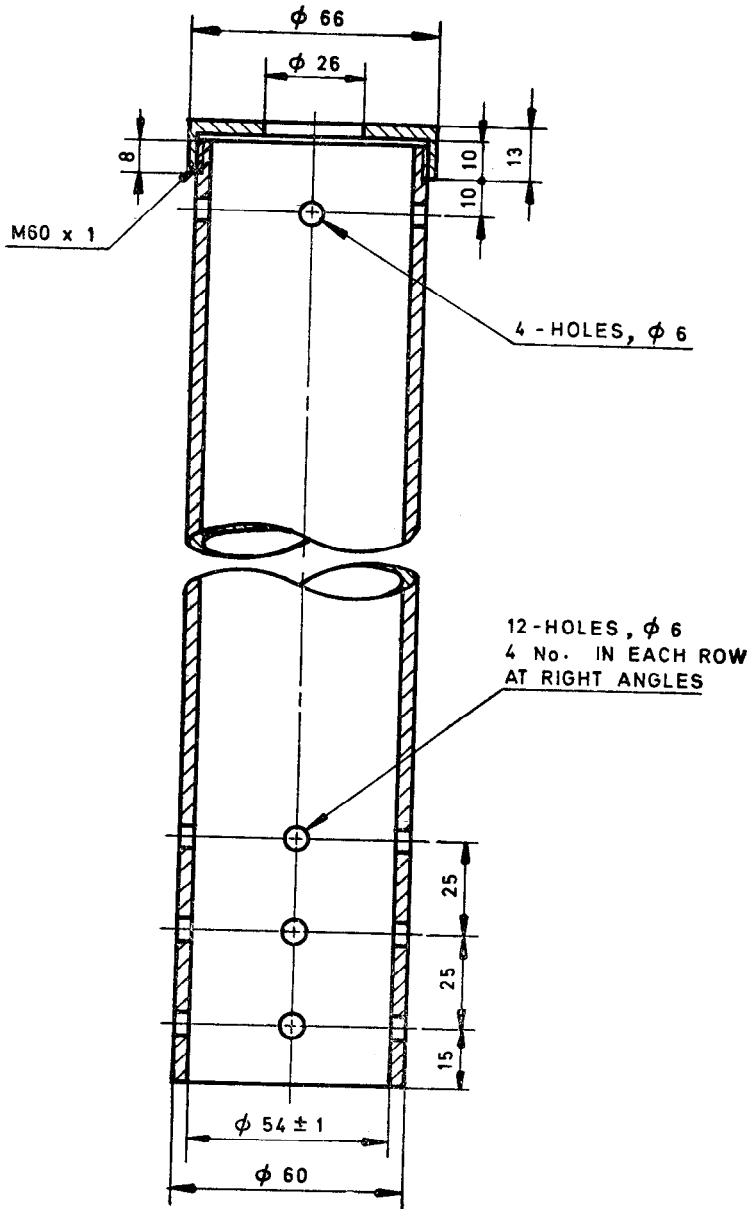


FIG. 1 ASSEMBLY OF COMPACTION RAMMER



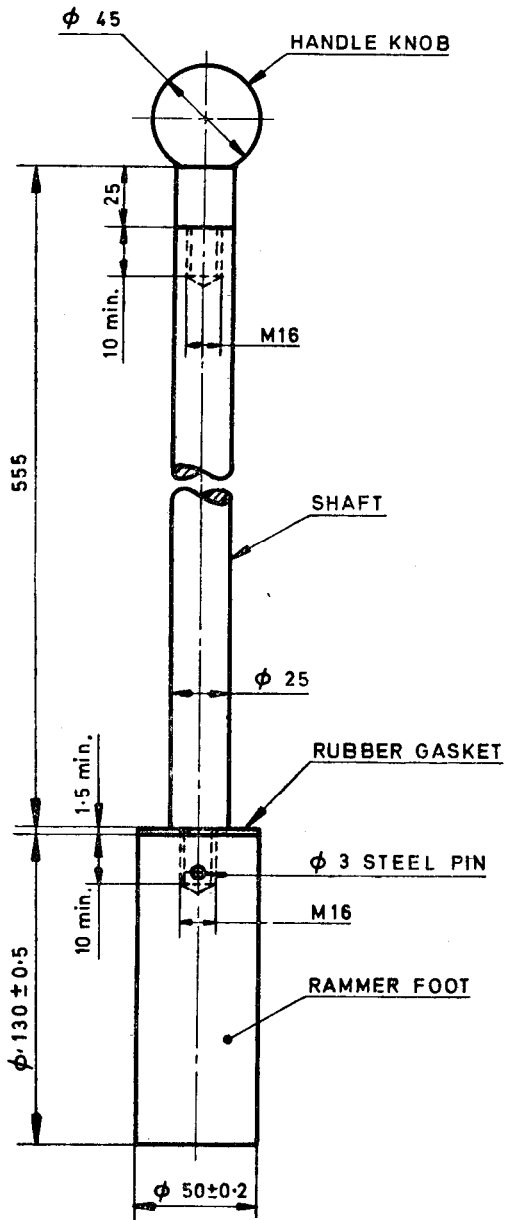
All dimensions in millimetres.

FIG. 2 DETAILS OF LIGHT RAMMER FOOT, SHAFT AND KNOB



All dimensions in millimetres.

FIG. 3 DETAILS OF GUIDE PIPE



All dimensions in millimetres.

FIG. 4 DETAILS OF HEAVY RAMMER FOOT, SHAFT AND KNOB

5. COMPACTION RAMMER, HEAVY

5.1 The heavy compaction rammer shall be as shown in Fig. 1, Fig. 2 and Fig. 4. The mass of the moving parts of the rammer shall be $4.9 \text{ kg} \pm 50 \text{ gm}$. The length of the guide pipe shall be such so as to give a fall of $450 \pm 0.5 \text{ mm}$. The free end of the rammer foot shall be square with the sides and shall be finished smooth. Provision shall also be made to square it to the shaft with a pin to prevent it from unscrewing while on use. It shall be chrome plated. The washer shall be as shown in Fig. 4. It shall be of minimum 1.5 mm thick.

6. MARKING

6.1 The following information shall be clearly and indelibly marked on each component of the apparatus in such a way that it does not interfere with the performance of the apparatus:

- a) Name of manufacturer or his registered trade-mark or both,
- b) Date of manufacture,
- c) Whether the rammer foot is of mild steel or brass, and
- d) Type of rammer.

6.1.1 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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AMENDMENT NO. 1 NOVEMBER 1987

TO

IS : 9198-1979 SPECIFICATION FOR COMPACTION RAMMER FOR SOIL TESTING

(Page 3, clause 0.3, lines 2 and 3) — Substitute ' IS : 2720 (Part 7)-1980*' and ' IS : 2720 (Part 8)-1983†' for ' IS : 2720 (Part VII)-1974*' and ' IS : 2720 (Part VIII)-1974†'.

(Page 3, foot-notes with ' * ' and ' † ' marks) — Substitute the following for the existing foot-notes:

*Methods of test for soils: Part 7 Determination of water content — dry density relation using light compaction (*second revision*).

†Methods of test for soils: Part 8 Determination of water content — dry density relation using heavy compaction (*second revision*).

(Page 4, Table 1, col 4) — Substitute ' IS : 1239 (Part 1)-1979†' for ' IS : 1239 (Part I)-1973†'.

(Page 4, Table 1, foot-note with ' ‡ ' mark) — Substitute the following for the existing foot-note:

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

(Page 4, clause 3.1, line 5) — Substitute ' IS : 2102 (Part 1)-1980*' for ' IS : 2102-1969*'.

(Page 4, foot-note with ' * ' mark) — Substitute the following for the existing foot-note:

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

(BDC 23)