IS 5225 (1992): Meteorology - Raingauge, non recording [PGD 21: Meteorological Instruments]

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IS 5225 : 1992
(Reaffirmed 2003)

भारतीय मानक

मौसम विज्ञान — वर्षामापी, अनभिलखी — विशिष्टि

(पहला पुनरीक्षण)

Indian Standard

METEOROLOGY — RAINGAUGE, NON-RECORDING — SPECIFICATION

(First Revision)

UDC 551·508·77

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

December 1992

Price Group 3

FOREWORD

The Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Meteorological Instruments Sectional Committee had been approved by the Light Mechanical Engineering Division Council.

Accuracy in the measurement of rainfall is of great importance in almost all fields of national economy and is of special significance in agriculture, irrigation, design of waterways, flood control, power generation and the conservation of water resources on both national and international scales. The Director General of Meteorology, New Delhi has been designated the sole authority for ensuring the correct rainfall registration in India and the India Meteorological Department is at present responsible for the testing and certification of all types of raingauges and rainmeasures made within the country. All rainfall registration authorities have also been instructed to use only raingauges and rainmeasures tested and certified by the India Meteorological Department.

This standard was originally published in 1969. This revision is based on further experience gained in the manufacture of Meteorological Instruments and other developments in this field. Main modifications are:

1) Figures 1, 2 and 3 have been modified based on an improved model of FRP non-recording raingauge. Only one size of bottle of capacity 4 litres with additional overflow cylinder has been indicated. With the experience it is found that it is necessary to provide an additional cylinder not only with two litre bottle but also with four litre bottle.

   NOTE – In the design a overlapping between the collector and base has been provided to prevent injection of rain water between the base and collector thereby protecting the locking ring from corrosion.

2) A suitable stop mentioned in **8.2.1** has been diagramatically indicated in Fig. 3.
3) Locking arrangement (hasp and staple) mentioned in **8.1.3** has been indicated in Fig. 1.
4) New clauses **5.1** (f) and **8.5** have been added.

In the formulation of this standard, due consideration has been given to the requirements laid down by the World Meteorological Organization, Geneva, in addition to the special circumstances obtaining in this country.

For the purpose ef 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.

Indian Standard

METEOROLOGY — RAINGAUGE, NON-RECORDING — SPECIFICATION

(First Revision)

1 SCOPE

1.1 This standard specifies the requirements for non-recording raingauges with capacities of 100, 200, 400 and 1 000 mm rainfall.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

IS No.	*Title*
617 : 1975	Aluminium and aluminium alloys ingots and castings for general engineering purposes (*second revision*)
4849 : 1968	Rain measures

3 DESCRIPTION

3.1 The raingauge consists essentially of a collector which intercepts the sample of rainfall to be measured and a receiver consisting of a base and a bottle in which the rainfall collected is stored. The collector is exposed above ground level while the reciever is fixed partially below ground level.

4 TYPES

4.1 This standard specifies to collectors 200 cm^2 and 100 cm^2 in area, two bases and three bottles of capacities 2, 4 and 10 litres. All components are completely interchangeable and combinations of these provide the raingauges as given in Table 1.

4.2 The 200 mm capacity raingauges shall meet the requirements of most of the stations in the country. The 400 mm capacity and 1 000 mm capacity gauges with 100 cm^2 collectors are recommended for use in heavy and very heavy rainfall areas.

5 MATERIAL

5.1 The material used for the manufacture of the raingauges shall have the following properties:

a) Rigidity and strength with no distortion or other deterioration when exposed to widely varying climatic conditions in the open air, while at the same time, being light in weight; the addition of a suitable ultra-violet inhibitor is recommended for increasing its durability;

b) Freedom from attack by animal, insect or fungoid life;

c) Smooth and permanent surface finish so as to facilitate free flow of precipitation·

d) Low thermal conductivity so as to minimize evaporation losses or condensation gains;

e) A life of not less than 15 years in the open; and

f) Pin in locking arrangement and hasp and staple shall be of brass or stainless steel to prevent corrosion/rusting.

5.1.1 While any material satisfying the above requirements may be used, fibre glass reinforced polyester is considered as a suitable material.

NOTE — Galvanized iron sheet is not considered as a suitable material for this purpose.

Table 1 Nominal Measuring Capacity and Combinations

(*Clauses* 4.1 *and* 7.1)

Nominal Measuring Capacity, mm Rainfall	Collector	Base	Bottle
100	200 cm^2	Small	2 litre
200	200 cm^2	Small	4 litre
400	100 cm^2	Small	4 litre
1 000	100 cm^2	Large	10 litre

NOTE — The 100 and 200 mm rainfall raingauges are identical except for the bottles used. The use of 2 litre bottle is advisable only in regions where rainfall between two observations is likely to be less than 100 mm or where an additional cylinder is used to collect the overflow, if any, from the bottle.

5.2 The material for the rim of the collector shall be gun metal or aluminium alloy conforming to grade A 9 of IS 617 : 1975.

5.3 The material for the locking ring shall be rigid plastic of a suitable composition or metal satisfying the requirements specified in **5.1**.

6 DIMENSIONS

6.1 The dimensions for collectors, bottles, bases and locking rings shall be as given in Fig. 1 to 4.

6.1.1 The inside diameter of the collector rim shall be correct within $\pm$ 0·5 mm of the specified value when measured in any four directions and the mean of the four values shall be within $\pm$ 0·2 mm of the specified value.

6.1.2 Where no tolerances have been indicated, normal manufacturing tolerances shall apply.

7 DESIGNATION

7.1 For the purpose of inquiry or order, the raingauge shall be designated by the nominal measuring capacity as shown in Table 1.

Example:

A raingauge with a nominal measuring capacity of 200 mm of rainfall, consisting of a collector, bottle and base as shown in Table 1 shall be designated as:

Raingauge, 200 mm rainfall IS 5225

8 GENERAL REQUIREMENTS

8.1 Collector

The collector shall have a rim cemented firmly at the top. If the collector is made of fibre glass reinforced polyester, the nominal thickness of the material where the gun metal rim is cemented shall be suitably increased to ensure strength and a firm and permanent adhesion. The entire inner surface of the funnel with rim shall have a smooth finish. The body of collector shall be tapered. All seams of the collector shall be of adequate strength and shall be water-tight. The funnel shall be firmly joined to the collector with a leak-proof joint. The junction of the funnel outlet pipe shall be reinforced as shown. When assembled, the funnel outlet pipe shall extend inside the bottle in the base.

8.1.1 The lower end of the collector shall have a ring fitted inside it. The ring shall have five locking lugs for locking the collector to the base (*see* Fig. 3). The locking ring shall be bonded to the collector with a suitable and strong adhesive or moulded with the collector.

8.1.2 The lower ends of the 200 cm² and 100 cm² collectors shall be identical and shall provide an interchangeable fitting with the raingauge base.

8.1.3 A suitable locking arrangement shall be provided for locking the collector to the base.

8.2 Base

The design of the base shall be such as to permit direct and interchangeable fitting of collectors of either size.

8.2.1 A locking ring (*see* Fig. 3) shall be fitted inside at the top end of the base to provide means for locking the collector funnel on it. The ring shall be either bonded to the base with a suitable and strong adhesive or moulded to the base. A suitable stop shall be provided in the locking ring so that it does not rotate further and get unlocked.

8.2.2 The special large capacity base and 10 litre bottle for very heavy rainfall stations may be as suggested in Fig. 4; the base shall have the standard interchangeable fitting for the 100 cm² collector.

8.3 Bottle

The bottle shall be of polythene, with nominal capacities of 2 litres, 4 litres or 10 litres and shall be provided with one or more handles for lifting it out of the receiver. The bottle shall be completely contained within the base. The upper portions of the bottle shall be smoothly curved so that when tilted, all the water from inside drains out completely leaving no water in the bottle. The mouth of the bottle shall be not less than 45 mm in diameter.

8.4 Additional Cylinder

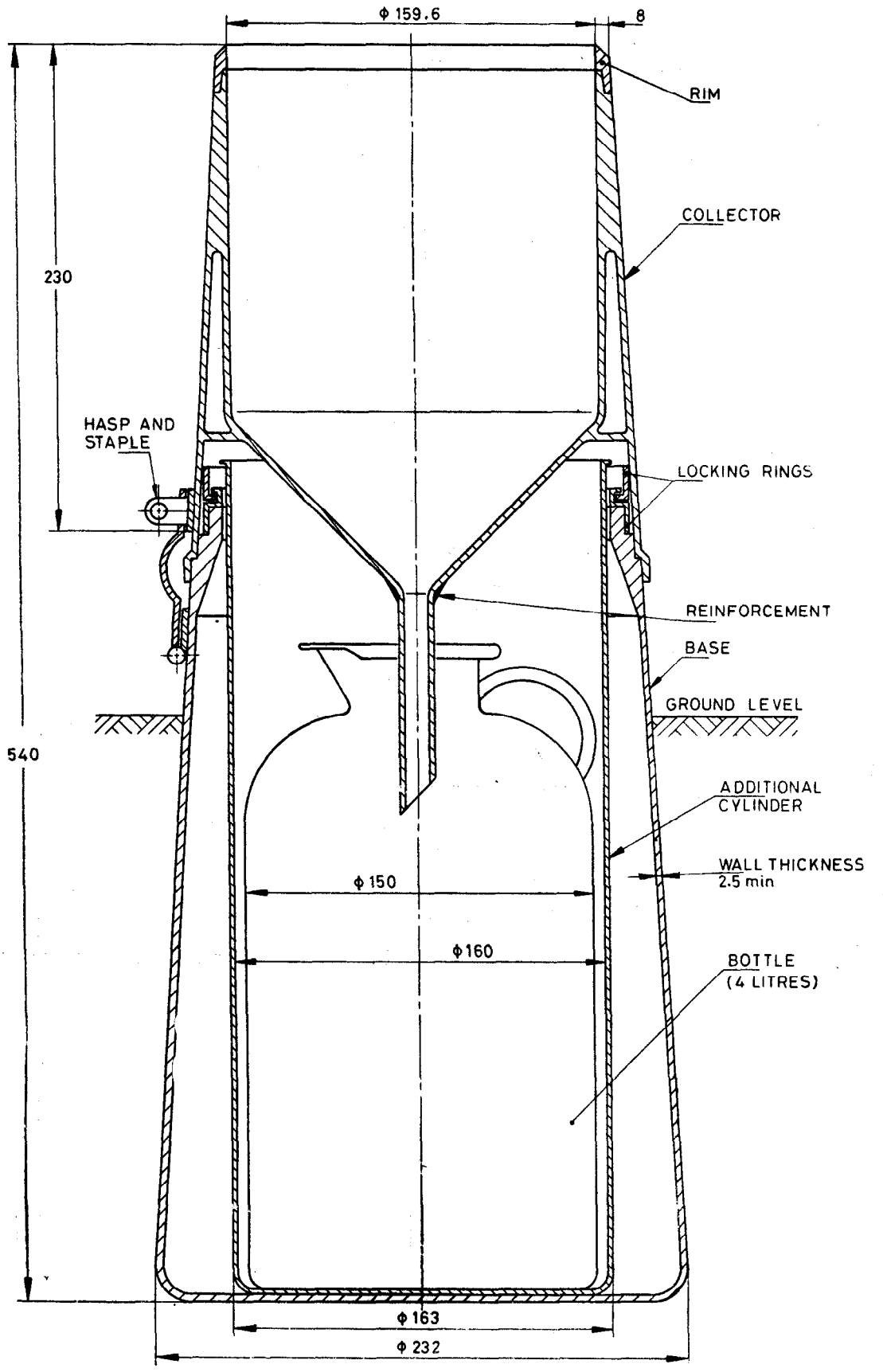
The inner surface of the additional cylinder provided shall be smooth and the top edge shall be slightly thickened to provide a grip for conveniently lifting it out when required.

8.5 Rain Measure

Appropriate rain measure conforming to IS 4849 : 1968 shall be used in conjunction with non-recording raingauge for the accurate determination of the catch.

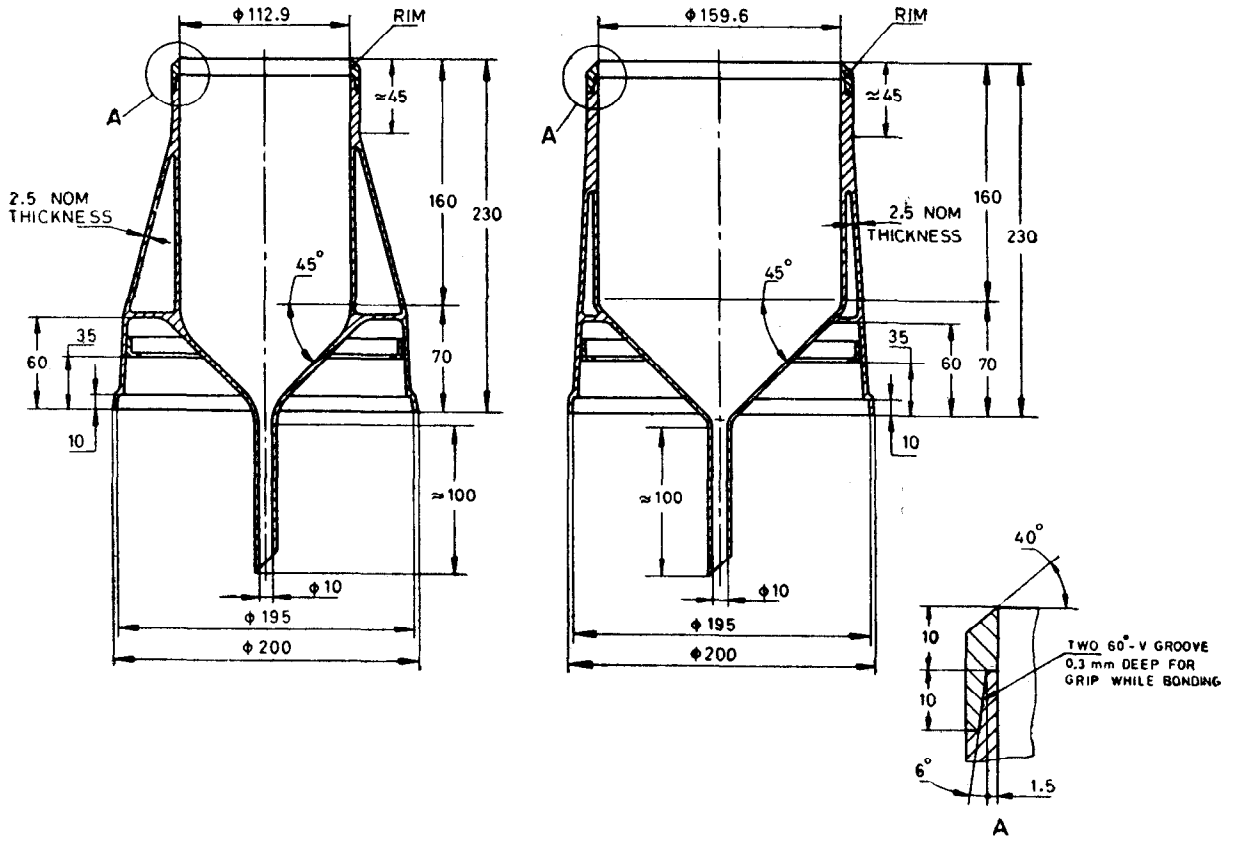
9 WORKMANSHIP AND FINISH

9.1 All parts shall be leak-proof and when assembled, the rim of the collector shall be truly horizontal.



All dimensions in millimetres.

FIG. 1 RAINGAUGE, NON-RECORDING (200 cm²), GENERAL ASSEMBLY



Collector (100 cm²) Collector (200 cm²)

All dimensions in millimetres.

FIG. 2 DIMENSIONS OF COLLECTORS

9.2 The external surface of the complete raingauge shall have a smooth and permanent finish.

9.3 The raingauge shall be of any light colour but a light shade of grass green or cream is preferred.

10 MARKING

10.1 Each raingauge shall bear the following inscription engraved legibly and neatly on a name plate which shall be cemented firmly on the collectors:

a) The inscription '200 cm² collector' or '100 cm² collector', as the case may be;

b) Maker's or indentor's name or recognized trade-mark as agreed to between the supplier and the indentor; and

c) Serial number and year of manufacture for example, No. 123/90.

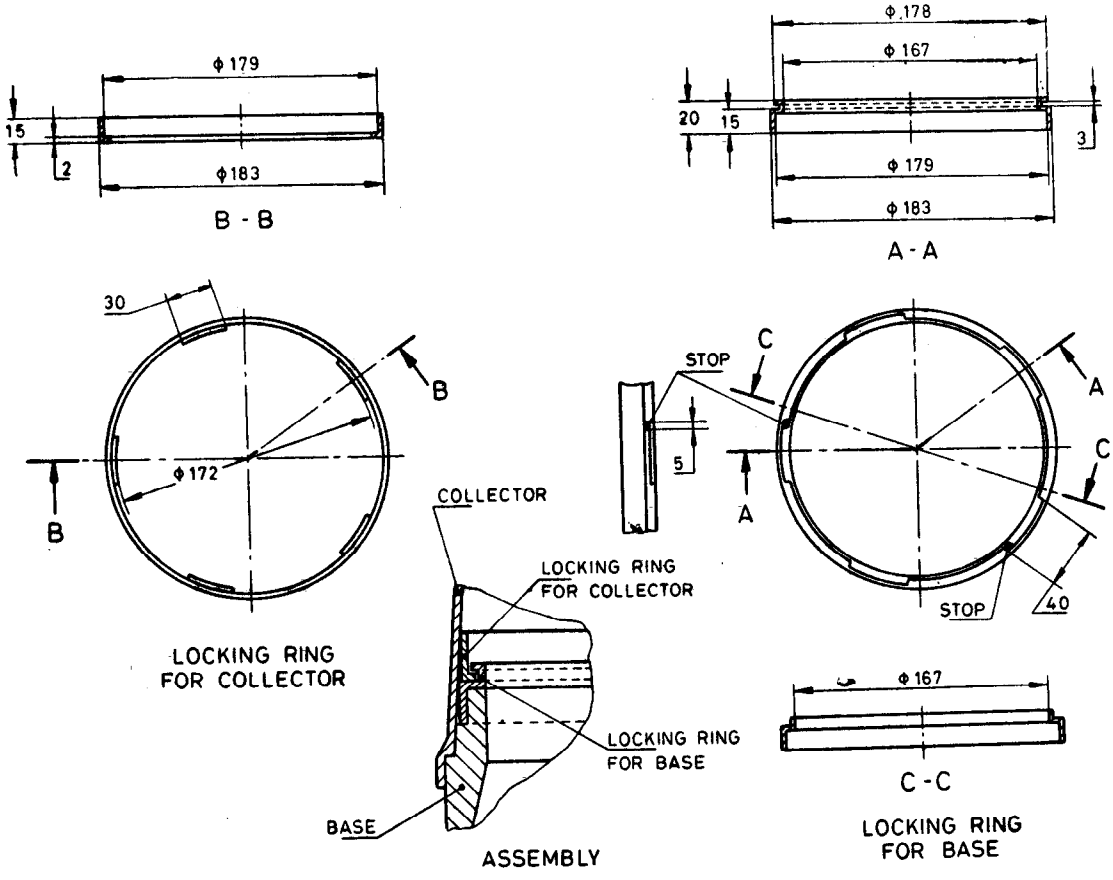
10.2 The bottle shall be legibly and permanently marked with its capacity in litres.

11 PACKING

11.1 Each raingauge shall be wrapped in corrugated cardboard sheet and packed in a stout bonded cardboard carton having a lid. Further packing shall be as agreed to between the supplier and the purchaser.

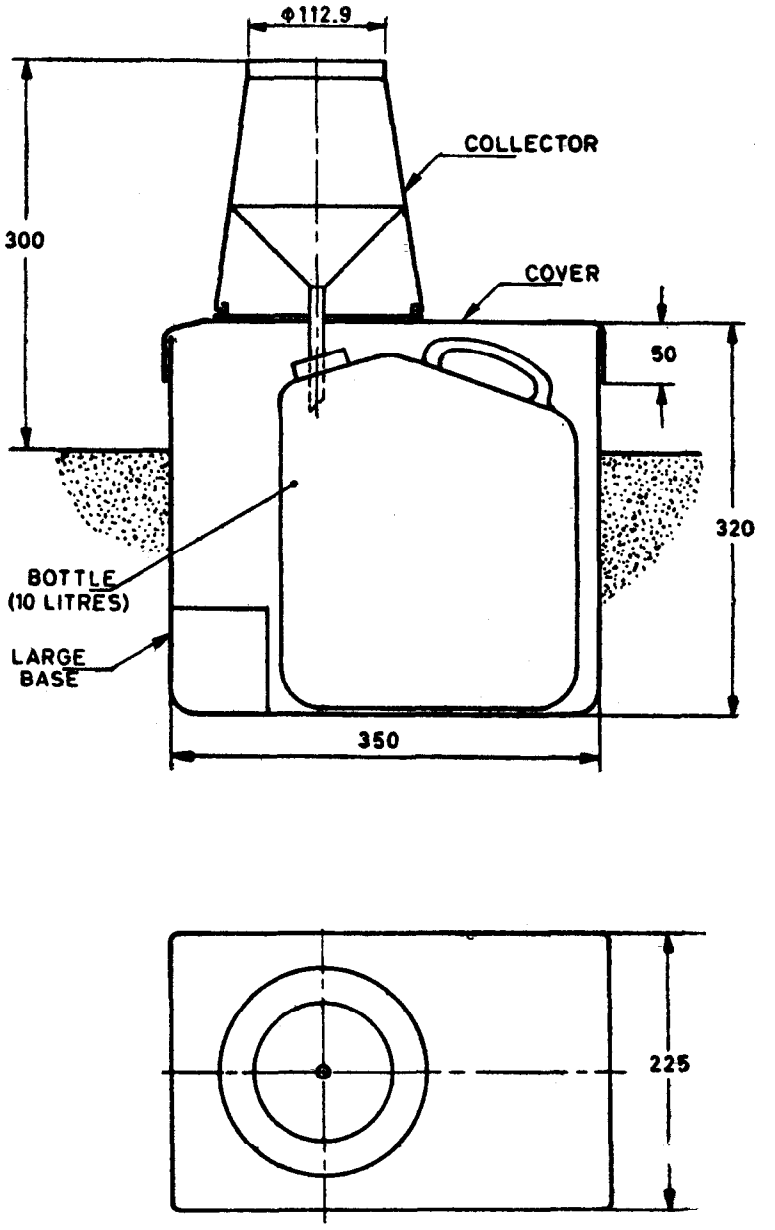
12 TESTING AND INSPECTION

12.1 All the raingauges shall be tested individually for conformity to all the requirements of this specification.



All dimensions in millimetres.

FIG. 3 DIMENSIONS OF LOCKING RING FOR COLLECTOR AND LOCKING RING FOR BASE



All dimensions in millimetres.

FIG. 4 RAINGAUGE, 1 000 mm RAINFALL

Standard Mark

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.

Bureau of Indian Standards

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices :	Telephone
Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002	331 01 31, 331 13 75
Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola, CALCUTTA 700054	37 84 99, 37 85 61, 37 86 26, 37 86 62
Northern : SCO 445-446, Sector 35-C, CHANDIGARH 160036	53 38 43, 53 16 40, 53 23 84
Southern : C. I. T. Campus, IV Cross Road, MADRAS 600113	235 02 16, 235 04 42, 235 15 19, 235 23 15
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