

INSTRUCTION MANUAL
TIPPING BUCKET RAINGAUGE
MODEL HS305

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TIPPING BUCKET RAINGAUGE MODEL HS305

I. GENERAL

The HS305 rain gauge operates on the tipping bucket principle. A receiver of 305mm diameter collects the rainfall which is strained by a metal gauze before being passed to the synthetic ceramic coated tipping bucket measuring system. Tips of the bucket occur with each 1.0mm of precipitation collected and a reed switch detects these events and produces a momentary contact closure signal for logging in our Rain/River Data Logger Model RRDL-3, for transmission by our Radio Reporting Rain gauge Model RRG-1 or for display on our Rainfall Counter.

II. SPECIFICATION

Receiver (cover)	:	Diameter 305mm (within ± 0.5 mm)
Sensitivity	:	One switch closure per tip of 1mm bucket.
Measuring range	:	Max. rainfall intensity, 600mm/hr
Measuring accuracy	:	Better than 2% @ 100mm/hr.
Sensor	:	Tipping bucket (synthetic ceramic coated brass).
Contact system	:	Dual reed switches (glass encapsulated normally open contact)
Contact capacity	:	12 VA (maximum current 0.5 amp)
Contact time	:	0.1 second

III. INSTALLATION

(i) Site Selection

Rainfall measurements are intended to be representative of the actual rain falling on a given area. Some of the more important factors which influence the representativeness of a gauge are as follows:

- a) Site the gauge on level ground where possible. Avoid sloping sites.
- b) Site should have adequate protection from strong winds.
- c) Site should be free of large obstructions such as buildings and trees.
- d) Provide suitable ground surface to avoid splashing into the gauge.

(ii) Setting up

- a) Remove the gauge from package
- b) Install the gauge on the foundation.
- c) Remove the enclosure from the gauge - to do this, loosen the three screws (Item 18) and lift off.
- d) The gauge is provided with a bullseye level. Level the gauge adjusting the nuts on the anchor bolts.
- e) Connect lead to recording instrument.
- f) Remove elastic band from bucket assembly.
- g) Remove packer between bucket (8) and adjusting screw (6).
- h) Manually tip the bucket a number of times, ensuring that each tip is being recorded and that the tipping mechanism is operating freely.
- i) Replace the enclosure.

IV. TEST OPERATION

1. Measure a volume of water corresponding to 10mm of rainfall using a rainfall measure and pour it very slowly, over about 15 minutes, into the receiver. This creates a condition of heavy rain striking the ground sufficient to make a pool of water of the ground.
2. If a rainfall measure is not at hand, pour 726cc of water into the 305mm receiver. (Since 1mm rainfall measured in this apparatus corresponds to approximately 72.62cc, $72.6 \times 10 = 726\text{cc}$)
3. After this water has passed through the gauge, the Tipping Bucket should have tipped:

10 times 1.0mm Bucket

and the recording device should indicate a reading equivalent to 10mm of rain.

4. If the above results cannot be obtained, check the following points:
 - a) Is the apparatus levelled accurately?
 - b) Is the wiring correct?
 - c) Is the battery condition OK?
 - d) If the above (a to c) are OK, refer to 'Calibration' Section VIII

V. MAINTENANCE

The only routine maintenance required is cleaning. The following items should be checked regularly for cleanliness:

- a) Catch filter
- b) Syphon
- c) Interior of bucket
- d) Top surface of adjusting screws
- e) Lubricate enclosure locking screws with plus oil, part no. SC034-02.
- f) All insect screens

VI. ELECTRICAL

Dual reed switches are provided for several reasons:

- a) Two isolated switches permit the control of two separate circuits; e.g. a local counter and a telemetry circuit.
- b) Parallel connection of both switches increases the current carrying capacity of the contact system if required.
- c) Parallel switch operation confers a degree of redundancy in locations where data from the rain gauge is critical to flood warning etc.

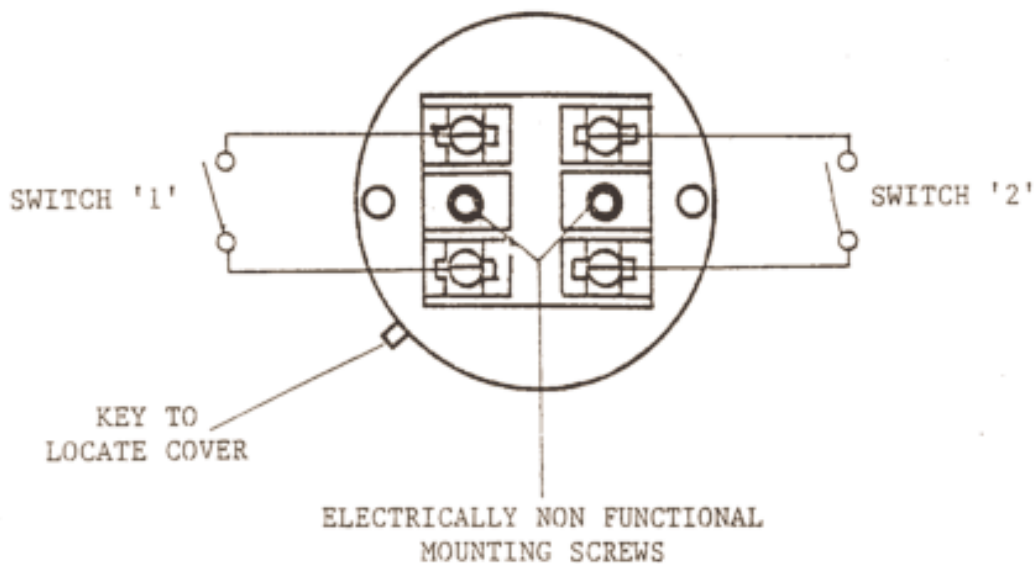


DIAGRAM 1

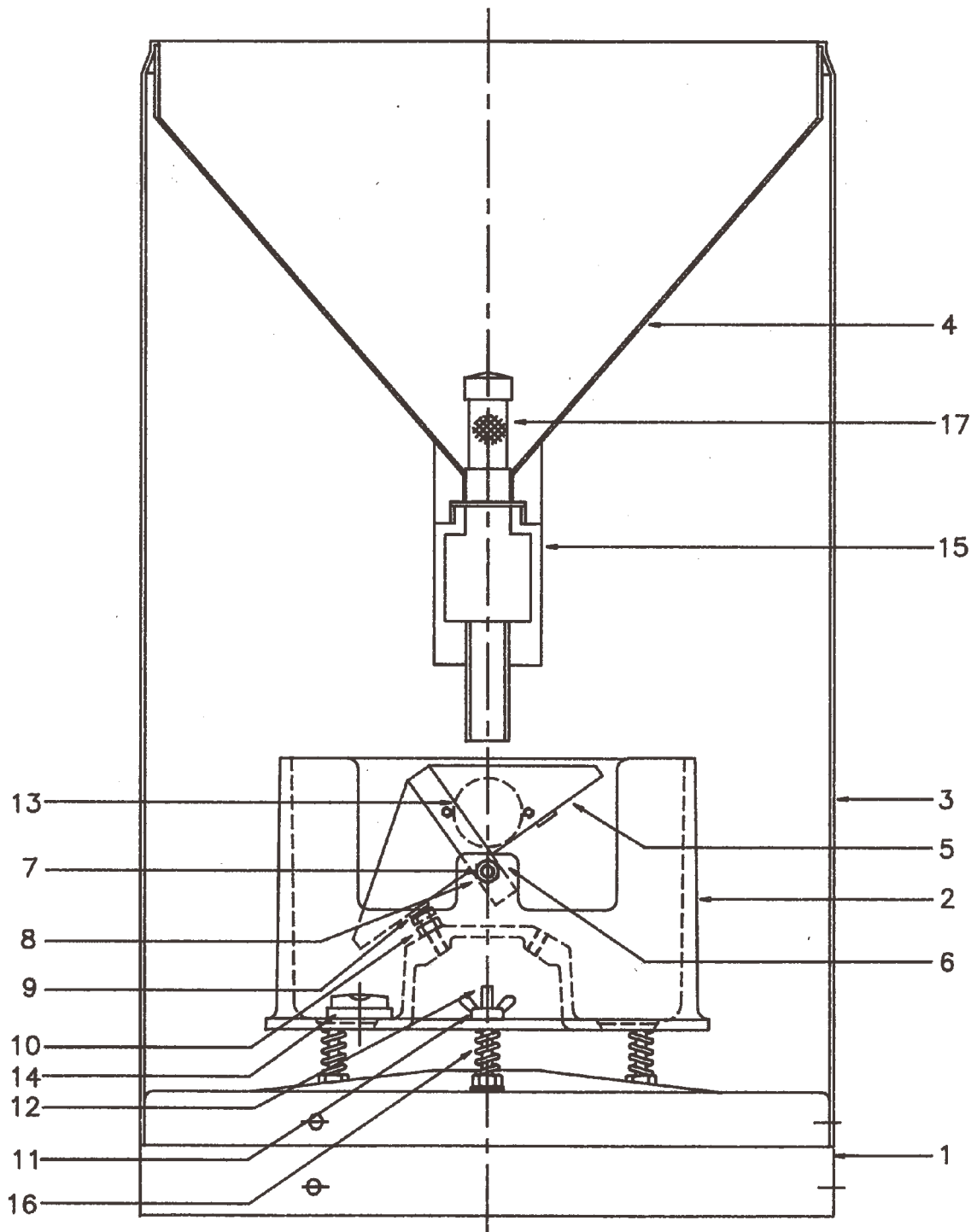


DIAGRAM 2

TIPPING BUCKET RAINGAUGE MODEL HS305

PARTS LIST

(Refer Diagram 2)

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PART NO.</u>	<u>QTY/ASSY</u>
1	SPIN BASE	HS305-02	1
2	CAST BASE	HS305-01	1
3	ENCLOSURE	HS305-03	1
4	FUNNEL ASSEMBLY	HS305-04	1
5	TIPPING BUCKET	HS305-05	1
6	BUCKET SHAFT	HS305-05-01	2
7	PIVOT SCREW	HS305-06	2
8	PIVOT LOCK NUT	TB301-06	2
9	STOP SCREW	TB312	2
10	LOCK NUT	SCO08-24	2
11	LEVELLING WING NUTS	M6	2
12	GUIDE SCREWS	M6 X 45	3
13	REED ASSEMBLY	TB303	1
14	BULL'S EYE LEVER	SCO23-09	1
15	SYPHON	HS305-09	1
16	SPRINGS	HS305-07	3
17	FILTER ASSEMBLY	TB310	1