

**INSTRUCTION MANUAL**  
**LABORATORY CALIBRATION UNIT**  
**MODEL TB340**

A DEVICE, WHEN CONNECTED TO A WATER SUPPLY,  
WILL DISCHARGE A PRE-SET VOLUME (653ML) OF  
WATER THROUGH ONE OR TWO TIPPING BUCKET  
RAIN GAUGES AND DISPLAY THE NUMBER OF TIPS.

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# **LABORATORY CALIBRATION UNIT**

## **1. UNPACKING**

- Remove the lid from the packing case.
- Carefully remove the timber noggings securing the unit within the packing case.
- Slide the unit complete with particle board base from the packing case and place on flat bench.
- Check the unit for damage and missing components - in the event of damaged or missed components advise Hydrological Services immediately.
- The unit consists of:
  - Assembled calibrator
  - Two mounting tables
  - Three nozzles
  - Set of keys
  - Manual
  - Optional extras
- Unwrap the two mounting tables and three nozzles.
- The particle board may be removed or may be used as the permanent base for the unit.

## **2. INSTRUCTION**

- The unit should be securely mounted on a flat level surface with access to water supply and a point to discharge waste water.
- Connect 6mm nylon tube to water supply.
- Connect waste tube (not supplied) to the outlet fitting under base and direct to waste outlet.
- Place mounting tables into position on the leveling knobs.
  - Take note that the mounting tables are double sided. One side is fitted with locators to suit the HS TB3 gauge and the other side to suit the Rimco gauge.

### 3. **PREPARATION FOR CALIBRATION**

- Remove the outer enclosure of the tipping bucket raingauge
- Clean the bucket and ensure that it is tipping freely.
- Remove the syphon from the inside of the enclosure and clean thoroughly.
- Place the raingauge on the mounting table ensuring that dowels are located in the gauge mounting holes.
- Adjust the levelling knobs until the bullseye level on the rain gauge indicates level.
- Screw the syphon directly into the syphon coupling of the catch - adaptors to suit the syphons of other brand rain gauges are available (see options).
- Tilt the bucket into a horizontal position and check that the syphon nozzle is directly over the partition in the bucket.
- The HS TB3 raingauge is fitted with two encapsulated reed switches (refer fig 2) connect the counter lead clamps to either of the switch terminals. (Check the operations of both reed switches)
- Manual tipping of the bucket should now produce one count of the counter per tip, if this is not the case then refer to the manufacturers' rain gauge manual for appropriate action.
- Remove the nut from the nozzle fitting on the calibration container.
- Insert the appropriate intensity nozzle replace the nut and tighten by hand. The standard nozzles simulate rain intensities of 100, 200 and 300 mm/hour. Others are available (See Options).

#### **4. CALIBRATION PROCEDURE**

- To fill the container with water
  - ▶ Close the outlet valve
  - ▶ Open the breather valve
  - ▶ Switch buzzer on
  - ▶ Open the inlet valve until the water level reaches the point of the probe and the buzzer activates
  - ▶ Close the inlet valve
  - ▶ Turn the buzzer off
  - ▶ Close the breather valve
  - ▶ Reset counter
- Calibration may now commence by opening the outlet valve. The contents of the container will discharge into the rain gauge at the appropriate intensity.
- Record the number of tips displayed on the counter when water has ceased discharging.
- Refer to the calibration specification sheet for the theoretical performance data for 200mm and 203mm catch rain gauges - other catch sizes data will need to be calculated.
- It is recommended that the above calibration run be repeated a minimum of three times.
- Adjust the rain gauge in accordance with manufacturers' instruction manual to achieve the desired performance.
- Replace the intensity nozzle and repeat for each nozzle.

Note:

Hydrological Services recommend that a quantity of water should be allowed to run through the gauge to permit the gauge to be "wet" prior to calibration.

## **5 MAINTENANCE**

- Periodically clean the entire unit
- Keep the water containers free of algal growth
- Replace the six “AA” batteries in buzzer as required
- The lithium batteries in containers have a life of 10 years.

**NOTE: DO NOT CLEAN THE ACRYLIC WATER CONTAINERS WITH SOLVENT. USE DETERGENT AND WATER ONLY.**

## **6 RECALIBRATION**

The unit should be periodically re-calibrated.

- The volume of the containers
- The intensity of the nozzles

Hydrological Services can provide a re-calibration service. (Refer to Option).

## **7. TROUBLE SHOOTING**

<i><u>Observation</u></i>	<i><u>Fault</u></i>	<i><u>Correction</u></i>
Nozzle off centre to bucket	Incorrect adjustment	Adjust catch arm
Syphon fouls gauge	Incorrect adjustment	Raise catch bracket
Bucket sticking	Various	Refer raingauge manual
Buzzer not functioning	Low power	Replace batteries
Varying discharge from nozzle	Dirty nozzle	Clean
Varying discharge from nozzle	Breather valve open	Close
Varying discharge from syphon	Dirty syphon	Clean

## 8. OPTIONS

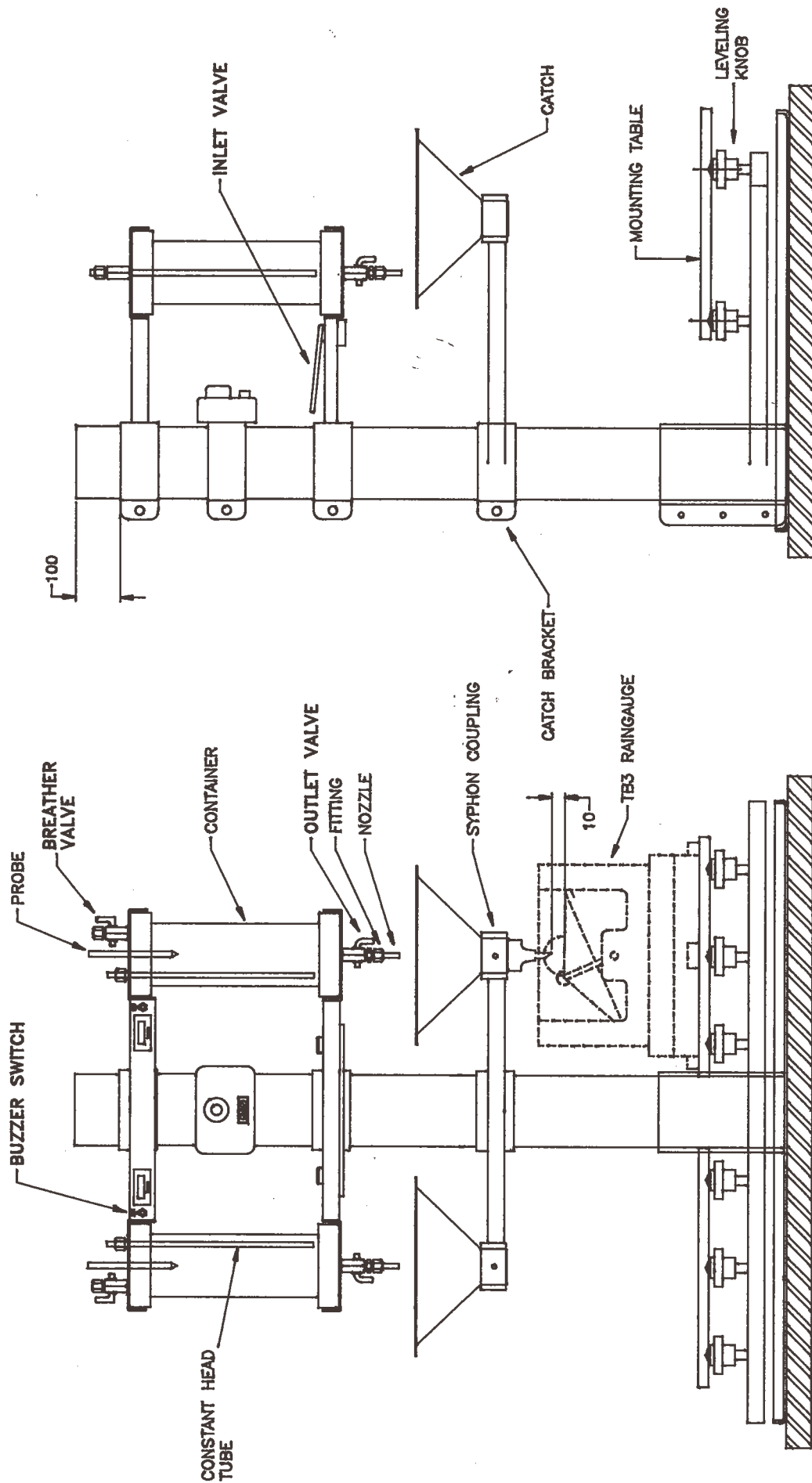
Hydrological Services provides the following optional accessories and services.

- Intensity nozzle 25 mm/hr                      Part number TB340-10
- Intensity nozzle 50mm/hr                      Part number TB340-11
- Intensity nozzle 500mm/hr                      Part number TB340-12
- Rimco syphon adaptor                              Part number TB340-13
- Monitor syphon adaptor                              Part number TB340-14
- Recalibration service
- Spare parts

## 9. PERFORMANCE SPECIFICATIONS

200mm diameter catch		203mm diameter catch	
Size	Tips per 653ml of Water	Size	Tips per 653ml of Water
0.2	103.9	0.2	100.92
0.5	41.6	0.5	40.35
1.0	20.8	1.0	20.17

Hydrological Services' standard calibration accepts a spread of +/- 2% from theoretical number of tips.



RAIN GAUGE CALIBRATION UNIT