

**INSTRUCTION MANUAL**  
**TIPPING BUCKET RAINGAUGE**  
**MODEL TB6**



QUALITY SYSTEM  
**ISO:9001**  
**CERTIFIED**

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## **TIPPING BUCKET RAINGAUGE MODEL TB6**

### **I GENERAL**

The Hyquest Solutions Pty Ltd Tipping Bucket Raingauge (TB6) is recognised as the standard for measuring rainfall and precipitation in remote and unattended locations.

The TB6 raingauge operates on the tipping bucket principle. A receiver of 200mm diameter collects the rainfall which is strained by a gauze before being passed to the tipping bucket measuring system. Tips of the bucket occur with each 0.2mm, 0.5mm, 0.01inch or 1.0mm of precipitation collected and a reed switch detects these events and produces a momentary contact closure signal for:

- logging in our Rainfall Data Logger
- transmission by our Radio Reporting Raingauge, or
- display on our Rainfall Counter.

### **II UNPACKING YOUR TB6 RAINGAUGE**

This package should contain:

- TB6 Raingauge
- TB311/5 5 metre connecting lead

Please verify you have received these items and that the Tipping Bucket Raingauge resolution is as ordered.

To prepare the Tipping Bucket Raingauge for installation:

- lift the unit from the carton and place on secure surface
- remove polythene bag
- loosen the three enclosure securing screws and back them off until screw head is clear of the enclosure.
- lift the enclosure from the gauge
- carefully remove the elastic band/support pad from the bucket.

Your Tipping Bucket Raingauge is now ready for installation.

**III SPECIFICATION**

Receiver:	200 mm $\pm$ 0.3 diameter heavy duty cast aluminium, Powder coated.
Bucket capacity:	ABS: 0.2 mm, 0.5 mm or 0.01 inch of rainfall. Metal: 1.0 mm of rainfall.
Sensitivity:	one tip.
Maximum intensity:	700 mm / hr.

**Calibration accuracy 0.2mm and 0.01”:**

50mm per hour ; better than +/-1%  
100mm per hour ; better than +/-4%  
125mm per hour ; better than +/-5%  
150mm per hour ; better than +/-6%  
200mm per hour ; better than +/-7%

**Calibration accuracy 0.5mm and 1.0mm:**

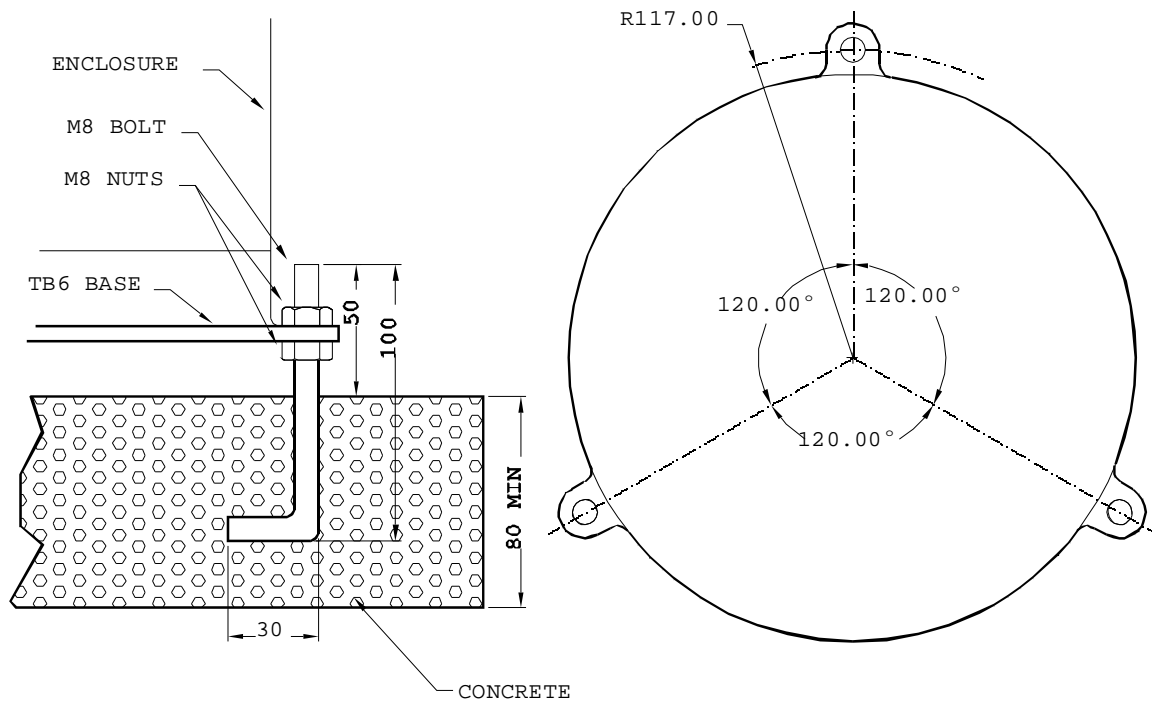
0 to 100mm/hr +/-2%  
100 to 150mm/hr +/-4%  
150 to 200mm/hr +/-5%

***Long term stable calibration.***

Humidity:	0 to 100 %
Temperature:	- 20 to +70°C
Contact system:	dual reed switches potted in soft silicon rubber with varistor protection.
-Max Capacity:	0.5 amp, 24 Volts
- Resistance:	Initial contact resistance 0.1 OHMS
- M.T.B.F:	10 <sup>8</sup> to 10 <sup>9</sup> Operations
Syphon:	Straight through (No syphon)
Bucket:	Injection moulded non hydroscopic ABS chrome plated UV stabilised balanced + 0.05gms.
Base:	injection moulded non-hydroscopic ABS UV stabilised.
Level:	bulls eye level fitted to base.
Mounting holes:	three 10 mm diameter mounting holes at 234 mm PCD in feet moulded to outside diameter of base.
Drain fittings:	to attach 12 mm inside diameter tubing, to catch rainfall after passing through buckets.
Bucket pivot system:	two stainless spring steel rolling bearings, clamped at 90 degrees to bucket stainless spring steel axle.
Insect covers:	stainless steel mesh on all openings to prevent insects and ants entering gauge.

Outer enclosure:	keyed to enable the release of the outer enclosure without the need for the removal of the three securing screws.	
Height:	315mm	
Weight:	2 kg	
Packed Dimensions:	4 kg	0.03m <sup>3</sup>

## **IV INSTALLATION**



**DIAGRAM 1**

### **(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:

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

( ii) Setting up

- Install the gauge on the foundation. A suggested foundation is shown in Diagram 1.
- Loosen the three enclosure securing screws and the enclosure.
- The gauge is provided with a bull's eye level. Adjust the nuts on mounting bolts until gauge is level.
- Connect lead to the raingauge terminals, refer to Diagram 3 page 9, and to the recording device, in accordance with manufacturer's instructions.

## V TEST OPERATION

- Manually tip the bucket a number of times, ensuring that each tip is being recorded and that the tilting mechanism is operating freely.
- Replace and secure the enclosure.

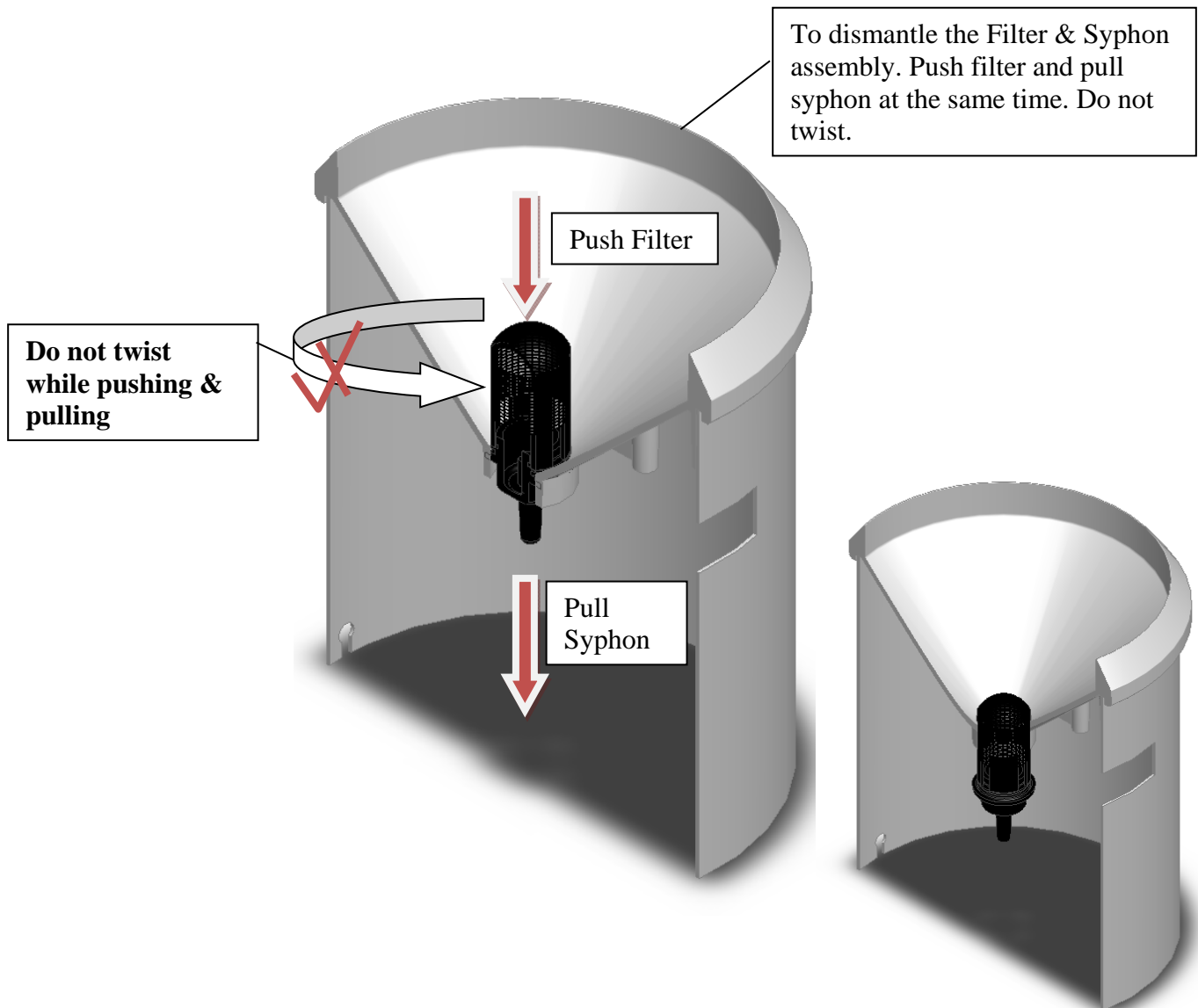
## VI MAINTENANCE

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

- **Catch filter**
- **Straight through syphon (refer diagram 2)**
- **Interior of bucket**
- **Top surface of adjusting screws**
- **Enclosure locking screws - lightly lubricate after cleaning**
- **All insect screens**

### i. Dismantle Details

- (a) Push filter in and pull straight through syphon out
- (b) Clean filter
- (c) Clean straight through syphon





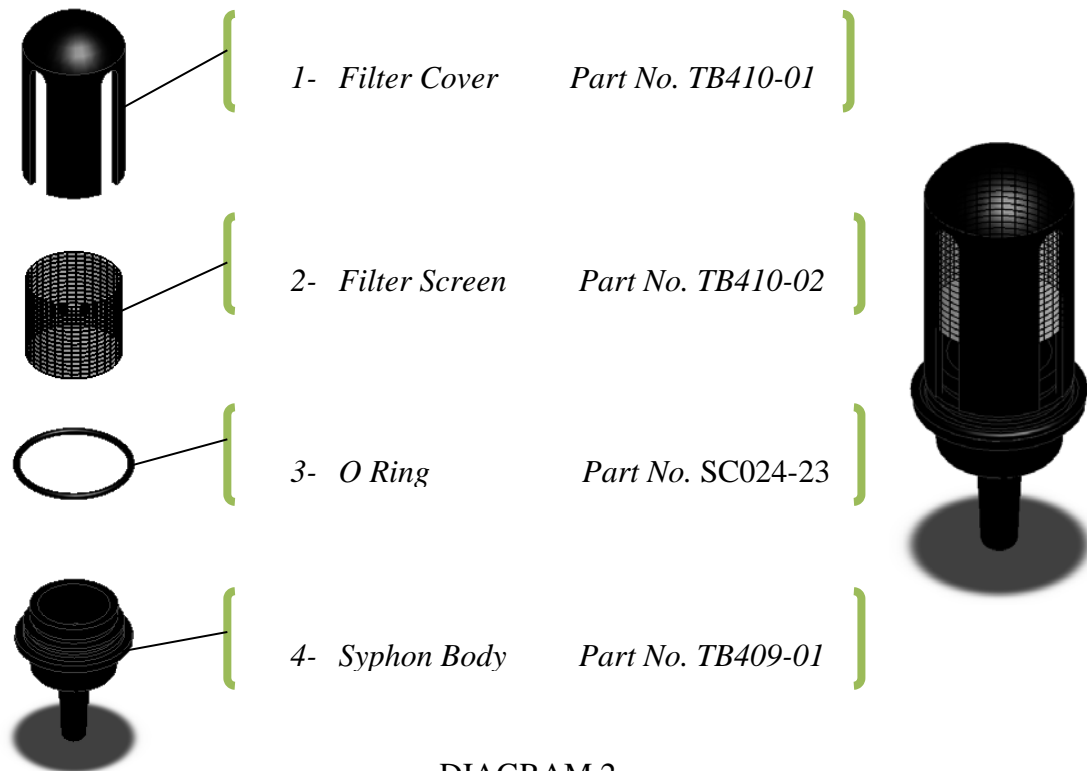
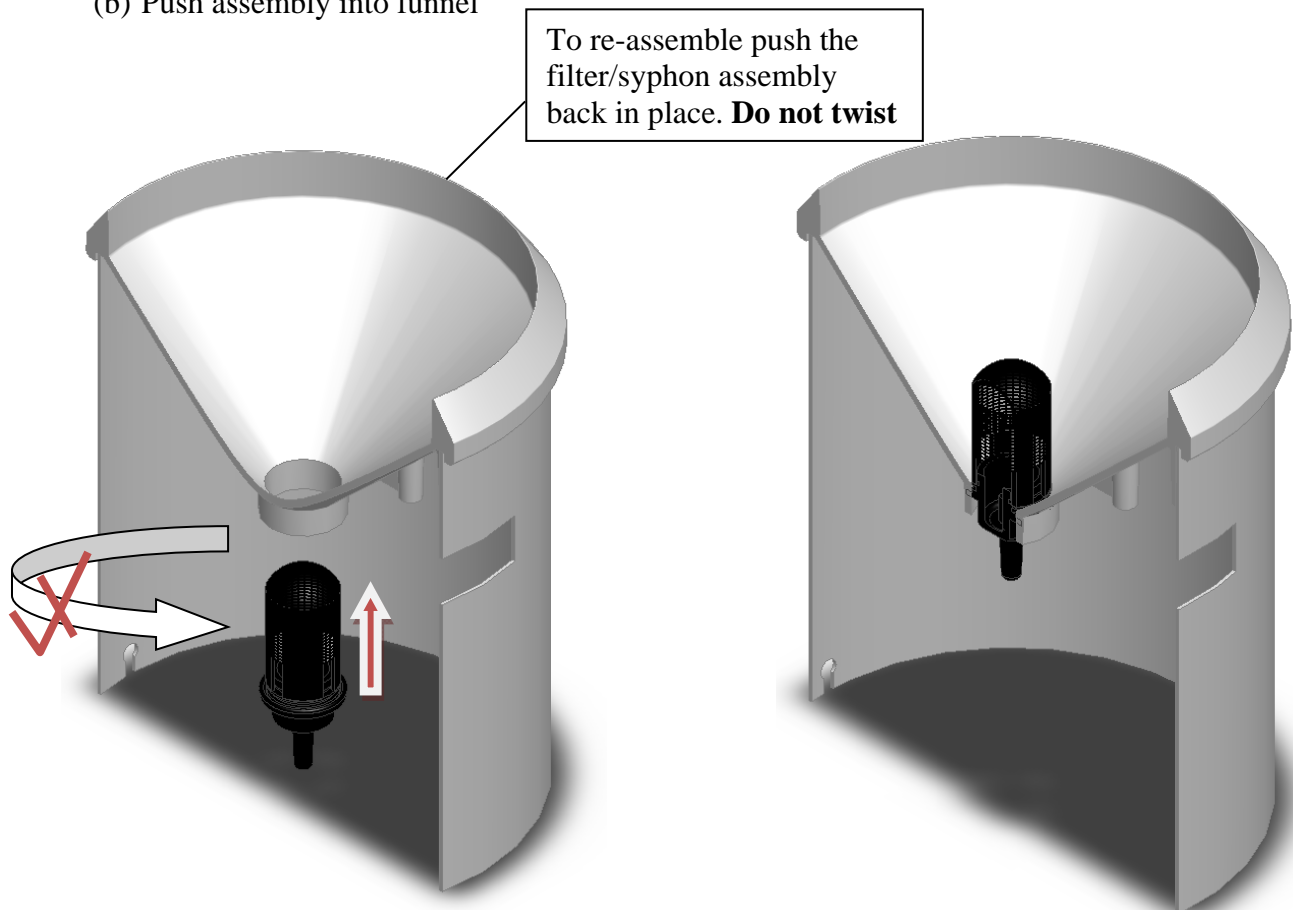


DIAGRAM 2

ii. Assembly Details

- (a) Assemble filter to straight through syphon body
- (b) Push assembly into funnel



## VII ELECTRICAL

Dual reed switches are provided for several reasons:

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

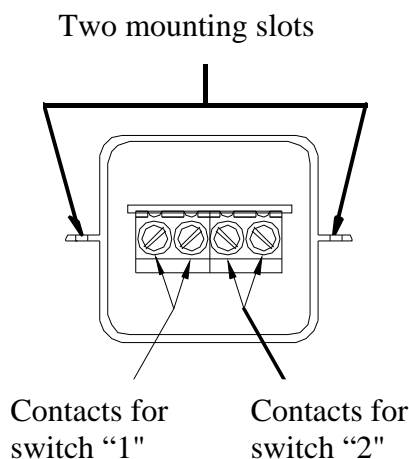


DIAGRAM 3

## VIII CALIBRATION

All gauges have been calibrated by Hyquest Solutions Pty Ltd Pty Ltd, prior to despatch. The following products and services are available from Hyquest Solutions Pty Ltd Pty Ltd:

- Field Calibration Device, Model TB320, for routine field check calibrations, supplied with operating instruction sheet refers to page FCD 110-01.
- Laboratory Calibration Unit, Model TB340, for calibration after servicing in workshops, supplied with operating manual.
- Recalibration Service at Hyquest Solutions Pty Ltd' factory.

Please contact either Hyquest Solutions Pty Ltd Pty Ltd or our local distributor for further information.

## IX TB6 PART LIST



ABS Plastic  
UV stabilised



Metal 1mm  
bucket only

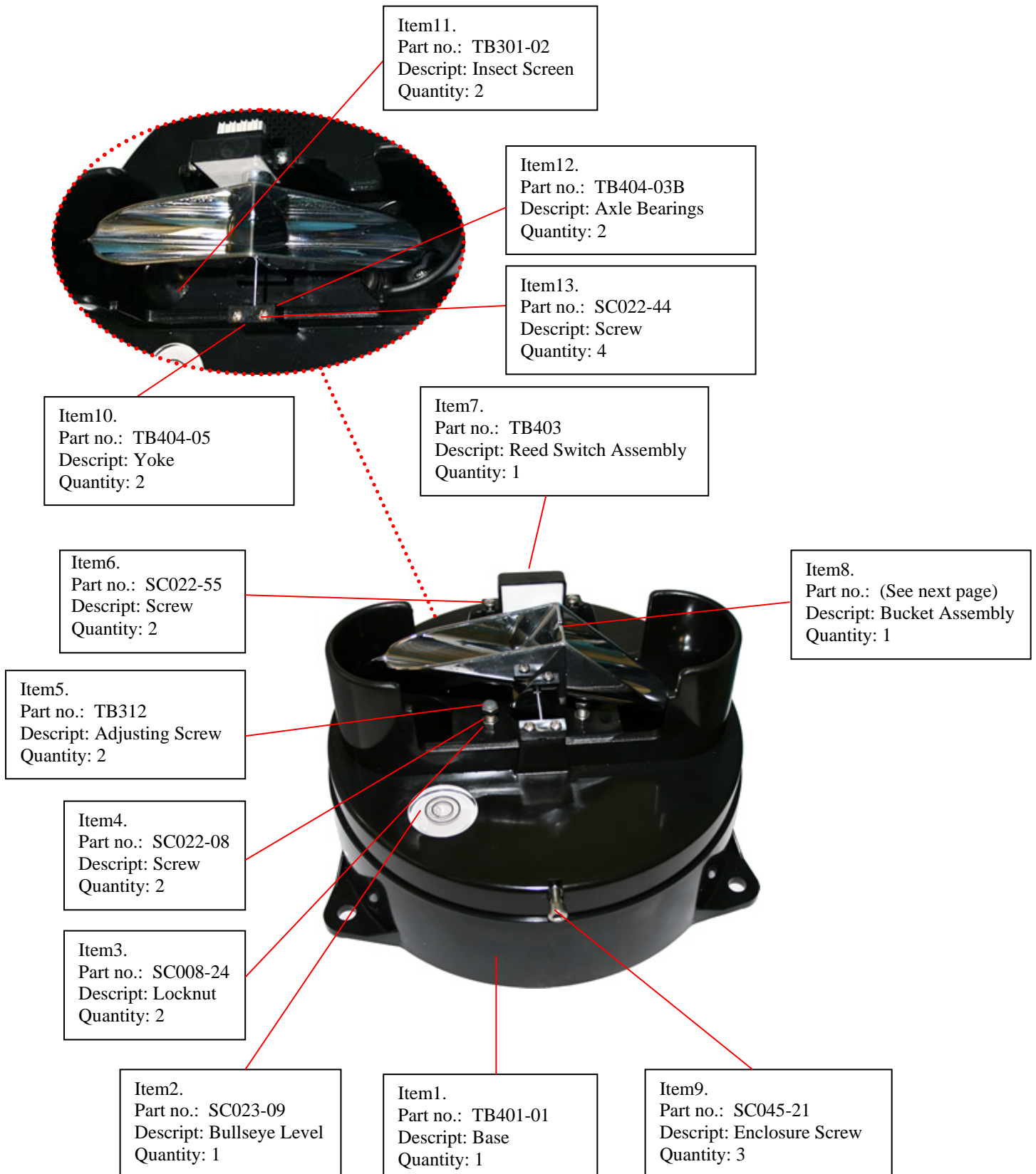


**Note:**

*The TB4 Raingauge is ordered with a synthetic ceramic coated brass bucket for 1mm size bucket only or chrome plated injection moulded non hydroscopic plastic ABS for the 0.2mm, 0.5mm or 0.01”.*

Raingauge Part No.	Raingauge Description
TB6/0.2/P	Tipping Bucket Raingauge, bucket capacity 0.2mm, bucket type chrome plated injection moulded non hydroscopic plastic ABS UV stabilised
TB6/0.01/P	Tipping Bucket Raingauge, bucket capacity 0.01inch, bucket type chrome plated injection moulded non hydroscopic plastic ABS stabilised
TB6/0.5/P	Tipping Bucket Raingauge, bucket capacity 0.5mm, bucket type chrome plated injection moulded non hydroscopic plastic ABS stabilised
TB6/1.0/M	Tipping Bucket Raingauge, bucket capacity 1.0mm, bucket type synthetic ceramic coated brass

**TB6 Base Part List**



**TB6 Bucket Part List**

Item14:

Part no: TB404  
Descript: Bucket (0.2mm, 0.01")  
or  
Part no: TB405  
Descript: Bucket (0.5mm)  
Quantity: 1

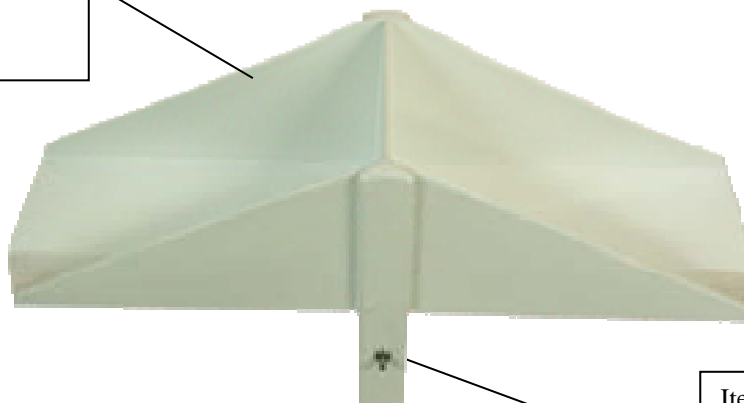


ABS UV  
Stabilised  
Plastic Bucket

Item15:  
Part no: TB404-03  
Descript: Bucket Axle  
Quantity: 1

**OR**

Item14a:  
Part no: TB406  
Descript: Bucket (1.0mm)  
Quantity: 1



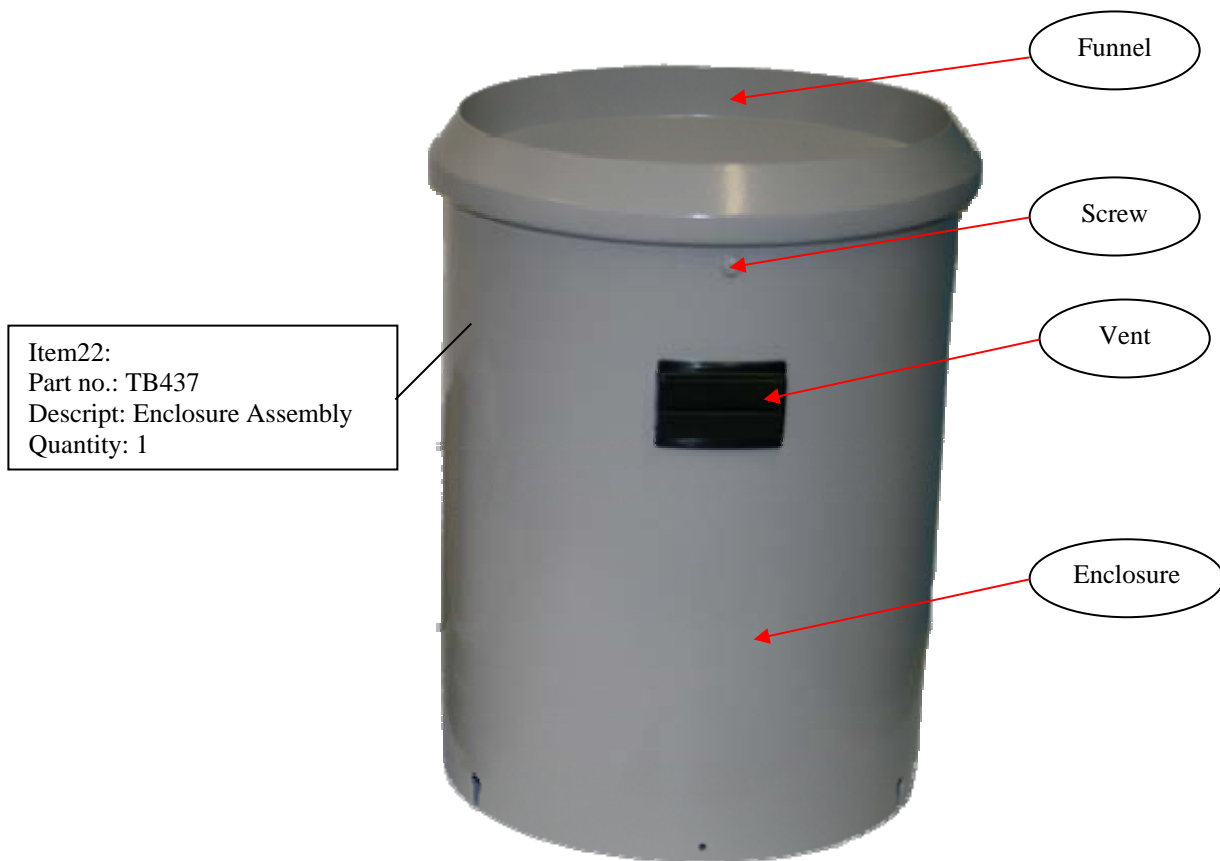
Metal Bucket  
1mm only

Item15:  
Part no: TB404-03  
Descript: Bucket Axle  
Quantity: 1

## Filter/Syphon Part List



## Enclosure Part List

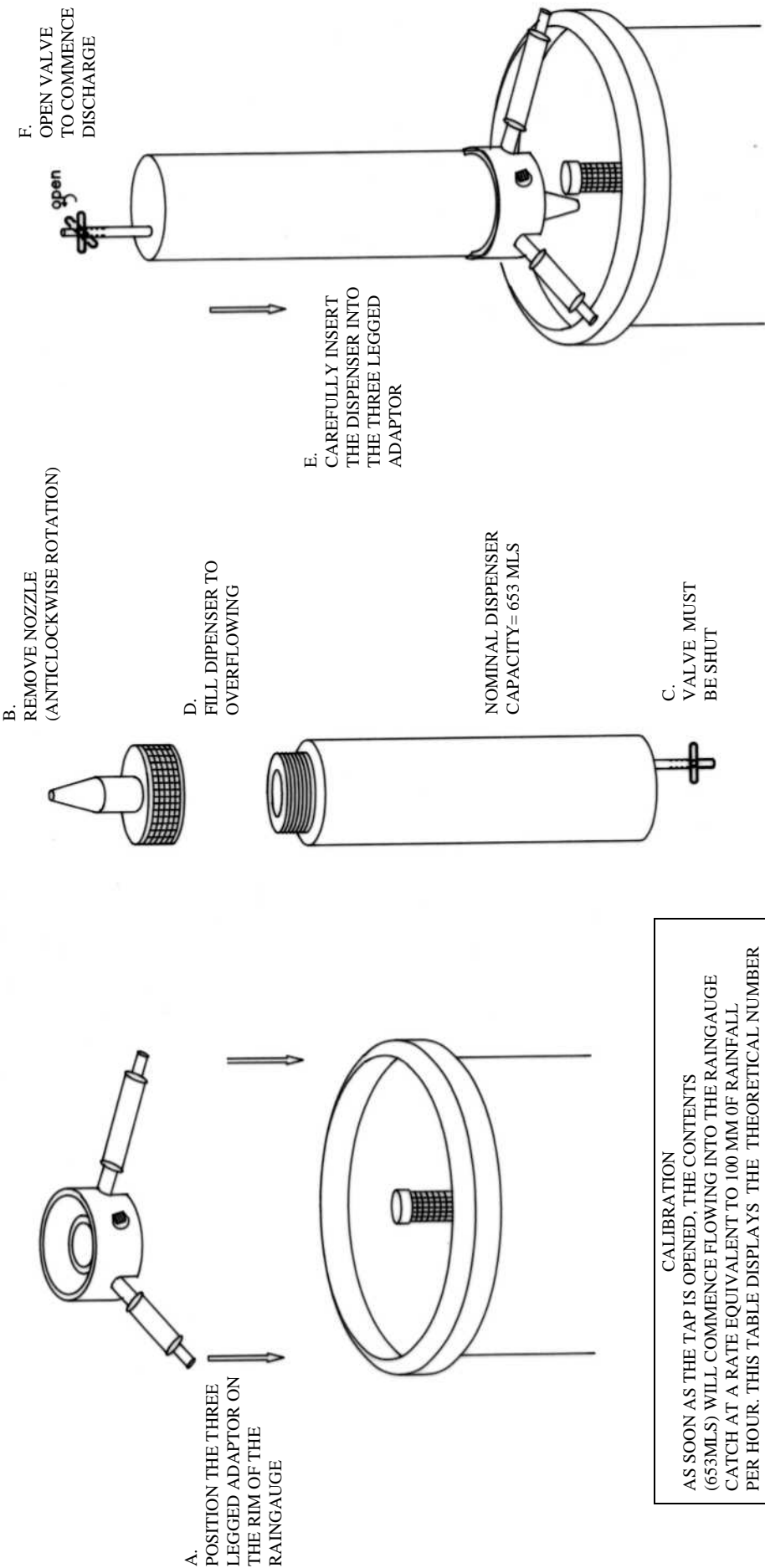


Part no.	Description	Quantity
TB437-01	Funnel	1
TB337-02	Enclosure	1
TB418-06	Vent	1
SC022-72	Screw	3

### **TB437 breakdown assembly**

NOTE: PLEASE WET RAINGAUGE PRIOR TO CALIBRATION

X FIELD CALIBRATION DEVICE



CALIBRATION			
AS SOON AS THE TAP IS OPENED, THE CONTENTS (653MLS) WILL COMMENCE FLOWING INTO THE RAINGAUGE CATCH AT A RATE EQUIVALENT TO 100 MM OF RAINFALL PER HOUR. THIS TABLE DISPLAYS THE THEORETICAL NUMBER OF BUCKET TIPS THAT SHOULD BE ACHIEVED.			
THEORETICAL NUMBER OF TIPS			
BUCKET SIZE	200 MM CATCH	203 MM (8") CATCH	
0.2 MM	103.9	100.9	
0.5 MM	41.6	40.4	
0.01 INCH	81.8	79.4	
IF THE OBSERVED RESULTS ARE UNACCEPTABLE THEN REFER TO THE RAINGAUGE INSTRUCTION MANUAL FOR APPROPRIATE ADJUSTMENTS			

INSTRUCTION FOR TIPPING BUCKET  
RAINGAUGE FIELD CALIBRATOR (FCD)



