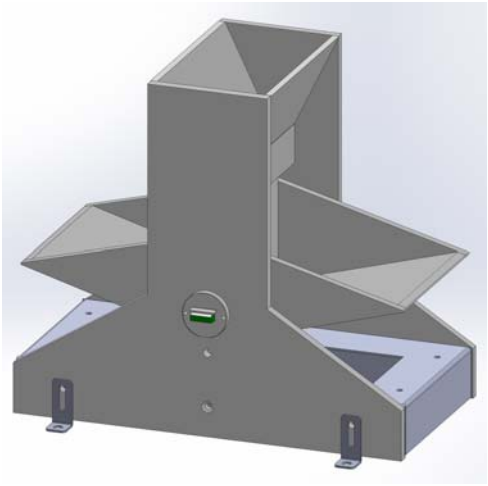
INSTRUCTION MANUAL

TIPPING BUCKET FLOW GAUGE

MODEL TB1L



QUALITY SYSTEM
ISO
9001
CERTIFIED

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TIPPING BUCKET FLOW GAUGE MODEL TB1L

I. GENERAL

The HyQuest Solutions Flow Gauge is used for measuring water flowing out of pipes or drains. The unit comes with a dual reed switch assembly, thus, when connected to a HyQuest Solutions data logger, the data can be stored and collected when required. In addition, the flow gauge can be telemetered by connecting one of the HyQuest Solutions data loggers to a GSM or Satellite.

- Event logging with our Data Logger (Optional)
- Telemetry options available on request
- Connect to display Counter (Optional)

II. UNPACKING YOUR TB1L FLOW GAUGE

This package should contain:

- TB1L Raingauge

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

To prepare the Tipping Bucket Flow gauge for installation:

- lift the unit from the carton and place on secure surface
- remove the bubble wrap
- carefully remove the elastic band/support pad from the bucket.

Your Tipping Bucket Flow gauge is now ready for installation.

III. SPECIFICATION

Receiver: 180mm long x 105mm wide rectangular, PVC UV stabilised.

Sensitivity: one tip at 0.5 litre or 1 litre of water.

Maximum Flow Rate: 25 litres / minute.

Approximate Accuracy:

Flow Rate	%Error
0.5 litre/min	-2%
1.0 litre/min	-6%
5.0 litre/min	-10%
10.0 litre/min	-14%
15.0 litre/min	-18%
20.0 litre/min	-20%
25.0 litre/min	-22%

Humidity: 0 to 95 %

Temperature: - 20 to +70^{o} C

Contact system: dual reed switches potted in soft silicon rubber with varister protection.

- Max Capacity: 24 Volts (0.5amp max.)
- Resistance: Initial contact resistance 0.1 OHMS
- M.T.B.F: 10^{8} to 10^{9} Operations

Bucket: PVC UV Stabilised.

Base: Stainless Steel Frame, powder coated grey.

Level: Bulls Eye level adhered to stainless steel base.

Dimensions: Length 390mm, Width 235mm, Height 345mm.

IV. INSTALLATION

The TB1L installation requirements are dependant site conditions. The user needs to ensure no water is lost outside the area of the collector.

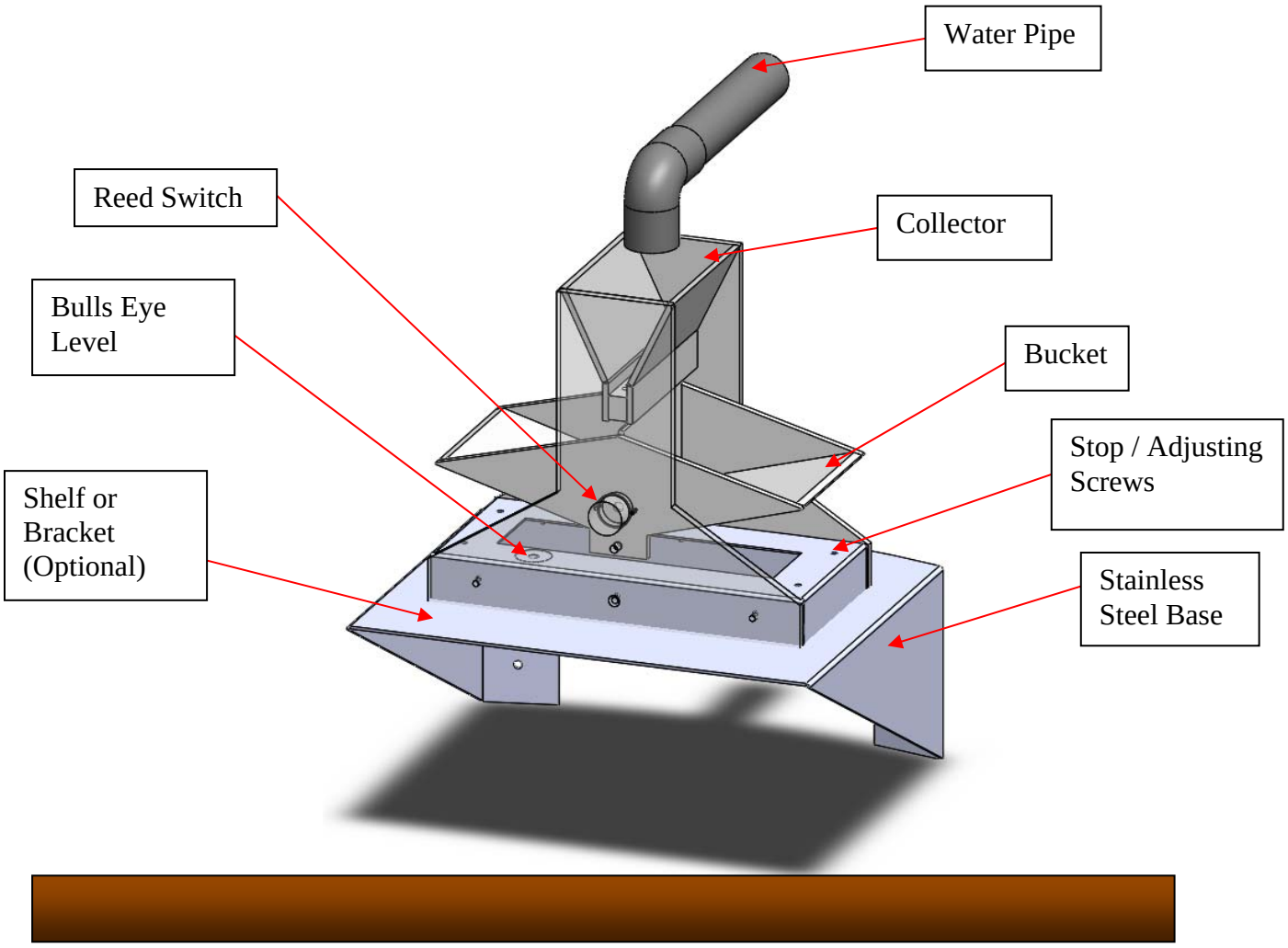
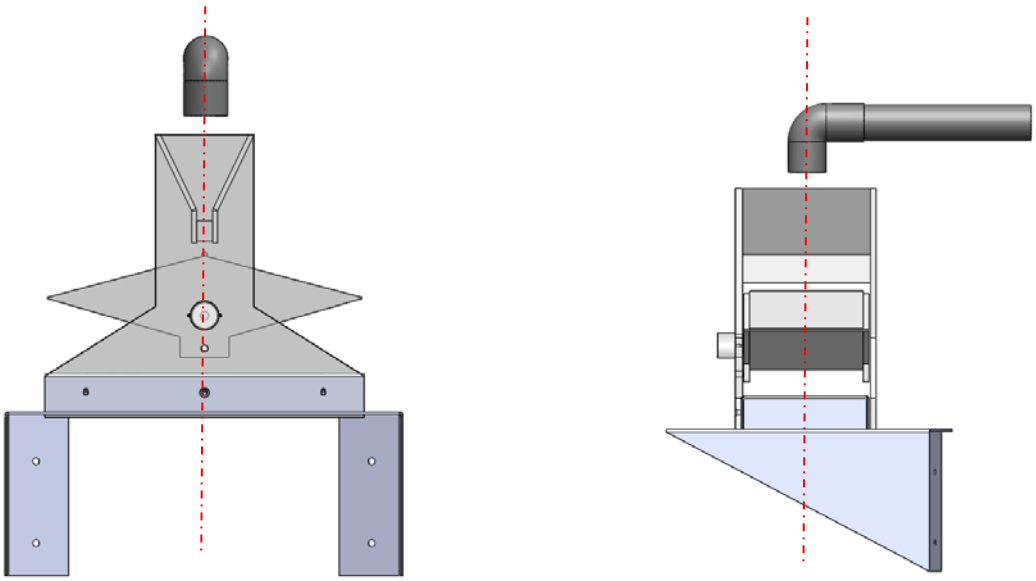
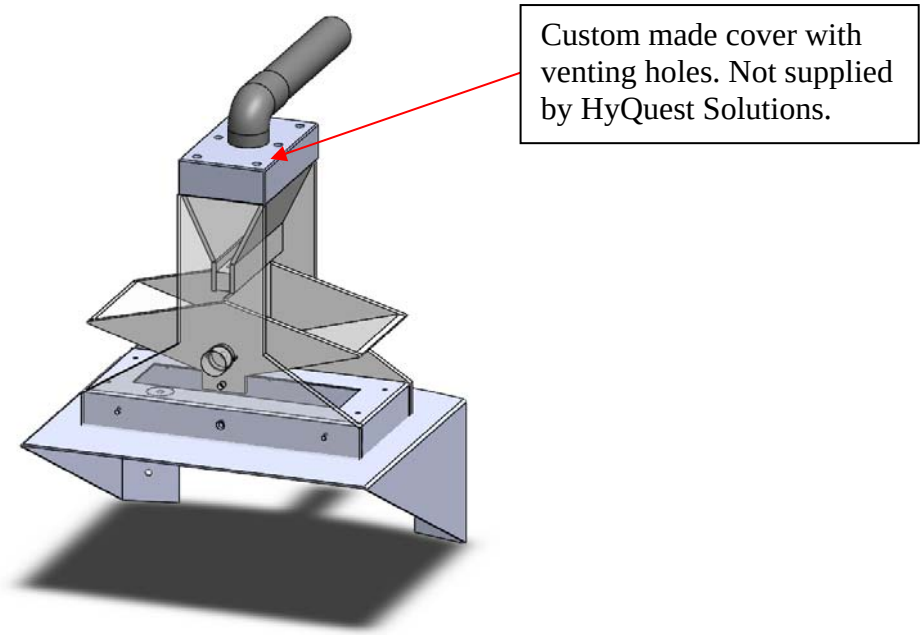


DIAGRAM 1



Note: Please ensure that the pipe diameter does not exceed the 75mm (2.5”) and is installed in the centre of the flow gauge as shown in figures above.

DIAGRAM 2



Note: It is advisable to have a vented cover above the collector of the flow gauge to avoid water loss at high flow rates and in windy conditions.

DIAGRAM 3

i. Site Selection

Water Flow measurements are intended to be representative of the actual water running out of the pipe. Some of the more important factors which influence the representativeness of a gauge are as follows:

- Site the gauge on a level surface.
- Site should have adequate protection from strong winds.
- Water coming out of the pipe should not contain any particles that could block the collector.
- Provide suitable ground surface to avoid splashing into the gauge.

ii. Setting up

- Install the gauge on a suitable bracket or shelf, as suggested in Diagram 1,2 & 3.

- The gauge is provided with a level. Proceed to level by ensure the bracket the gauge is mounted on is level

- Connect lead to the Flow gauge terminals, in accordance with Diagram 3, and to the recording device, in accordance with manufacturer's instruction manual.

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.

VI. MAINTENANCE

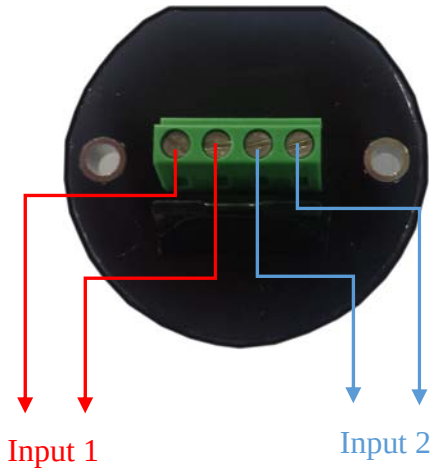
The only routine maintenance required is cleaning. The following items should be checked regularly for cleanliness:

- **Collector area**
- **Interior of bucket**
- **Top surface of adjusting screws**
- **Lubrication of the pivot using (WD40 or equivalent)**

VII. ELECTRICAL

Dual reed switches are provided for several reasons:

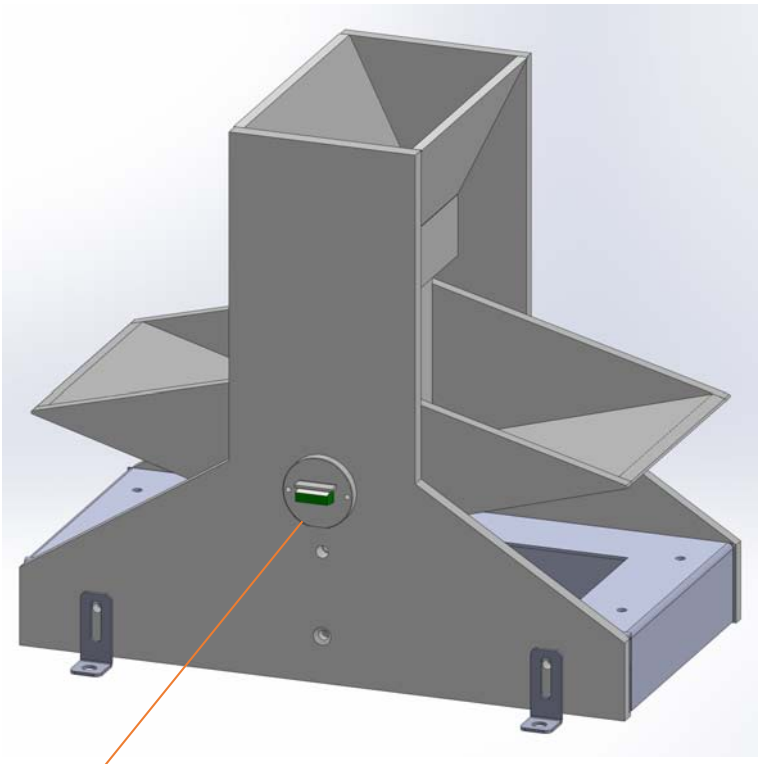
- Two isolated switches permit the control of two separate circuits; e.g. a local counter and a telemetry circuit.
- Parallel connection of both switches increases the current carrying capacity of the contact system if required.
- Parallel switch operation confers a degree of redundancy in locations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

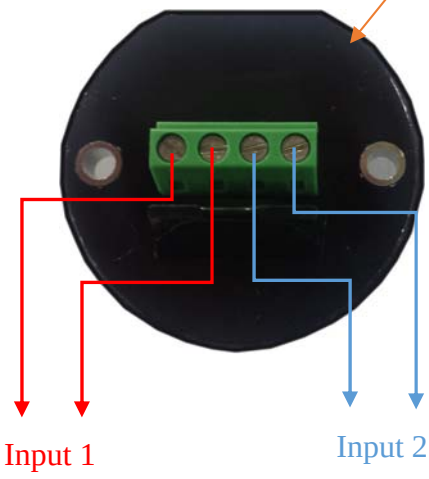


Note: 2x Digital inputs with maximum capacity of 24 Volts (0.5amp max.). They operate simultaneously to two different RTU's (example Data logger & Satellite modem)

DIAGRAM 4

IV. APPLICATIONS





Each signal from this reed switch indicates a 0.5L or 1L of water flow depending on bucket size.

2x Digital inputs with maximum capacity of 24 Volts (0.5amp max.). They operate simultaneously to two different RTU's (example Data logger & Satellite)