INSTRUCTION MANUAL

TIPPING BUCKET FLOW GAUGE

MODEL TBL-70ML

HYQUEST SOLUTIONS

QUALITY SYSTEM
ISO
9001
CERTIFIED

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Table of Contents

TIPPING BUCKET FLOW GAUGE MODEL TBL-70ML

I. GENERAL

The HyQuest Solutions Flow Gauge is used for measuring water seeping out of pipes or drains. The unit comes with a 2 x 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 TBL-70ML FLOW GAUGE

This package should contain

- TBL-70ML 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 Metal Bucket 70ML of water flow one tip Lower PVC Bucket 0.5 litre or 1 litre of water.
Maximum Flow Rate:	6 litres/minute with metal bucket **(Note: remove metal bucket for higher flow).** 25 litres/minute with 0.5L or 1.0L PVC Bucket.

Approximate Accuracy for Metal Bucket:

Flow Rate	%Error
0-3 litres/min	-3%
3-6 litres/min	-5%
>6 Litres/min	NA

Approximate Accuracy for lower PVC Bucket:

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:	2x 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 Metal:	Capacity 70ML, Material Brass Powder Coated.
Bucket PVC:	Capacity 1L or 0.5L, material 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 470mm.

IV. INSTALLATION

Case one low flow up to 6L/min (Metal bucket deployed)

The TBL-70ML installation requirements are dependant site conditions. The user needs to ensure no water is lost outside the area of the collector.

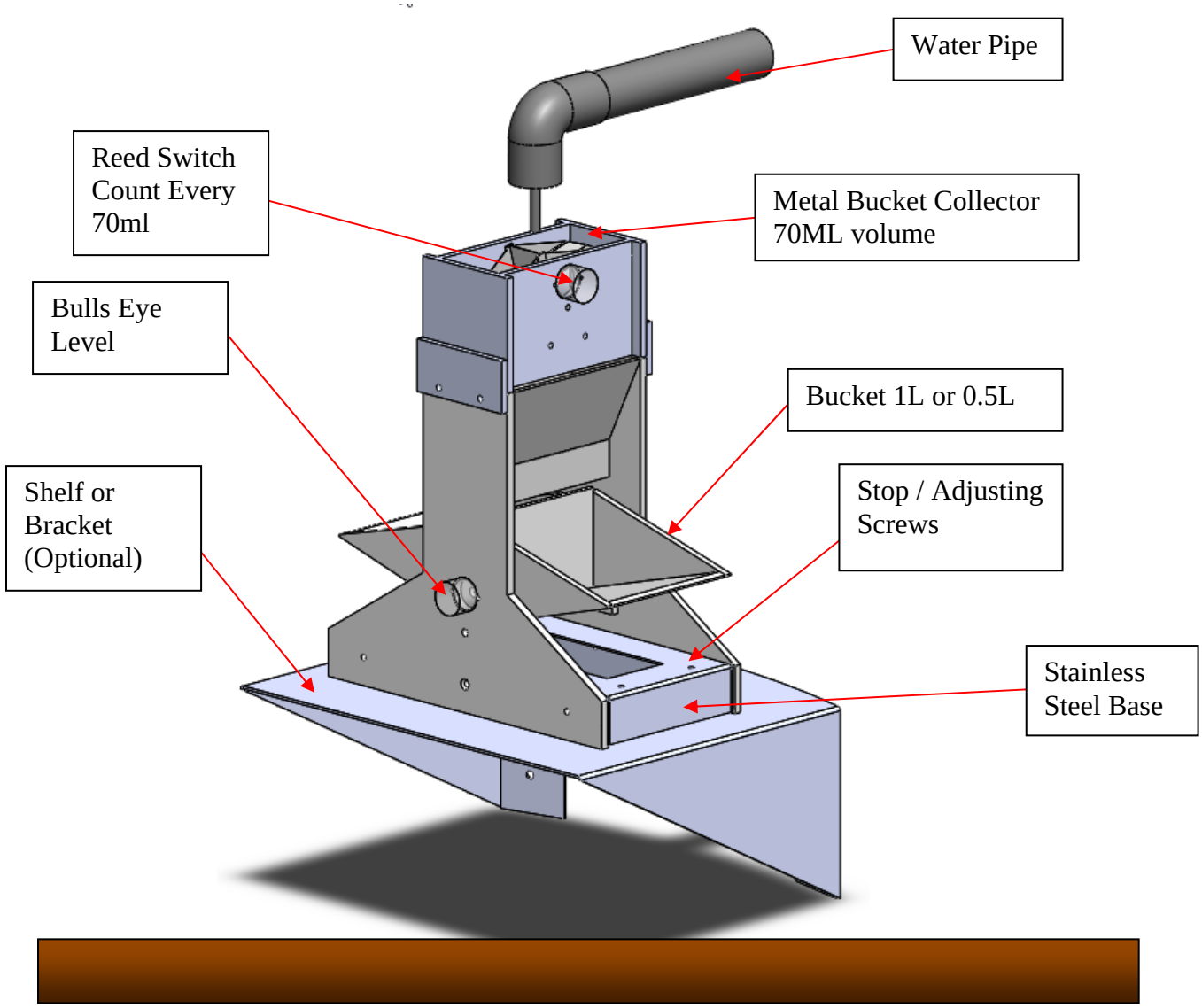
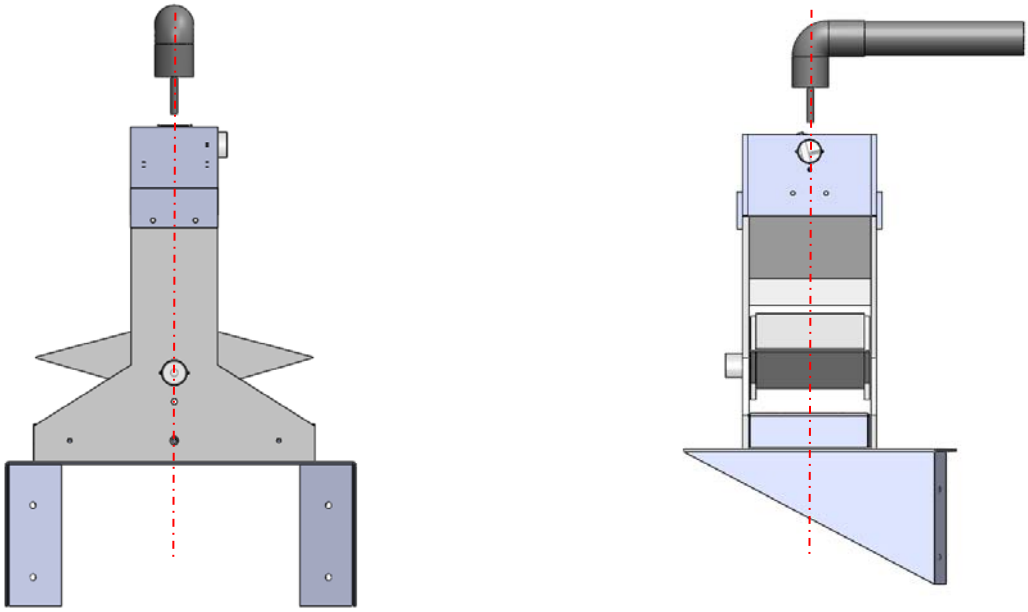
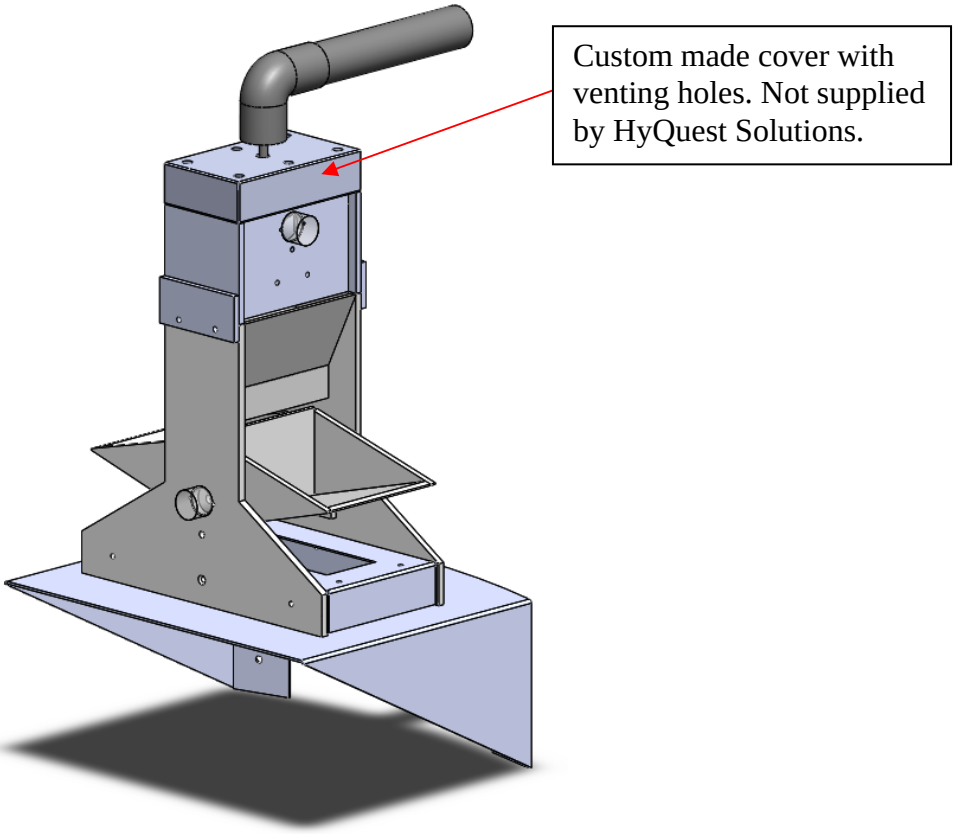


DIAGRAM 1



Note: Please ensure that the pipe diameter does not exceed the size of 10mm to 12mm (1/2”) and is installed in the centre of the flow gauge where centre of the bucket is located 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 situations.

DIAGRAM 3

Case two flow greater than 6L/min (Metal bucket removed)

For flow greater than 6L/min the metal bucket should be removed by removing the four screws as shown in the figure below:

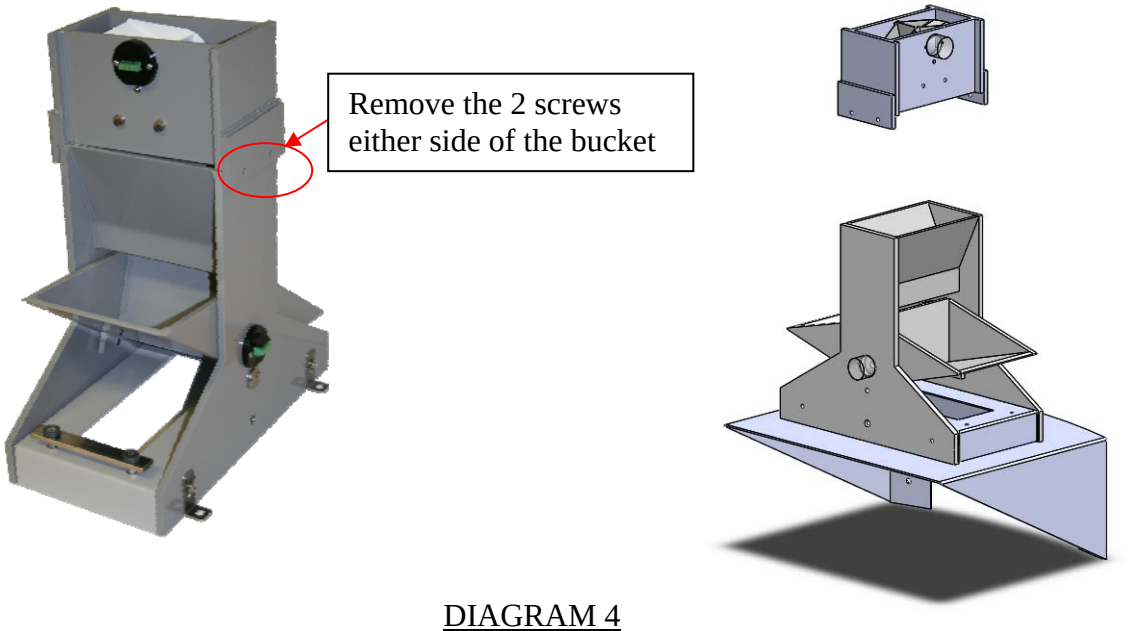
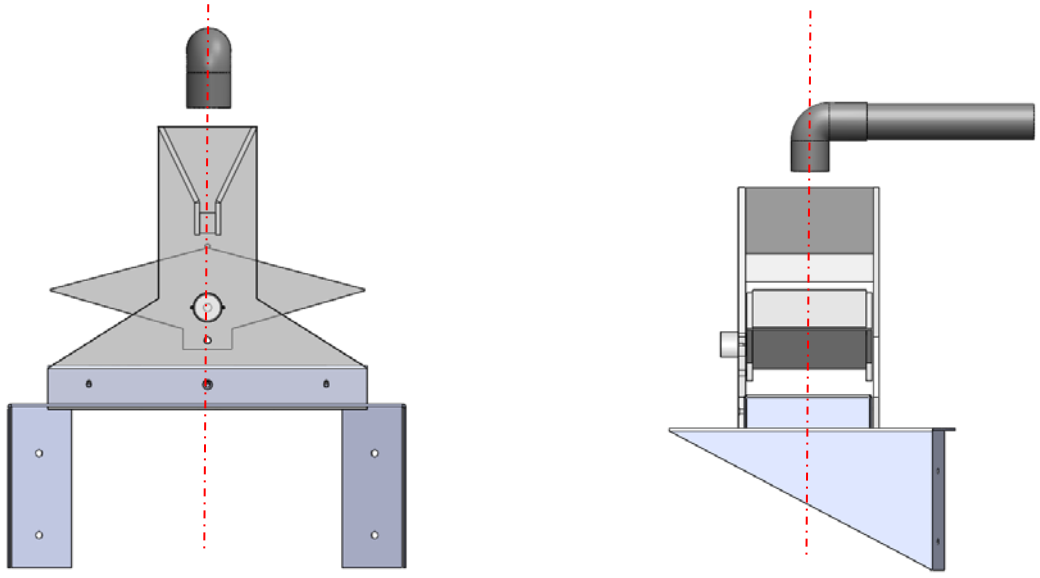
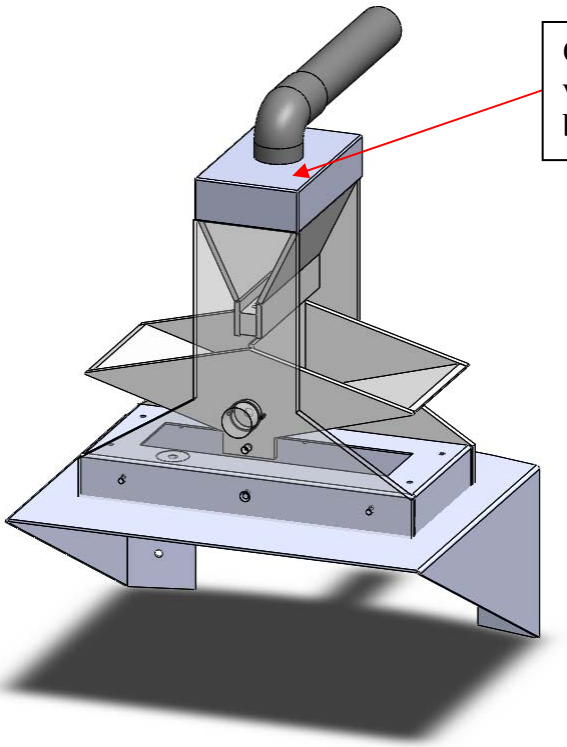


DIAGRAM 4



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 5



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 situations.

DIAGRAM 6

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.
- 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

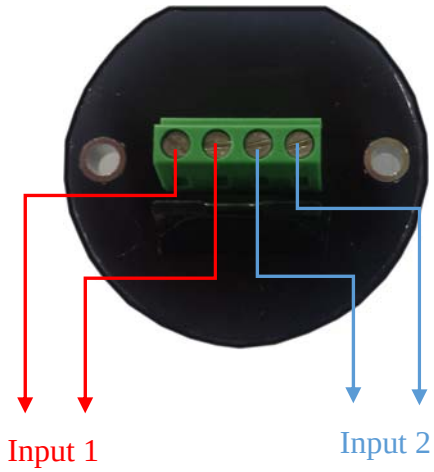
The only routine maintenance required is cleaning. The following items should be checked regularly for cleanliness:

- **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)

IV. APPLICATIONS