

**MODEL 380/382  
12" RAIN GAUGE**

**OPERATION MANUAL**  
Document No 380/382-9800 Rev C



**Met One Instruments, Inc.**

Corporate Sales & Service: 1600 Washington Blvd., Grants Pass, OR 97526, Phone (541) 471-7111, Fax (541) 471-7116  
Distribution & Service: 3206 Main Street, Suite 106, Rowlett, TX 75088, Phone (972) 412-4747, Fax (972) 412-4716  
<http://www.metone.com>

---

## 380/382 RAINFALL SENSOR (TIPPING BUCKET) OPERATION MANUAL

### 1.0 GENERAL INFORMATION

1.1 Model 380/382 Tipping Bucket Rain Gauge is an accurate, sensitive, and low-maintenance sensor designed to measure rainfall on a continuous basis. Water does not collect in the sensor, but is drained each time an internal bucket fills with 0.01 inch of rainfall (standard calibration). At this time, a switch closure pulse is also sent to the translator module or datalogger for counting.

1.2 Sensor Cable is a vinyl-jacketed 2-conductor shielded cable connecting to the sensor via an internal terminal strip. Cable length is designated in –XX feet on each cable part number label.

Table 1-1  
Model 380/382 Rainfall Sensor Specifications

Orifice	12 inches
Calibration (standard)	.01 inch rain per switch closure
Calibration (optional)	0.2 mm, 0.25 mm
Calibration (382)	0.1 mm
Accuracy	±1% at 1 inch to 3 inches per hour at 70°F
Switch Type	Magnet & Reed
Mounting	3 Pads for ¼ inch bolts on 9*21/32 inch (9.66 inch) circle diameter
Dimensions	21-1/4 inches high, 8 inches diameter not including mounting pads
Weight, less cables	6.7 pounds/ 3 kg (10 pounds shipping w/cables)

### 2.0 INSTALLATION

2.1 Choose a site where the height of any nearby trees or other objects above the sensor is no more than about twice their distance from the sensor. A uniform surrounding of objects (such as an orchard) is beneficial as a windbreak. Nonuniform surroundings (such as a nearby building) create turbulence, which affects accuracy.

2.2 Using washers for shims, mount the sensor level on a platform or tower, using the built-in level as an aid. Three ¼ inch diameter bolts are used to mount the unit on a 9-21/32 inch bolt circle.

- 2.3 Remove shipping restraint (this may be tape, rubber band, or similar item) from sensor bucket and verify that bucket moves freely and that all adjusting screws are tight.
- 2.4 Connect the signal cable lugs to the terminal strip if not connected already. Polarity is not important.
- 2.5 Replace cover on sensor, tightening screws at base. Route cable to translator or datalogger.
- 2.6 If this rain gauge is part of a Met One Instruments weather station, refer to System Interconnect Diagram for connection of signal cable to translator or datalogger.

### 3.0 CALIBRATION

- 3.1 The sensor is factory calibrated; recalibration is not required unless damage has occurred or the adjustment screws have loosened. To check or recalibrate, perform the following steps.
  - A. Check to be sure the sensor is level.
  - B. Wet the mechanism and tipping bucket assembly. Using a graduated cylinder, slowly pour the measured quantity of water through the inner funnel to the tipping bucket, which should then tip. Repeat for the alternate bucket. If both buckets tip when filled with the measured quantity of water, the sensor is properly calibrated. If they do not, recalibrate as follows:
    - 1. Release the lock nuts on the cup adjustments.
    - 2. Move the adjustment screws down to a position that would place the bucket far out of calibration.
    - 3. Allow the measured quantity of water to enter the bucket.
    - 4. Turn the cup adjustment screw up until the bucket assembly tips. Tighten the lock nut.
    - 5. Repeat steps 3 and 4 for the opposite bucket.
    - 6. Measure the quantity of water necessary to tip each bucket several times to ensure proper calibration.

3.2 After installation and calibration (if necessary), replace the cover on the gauge.

Table 3-1  
Calibration Quantities

<u>Tip Calibration</u>	<u>Water Quantity</u>
0.01 inch (standard)	18.53 milliliters
0.20 mm	14.6 milliliters
0.25 mm	18.24 milliliters
0.10 mm (382)	7.3 milliliters

4.0 MAINTENANCE AND TROUBLESHOOTING

4.1 General Maintenance Schedule\*:

At 6 month intervals, perform the following steps:

- A. Clean sensor funnel and buckets.
- B. Do NOT lubricate the pivots, as any lubricant may attract dust and dirt and cause wear of the jewel bearings.
- C. Verify that buckets move freely and that translator card or datalogger registers 0.01 inch (or as calibrated) for each bucket tip.

\*Based on average to adverse environments.

Table 4-1  
380/382 Rain Gauge Parts List

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	2528	Assembly, Tip Bucket (.01", .2 mm, .25 mm)
1	2545	Assembly, Tip Bucket (0.1 mm. Model 382)
2	2492	Pin, Pivot
3	340070	Barrier, Strip – 3 pos
4	480210	Nut, Crown, Nylon #8-32
5	2598	Screen, Base
6	2503	Screen, Primary Top
7	480510	Clamp, Liquid-Tight
8	2934	Reed Switch Cartridge
9	2936	Adjustable Magnet Bracket
10	2937	Lightning Protection Diode
11	1566	Standard Cable Assembly
11	2745	Cable Assembly (for use with Automet)
12	2504	Screen, Secondary
13	2833	Assembly, Housing/Funnel 12 inch
14	2516	Foot

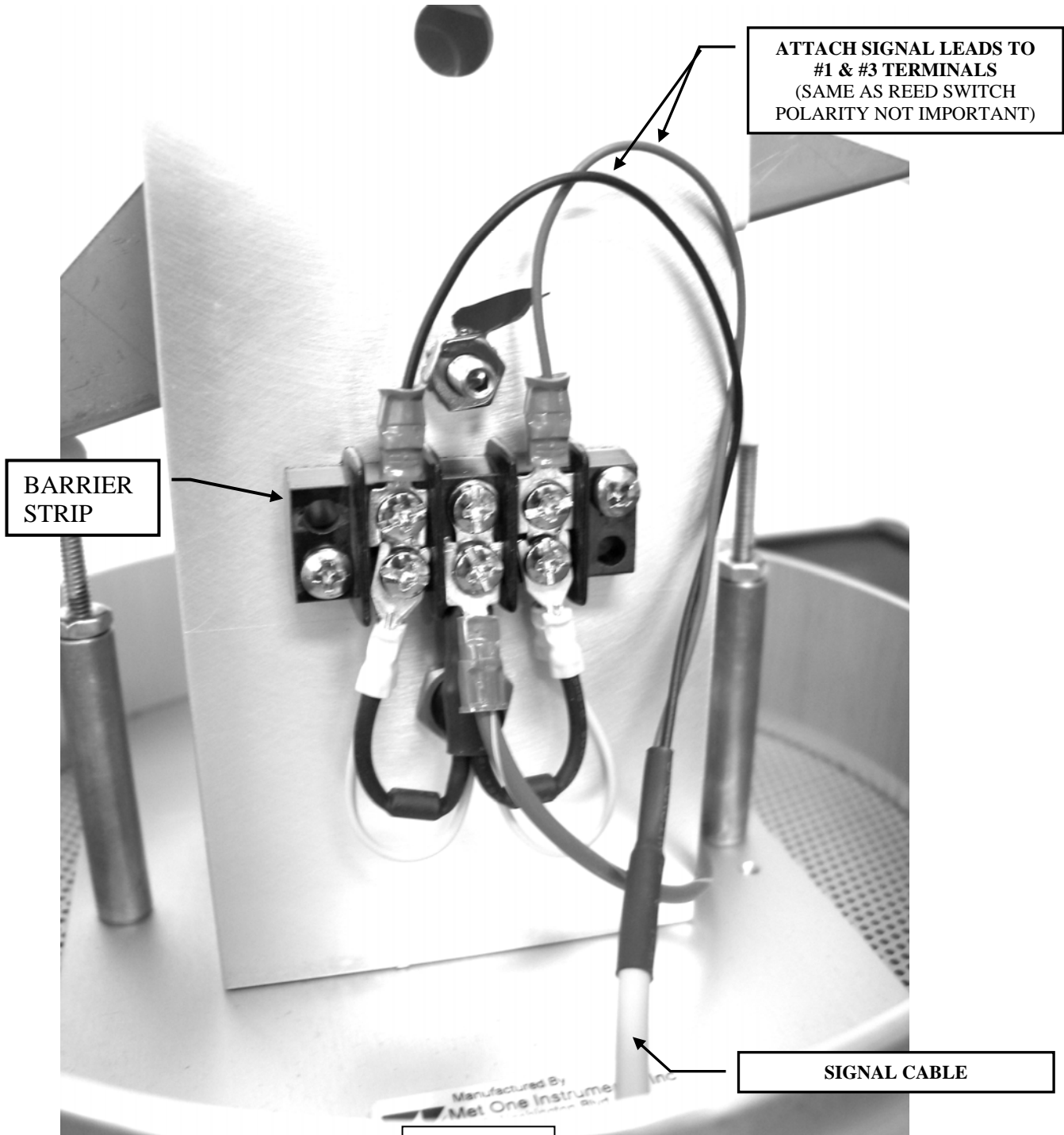


FIGURE 1

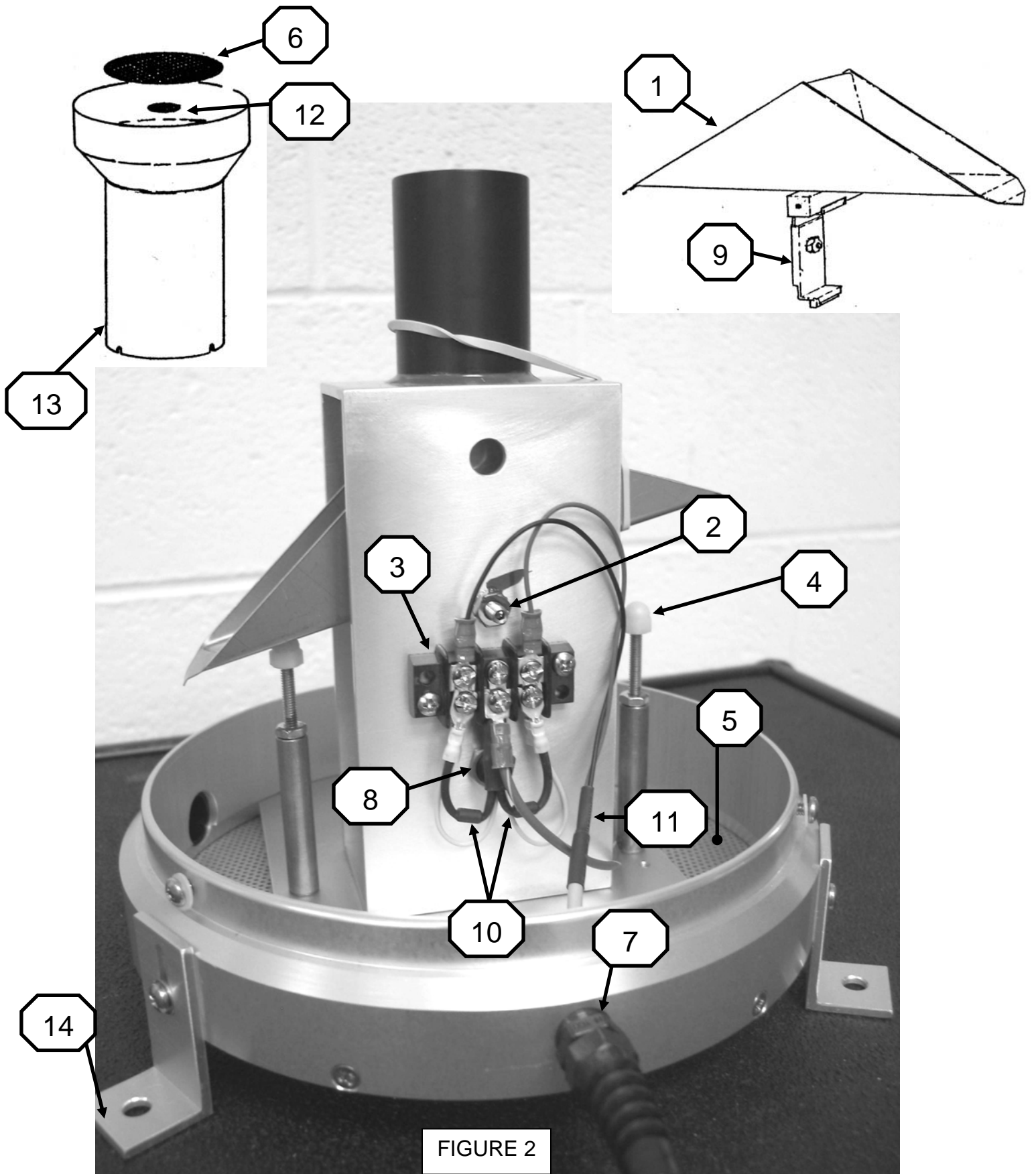


FIGURE 2