



Texas Electronics, Inc.

The Gold Standard in Weather Instrumentation Since 1957



TR-525S SIPHON RAIN GAUGE TIPPING BUCKET

TEXAS ELECTRONICS, INC.

5529 Redfield St. Dallas, TX 75235

P.O. Box 7225 Dallas, TX 75209

Phone (214) 631-2490

Fax (214) 631-4218

Toll Free (800) 424-5651

Siphoning Rain Gauge Tipping Bucket - TR-525S Rainfall Sensor



The Texas Electronics, Inc. TR-525S Siphoning Rainfall Sensor is a remote tipping bucket style rain gauge that measures the amount of liquid precipitation with a unique siphoning technique that allows for a wide range of accuracy.

The Rain Gauge is a freestanding receptacle for measuring precipitation. It contains an open top, which allows rainfall to fall into the upper portion, which is called the collector. Collected water is funneled to a mechanical device (tipping bucket). The precipitation is then siphoned into a tipping mechanism which regulates the flow. The tipping mechanism then incrementally measures the rainfall accumulation and causes a momentary closure of a switch. As water is collected, the tipping bucket fills to the point where it tips over. This action empties the bucket in preparation for additional measurement. Water discharged by the tipping bucket passes out of the rain gauge with no need for emptying.

Features

- Unique Siphoning technique allows a wide accuracy
- Easy installation and maintenance
- Over 30 years in production
- All Aluminum Exterior
- Integral Bubble Level

Installation & Maintenance

Installation consists of attaching the three sensor support legs to a firm platform (such as our MB-525 Mounting Base). Pole mounting on the mast of a weather station is available by securing to the included side bracket.

Maintenance consists of routine cleaning of debris from the filter screen, and occasional calibration verification with our FC-525 Field Calibration Kit.

Specifications

Resolution:	0.01" English
Accuracy:	1.0% up to 12"/hr
Operating Temp:	32 to 125° F (0 to 50° C)
Storage Temp:	-40 to 160° F (-40 to 70° C)
Humidity Limits:	0 to 100%
Weight:	5.0 lbs. 7 lbs. shipping
Height:	15" >4" (50 mm) splash out protection
Cable:	25', 22 gauge 2 conductor
Siphon starting threshold	< 0.01"
Switch:	Momentary Potted reed switch
Switch Closure Time:	135 ms
Bounce Settling Time:	0.75 ms
Pivot:	Hardened SS Jewel & Pivot
Bucket:	Black ABS injection molded
Level:	Integral Bubble Level
Warranty:	3 years
Ordering Information	

Model #	Description
TR-525S	Rain Gauge, Siphon, 8.00" collector

Optional Parts / Accessories

MB-525	Pole Mounting Base
FC-525	Field Calibration Kit
BB-525	Bird Repellant Apparatus
HT-525	Heater, 120 VAC
Cable	Additional Cable

MODEL 525S

TIPPING BUCKET RAIN GAUGE TRANSMITTER

INSTALLATION INSTRUCTIONS

Rain gauges should be installed on a level plot of ground, at a distance from any object of at least two and preferably four times the height of the object above the top of the gauge. All types of gauges must be exposed with the rim of the receiver in a horizontal plane and at a level well above the average level of snow surfaces. Roof-mounting of rain gauges should be avoided when possible. Air currents at heights other than at ground level have been observed to cause an apparent decrease in rainfall catch commensurate with the increase in mounting height above ground level.

Objects which individually or in small groups constitute a "windbreak" reduce prevailing wind speed in the vicinity of the gauge. This reduction of wind speed will, as a consequence, also reduce possible eddy currents and turbulence around the gauge. The presence of such objects is usually beneficial in providing a more accurate rainfall catch. Ideally, the "windbreak" objects (fences, bushes, etc.) should be generally uniform in height and distance from the gauge. Height above the gauge should not exceed about twice their distance from the gauge. The funnel and tipping bucket mechanism should be cleaned periodically. An accumulation of dirt, bugs, etc. on the tipping bucket will adversely affect the calibration.

Accessories:

Model MB-525 mounting base

Model FC-525 field calibration kit.

FIELD CALIBRATION

TR-525S

Absolutely accurate calibration can be obtained only with laboratory equipment, but an approximate field check can be easily made. The tipping bucket mechanism is a simple and highly reliable device. The transmitter must be located in a clear area, away from trees, buildings, etc. It must also be mounted level. Accurate readings will not be obtained unless the transmitter is mounted in a level position. The mechanism must be clean. Any accumulation of foreign material, dust, etc. will alter the calibration of this unit. The transmitter must be calibrated with the rate of flow of water through the tipping bucket mechanism under control.

The model TR-25S has been calibrated at a rate of 2 inches per hour, this means that 823.6 ml of water is metered through the tipping assembly in 30 minutes and the amount of tips should be 100, represent 1 inch of rainfall.

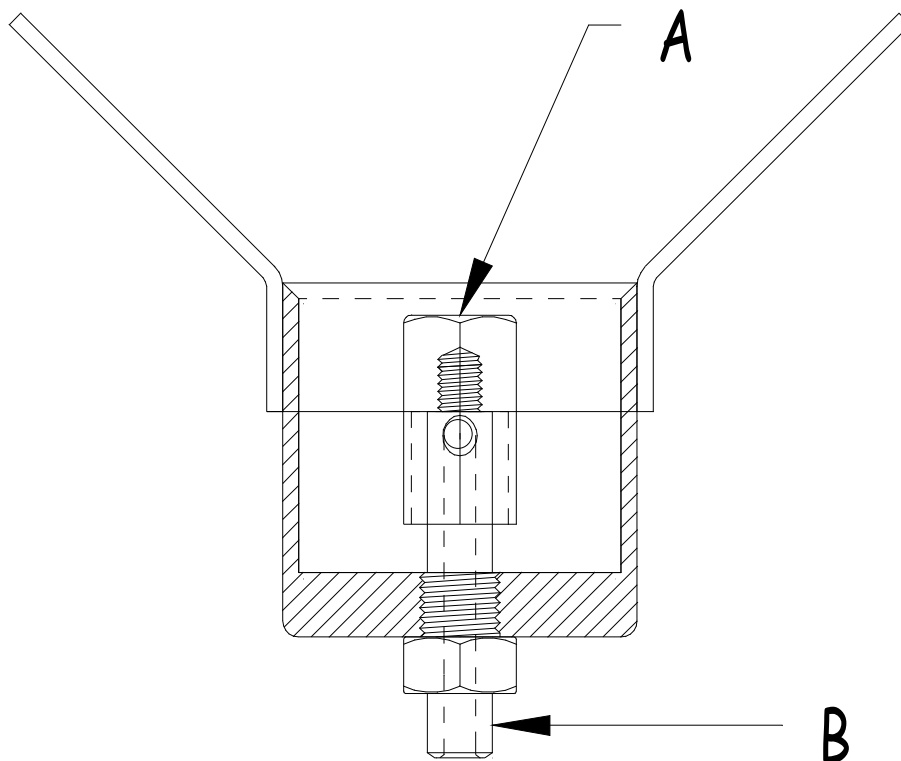
TO CHECK CALIBRATION:

1. Obtain a plastic or metal container of at least one quart capacity. Place a very, very small hole in the bottom of the container.

2. Place the can in the top funnel of the transmitter.
3. Pour exactly 825 ml of water into the can. Each tip of the bucket represents 0.01" of rainfall (8.25 ml/tip).
4. If it takes less than 30 minutes for this water to run out, then the hole (Step 1) is too large.
5. Rough field calibration of this sort should result in one hundred tips plus or minus two, or at the most, three.
6. Adjusting screws are located on the bottom outside of the transmitter housing. These are the two screws located adjacent to the large bottom center drain. Adjust both equally, i.e. if you turn one a half turn, then turn the other a half turn in the same direction. Turning these screws clockwise will increase the number of tips per 825 ml of water. Turning the screws counter-clockwise will decrease the number of tips 825 ml of water. One half turn of both screws normally results in a change of 2% to 3%.

Model TR-525S

Instructions for Cleaning Siphon Assembly



1. Remove Both Screens
2. Using a 7/16" Hex Nut Driver Remove Cap (Fig. A.)
3. Using a 7/16" Hex Nut Driver Remove Stem (Fig. B.)
4. Clean Main Drip Hole and The Cross Hole Until All Dirt Debris is Removed. Blow Out With Air Hose if Possible.

- Both Holes are 1/8" Dia. So You May Use A 1/8" Drill Bit As A Cleaning Rod.
- (DO NOT REMOVE ANY METAL)**
5. Re-Assemble, Stem First and Then The Cap Last, Making Sure Both Parts Are Seated All The Way Down and Not Cross Threaded.
 6. Re-Install Screens.

Warranty

Texas Electronics, Inc. (hereafter TEI) warrants the equipment manufactured by it to be free from defects in material and workmanship. Upon return, transportation charges prepaid to TEI, within three (3) years of original shipment of sensors and one (1) year of original shipment of electronics, recorders and indicators, TEI will repair or replace, at its option, any equipment which it determines to contain defective material or workmanship, and will return said equipment to purchaser, F.O.B., TEI. Texas Electronics shall not be obligated however to repair or replace equipment which has been repaired by others, abused, improperly installed, altered or otherwise misused or damaged in any way. TEI will not be responsible for any dismantling, re-assembly, or reinstallation charges.

This warranty is in lieu of all other warranties, expressed or implied. TEI shall not be liable for any special, indirect, incidental or consequential damages claimed in connection with any rescission of this agreement by purchaser.

For a list of specific items covered by the extended warranty, see the *Three-Year Warranty Equipment List*.

Three-Year Warranty Equipment List

Effective February 1, 1992 all of Texas Electronics, Inc. sensors will carry a Three-Year warranty instead of the previous One-Year. The remainder of terms and conditions of the warranty remains unchanged. A specific list of items follows.

Sensors Covered by Three-Year Warranty

Parameter	Model No.
Wind Direction	TD-105 (Synchro) TD-104D (Potentiometer) TD-110-L2 (Photo-Chopper) TD-106 (Potentiometer)
Wind Speed	TV-110-L2 (Photo-Chopper) TV-110-L3 (Photo-Chopper) TV-114 (A.C. Generator)
Barometric Pressure	TB-2012
Relative Humidity	TH-2013 TH-2013V
Rainfall	TR-525 TR-6118
Temperature	TT-101 (Outdoor) TT-103R (Surface Mount) TT-103R-W (Water Probe) TT-309I (Indoor)
Solar Radiation	TS-100

Systems Covered by Three-Year Warranty

Model No.	Description
WSC-5-S	Wind Speed Controller Single Set Point
WSC-5-ST	Wind Speed Controller Single Set Point with Time Delay
WSC-5-D	Wind Speed Controller Dual Set Point
WSC-5-DT	Wind Speed Controller Dual Set Point with Time Delay
WDC-2	Wind Direction Controller