

**RAIN GAUGE INSTRUCTION MANUAL
FOR MODELS 2500 AND 2500-12****1.0 INTRODUCTION****1.1 GENERAL DESCRIPTION**

The Model 2500 Rain Gauge is of Canadian manufacture and design. It is made of the highest quality materials to ensure years of trouble-free operation when properly installed and maintained. The basic gauge comes in two orifice sizes, 8" and 12" diameter, and consists of a funnel and a tipping bucket assembly mounted on a base. When used as a snow gauge the unit also includes an electric or propane heater assembly.

1.2 SPECIFICATIONS

Orifice Diameter:	8" standard, 12" optional
Mounting:	8" gauge; 4 Mounting pads, 1/4" diameter bolt holes on 8 1/2" diameter bolt circle. 12" gauge; 4 Mounting pads, 1/4" diameter bolt holes on 12 13/16" diameter bolt circle.
Calibration:	.01" Standard Optional: .2mm .25mm .5mm (1mm on 8") .1mm is a custom option
Accuracy:	± 3% over 0 to 6"/hour + .5% at 1/2 ml/second.
Switch Closure:	Standard: approx. 0.1 second magnetically operated reed
Switch:	Proximity switch, 3W, 28VAC

1.2 OPTIONAL ACCESSORIES

2525 Wind Shield
2525A Wind Shield, NWS Alder Type
2525 Event Recorder, Drum Chart
XT-109 Internal Data Logger, 32,000 readings

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2.0 INSTALLATION

2.1 SITE REQUIREMENTS

Siting the Gauge is important and careful consideration should be made to the quality of precipitation catch prior to installing the gauge.

2.1.1 Protected Sites:

When objects, which constitute obstructions, are numerous and are so extensive that the prevailing wind speed, turbulence and eddy currents have been reduced in the vicinity of the gauge, the presence of such objects is usually beneficial in providing a more accurate catch. The best exposures are often found in orchards, openings in a grove of trees, bushes or shrubbery, or where fences or other objects serve as an effective windbreak. As a general rule, in areas where the heights of the objects and their distance from the gauge is generally uniform, their height above the gauge should not exceed twice their distance from the gauge. Good exposure sites are not always permanent. The growth of vegetation and man-made alterations to the surroundings may change an excellent exposure to an unsatisfactory one in a short time.

2.1.2 Open Sites:

In open areas, individual or small groups of isolated objects near a gauge may set up serious eddy currents. As a general rule the height of such objects above the gauge should not exceed half their distance from the gauge. Since it is not always possible to select sites which provide adequate protection from adverse wind effects, an open site away from isolated objects may be the only location available.

2.1.3 Wind Shields:

Wind shields help to minimize loss in precipitation catch. Wind effects on catch losses are much greater during snowfall than rainfall. Windshields are not usually required at sites where snowfall constitutes less than 20% of the mean annual precipitation.

2.1.4 Towers:

In areas where heavy snowfall occurs, gauges are mounted on supports or towers at a height well above the average level to which snow accumulates; note however, that this exposure would be better if the tower were located in an area of trees of comparable height.

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2.2 RAIN GAUGE SET-UP

The 2500 is shipped complete. Please remove the bucket restraint when unpacking the gauge. The gauge must be mounted level on a platform or tower. Four mounting brackets are provided on the gauge for this purpose. The holes in the mounting brackets are sized for 1/4 inch diameter mounting bolts.

For the correct measurement of precipitation the open end of the gauge must be on a horizontal plane. This can be checked by checking the bubble level on the gauge, or by laying a carpenter's level across the open top of the gauge in two directions; one crossing the other at right angles. If the top is not level in both directions the condition should be corrected. Washers can be used as leveling shims underneath the mounting brackets on the gauge.

When the gauge is properly mounted, remove the cover. The tipping bucket assembly has been secured at the factory to maintain calibration during shipment and installation. Remove the tape or elastic band and tip the bucket assembly gently by hand. The buckets should tip easily and without friction.

3.0 OPERATION

Precipitation entering the collection orifice fills the calibrated tipping bucket assembly. When the calibrated amount is collected, the bucket tips, causing a momentary closure of the reed switch and in turn sends an electrical signal to the event recorder or other means of data collection.

3.1 CALIBRATION

The gauge is calibrated at the factory and recalibration should not be necessary unless damage in shipment or mishandling during installation has occurred.

3.1.1 Calibration Check

Using a graduated cylinder or calibrated burette.

First allow water to flow into the funnel and tipping bucket, wetting gauge. This gauge must be calibrated wet.

Second, allow exactly 5 or 6 times the correct amount of water (refer to Table 1) to pass through the funnel to the tipping bucket at the specified flow rate of 1/2 ml per second. This 1/2 ml per second flow rate implies the water is flowing at a fast drip, not a steady stream.

The bucket should tip 5 or 6 times within tolerance. This implies that you may have to add or remove up to 3% of the correct amount of water for one tip multiplied by the number of tips expected.

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TABLE 1

STANDARD CALIBRATION QUANTITIES

2500-8	@	.01"	Cal.:	8.24 milliliters
2500-8	@	.05"	Cal.:	41.2 milliliters
2500-8	@	.2mm	Cal.:	6.48 milliliters
2500-8	@	.5mm	Cal.:	16.215 milliliters
2500-12	@	.01"	Cal.:	18.53 milliliters
2500-12	@	.2mm	Cal.:	14.6 milliliters
2500-12	@	.5mm	Cal.:	36.48 milliliters

Note: Flow rate for calibration: 1/2 ml per second.
This implies a fast drip, not a steady flow.

3.1.2 Calibration Check, Field Method

First allow water to flow into the funnel and tipping bucket, wetting the gauge. This gauge must be calibrated wet.

If an accurate liquid measuring device, such as a calibrated burette or a graduated cylinder is not available, the calibration can be checked by pouring a known amount of water at the specified flow rate (refer to Table 1) through the funnel to the tipping bucket.

Total number of tips should equal amount poured in (expressed in milliliters; 1 quart = 946.3 milliliters) divided by the calibration quantity indicated in milliliters in Table 1. If the number of tips is incorrect, the unit needs to be recalibrated. Note: The field method is only as accurate as the device(s) used to measure water and control flow rate.

3.1.3 Calibration

To recalibrate the gauge the following procedure should be followed.

Release the lock nuts on the calibration screws that the bucket rests on.

Tip the bucket manually in both directions to empty buckets. Do not wipe buckets dry.

Observing the proper flow rate, pour water through the inner funnel into the bucket and note how much water it takes to make the bucket tip.

If it takes more than the correct amount of water to tip the bucket then the calibration screw for that side of the bucket needs to be adjusted upwards so that it will take less water to tip the bucket.

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If it takes less water than the correct amount to tip the bucket then the calibration screw for that side of the bucket needs to be adjusted downwards so that it will take more water to tip the bucket.

Do not wipe water from bucket in between tips.

Once the correct height for each calibration screw has been determined, carefully tighten the lock nuts without changing the position of the calibration screw.

After tightening both calibration screws, check calibration again.

4.0 MAINTENANCE

A minimum of maintenance should be required throughout the life of the gauge. If the paint becomes scratched, matching paint is available from the factory.

Most stations are serviced annually; in heavily forested areas or where airborne debris is a consideration, this should be done more often. The bucket assembly and drains should be checked to make sure they are clean and free from obstructions. The tipping bucket and the inner funnel should be carefully wiped clean. The calibration should be checked.

Check the switch closure. The standard switch closure is momentary SPNO contact. Connect an ohmmeter to gauge at the terminal strip. With the bucket at rest on one of the calibration screws, the ohmmeter should read infinite resistance. Slowly move the bucket simulating the tipping motion, until contact closure is made, taking note of the angle of the bucket at this point. The resistance of the contacts should be less than 1 ohm. Allow tipping bucket to complete tip to rest on other calibration screw, the ohmmeter should read infinite resistance.

After replacing cover, confirm that the gauge is still level.

5.0 TROUBLESHOOTING

Always perform the following first: check the cable connections to ensure a solid connection. Also check to see that the bucket moves freely on the pivot screws. Make sure the magnet is securely in place on the bucket. Check to ensure proper contact closure.

If the unit registers low or does not register anything during precipitation, check for debris in inlet funnel and drains which can affect bucket movement. If the unit registers high during precipitation, check the level bubble indicator to ensure sensor is properly installed and leveled. Recheck calibration.

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If it becomes necessary to return the instrument to the factory for any reason, call Sierra-Misco at:

Victoria, B.C. Canada Phone (604) 381-4452 Fax (604) 381-5414
Sacramento, CA U.S.A. Phone (916) 363-4271 Fax (916) 363-1886

between 9:00 AM and 3:00 PM (Pacific Standard Time) . Ask for a Return Authorization Number to be assigned to your instrument.

Carefully pack the instrument so that it will not be damaged in shipment and write the Return Authorization Number on the box and all paperwork included in the box with the instrument. Please write a detailed description of the problem and under what conditions it failed (or other reason for return) and include it with the instrument.

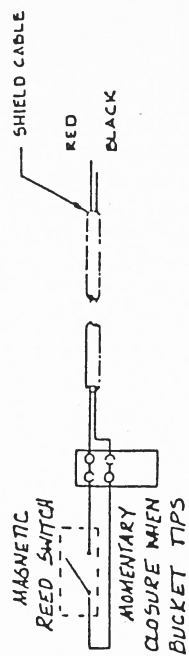
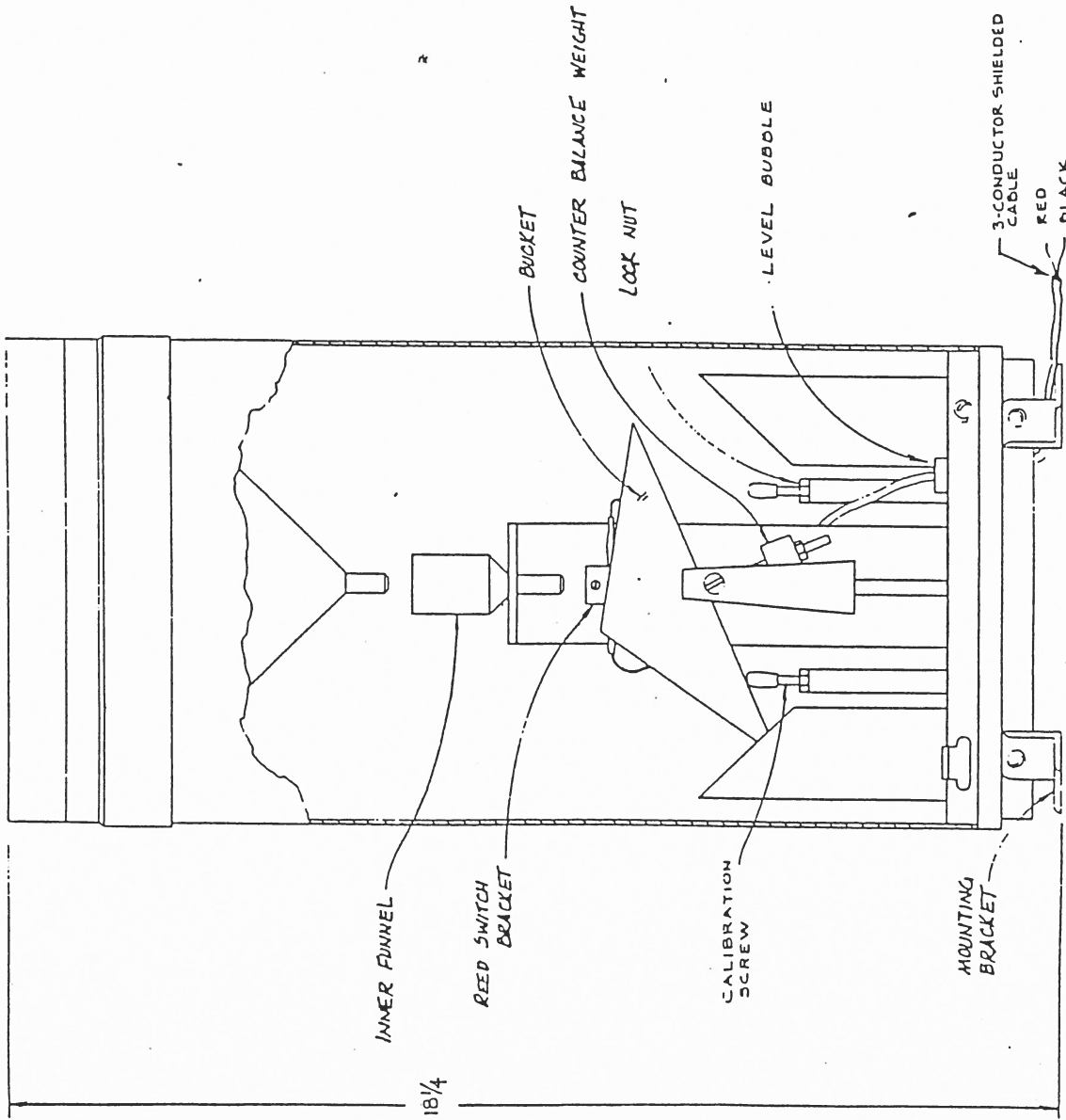
6.0 SPARE PARTS LIST

MODEL	DESCRIPTION
2500	Conversion to: Barrel SN#1550; Tube SN#1625
SP2500-C1	Cover(8") Serial #1624 & down
SP2500-C3	Cover(8") Serial #1625 & up
SP2500-C2	Cover(12") Serial #1624 & down
SP2500-C4	Cover(12") Serial #1625 & up
SP2500-CT	Collection Tube, each
SP2500-CP	Calibration Posts, two
SP2500-F1	Funnel(8")
SP2500-F2	Funnel(12")
SP2500-F3	Inner Collection Funnel
SP2500-L	Leg cost each
SP2500-MA	Magnet
SP2500-R1	Collar(8")
SP2500-SCT	SS Bug Screen for Funnel(8" or 12" dia. screen)
SP2500-SCB	SS Bug Screen for Base (8" or 12" dia. screen)
SP2500-SU	Bckt Spprt,Cast,pvt scrs Serial #1624 & down
SP2500-SU2	Bckt Spprt,Tube,pvt scrs Serial #1625 and up
SP2500-1	Reed Switch with Bracket Approx Ser. #1549 & down
SP2500-2	Mercury switch/bracket
SP2500-4	Reed Switch,plastic,barrl Approx Serial #1550 & up
SP2500-5,6	Bucket assembly 8" .2,.5 (mag,buc,jew,wgt)
SP2500-7,8	Bucket assembly 12".2,.5 (mag,buc,jew,wgt)
SP2500-9	Levelling device
SP2500-10	Calibration screw tips(2)
SP2500-13	Cover assembly 8" (fun,col,scrs,cov,lch) Ser.#1624down
SP2500-13B	Cover assembly 8" (fun,scrs,cov,lch) Serial #1625 up
SP2500-14	Cover assembly 12" (fun,scrs,cov,lch) Ser. #1624 down
SP2500-14B	Cover assembly 12" (fun,scrs,cov,lch) Serial #1625 up
SP2500-17	Screens 8",upper & Lower
SP2500-18	Screen 12",ukper & Lower
SP2500-19	Counter weight
SP2500-21	Pivot screw set(2)
SP2500-22	Jewel Bearing set(2)

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SIERRA MISCO

SCALE: HALF	APPROVED BY: /	DRAWN BY: WJMG
DATE: 1-03	REVIEWED: rjg	
2500 HAIN CAGE ASSY DIAG		
DRAWING NUMBER		B102360

2500 MOUNTS ON 6 7/16 DIA BOLT CIRCLE
 2500-12 MOUNTS ON 12 3/8 DIA BOLT CIRCLE