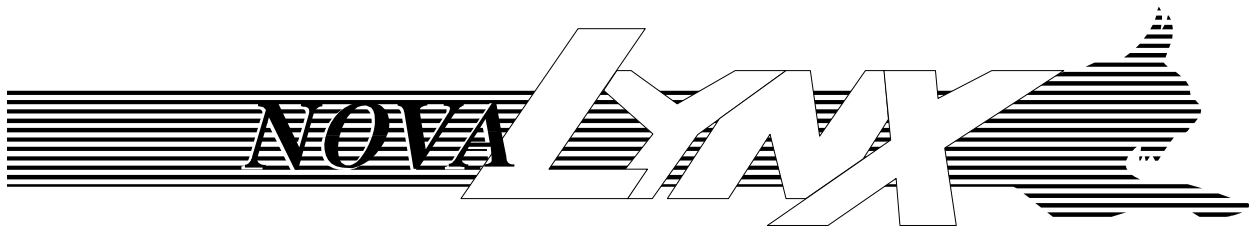


NOVALYNX CORPORATION

MODEL 260-2510
STANDARD RAIN AND SNOW GAUGE

INSTRUCTION MANUAL



Receiving and Unpacking

Carefully unpack all components and compare to the packing list. Notify NovaLynx Corporation immediately concerning any discrepancy. Inspect equipment to detect any damage that may have occurred during shipment. In the event of damage, any claim for loss must be filed immediately with the carrier by the consignee. Damages to equipment sent via Parcel Post or UPS require the consignee to contact NovaLynx Corporation for instructions.

Returns

If equipment is to be returned to the factory for any reason, call NovaLynx between 8:00 a.m. and 4:00 p.m. Pacific Time to request a Return Authorization Number (RA#). Include with the returned equipment a description of the problem and the name, address, and daytime phone number of the sender. Carefully pack the equipment to prevent damage or additional damage during the return shipment. Call NovaLynx for packing instructions in the case of delicate or sensitive items. If packing facilities are not available take the equipment to the nearest Post Office, UPS, or other freight service and obtain assistance with the packaging. Please write the RA# on the outside of the box.

Warranty

NovaLynx Corporation warrants that its products are free from defects in material and workmanship under normal use and service for a period of one year from the date of shipment from the factory. NovaLynx Corporation's obligations under this warranty are limited to, at NovaLynx's option: (i) replacing; or (ii) repairing; any product determined to be defective. In no case shall NovaLynx Corporation's liability exceed product's original purchase price. This warranty does not apply to any equipment that has been repaired or altered, except by NovaLynx Corporation, or that has been subjected to misuse, negligence, or accident. It is expressly agreed that this warranty will be in lieu of all warranties of fitness and in lieu of the warranty of merchantability.

Address

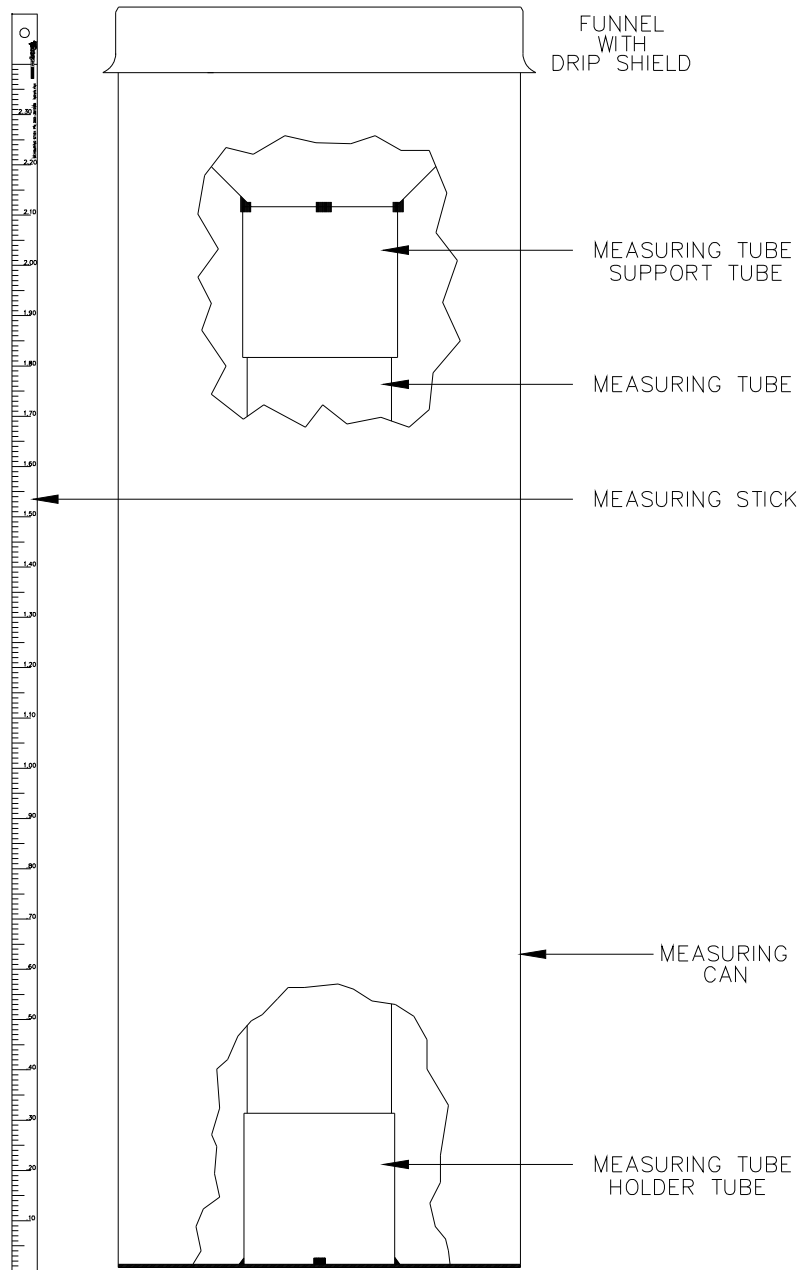
NovaLynx Corporation
4055 Grass Valley Highway, Suite 102
Auburn, CA 95602
Phone: (530) 823-7185
Fax: (530) 823-8997
Email: nova@novalynx.com
Website: www.novalynx.com

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MODEL 260-2510 EQUIPMENT CONFIGURATION AND IDENTIFICATION



NovaLynx Corporation

Model 260-2510 Standard Rain and Snow Gauge Instruction Manual

1.0 INTRODUCTION

NovaLynx Corporation manufactures a National Weather Service style Standard Rain and Snow Gauge, Model 260-2510. The NovaLynx gauge differs from an actual NWS gauge in some of the design features and materials used. The Model 260-2510 is constructed entirely of aluminum with the exception of the measuring stick. The total capacity of the gauge is twenty inches of rainfall.

Rain is collected by the gauge's eight-inch diameter funnel and is directed into the measuring tube. The diameters of the funnel and measuring tube and the capacity of the tube have been set to give a maximum of two inches of rainfall before the tube overflows into the larger measuring can. The measuring can also acts as the body of the rain gauge.

Water collected by the inner collection tube is easily measured by using the measuring stick as a dip stick. The amount of rainfall collected is read directly from the measuring stick scale.

Whenever rainfall overflows into the measuring can, the reading is more involved. Water is poured from the measuring can into the smaller measuring tube and the reading is then made using the measuring stick. This process is repeated until all of the water inside the large tube has been measured. Care must be used to avoid any loss of the water during the pouring process.

Snow may also be measured by the gauge. The funnel and the measuring tube are removed during the snow season. Snow is collected using the measuring can tube only. After each snow storm, the snow is melted and then measured as if it were overflow rain water.

The measuring stick is made of black plexiglass and has units of inches on one side and units of millimeters on the other side. Resolution of the measuring stick is 0.01 inches and 0.25 millimeters. The measuring stick is Model 260-2510MS

A galvanized steel stand is available for mounting the rain gauge off the ground. The stand is also manufactured by NovaLynx and is Model 260-2510S.

2.0 SPECIFICATIONS

The following specifications are for the NovaLynx Standard Rain and Snow Gauge, Model 260-2510.

Collection orifice:	Aluminum funnel
Orifice diameter:	7-7/8 inches (200 mm)
Measuring tube:	Aluminum tube
Tube diameter:	2 inches (50 mm)
Measuring can:	Aluminum Tube
Can diameter:	8 inches (200 mm)
Can capacity:	20 inches (500 mm)
Measuring stick:	Black plexiglass
Units of measure:	Inches & millimeters
Resolution:	0.01 inches (0.25 mm)
Finish:	White powdercoating and black anodizing
Overall size:	8" Dia x 27" High (200 x 686 mm)
Gauge weight:	7 lbs (3 kg)
Shipping weight:	8 lbs (4 kg)
Stand weight:	8 lbs (4 kg)
Stand shipping weight:	10 lbs (5 kg)

3.0 INSTALLATION

3.1 Site Requirements

Correct placement of the gauge is critical to the operation of the gauge. Best operation occurs whenever the gauge is placed into an area with full or even partial blockage of the wind. High wind and eddy currents can cause poor catch in the vicinity of the gauge. Best local exposures are often found in orchards, openings in a grove of trees, bushes or other shrubbery. Fences and some other objects can act together to serve as an effective windbreak. The rule to follow is that the heights of the objects and the distances from the gauge must be uniform. The object's height must not be greater than twice the distance of the object from the gauge. Individual objects and small groups of objects can create eddy currents that will affect the gauge's catch.

Since site selection may be restricted, try to use an open area that is free of isolated objects. The use of rain gauge wind screens can help minimize the loss of precipitation catch at windy sites. Wind effects are much greater during snow storms than they are during rain storms. Rain tends to fall in a vertical fashion except in extremely high winds, whereas snow flakes swirl and ride the wind currents. Generally, wind screens are not used whenever snow constitutes less than twenty percent of the mean annual precipitation.

Good exposures may not always be permanent. The growth of local vegetation can change a site's characteristics rather quickly. If possible try to maintain a clear area around the rain gauge.

Locations with heavy snowfall may require that the gauge be mounted above the normal snow level. This usually means mounting the gauge onto a tower, elevated platform, or onto a pole. Try to use an elevated support that is within a wind break made of trees. The trees should be at least the height of the top of the support.

Remote gauge locations should have security measures such as perimeter fencing with locked gates to help prevent vandalism and to protect the catch until the readings can be recorded by the station operator. If necessary, the gauge can be painted to blend in with its surroundings to help conceal its location.

3.2 Installing the Gauge

The easiest and quickest method of installing the rain gauge is to set it onto a stable and flat, level surface. This is typical of rain gauges that are used on private property where access to the gauge is restricted and the operator is close by most of the time.

If necessary, a brace or support arm can be provided by the installer to help prevent the gauge from tipping over during high winds. The gauge is more susceptible to falling over when it is empty.

The second most common method of installing the gauge is by using the mounting stand, Model 260-2510S. The stand is a galvanized steel frame with three legs and two support rings. The legs have foot tabs that are bent for placement onto a flat surface. The feet have bolt holes that allow the stand to be anchored to its support structure. The support structure can be a concrete pad, a metal plate, or even a wooden platform. Use a support that is best for the site. The diameter of the anchor bolt holes is 9/32".

The rain gauge stand is shipped in pieces. Using the three bolts that are 1/2 inch in length, bolt the tops of the legs to one of the rings. Leave the bolts slightly loose until the entire frame is bolted together. The ring holes are threaded for 1/4-20 bolts.

Take the three bolts that are 1 inch in length and attach the second ring to the bottom holes in the three legs. The bottom holes are located just above the bends in each leg. The ring bolt holes have been tapped so that nuts do not need to be used. The one inch bolts provide the seat for the rain gauge. Tighten all of the bolts before placing the gauge into the stand.

For extremely severe weather location, additional support can be implemented by using steel cables to help anchor the stand to the support structure. Attach and anchor the cables in the same manner as tower guy wires.

Place the rain gauge into the stand. Remove the funnel and inspect the inside of the gauge. Check to make sure that the measuring tube has been seated into its guide tube

properly. Also check to see that all foreign materials such as packing foam have been removed from the gauge. Replace the funnel. Notice that a short length of tube is welded onto the funnel. This tube helps guide the funnel into the measuring tube and helps prevent rain from splashing out of the measuring tube.

Check the rain gauge plumb. Use a Carpenter's level if possible. Place the level across the top edges of the funnel. The level's bubble should be centered for best gauge performance. If the gauge is not level, place washers or shims under the stand feet until the gauge is level. Recheck the level after each washer is put in place. For extremely uneven sites, use threaded rods as the anchor bolts. By placing double sets of hex nuts and washers on each rod, the gauge can be leveled with greater ease. The hex nuts should be placed so that one is above and one is below each stand foot tab. Three additional hex nuts can be used to lock each leveling nut into place after the gauge has been leveled. This extra nut will prevent loosening of the leveling nuts by wind induced vibrations. All of the stand hardware has been designed for 1/4-20 bolts.

The measuring stick is shipped inside the rain gauge for convenience. Remove the measuring stick from the rain gauge and store it near the gauge if possible. The measuring stick should be protected from the weather and from long term exposure to sunlight. If no storage facility is available at the rain gauge location, be sure to transport the measuring stick each time the site is visited for measurement recording and for testing and maintenance of the gauge. In some cases it may be convenient to order extra measuring sticks and to have them available at several locations.

4.0 THEORY OF OPERATION

Rain gauge measurements have been defined by the U.S. Weather Bureau (now the NWS) and by international organizations as being proportional to the amount of water that covers an acre of level ground. For the Standard Rain and Snow Gauge the rainfall is measured in 0.01" increments or in 0.25 mm increments. The definition of the rain measurement and historical practices require that the gauge have a collection orifice with an eight inch diameter. Knowing this, the measuring tube and the measuring stick can be sized and calibrated to produce a resolution of 0.01" and 25 mm.

For the Model 260-2510, the measuring tube surface area has been calculated to be one tenth that of the eight inch funnel. The length of the tube has been selected to allow a maximum collection and measurement of two inches of rain. This size was selected to cover most light and moderate rain storms. For areas that receive larger amounts of rain and for long term measurement, the outer can was included to catch and store the rain that overflows from the internal collection tube. The outer tube capacity allows the gauge to measure a total catch of twenty inches (500 mm) of precipitation.

Using the magnification factor of the measuring tube, the measuring stick has been marked so that each inch of length represents one tenth (0.1) inches of rain. This enables each one tenth inch length of the measuring stick to indicate one-hundredth (0.01) inch of rain.

Winter precipitation in the form of snow and sleet can be measured as well. Removal of the funnel and internal tube allows the frozen precipitation to collect inside the larger measuring can. After each storm, the frozen precipitate is melted and measured by pouring it into the measuring tube. Ethylene glycol may be added to the gauge during winter months to help prevent splitting of the tube due to the expansion of the freezing water. Remember to keep track of the amount of glycol added to the gauge and subtract that amount from each reading.

To install the gauge for measuring snowfall or when freezing temperatures are likely to occur, remove the orifice funnel and inner measuring tube and store these in a convenient place. Use the outer cylinder to catch the snow and any other precipitation.

Note: If water should freeze inside the measuring tube, the tube may split and will become useless and will void the warranty.

5.0 READING A GAUGE

The following procedure has been included to itemize the method used to take a rainfall measurement. Use this procedure as a guide until use of the gauge becomes routine.

1. Before the onset of a storm, clean out all debris, dirt, leaves, insects, etc. from the funnel and collection tubes. Rinse the parts of the gauge with clean water before putting the pieces together.
2. Allow the gauge to collect the precipitation from the storm. During long term rainfall, visit the gauge during the storm to prevent loss of data due to water escaping from the outer collection tube of the gauge. This is only a problem in areas that experience more than 20 inches of rain in a season. A second overflow container may be placed under the rain gauge if needed.
3. After the storm has ended, visit the rain gauge site. Remove any debris from the funnel. Allow any drops of water in the funnel to drop into the measuring tube.
4. If the water is in the measuring tube only, tap the tube gently to get any drops on the inside edges of the tube to fall into the collected water.
5. If there is water inside both collection tubes, carefully raise the measuring tube allowing any water clinging to its outside surfaces to drop into the measuring can. Place the measuring tube onto a level surface.
6. Place the measuring stick into the measuring tube. Lower the stick into the tube until it just contacts the bottom surface of the tube. Try to avoid pressing downward on the stick causing it to bow or flex. Lift the stick out and read the water mark. Take a second reading if necessary.
7. To prevent loss of data, it may be desirable to empty the contents of the measuring tube into a bucket or another container, saving the water until all

readings have been completed for that visit. This is especially true if there is water inside the measuring can and more than one measurement must be made in order to get the total rainfall amount.

8. Empty the water out of the measuring tube. Tap the tube or shake it to remove any excess water drops.
9. If there is any water inside the measuring can, it must be measured as well. Carefully pour the water from the larger tube into the smaller tube. If there is a large amount of water, pour only a portion of the water. Do not overfill the measuring tube. It is advisable to fill the measuring tube by placing it over or into a bucket to catch any spilled water. Measure the water inside the measuring tube. Add the amount to the storm total. Add any spilled water to the measurement.
10. Repeat steps 8 and 9 until all of the water has been measured and recorded.
11. If the measurements have been made correctly and the results have been recorded, the rain water may be dumped out unless it is saved for other purposes.
12. Wipe or shake out the excess water from the collection tubes. Dry off the measuring stick and store it away.
13. Place the measuring tube back inside the measuring can.
14. Place the funnel back onto the gauge.
15. Place the gauge back into its stand or onto its support structure.
16. For winter measurements use the same procedure. The measuring tube should not have any precipitate in it initially. If the precipitation is frozen inside the gauge, use a mild heat source to warm the exterior of the gauge to melt the water. Do not heat the gauge rapidly to avoid boiling off any of the water and to avoid damaging the metal container.
17. Record the data in the most desirable method. Taking storm totals may result in fewer site visits. Daily or weekly records may be required due to the type of study being conducted.

6.0 MAINTENANCE

Regularly scheduled maintenance visits to the rain gauge site will result in more accurate data and in longer life of the gauge. Site visits should be planned after every major storm for the purpose of removing debris deposited during the storm.

A site maintenance visit should include a quick visual inspection of the gauge and its support structure. The funnel of the gauge and the internal collection tube must be free of dents or any other alteration in the edges and surfaces of the parts.

All loose or missing fasteners must be tightened or reinstalled as required.

Check the support structure for damage that might cause the gauge to become unstable or out of plumb.

Always take clean water to rinse dirt, mud, leaves, insects and other debris out of the collection tubes and the funnel.

Use a bottle brush to clean out the funnel tip.

Repair any parts that have damage to the painted surfaces.

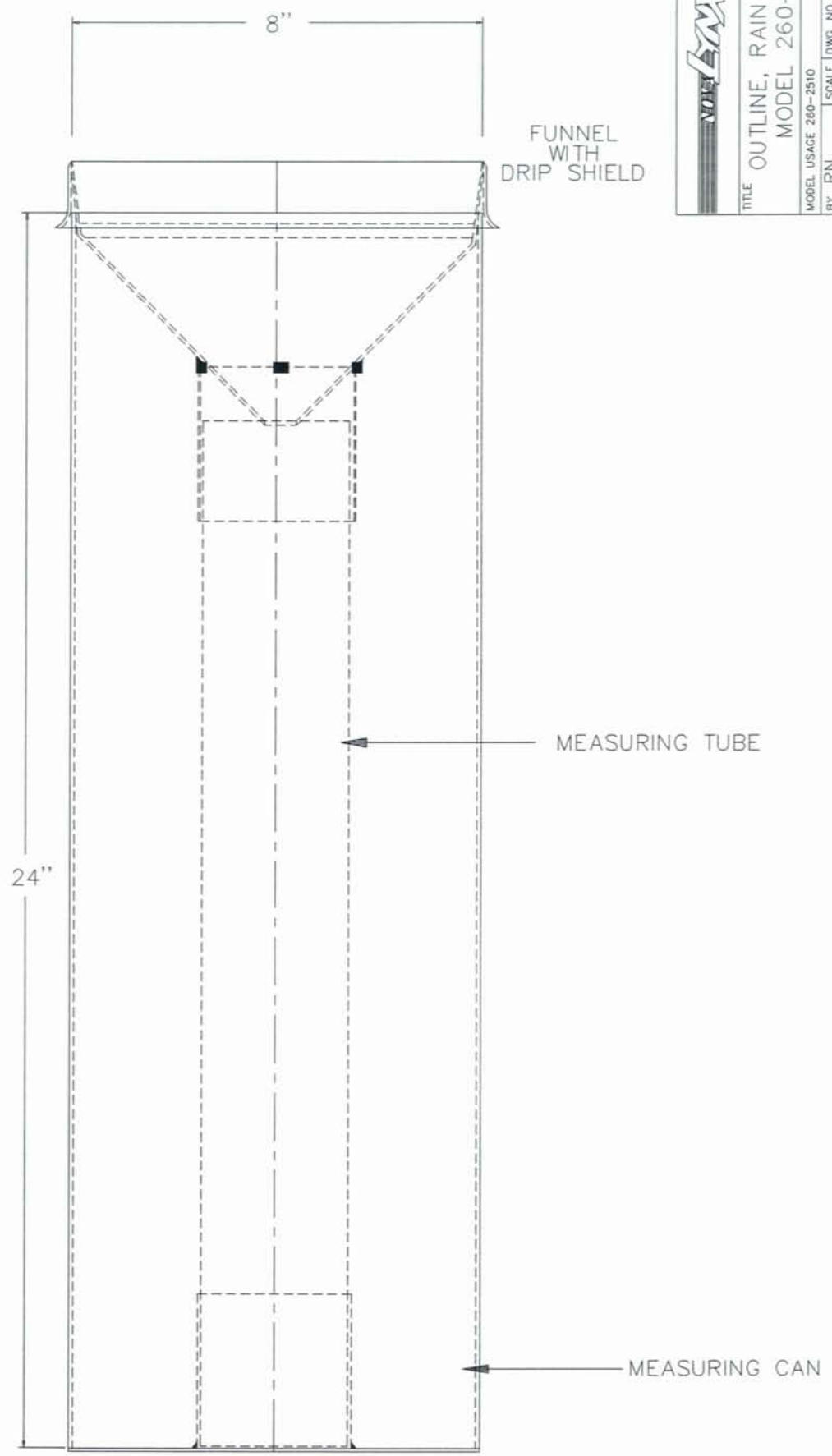
Remove any vegetation that has grown up around the rain gauge. Check for overhanging tree limbs, cables, or other item that may cause rain to collect on it and then fall into the gauge. If necessary move the gauge to a clearer position.

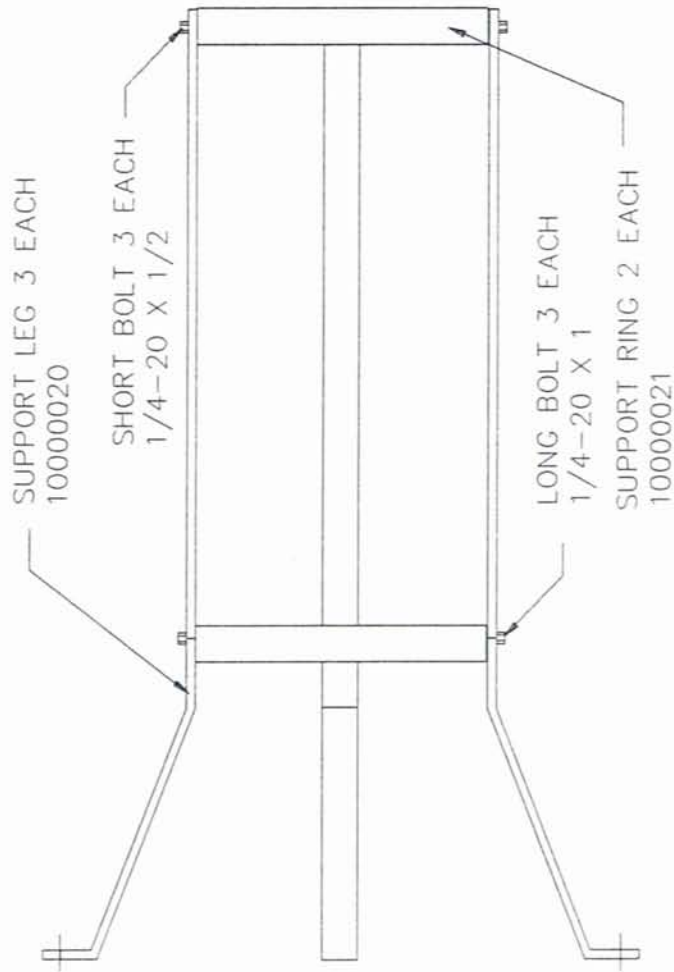
Contact NovaLynx for assistance in repairing or replacing any rain gauge parts.

7.0 DRAWINGS

Use the enclosed drawings to assist in the identification of parts, and in the installation of the stand and the gauge.

		D	
TITLE OUTLINE, RAIN GAUGE MODEL 260-2510			
MODEL USAGE 260-2510	SCALE	DWG. NO.	SHEET 1 OF 1
BY RN	DATE 4-12-95	1:1	10000254

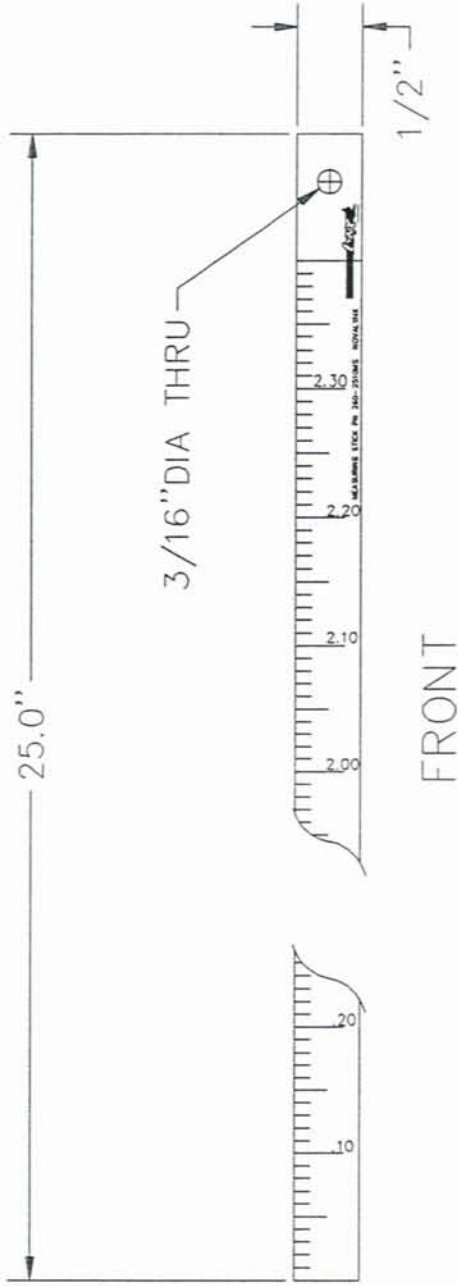




RAIN GAGE STAND MODEL 260-2510S

- NOTES - 1 RINGS ARE FOR 8 INCH DIAMETER RAIN GAGE.
 2. RAIN GAGE RECEIVER CAN RESTS ON 1" LONG BOLTS.

		C	
TITLE ASSEMBLY, STAND FOR 8 INCH NWS RAIN GAGE			
MOD. USAGE	260-2510S	SHEET 1 OF 1	
BY	RCN	SCALE	DWG. NO.
DATE	2-17-93	NONE	10000255



		C	
TITLE OUTLINE, MEASURING STICK MODEL 260-2510MS			
MODEL USAGE: 260-2510		SHEET 1 OF 1	
BY RCN	SCALE DWG. NO. 2.1	10000257	
DATE 4-28-97			

Daily Precipitation Log

Name _____

Obs. time _____ Year _____

Address _____

Section _____ Range _____

City State Zip _____

County _____

	Jan	Feb	Mar	Apr	May	Jun	Remarks - Severe Weather - Storm Damage
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
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26							
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28							
29							
30							
31							

Instructions: Try to record precipitation at the same time each day. Record precipitation to the nearest 1/100 of an inch (.01, .31, 1.31, etc.). If precipitation is less than .01", record "T" for trace. Use the remarks column to list any unusual or severe weather (i.e. Jan 2 blizzard, roads blocked for 2 days). For more information call NovaLynx at 800-321-3577 or 530-823-7185.

Daily Precipitation Log

Name _____ Obs. time _____ Year _____

Address _____ Section _____ Range _____

City State Zip _____ County _____

	Jul	Aug	Sep	Oct	Nov	Dec	Remarks - Severe Weather - Storm Damage
1							
2							
3							
4							
5							
6							
7							
8							
9							
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31							

Instructions: Try to record precipitation at the same time each day. Record precipitation to the nearest 1/100 of an inch (.01, .31, 1.31, etc.). If precipitation is less than .01" record "T" for trace. Use the remarks column to list any unusual or severe weather (i.e. Jan 2 blizzard, roads blocked for 2 days). For more information call NovaLynx at 800-321-3577 or 530-823-7185.