

HydroLynx Systems, Inc.

**Model 5054TS-E
Electrically Heated Top Section**

Instruction Manual



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Receiving and Unpacking

Carefully unpack all components and compare to the packing list. Notify HydroLynx Systems 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. If the equipment was shipped via Parcel Post or UPS, contact HydroLynx Systems for instructions.

Returns

If equipment is to be returned to the factory for any reason, call HydroLynx 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 during the return shipment. Call HydroLynx 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 packaging. Please write the RA# on the outside of the box.

Warranty

HydroLynx Systems 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. HydroLynx Systems' obligations under this warranty are limited to, at HydroLynx's option: (i) replacing; or (ii) repairing; any product determined to be defective. In no case shall HydroLynx Systems' liability exceed product's original purchase price. This warranty does not apply to any equipment that has been repaired or altered, except by HydroLynx Systems, 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

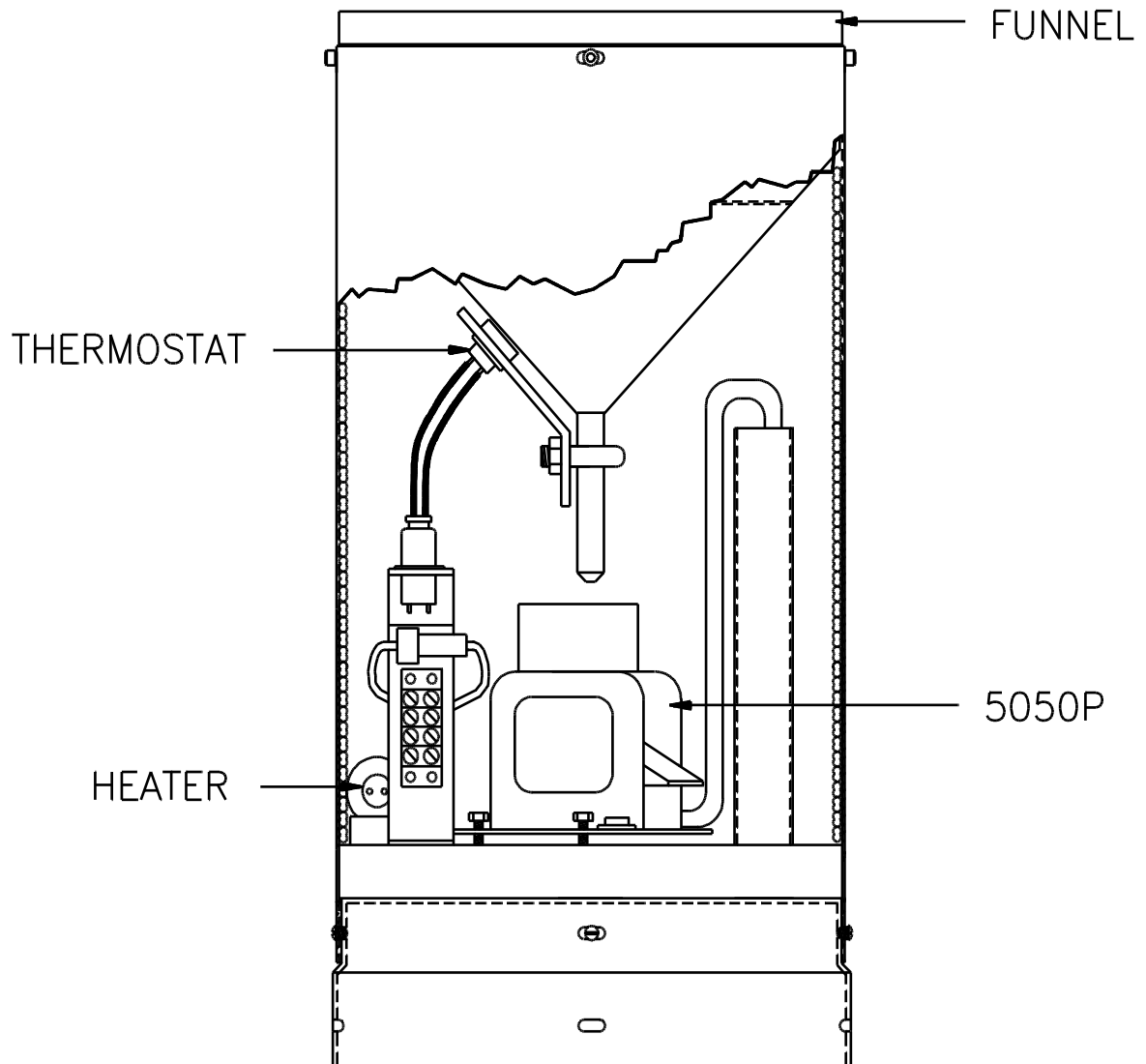
HydroLynx Systems, Inc.
950 Riverside Pkwy., Suite 10
West Sacramento, CA 95605
Phone: (916) 374-1800
Fax: (916) 374-1877
E-mail: hydro@hydrolynx.com

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Equipment Configuration and Parts Identification



TOP SECTION
(CUT AWAY VIEW)

MODEL 5054TS-E

1.0 INTRODUCTION

1.1 General Description

The Model 5054TS-E is an electrically heated, self-contained, rain gauge. The rain gauge has been designed for operation with the 5054 Self Reporting Rain Station that automatically reports precipitation data from remote locations back to a centrally located data gathering site. The 5054TS-E top section assembly consists of a Model 5054TS top section with a Model 5050P tipping bucket precipitation sensor, a 115 Vac powered heating element, and a thermostat. The Model 5054 package includes a standpipe section, a Model 5096 transmitter, interconnecting cables, and an antenna mast assembly. The standpipe section acts as the antenna tower and weather-proof housing for the transmitter.

The 5054TS-E is electrically heated to melt frozen precipitation, as it collects in the funnel, so that it can be measured as rainfall. The 5054TS-E includes a standard 5054TS with the addition of an electric heater mounted to the base of the top section and a thermostat mounted onto the funnel to regulate the heat. A bracket containing a terminal block provides a convenient method of attaching the power wiring to the heater element. An in-line fuse holder is also part of the bracket assembly. A short length of cable with a two prong connector attaches the thermostat to the heater.

1.2 Specifications

Height of orifice:	9' 8" above ground level
Height of omni antenna:	15' 4" above ground level
Material:	Aluminum and stainless steel
Transmitter:	5096 or 5096N; refer to manual
Sensor:	5050P; refer to manual
Orifice size:	12"
Protective screens:	2 each on funnel
Drain holes:	4 each, 7/8" diameter
Heating unit:	Electric, 115Vac, 50-60 Hz, 400 Watts with thermostat control

2.0 INSTALLATION

Refer to Basic Gauge manual for information on the set up of the standpipe.

2.1 Unpacking

Carefully unpack the 5054TS-E and any associated equipment sent with it. Open the cover of the 5054TS-E by unbolting the four fasteners at the bottom edge of the cover. Lift the cover off. Check for additional packing material used to keep the internal parts from moving during shipment. Remove all of these packing materials to avoid impeding the operation of the equipment.

2.2 Wiring

The 115 Vac power must be supplied to the terminal block located inside the top section. Route the power cord through the cord grip on the side of the top section can, whenever available, or up through the cable tube located inside the top section. Tighten the cable grip used on the cord so that it will not leak. Connect the power wiring as shown in the wiring diagram included with this manual. Be sure to connect the ground wire to the screw at the end of the terminal strip or to a screw located on the base plate. Check to see that the thermostat connector is plugged into the mating connector on the top of the bracket assembly.

After installing the 5050P tipping bucket assembly onto the base plate, route the cable with the connector down through the cable tube as well. If there is a problem with space it may be necessary to disconnect the 5050P wires at the connector end of the cable and then route the loose ends of the cable up through the cable tube from the standpipe side. Reinstall the connector after running the cables through the tube.

3.0 THEORY OF OPERATION

Water enters the 12-inch diameter funnel orifice and is directed downward into the 5050P tipping bucket rain gauge assembly. An internal funnel helps direct the water into the buckets, minimizing splash and water loss. As soon as the bucket fills with the calibrated amount of water, the bucket tips, discharging the water. With the tipping motion, the bucket moves the magnet past the reed switch, causing a momentary switch closure. The 5050P is a digital sensor and operates as an event detector. Whenever a switch closure occurs, a count is added to an accumulator and is stored in the data transmitter. The transmitter sends the new accumulator number along with the ID code to the central station. For more detailed operational information, refer to the transmitter and tipping bucket rain gauge manuals.

3.1 Heater

The heater thermostat has been set at the factory to start cycling on and off at a temperature of 40°F ($\pm 5^\circ$) measured at the funnel and inside the gauge. The thermostat has no external adjustments. The operation of the thermostat may be tested by placing the 5054TS-E into a chamber and cooling it down to a temperature that is less than 40 °F. Measure the operation of the heater using a current monitor or an electric thermometer. Check for proper switching OFF of the heater as well to avoid drying out the precipitation catch in the buckets during low rates of rain. The thermostat is set to switch off at 60°F ($\pm 5^\circ$).

4.0 MAINTENANCE

4.1 Fuse

If the heating system fails to operate properly, first disconnect the power cord from the power source and then check the fuse located on the terminal block mounting bracket. If the fuse has blown, replace it with a 4 amp fuse, preferably a SLO-BLO style. Also check the thermostat to insure that it operates at the correct temperature. Use an ammeter to determine if current is flowing through the heater.

4.2 On Site Visits

Whenever visiting the rain gauge site, be sure to inspect all the cables and connectors as well as the forward and reverse power to be sure the antenna and antenna cables have not been damaged. If a directional antenna is used at the site, its orientation should be checked to ensure that the antenna has not moved. The same inspection methods should be performed on the solar battery charging panel if there is one.

4.3 5050P

The tipping bucket rain gauge should be serviced as outlined in the 5050P manual.

4.4 Funnel

The outer collection funnel should be kept clear of all debris. Ensure that the funnel nipple is clear by running a brush or large pipe cleaner through it. The four drain holes located on the outer cover should also be cleaned. Some newer models do not have the cover drains.

5.0 TROUBLESHOOTING

Troubleshoot immediately whenever any of the following conditions are observed:

- The instrument does not appear to operate normally or exhibits a marked change in performance.
- The instrument has been vandalized or damaged.
- Moisture damage has occurred to the electrical or electronic circuits.
- An unusually severe storm has passed through the site.

5.1 Power

If the instrument does not register correctly, first check the power connections. Check the line voltage with a voltmeter. Be sure the instrument has been powered up correctly. Check the transmitter batteries to be sure they have sufficient voltage to power up the instrument and are securely in place. Also check the battery terminals to ensure that they are clean and provide solid contact with the batteries. Check the heater fuse to see if it has blown. Check the thermostat to see that it operates correctly.

5.2 Sensor Cables

Check the sensor cable connections both at the sensor and at the transmitter. Cable shorts can cause missed readings. If a connector is loose, remove the shell and inspect the solder connections for damage. Correct any wiring problems and re-install the connector shell.

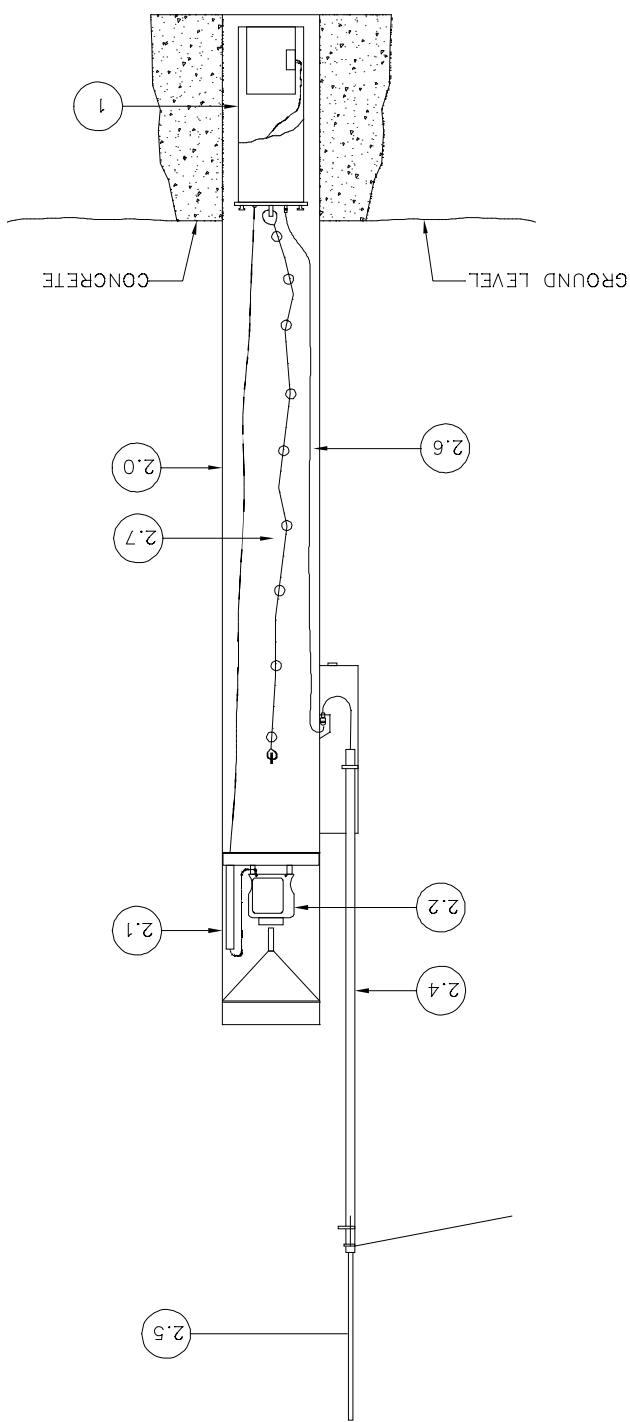
5.3 Individual Components

Refer to individual component manuals for additional troubleshooting procedures.


6.0 FORMS AND DOCUMENTS

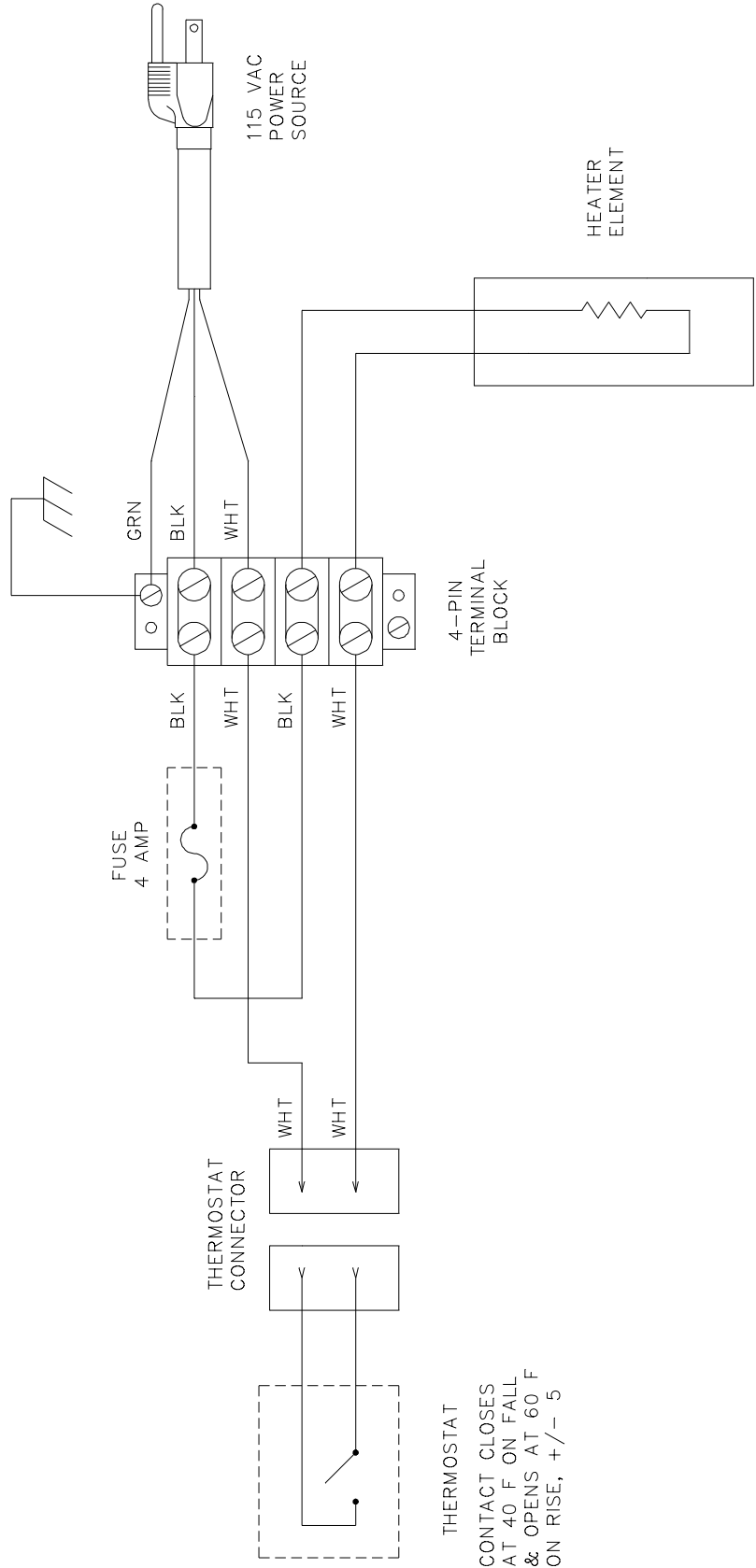
The following pages include assembly drawings, schematics, test forms, and any other documents that cover technical features of this instrument.

AC102302	Assembly - 5054 Rain Gauge
AC104407	Wiring Diagram - 5054TS-E Heater Harness
AC104413	Assembly - 5054TS-E Electrically Heated Top Section
5050P	Tipping Bucket Sensor Manual



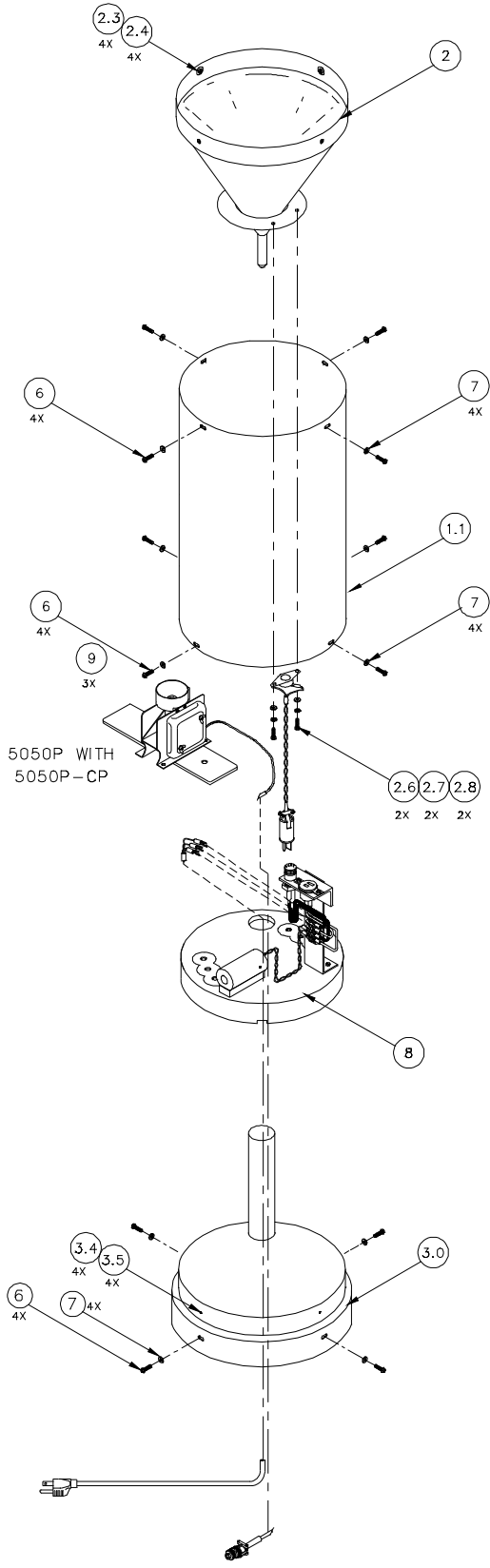
NOTE 1. 1.0 NUMBER IN BUBBLE IS BOM REF NO.
 2. TOP BOM REF NO IS 1.0

N/A	REDRAWN ON NEW BORDER	3/5/99
ECN #	DESCRIPTION	DATE
		
MODEL USAGE		
MODEL NO. 5054		
TITLE RAIN GAUGE		
DRAWN BY G. BARRITT		
DATE 3/5/1999	DWG TYPE ASSEMBLY	REV A
CHECKED BY	SIZE B	DWG NO. AC102302



ECN #	DESCRIPTION	DATE
MODEL USAGE	HydroLynx	
5054TS-E		
FRACTIONS = €	MODEL NO.	5054TS-E
.XX = €	TITLE	HARNESS, HEATER
.XXX = €	DWG TYPE	WIRING DIAGRAM
MAT'L	DRAWN BY	J. ORTEGA
FINISH	CHECKED BY	
TREATMENT	DATE	16-01-01
	SIZE	A
	DWG NO.	AC104407
	REV	

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES



NOTES: 1. (6) NUMBER IN BUBBLE IS BOM REF. NO.
 2. TOP BOM REF. NO. IS 0.0

ECN#	DESCRIPTION	DATE
MODEL USAGE	HydroLynx	
MODEL NO.	5054TSE	
TITLE	TOP SECTION	
DWG TYPE	ELECTRICALLY HEATED ASSEMBLY	
DRAWN BY	J DOBBS	DATE 8/10/00
CHECKED BY		DATE
SIZE	B	DWG NO. AC104413
REV	A	

