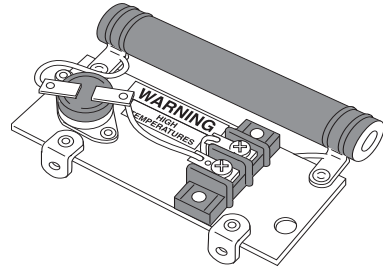


Rain Collector Heater with Cone (#7721) User Guide

The Rain Collector Heater with Cone may be used to protect the Rain Collector's internal components from freezing and/or to measure the moisture content of snowfall. When the heater is on, it is capable of melting snow at a rate of 1/4" (6 mm) of liquid precipitation per hour. It may not be able to keep up with larger rates of snowfall.



The rain collector heater warms only the inside of the rain collector and the cone itself.

Please note that we have made every attempt to design and manufacture a safe product, but Davis Instruments assumes no liability for any injury or damage caused directly or indirectly by the installation or use of this product.

Note: Although the nominal heater voltage is not hazardous, a short in the wall transformer could cause hazardous voltage to appear on the heater wires. For safety, you should always turn the heater's power unit to the "OFF" position before removing the rain collector's cone. We also recommend that you unplug the wall transformer before removing the rain collector's cone.

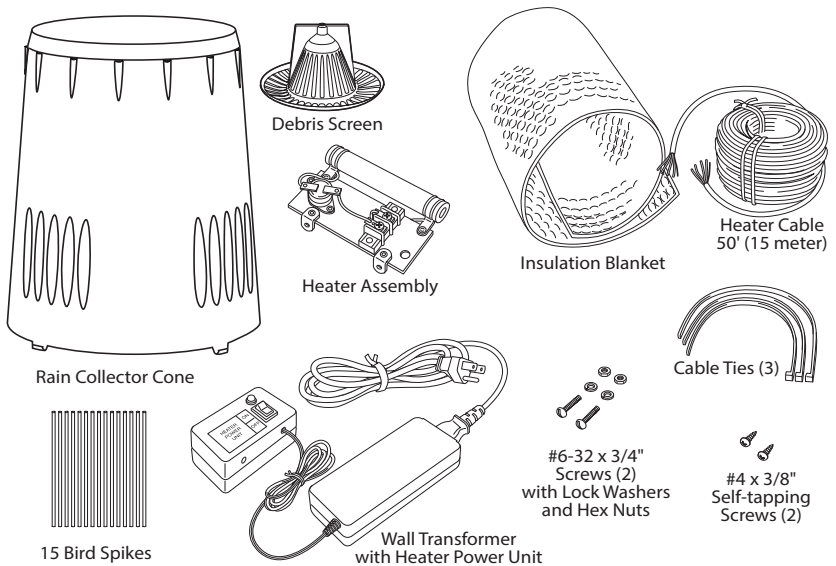
This instruction manual is designed to take you step-by-step through the process required to install and use your rain collector heater. Please take the time to read through this manual before beginning the process.

Note: This heater is not compatible with AeroCone rain collectors. You will need to replace the AeroCone on your sensor suite with the included old-style cone.

Components

The rain collector heater includes the following components. Please make sure you have all listed components before continuing.

- **Cone & debris screen**-- Replaces the existing AeroCone
- **Heater assembly** — Includes heater element, thermostat, and terminal block for power cable.
- **Wall transformer with power unit**
- **Insulation blanket**
- **50' (15 meter) heater cable**
- **Hardware Kit:**
 - **Three cable ties**
 - **Two #6-32 x 3/4" screws**
 - **Two #6-32 hex nuts**
 - **Two #6-32 split lock washers**
 - **Two #4 x 3/8" self-tapping screws**
 - **15 bird spikes**



Tools and Materials Needed for Installation

In addition to the components listed above, you will need some of the following tools and materials. Please be sure you have everything you need before beginning the installation.

- **Medium Phillips-head and slot-tip screwdrivers**
- **Drill with 5/32" (4 mm) or 3/16" (4.8 mm), and 9/32" (7.2 mm) or 5/16" (8 mm) drill bits**
- **Wire cutter**
- **Wire stripper or knife**
- **Cable clips or weather-resistant cable ties**

Choosing Cable for the Rain Collector Heater

The rain collector heater comes with a 50-foot (15 m) length of 22 gauge cable. You may extend the length up to 250' (80 m) from the power unit to the AC adapter using 22AWG -16AWG cable with PVC jacket. We recommend using a 3M Scotchpak or Duraseal heat shrink splice connector when extending the sensor cables.

Note: If you are using the heater in extreme environmental conditons, the recommended cable coating may differ .

Use the table below to determine the minimum wire size for the desired length of cable run:

Length of Cable Run	Minimum Wire Size
Up to 60 feet (18m)	22AWG (0.50mm ²)
60 - 100 feet (18 -30 m)	20AWG(0.75mm ²)
100 - 160 feet (30 -50 m)	18AWG(1.00mm ²)
160 - 250 feet (50 -80 m)	16AWG(1.50mm ²)

If the heater cable is routed with any *signal cable* (i.e. any cable running from a sensor or SIM), be aware that for cable runs over 50 feet (15 m) the heater cable's voltage may interfere with sensor voltages in the signal. To prevent this interference, do at least one of the following:

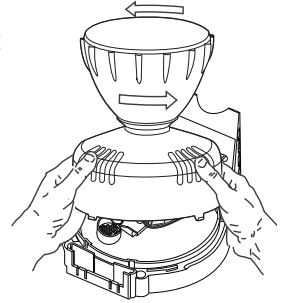
- Keep the heater cable and the signal cable separated by several inches over most of the length of the cable run.
- Use shielded cable for the heater cable or signal cable (shield must be grounded).

Installing the Rain Collector Heater

CAUTION: Make sure the wall transformer is unplugged until you are instructed to plug it in.

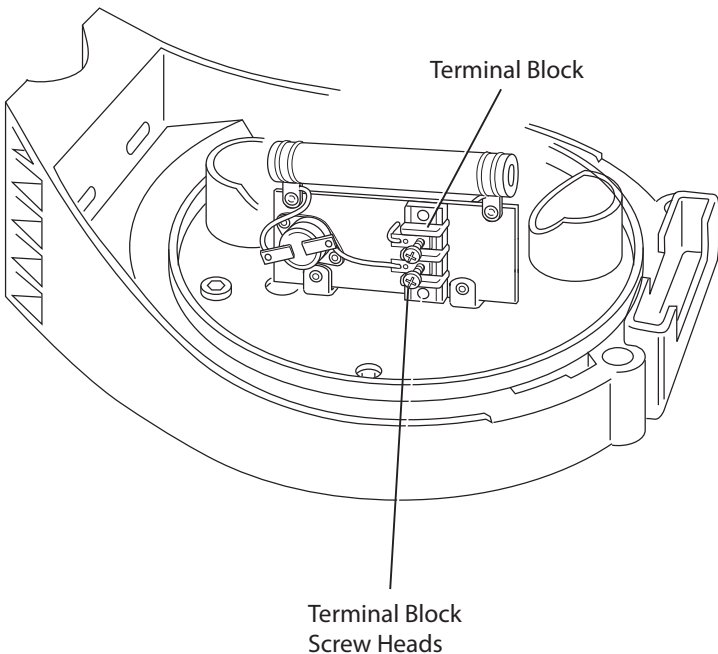
Attaching the Heater to the Rain Collector

1. Remove the AeroCone rain collector from the rain collector base, and if necessary, the mounting screws from the base of the rain collector.



2. Position the heater as shown on the next page (with the terminal block facing away from the bucket) over the holes in the base.
3. Loosen the screw heads on the terminal block.

You will eventually secure the heater cable wires underneath these screw heads.

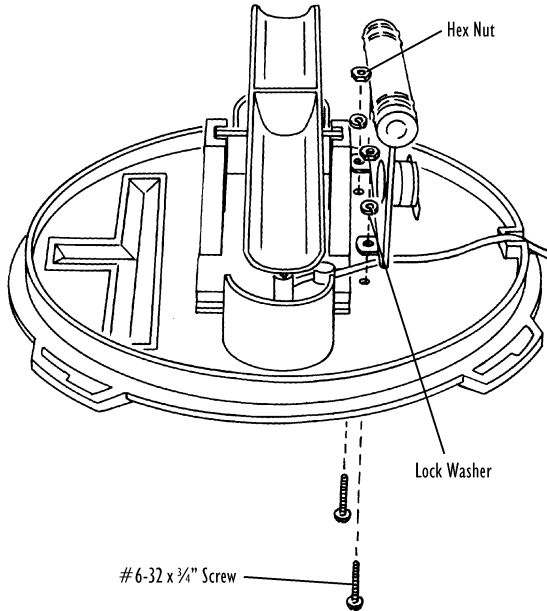


Rain collector heater terminal block

4. Secure the heater assembly to the rain collector.

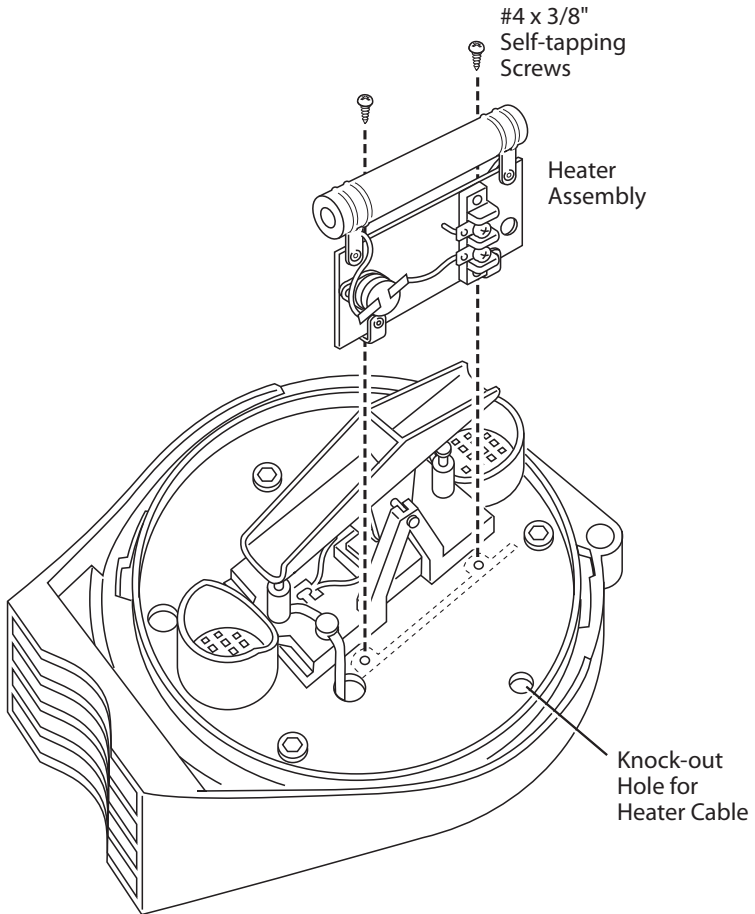
Stand-alone rain collectors come in two versions, one with a flat base, and one with a Vantage Pro2 base.

For **stand-alone rain collectors with a flat base** (#6463), secure the heater assembly to the rain collector base using the #6-32 x 3/4" (19 mm) screws, a lock washer, and a hex nut, as shown below.



Securing the heater in a flat-base stand-alone rain collector

For **Vantage Pro2 rain collectors and stand-alone rain collectors on a Vantage Pro2 base (#6465)**, secure the heater assembly to the rain collector base using two #4 x 3/8 self-tapping screws, as shown below.

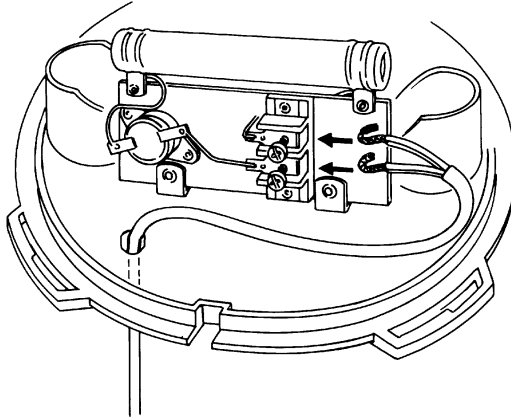


Securing the heater in an Vantage Pro2 rain collector

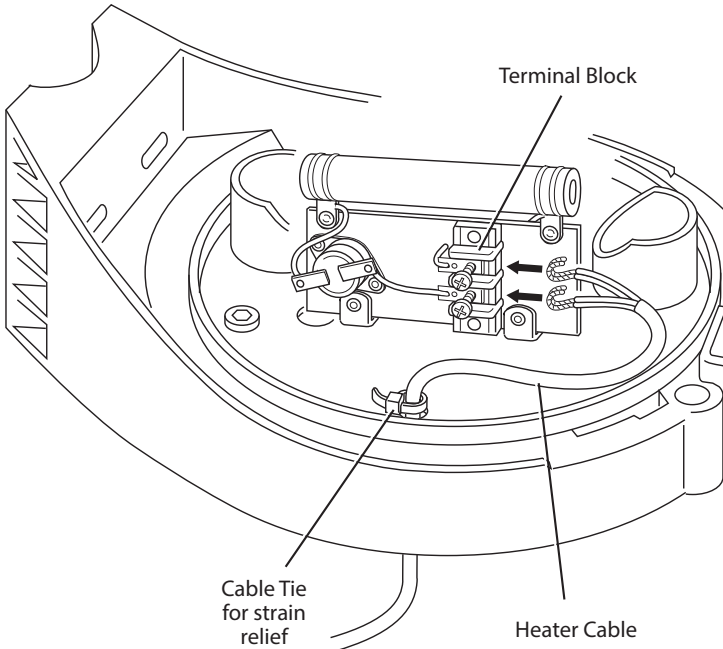
5. Using wire strippers or a knife, strip 3/8" (10 mm) of insulation from the heater cable wires.
6. If you have a Vantage Pro2 rain collector, use a medium size Phillips-head screwdriver to knock out the hole for the heater's power cable.
7. Pass the heater cable wires up through the cable hole you just drilled (stand-alone rain collector) or knocked out (Vantage Pro2 rain collector).

- Bend each bare wire into a U-shape and secure each one under a screw head on the terminal block as shown below.

It does not matter which wire goes to each screw as long as only one wire goes to each screw.

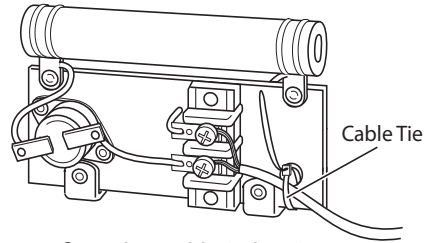


Attaching cables to the terminal block of stand-alone rain collector heater



Attaching cables to terminal block of Vantage Pro2 rain collector heater

9. Secure the cable to the heater assembly by running a cable tie over the cable and through the hole as shown. You can cut off excess cable tie.

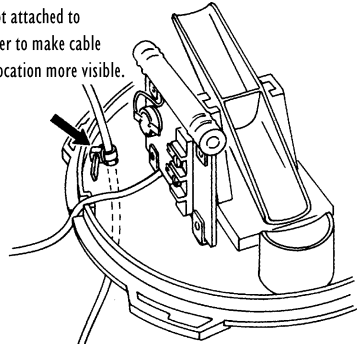


Securing cable to heater

10. To provide strain relief for the cable, place a cable tie around the cable just above the hole through which this cable is running, as shown below.

You may want to cut off the excess cable tie.

Note: Cable shown here is not attached to heater to make cable tie location more visible.

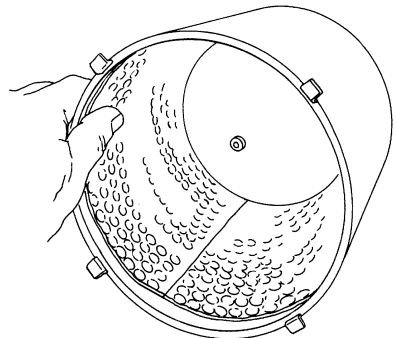


Providing Strain Relief

11. Re-attach (or attach) the rain collector to the mounting surface.

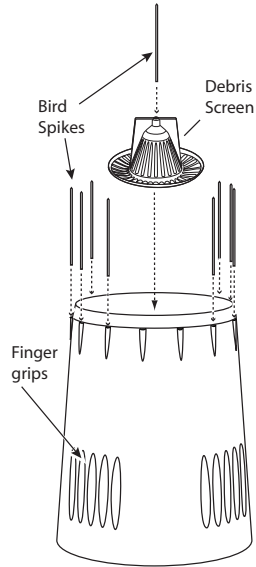
Installing the Insulation Blanket

1. Fit the insulation blanket against the side of the included rain collector cone, pushing it as far inside the cone as it will go. If fully inserted correctly, the blanket should extend all the way to the top of the cone, leaving a space of approximately 5/16" (8 mm) at the bottom to accommodate the base.



Inserting the insulation

2. Attach the rain collector cone (with insulation blanket) to the base.
3. Place the debris screen, pointed end up, into the cone over the funnel hole.
4. In some installations, bird droppings can clog the rain collector. To use the bird spikes, insert one spike into each socket around the rim of the cone. The sockets are tapered: push firmly or tap lightly with a hammer for a more secure fit. If you choose not to install the spikes, we recommend that you keep the packet of spikes in case birds become a problem in the future.
5. If bird nesting is a problem, you can place a spike in the hole on top of the debris screen. Note that using a bird spike in the debris screen may make the screen more likely to be blown over or out in a high wind gust.



Powering the Heater

Running the Cables

Run the heater cable from the rain collector to the location at which you plan to plug in the wall transformer/power unit. To prevent fraying or cutting of the cable, secure it so that it does not whip about in the wind. Use cable clips or weather resistant cable ties to secure the cable underneath the eaves of your house/building, or in a location similarly shielded from rain. Make sure the cable is secure by placing clips or ties approximately every 3-5 feet (1-1.6 m). Do not use metal staples or a staple gun. Metal staples, especially when installed with a staple gun, have a tendency to cut the cables.

Note: If your cable run extends more than 50 feet (15 m), keep the heater cable and the rain collector cable separated by at least a few inches, as discussed in "Choosing Cable for the Rain Collector Heater" on page 3.

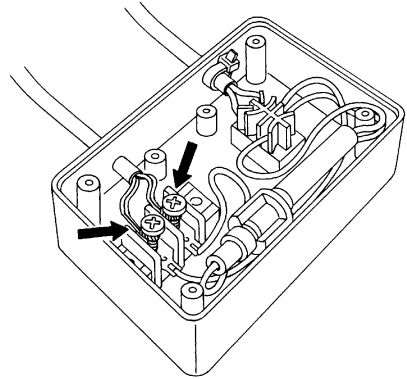
Attaching Cable to Power Unit

1. Remove the base of the power unit by removing the four screws in the base.
2. Loosen the screw heads on the power unit terminal block.
You will eventually secure the heater cable wires underneath these screw heads.
3. Using wire strippers or a knife, strip 3/8" (10 mm) of insulation from the heater cable wires.

4. Feed the cable through the hole in the power unit..

5. Bend each bare wire into a U-shape and secure under a screw head on the terminal block, as shown below.

It does not matter which wire goes to each screw as long as only one wire goes to each screw



Power unit terminal block

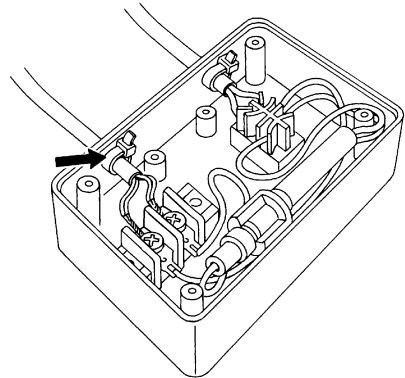
6. To provide strain relief for the cable, place a cable tie around the cable just inside the hole through which this cable is running as shown below.

You may need to cut off the excess cable tie in order to close the power unit.

7. Replace the base of the power unit.

8. You may now plug the wall transformer into an outlet.

9. To insure that the heater is working, you may want to set the power unit to the “ON” setting and then go to the rain collector to insure that the heater element is hot.



Providing strain relief

CAUTION: DO NOT TOUCH THE HEATER ELEMENT OR ANY METALLIC PORTION OF THE HEATER. You should be able to feel the heat at a short distance from the heater element.

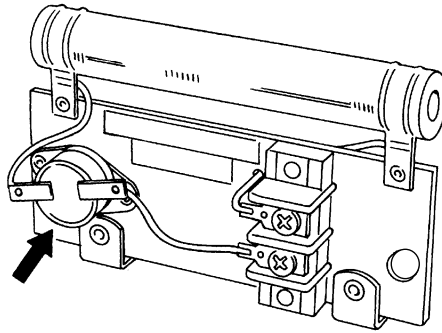
Using the Rain Collector Heater

You may switch the rain collector heater on and off from the power unit.

- **OFF** — When the rain collector heater is off, the indicator light on the power unit is also off.
- **ON** — When the rain collector heater is on, it is capable of melting snow at a rate of 1/4" (6 mm) of liquid precipitation per hour. It may not be able to keep up with larger rates of snowfall. When the rain collector heater is set to "ON," the indicator light on the power unit is also on.

The heater assembly includes a thermostat switch. If the temperature at the thermostat reaches 110°F (43°C) the thermostat will interrupt power to the heater element.

When the temperature at the thermostat drops to about 85°F (30°C) power flow to the heater element will be resumed.



Location of thermostat

You can turn the heater on when you expect the temperature to drop below freezing, and turn it off again when you are no longer worried about freezing conditions.

Contacting Technical Support

For questions about rain collector heater, please contact Davis Technical Support. We'll be glad to help.

Note: Please do not return items to the factory for repair before calling to get a Return Materials Authorization number.

Online	www.davisnet.com Find copies of user manuals, product specifications, application notes, software updates, and more.
E-Mail	support@davisnet.com
Telephone	(510) 732-7814 Monday - Friday, 7:00 A.M. - 5:30 P.M., Pacific Time

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