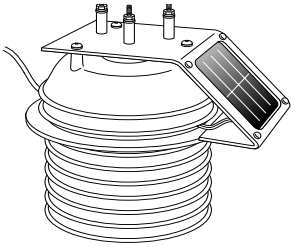


FAN-ASPIRATED RADIATION SHIELD

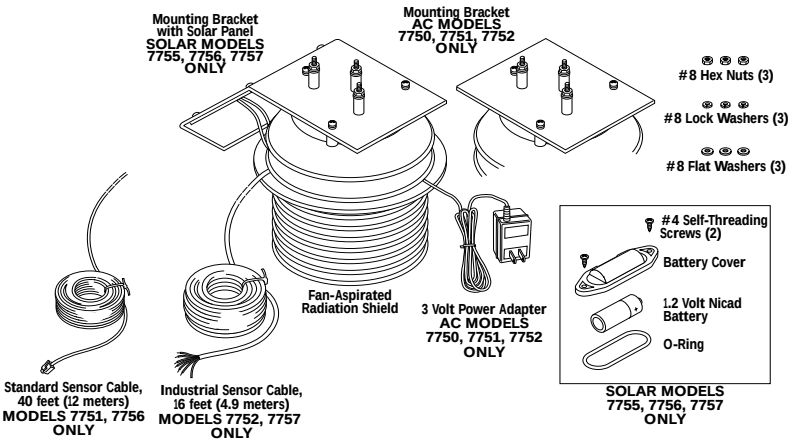
INSTALLATION MANUAL

The Fan-Aspirated Radiation Shield uses active and passive aspiration to minimize the effects of solar radiation and to provide accurate temperature readings.

This instruction manual takes you step-by-step through the process of installing and mounting your Fan-Aspirated Radiation Shield. *Installation varies according to the shield type, so please take note of your product number before you begin to install. You can find the model number on the label on the underside of the Fan Plate.*

COMPONENTS

The Fan-Aspirated Radiation Shield comes pre-assembled along with these items:



TOOLS AND MATERIALS NEEDED

To disassemble, install, and mount your Fan-Aspirated Radiation Shield, you may need the following:

- **A medium Phillips-Head screwdriver.**
- **A small Phillips-Head screwdriver.**
  To install an exisiting Davis Temperature / Humidity sensor.
- **A radiation shield bracket.**
  To mount the radiation shield on a mast or pipe if you wish.
- **A small wrench or 3/8" (9 mm) nutdriver.**

LOCATION TIPS

- **Install the shield over plants or soil if possible. Avoid installing over or near sprinklers. The shield does not to protect the sensor from water spraying upwards.**
- **Place the sensor 5 feet (1.5 m) or more from man-made heat sources.**
- **Avoid running the sensor cable across large metal objects if possible.**
- **Avoid placing the motor near any curing caulking compounds as deposits from silicone compounds can cause open-circuit failure.**

INSTALLATION STEPS

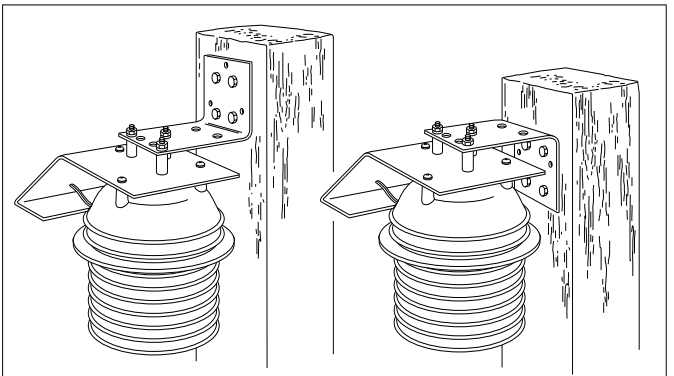
The Fan-Aspirated Radiation Shield comes pre-assembled. Depending on your model number, you may need to disassemble your shield to install a battery and / or a sensor or probe. Here's the installation steps for your shield:

MODEL # 7750	MODEL # 7751 /7752	MODEL # 7755	MODEL # 7756/7757
1. Disassemble the shield Page 4	1. Install the inlet shield Page 12, step 1	1. Disassemble the shield- Page 4	1. Disassemble the shield Page 3
2. Install a sensor or probe Page 5	2. Mount the shield Page 13	2. Install a sensor or probe Page 5	2. Install the battery Page 10
3. Install the sensor board Page 7		3. Install the sensor board Page 7	3. Reassemble the shield Page 12
4. Reassemble the shield Page 12		4. Install the battery Page 10	4. Install the inlet shield Page 12, step 1
5. Install the inlet shield Page 12, step 1		5. Reassemble the shield Page 12	5. Mount the shield Page 13
6. Mount the shield Page 13		6. Install the inlet shield Page 12, step 1	
		7. Mount the shield Page 13	

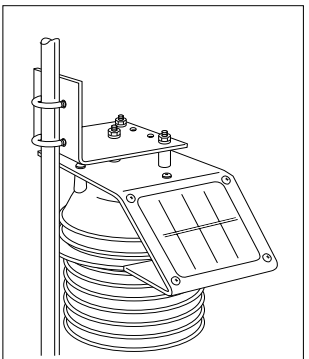
INSTALLATION OPTIONS

You can mount the Fan-Aspirated Radiation Shield in three ways:

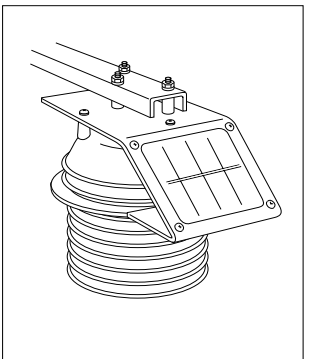
- **On a Davis Sensor Mounting Arm or other horizontal plate up to 0.26" (6.6 cm) thickness.**
- **On the side of a wood post or a wall**
- **On a metal pipe or mast with outside diameter from 1" (2.5 cm) to 1 1/4" (3.1 cm).** To mount this way, you need a radiation shield mounting bracket (part # 7794.)



Mounting on the Side of a Post or Wall



Mounting on a Pipe or Mast



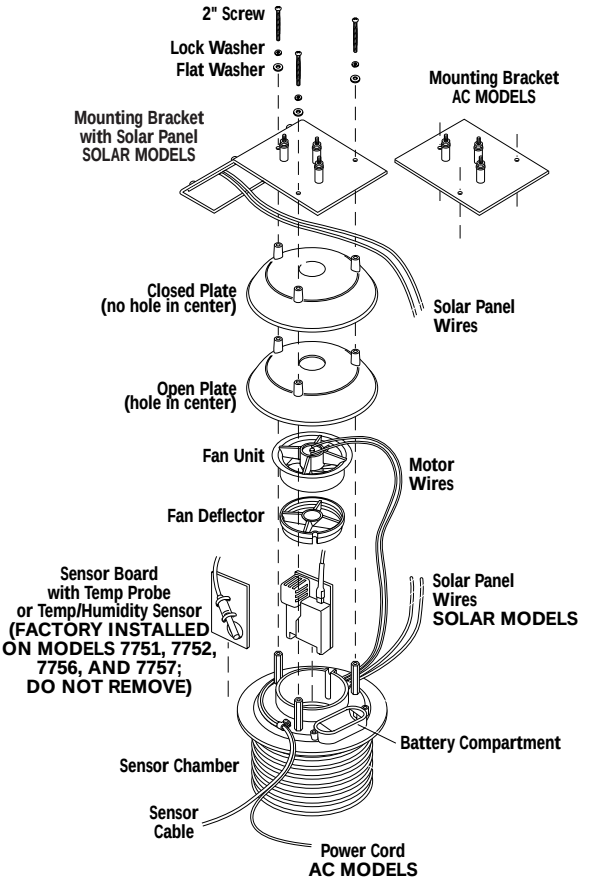
Mounting on the Sensor Arm

SOME INSTALLATION OPTIONS

DISASSEMBLING THE SHIELD TO INSTALL A SENSOR OR PROBE

Here's how to disassemble the radiation shield to install a sensor or probe. Using a medium Phillips-Head screwdriver, disassemble as follows:

1. **Unscrew the three screws at the top of the unit and remove the mounting bracket.**
2. **Remove the two plates and put aside.**
3. **Gently remove the fan and the deflector, taking care not to stress the wires soldered to the terminal board.**



DISASSEMBLING THE SHIELD

4. **Slide out the sensor board.**

   You are now ready to install a sensor or probe.

• **Please Go to: "Installing a Sensor or Probe" page 5.**

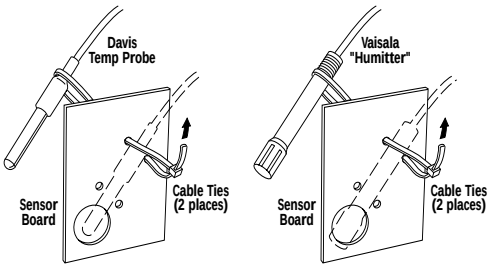
INSTALLING A SENSOR OR PROBE

For models without a pre-installed sensor, continue to the section **"To install a sensor or probe on the sensor board."**

If you want to install your own Davis Temperature / Humidity sensor (Temp / Hum), you must remove your old sensor housing and attach a new and smaller sensor board cover. Please continue to the section **"To attach a new sensor board cover."**

To install a sensor or probe on the sensor board:

- **Attach the sensor or probe to the board using the cable ties.**



INSTALLING A SENSOR OR PROBE ON THE SENSOR BOARD

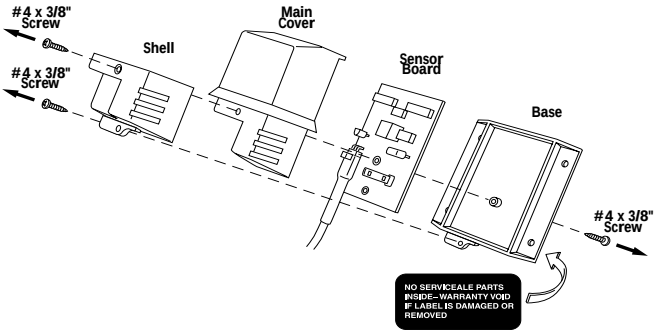
You are now ready to install the sensor board.

• **Please Go to: "Installing the Sensor Board" page 7.**

If you have an exisiting sensor model # 7859 or # 7860, or a Temp / Hum sensor you need to attach a new sensor cover as follows:

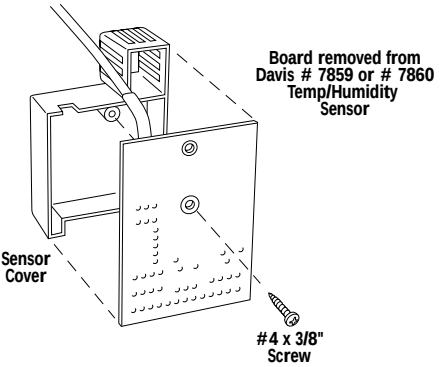
1. **Remove the shell and main cover by undoing the screw at the front of the board beside the cable exit point.**
2. **Remove the warranty label on the back of the cover and undo the screw.**

Note: *Removing this warranty label to attach a new sensor board does not void your warranty in this instance. To avoid damaging senstive components on the PC board, hold the board by the edges.*



REMOVING THE "OLD" TEMP/HUM HOUSING

3. **Remove the sensor board and discard the "old" cover and shell.**
4. **Fit the "new" sensor cover on the front of the sensor board as shown below.**



ATTACHING A NEW SENSOR BOARD COVER

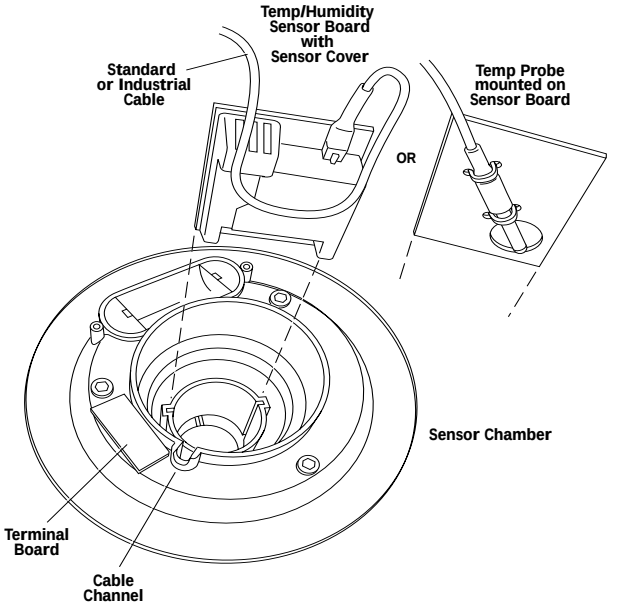
5. **Insert and tighten the #4 x 3/8" (9.5 mm) screw in the back of the sensor board.**
   You are now ready to install the sensor board,

• **Please Go to: "Installing the Sensor Board" page 7.**

INSTALLING THE SENSOR BOARD

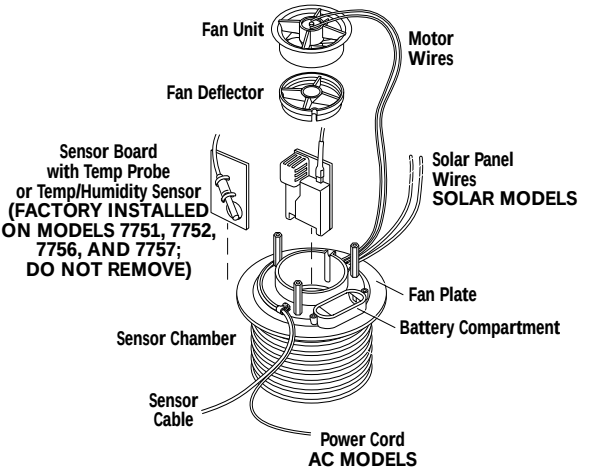
Here's how to install he sensor board supplied with the radiation shield:

1. **Insert the board into the grooved slots.**
2. **Push the cable gently into the sensor chamber, allowing the cable to loop a little.**



INSTALLING THE BOARD

3. **Route the cable to the cable channel.**



REASSEMBLING THE UNIT

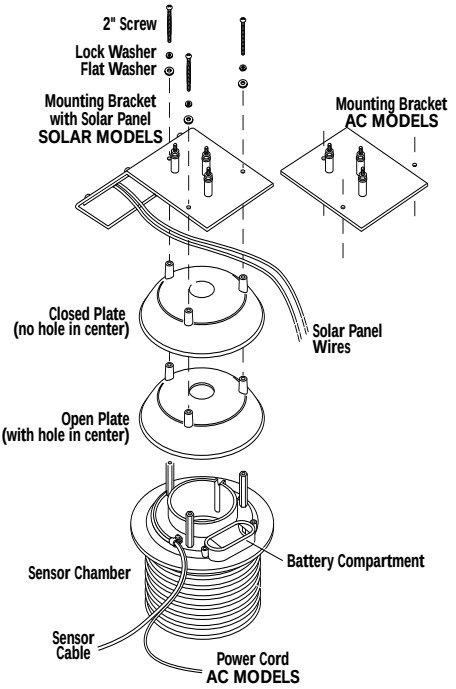
4. **Insert the fan deflector, ensuring that the sensor cable is in the cable channels of the deflector and the fan plate.**
5. **Place the fan on top of the deflector.**

- **Please Go to: "Installing the Battery" page 10, if you have model # 7755, 7756, or 7757. Go to "Reassembling the Shield" page 12, if you have model # 7750, 7751, or 7752.**

DISASSEMBLING THE SHIELD TO INSTALL A BATTERY

Here's how to disassemble the radiation shield to install a battery. Using a medium Phillips-Head screwdriver, disassemble as follows:

1. **Loosen the three screws and the washers at the top of the unit and remove the mounting bracket.**
2. **Remove the two plastic plates and put aside.**

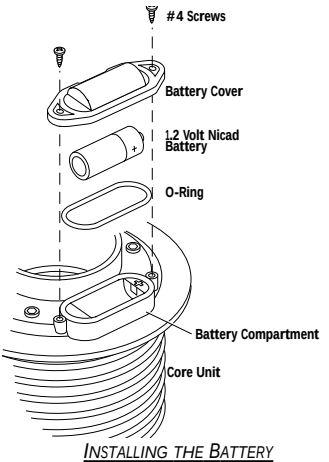


DISASSEMBLING THE SHIELD TO INSTALL A BATTERY

You are now ready to install the battery.

To install the battery:

1. **Insert the O-ring in the groove around the edge of the battery compartment.**
2. **Insert the Nicad battery in the compartment matching the plus sign on the battery with the plus sign in the battery compartment.**



INSTALLING THE BATTERY

3. **Attach the battery cover to the battery compartment using two #4 x 3/8" (9.5 mm) screws.**

Before you continue any further, it is a good idea to check if the fan works.

To check if the fan works:

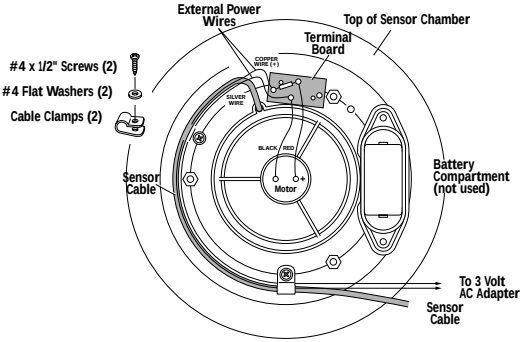
- **See that the fan blade turns and that the air is blown upwards by extinguishing a lit match about two inches from the bottom of the unit. When the fan works correctly, smoke is sucked up through the center of the unit and blown out the top.**

• **Please Go to: "Routing the Sensor Cable."**

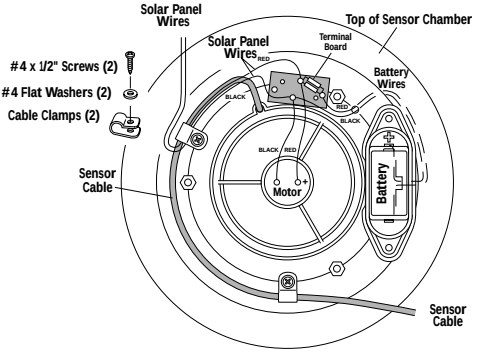
ROUTING THE SENSOR CABLE

To route the cable do the following:

1. **Loosen the cable clamp screws on the top of the unit core, remove the cable clamps.**
2. **Route the sensor cable through the groove and outside of the unit.**
3. **Bend the cable to route it around the top of the unit. Slip the cable in through the cable clamps and secure the clamps to the unit using the screws provided.**



THE AC CABLE ROUTING



THE SOLAR CABLE ROUTING

4. **Attach the cable to the appropriate connector on the junction box/sensor interface.**
   Consult your station installation manual for more information.

You may want to test the sensor or probe before you mount the radiation shield. Please consult your sensor, or probe installation manual to find out how to conduct the test. Here's how to test the pre-installed Davis sensor:

1. **Attach the sensor cable to the appropriate connector on the junction box/sensor interface module (SIM).**
   Consult the station manual or installation manual.
2. **Press the appropriate key on your console as necessary to make sure you are getting an outside air temperature reading on the console.**
3. **Press the appropriate key on your console as necessary to make sure you are getting an outside humidity reading on the console.**

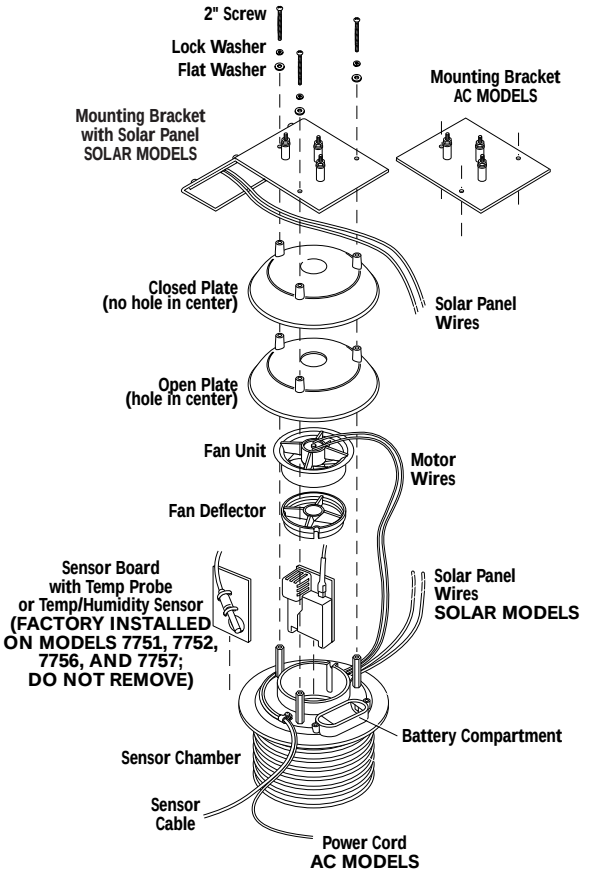
Once you complete this test, you are ready to reassemble the radiation shield.

• **Please Go to: "Reassembling the Shield."**

REASSEMBLING THE SHIELD

To reassemble the shield do the following:

1. **Push the inlet screen into place on to the bottom of the sensor chamber**
2. **Place the open shield plates on top of the three threaded spacers as shown below, making sure to line up the screw holes. Add the closed plate.**
   Use the plastic ridges on the underside of the plates as a guide.



3. **Secure the two shield plates to the radiation shield mounting bracket using the three 2" screws and the washers.**
   Tighten until the radiation shield attaches firmly to the mounting bracket.

You are now ready to mount the shield.

• **Please Go to: "Mounting the Fan-Aspirated Radiation Shield."**

MOUNTING THE FAN-ASPIRATED RADIATION SHIELD

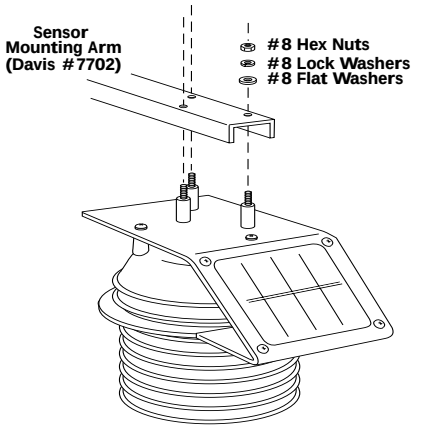
You can mount the Fan-Aspirated Radiation Shield on a Davis Sensor Mounting Arm, on a pipe, or on the side of a wall or post. We recommend you use a Davis Sensor Mounting Arm.

Attaching to the Davis Sensor Mounting Arm

To attach the Fan-Aspirated Radiation Shield to the Sensor Mounting Arm you need:

- **Three #8 split lock washers (supplied)**
- **Three #8 flat washers (supplied)**
- **Three #8 hex nuts (supplied)**
- **A Davis Sensor Mounting Arm (part # 7794-not supplied)**

1. **Position the shield below the Sensor Arm to align the three protruding screws from the bracket with the three holes at the end of the arm.**
2. **Raise the shield into position and place a flat washer, a lock washer, and a nut on each screw protruding above the arm.**



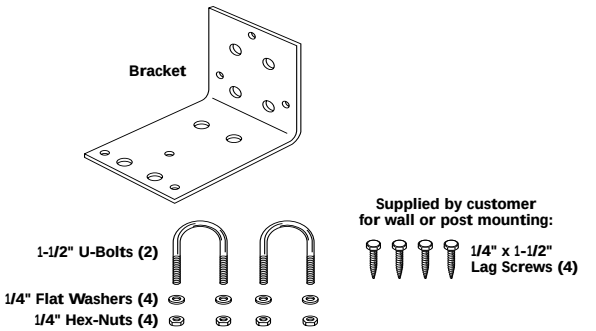
ATTACHING THE SHIELD TO THE SENSOR MOUNTING ARM

3. **Tighten the nuts.**

Mounting to a Pipe or Mast

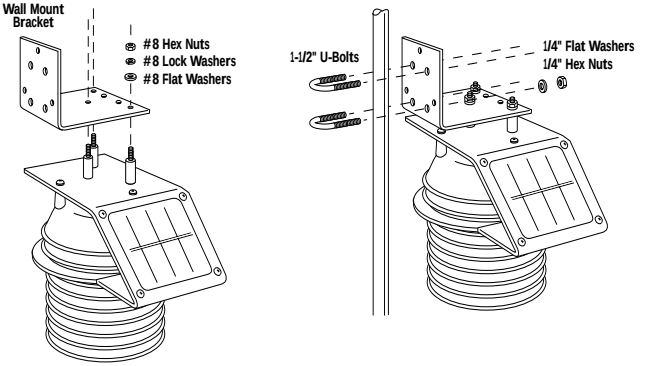
You can mount the Fan-Aspirated Radiation Shield to a metal pipe with outside diameter between 1" (2.5 cm) and 1 1/4" (3.1 cm). To mount to a pipe you need:

- **Two 1 1/2" (3.8 cm) U-bolts**
- **Four 1/4" (6.3 mm) flat washers**
- **Four 1/4" (6.3 mm) hex nuts**
- **Three # 8-32 x 2" (5.1 cm) screws (supplied)**
- **A mounting bracket (part # 7794-not supplied)**
- **A 7/16" (1.1 cm) wrench**



PIPE MOUNTING REQUIREMENTS

Note: *You can mount the Fan-Aspirated Radiation Shield on a pipe with a maximum diameter of 2 1/2" (6.35cm). You need to drill additional holes and get additional bolts.*

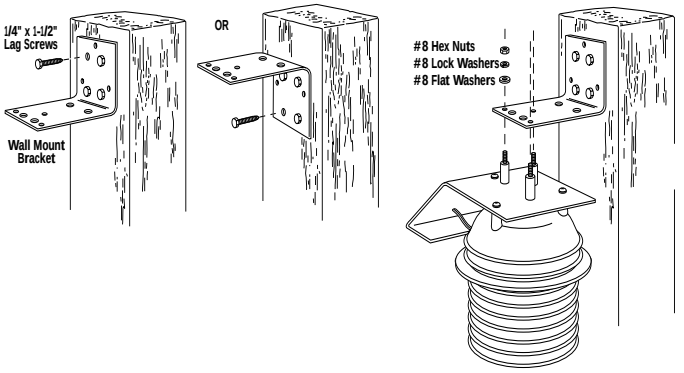


MOUNTING THE SHIELD TO A PIPE OR MAST

Mounting to the Side of a Post or Wall

To mount the Fan-Aspirated Radiation Shield on the side of a post or wall you need:

- **Four 1/4" (6.8mm) x 1 1/2" (3.8cm) lag screws (not supplied)**
- **A mounting bracket (part # 7794 - not supplied)**



MOUNTING THE SHIELD TO THE SIDE OF A POST OR WALL

CONNECTING THE SENSOR CABLE

Once you mount the radiation shield, you can then connect the sensor cable with the appropriate connector on the junction box / sensor interface module (SIM). Consult your weather station owner's manual for further details.

Note: *If you wish to extend the cable or mount the solar panel separate from the radiation shield, please call us and we will send you application note # 24.*

Securing the Sensor Cable

To prevent fraying or cutting of the cable or wires where they are exposed to weather, you must secure them so they do not lash about in the wind. To secure the cable and wires you need to:

- **Use cable clips or weather resistant cable ties to secure the cable.**
- **Place clips or ties approximately every 3 to 5 feet (1 to 1.6 m).**
- **Avoid using metal staples or a staple gun to secure cables or wires since metal staples installed with a staple gun can cut the cable and wires.**
- **Avoid tugging on the sensor cable when you run it. Leaving the connection taut may cause strain and the cable may pull free.**

CALIBRATING THE DEW POINT AND RELATIVE HUMIDITY

If you want to install the Fan-Aspirated Radiation Shield as part of a Weather monitor II station, you need to calibrate the dew point and relative humidity. Please refer to your weather station owner's manual for calibration instructions.

MAINTENANCE INSTRUCTIONS

- **Keep the surfaces clean as the Fan-Aspirated Radiation Shield is less effective when the surfaces are dirty. Remove dust from the solar panel and the screen with a damp cloth.**
- **Remove any debris that obstructs air flow between the radiation shield parts e.g., leaves, twigs, webs, and nests.**
- **Avoid spraying insect killer of any kind into the radiation shield as this may damage the sensors and the shield.**
- **Change the battery annually (solar models only) and also remove any debris lodged inside the unit at this time.**

TECHNICAL SUPPORT

If you are unable to solve a problem with your Fan-Aspirated Radiation Shield, please call our technical support team at (510)-732-7814 for assistance (M-F, 7am-5:30 pm PST)

Product Number: 7750, 7751, 7752, 7755, 7756 & 7757

Davis Instruments Part Number: 7395-084
Fan-Aspirated Radiation Shield
Rev. A Manual (12/7/99)
Controlled online: DI:Wx:Accessories:SPARS

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