Daytime Fan-Aspirated Radiation Shield Kit Installation Manual
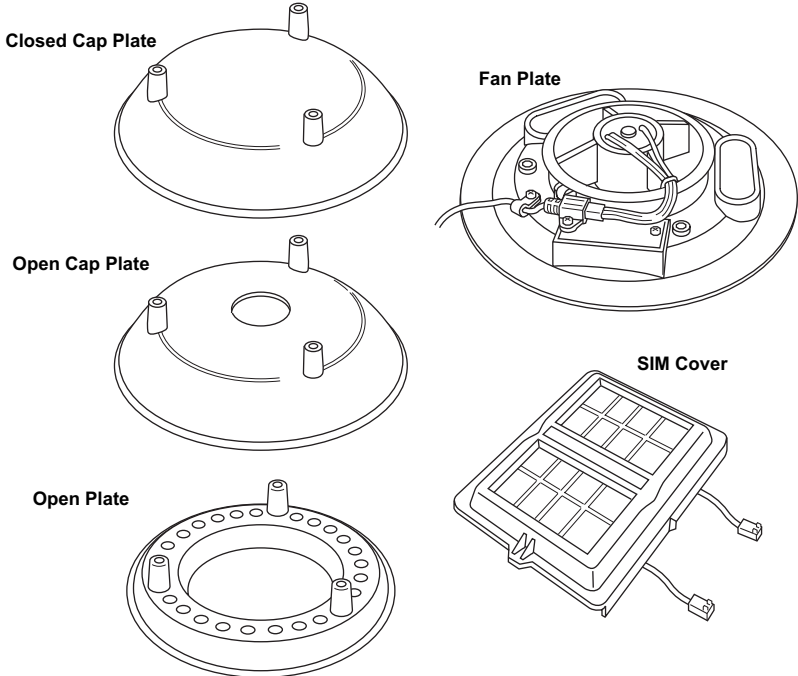
For Vantage Pro2™ & Vantage Pro2 Plus™ Stations

Introduction

The instructions describe how to upgrade a non-aspirated Vantage Pro2™ radiation shield to a Daytime Fan-Aspirated Radiation Shield. The upgrade kit can be installed on any Vantage Pro2™ or Vantage Pro2 Plus™ Integrated Sensor Suite (ISS) equipped with a round-plate non-aspirated, radiation shield. The Daytime Fan-Aspirated Radiation Shield Kit can only be installed on round-plate non-aspirated radiation shields.
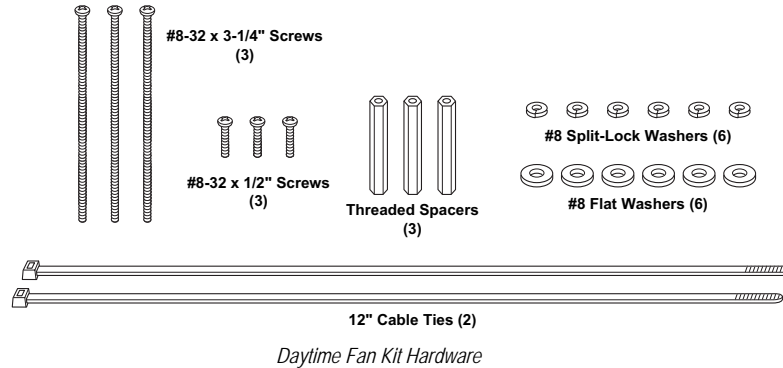
Components

The upgrade kit includes the following components:

Closed Cap Plate

Fan Plate

Open Cap Plate

SIM Cover

Open Plate

Daytime Fan Kit Components

The kit also includes the following hardware:

Daytime Fan Kit Hardware

Tools Needed

You may need some or all of the following tools and other items to complete the upgrade:

- A medium Phillips-Head screwdriver
- A medium slot-tip screwdriver
- Other tools as required to remove and re-mount the ISS
- **Cabled ISS Only:** Wire cutters
- **Wireless ISS Only:** CR-123A 3-volt lithium battery (optional)

Note: If you are upgrading an ISS that has been in service for a year or more, you should consider changing the ISS battery on the SIM board during the upgrade.

Installing the Daytime Fan Kit

Installation Overview

Installing the Daytime Fan Kit is not very complicated and should take only 30 to 60 minutes to complete.

These are the steps to install the Daytime Fan components:

1. Put the console into Setup Mode.
2. Take the ISS down from its installed position.
3. Disassemble the standard radiation shield..
4. Assemble the lower section of the fan-aspirated shield.
5. Install the fan unit.
6. Assemble the upper section of the fan-aspirated shield.
7. Re-Install the ISS.
8. Take the console out of Setup Mode.

Put Console in Setup Mode

1. At your Vantage Pro2 console, press and hold DONE and then press the down arrow (-) to put the console in Setup Mode. This prevents the reception of erroneous data while you are removing the ISS.
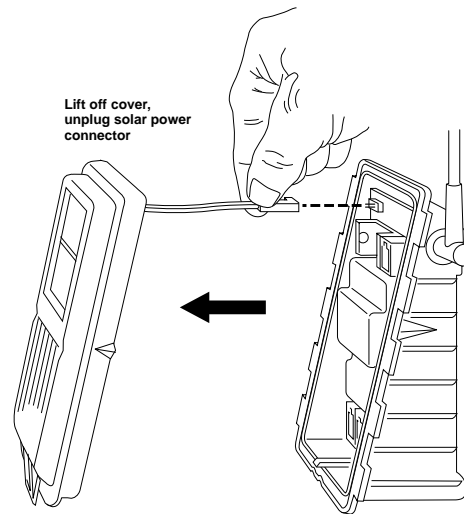
Note: If the console acquires erroneous data during the upgrade, refer to "Take the Console Out of Setup Mode" for instructions on clearing data. Additional information on clearing and setting console data can be found in the *Vantage Pro2 Console Manual*.

Take Down the ISS

Please work on your Vantage Pro2 ISS in a safe place. We strongly recommend that you take the ISS down from its sited location before beginning the upgrade. If you are installing the Daytime Fan Kit on an ISS that has already been placed into service, you will need to take down the ISS from its sited location and move it to a convenient and safe place to perform the installation.

To dissassemble the ISS:

1. Locate the Sensor Interface Module (SIM) housing cover on the side of ISS and open it..

2. Disconnect the Solar Panel wire on the SIM cover from the SIM board by pulling the Solar Panel connector

3. Pull the foam insert out of the cable access port in between the cables and set the foam insert aside.

4. Disconnect the anemometer cable from the sensor connector labeled WIND and, if you are using a cabled model, disconnect the console cable from the SIM.

Lift off cover, unplug solar power connector

Dettaching the SIM Cover

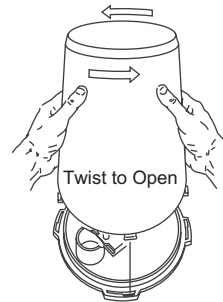5. You can now remove the ISS from its mounted position. Move it to a safe place to install the kit components.

Disassemble the Standard Radiation Shield

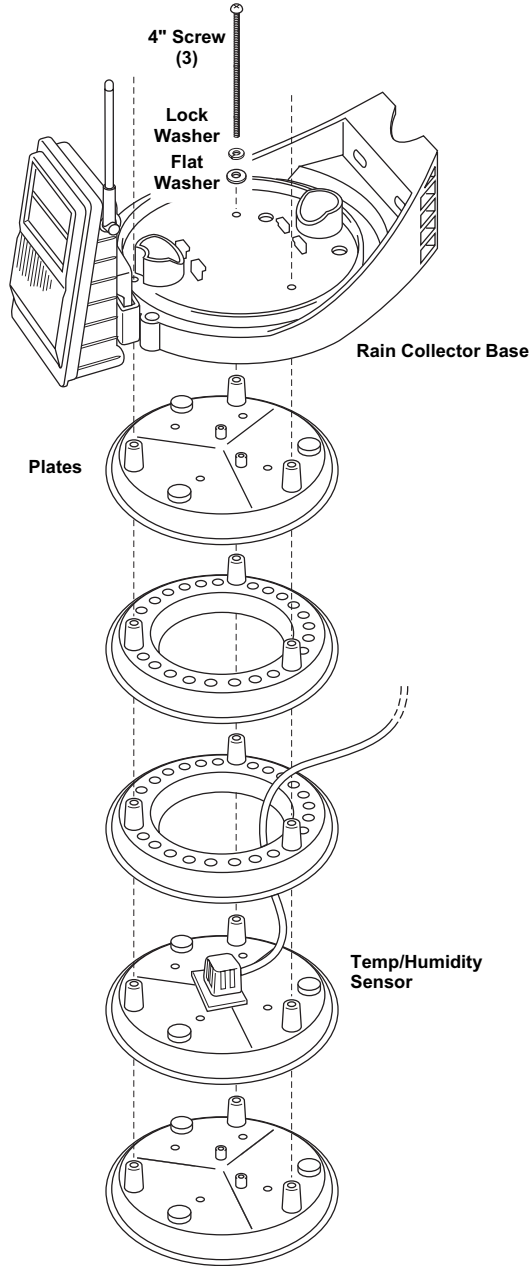Note: We recommend using a workbench or table to perform the following procedures.

1. Open and remove the SIM cover if you have not done so already.

2. Disconnect the TEMP/HUM cable from the SIM and slide the cable out of the cable access port.

3. Remove the rain collector cone from the ISS base by rotating the cone counter-clockwise. When the cone's latches line up with openings in the base, you can lift the cone off. The cone fits in the base tightly and may require extra pressure to remove the first few times.

   Steady the ISS base between your knees when removing the cone.

Twist to Open

Remove the Rain Collector Cone

4. Remove the three 8-32 x 4" screws holding the radiation shield plates together.

4" Screw (3)

Lock Washer

Flat Washer

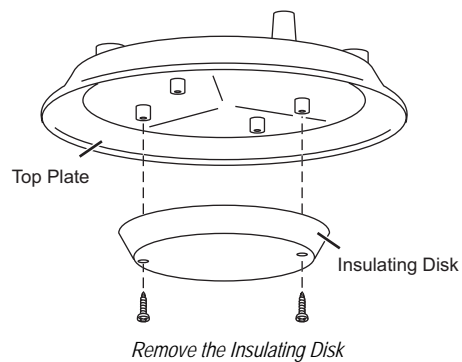**Rain Collector Base**

Plates

Temp/Humidity Sensor

Standard Radiation Shield Assembly Diagram

5. Save these three screws and washers, and keep the radiation plating together for use in the next procedure, Assemble the Lower Section (page 6).

Assemble the Lower Section

Once the existing radiation shield has been disassembled, the existing disks have to be re-organized and assembled with the fan-aspirated kit. To re-assemble the radiation shield with the new fan-aspirated shielding:
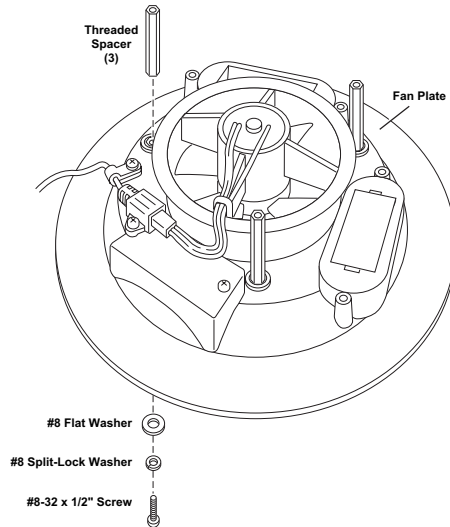
1. Locate the plate at the top of the radiation shield plating and find the insulating disk on the underside of the radiation shield.

2. Remove the two screws holding insulating disk attached on the under-side and discard it. Save the top plate for use in Step 3.

3. Start building the lower section of the new radi-ation shield , starting with the original bottom plate on bottom and the disassembled top plate above that.

Top Plate

Insulating Disk

Remove the Insulating Disk

4. Place the plate containing the Temperature/Humidity sensor and the two open plates on top of the two bottom plates.

Note: When stacking plates, make sure the screw bosses (holes) line up with each other.
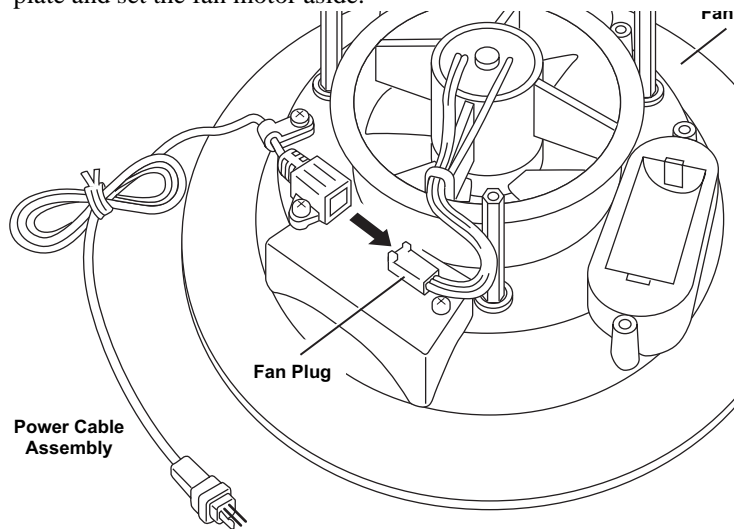
5. Place the third open plate (supplied with the fan-aspirated kit) on the stack.

6. Run the TEMP HUM cable through the top of the three open plates.

7. Set aside the re-assembled radiation shielding and find the fan plate motor assembly.

8. Attach the three threaded spacers to the fan plate using the three #8-32 x 1/2" screws and the three #8 washers and #8 lock washers included with the kit.
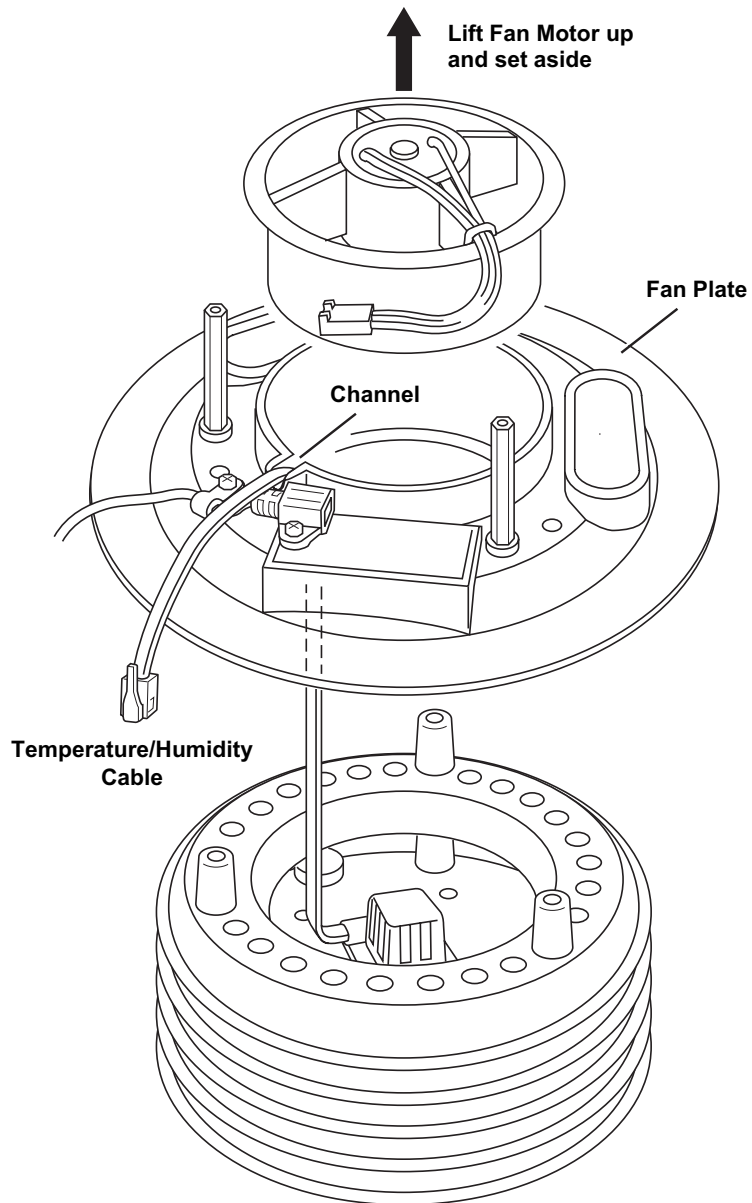

Install Threaded Spacers

9. Dettach the fan motor cable from the power cable assembly on the fan plate and set the fan motor aside.

Dettach Fan Motor Cable

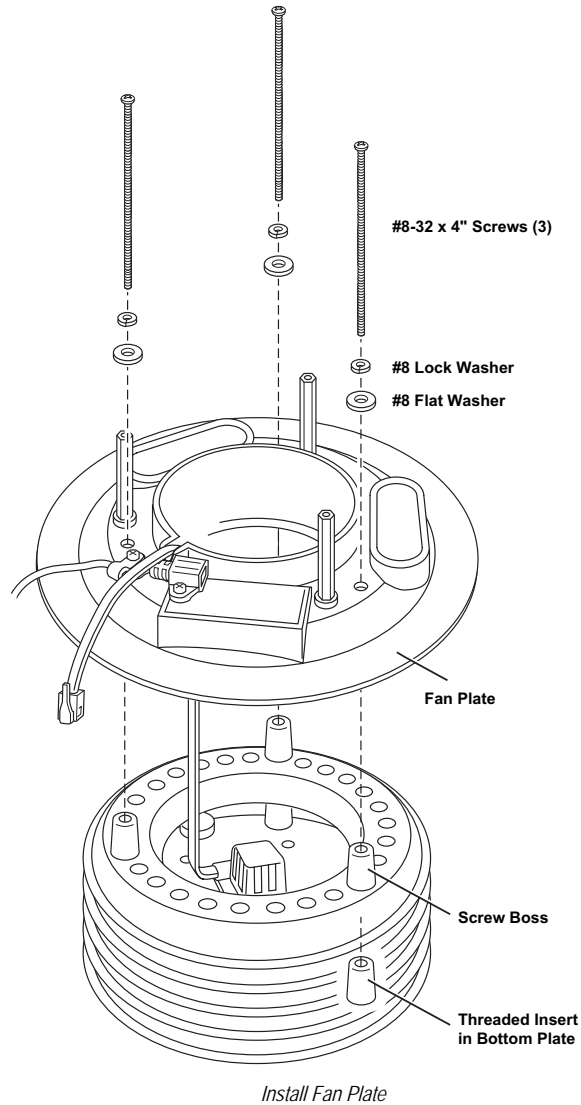10. Lower the Fan Plate onto the radiation shielding stack.

11. Bring the TEMP HUM cable over the top of the fan plate so that no slack in the cable exists between the sensor and the fan plate and press it firmly into the cable channel on the fan plate.
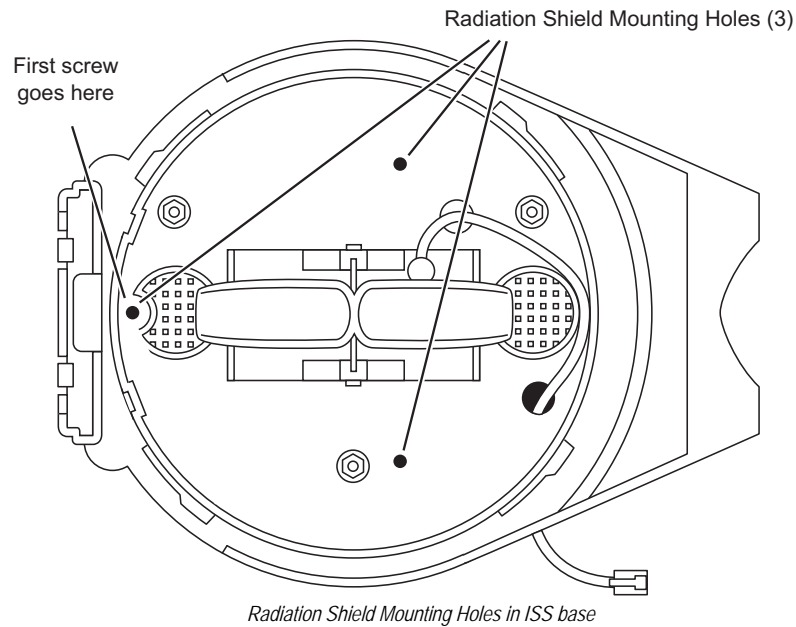
Lift Fan Motor up and set aside

Fan Plate

Channel

Temperature/Humidity Cable

Connecting the Radiation shield and Fan Unit

12. Place one of the 4" screws removed from the original radiation shield and its corresponding #8 lock washer and # 8 flat washer into one of the radiation shield plate holes on the fan plate located just counter-clockwise from a threaded spacer, making sure the screw goes through the boss in each of the plates and lines up with the threaded insert located in the bottom plate.
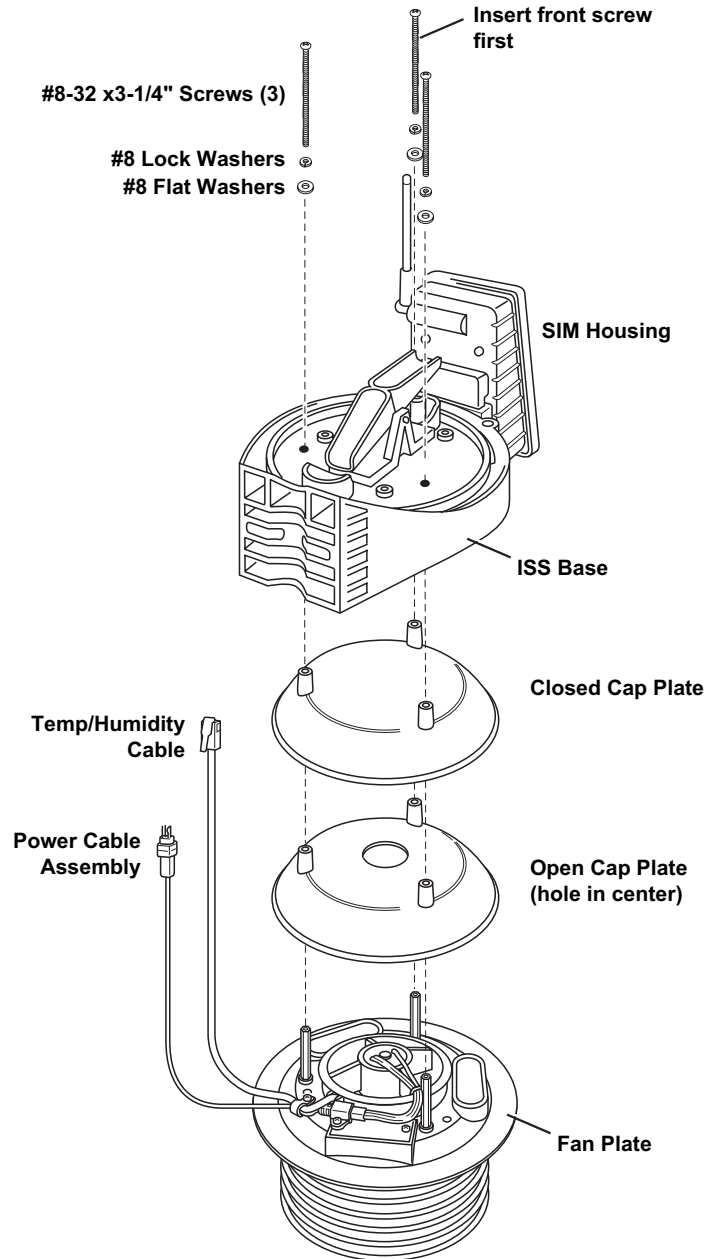

#8-32 x 4" Screws (3)

#8 Lock Washer

#8 Flat Washer

Fan Plate

Screw Boss

Threaded Insert in Bottom Plate

Install Fan Plate

13. Turn the screw a few times to engage the threaded insert in the bottom plate.

14. Make sure the other screw bosses are aligned and then insert the other two 4" screws and corresponding washers in the same way.
15. Tighten all three screws to securely fasten the bottom section of the radiation shield.
16. Place the fan motor back into place and plug the fan motor cable back into the power cable assembly.
17. Unscrew the cable clamp holding the power cable assembly in place.
18. Thread the TEMP HUM cable into the cable clamp and tighten the screw back down in its original placement.
19. Place the cap plates on top of the rest of the radiation shield and line up their bosses.
20. Insert one of the 3 1/4" screws and corresponding lock and flast washers included in the kit hardware into the ISS base using the hole indicated for the first screw in the following diagram.

Radiation Shield Mounting Holes in ISS base

21. Lower the ISS base onto the stack so that the screw goes into the boss. Turn the screw a few times to engage the threads.

Insert front screw first

#8-32 x3-1/4" Screws (3)

#8 Lock Washers
#8 Flat Washers

SIM Housing

ISS Base

Closed Cap Plate

Temp/Humidity Cable

Power Cable Assembly

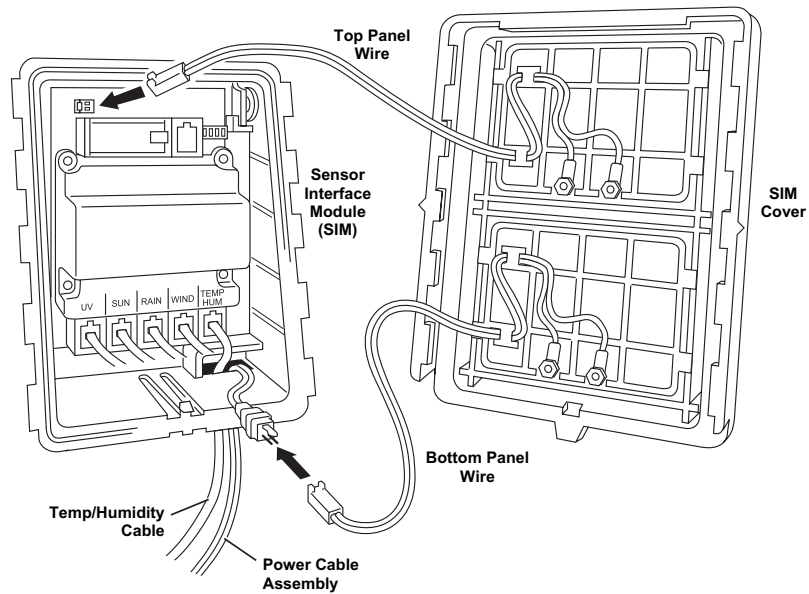**Open Cap Plate (hole in center)**

Fan Plate

Reconnecting the Radiation Shield to the Rain Collector

22. Place a lock washer and flat washer on the other two 3 1/4" screws then insert them through the remaining two screw holes.

23. Tighten all three screws to securely fasten the radiation shield to the ISS base.

Re-Install the ISS

1. Install the rain collector cone and lock it in place.

2. Slide the TEMP HUM cable and the fan-aspirated unit's solar power cable assembly through the cable access port of the SIM box.

3. Connect the TEMP HUM sensor cable.

4. Close the SIM cover temporarily without connecting the solar panel cables.

5. Re-install the ISS in its previous location.

6. Open the SIM cover and connect the WIND (anemometer) cable.

7. **Cabled ISS Only:** Connect the console cable.

8. Connect the wire coming from the top solar panel on the SIM cover included in the components of the fan-aspirated unit to the SIM board.
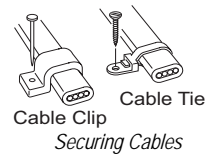

Connecting the Solar Panel Wires

9. Connect the wire coming from the bottom solar panel to power cable assembly in the SIM Box.

10. Reinsert the foam into the cable access port in the SIM box.

11. Close the SIM box .

12. Use cable ties to secure cables.

13. Make sure the fan blades rotate in a counter-clockwise direction by directing the connect SIM cover to sunlight or by shining a bright incandescent light on the solar panel.

You should hear a slight whir if the fan is running.

Guidelines for Securing Cables

- Secure cables so they will not whip about in the wind.
- Secure cables to metal poles by using a cable tie or by wrapping electrical tape around them both.
- Place clips or ties approximately every 3 to 5 feet (1 to 1.6 m).
- If needed, additional cable ties, cable tie mounts, and other hardware can be obtained at a hardware or electronics store.

Cable Clip   Cable Tie

Securing Cables

Note: Do not use metal staples or a staple gun to secure cables. Metal staples—especially when installed with a staple gun—have a tendency to cut the cables.

Take the Console Out of Setup Mode

1. At your Vantage Pro2 console, press DONE to take the console out of Setup Mode.
2. Check the console for erroneous rain data and clear if necessary.

   To clear erroneous data:
   - Select the weather variable to be cleared.
   - Press and release 2ND, then immediately press and hold CLEAR.
   - The daily rain reading will start blinking.
   - Keep holding CLEAR until the reading changes to zero.
   - Refer to your *Vantage Pro2 Console Manual* for more information on setting and clearing weather variables.
3. Congratulations! You have completed the upgrade and can now enjoy your daytime fan-aspirated radiation shield.

Maintenance

- Keep the surfaces of the ISS clean, since the radiation shield and solar panel are less effective when dirty. Remove dust from the solar panel and radiation shield with a damp cloth.
- Remove any debris obstructing air flow through the radiation shield such as leaves, twigs, webs, and nests.
- Do not spray the ISS with insecticides of any kind. Some insecticides can damage the sensors and even damage the radiation shield.

Annual Maintenance

We recommend cleaning out any debris that may have accumulated inside the radiation shield and replacing the motor (# 7758) on an annual basis. The routine procedures for annual maintenance include:

1. Remove your fan-aspirated ISS and place on a stable work surface.
2. Disassemble the radiation shield.
3. Remove any debris lodged inside the unit.
4. Clean the surfaces of the radiation shield with a damp cloth.
5. Unplug the old fan unit and remove from it from the radiation shield.
6. Install the new fan unit (#7758) and plug it into the Junction Board.
7. Assemble the Radiation Shield.
8. Re-install the ISS in its previous location.

Troubleshooting

If you are experiencing problems performing the upgrade or have problems with your Daytime Fan-Aspirated Radiation Shield, first be sure to check all cable connections. If you are unable to solve the problem, please call Davis Technical Support. We'll be glad to help. Most questions can be answered over the phone. You can also email us for support or visit our website. Sorry, we are unable to accept collect calls.

Note: Please do not return items to the factory for repair without prior authorization.

Contacting Davis Instruments

(510) 732-7814 for Technical Support, Monday – Friday, 7:00 a.m. – 5:30 p.m. Pacific Time.

(510) 670-0589 – Fax to Customer Service or Tech Support.

support@davisnet.com – E-mail to Technical Support.

info@davisnet.com – General e-mail.

www.davisnet.com – Copies of user manuals and other product documents are available on the "Support" page. Watch for FAQs and other updates. Subscribe to the e-newsletter.

FCC Part 15 Class B Registration Warning

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful inter-ference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modification not expressly approved in writing by Davis Instruments may void the warranty and void the user's authority to operate this equipment.

IC: 378810-6328

EC EMC Compliance

This product complies with the essential protection requirements of the EC EMC Directive 89/336/EC.

Addendum, Fan-Aspirated ISS Installation

Rev A Manual (November 19, 2004)
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Davis Instruments

3465 Diablo Avenue, Hayward, CA 94545-2778 U.S.A.
510-732-9229 • Fax: 510-732-9188
E-mail: info@davisnet.com • www.davisnet.com