INSTALL APPLICATIONS SUPPORTED BY THIS GUIDE:

1. Heat King (all models) 40W
2. Precedent Domestic Rail Container (DRC front skin mounted) 40W
3. Tractor Fairing Mounted 40W and 110W
4. T-Series Truck 40W and 110W

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Installation Best Practices

**WARNING:** Always wear safety glasses and protective gloves when working with batteries.

**IMPORTANT:** For the solar panel to adhere properly, both the application surface and air temperature must be above 45 F (7 C).

**NOTE:** This equipment is designed and rated for 12V DC nominal systems.

- Switch unit controls to the off position and disconnect the positive battery cable.
- Always ensure solar panel fuse (located on the harness) is removed during installation and service.
- Clean the surface with isopropyl alcohol or appropriate de-greasers to completely clean of dirt and grease before installing panel. All cleaning residue must be removed and the surface completely dry. If the surfaces have degraded due to UV and weather exposure, application and adhesion of solar panels on non-metallic surfaces, even if cleaned thoroughly, may require additional evaluation of adhesion strength. Surfaces showing loose fibers or color fading should be considered to have bond strength reductions. Mechanical fasteners and edge sealant should be added to the install.
- Care should be taken when installing solar panel as the adhesive backing is very aggressive. Once installed, the panel cannot be removed without causing permanent damage to the panel and possibly the mounting surface. If the panel is intended to be removed in the future, use only the supplied screws not the adhesive backing to secure.
- Install the charge controller near the battery to be charged or the electrical connection to avoid voltage loss in the cable.

![Typical fasteners and hardware supplied.](image)

Figure 1: Typical fasteners and hardware supplied.
Installing the Panel


1. Peel back the top 4 inches of the backing paper and apply the top edge of the panel near the rear bolts and the left side against the coolant cap cutout hole. The junction box should be facing toward the roadside of the unit.

2. With the panel properly positioned, remove the remainder of the backing paper and firmly press the panel down over the entire area. Repeat several times to ensure the entire panel is properly adhered to the sheetmetal skin. This is critical to prevent moisture between the surfaces.

3. Drill 5/32” holes at all panel grommet holes. Secure panel with #10-1/2” long thread forming screws (10 places).

4. Drill a 7/8” hole near the front roadside corner as shown.

5. Cut a slit in the provided rubber grommet and place around the controller harness. Route connector through the hole then install grommet.

Figure 2: Solar panel shown installed with harness routed through grommeted hole into unit.
Connecting the Harness

6. Connect charge controller harness and route it down the roadside corner frame.
7. Drill ¼” holes into the vertical frame member on either side of the charge controller.
8. Secure the charge controller to the frame on both sides using bandwraps through the ¼” holes and around the charge controller cables.
9. Attach the battery harness to the charge controller and route the RED/WHITE lead to the B+ positive terminal on the back of the alternator, add the small brass washers on each side of the harness ring terminal on the B+ stud and torque to 6.0 N·m (44-53 lb-in).
10. Attach the BLACK wire to the negative ground cable or to other secure chassis ground mounting hardware. Verify 0 ohms resistance to ground using a multi-meter.
11. Ensure the harness has a drip loop to prevent water from running down onto the terminals.
12. Apply sealant to the all screws securing the panel and the grommeted hole.
13. Install fuse and return the unit to service.

Figure 3: Solar panel electrical connections shown.
PRECEDENT DRC INSTALLATION

Installing the Panel


1. Peel back the top 4 inches of the backing paper and apply the top edge of the panel to the middle door skin just under the Thermo King Crest with the junction box facing toward the roadside of the unit. The curbside edge should be just inside the curbside door edge.

2. With the panel properly positioned, remove the remainder of the backing paper and firmly press the panel into the plastic skin over the entire area of the panel. Repeat several times to ensure the entire panel is properly adhered to the skin and conforms to the curve of the top door.

3. Drill 3/16” holes at each panel grommet. Insert Christmas tree fasteners (10 places). Alternate method, drill 5/32” hole at each grommet and secure with #10-1/2” long thread forming screws.

4. Drill a 7/8” hole approx 1” to the left of the edge of the panel.

5. Cut a slit in the provided rubber grommet and place around the harness exiting the panel. Place the connector through the hole and place the grommet around the hole.

Figure 4: Solar panel shown installed with harness routed through grommeted hole into unit.
6. Connect the extension harness (401293) and route the harness near the top of the roadside door hinge. Secure using band wraps and ensure the door does not bind when closing. **NOTE:** Harness 401293 is shipped with one connector not installed and tied to the harness. See wiring information on page 20 for correct polarity for connector installation.

![Figure 5: Proper harness routing shown.](image)

7. Route the harness down the roadside wall next to the condenser wall and following existing wires to starter. Ensure that the wire does not touch hot copper tubing and that it is properly band tied to solid structures or other harnesses. Coil excess cable as shown.

![Figure 6: Harness properly routed, bundled and secured.](image)

8. Attach the **white/red** wire to the positive terminal on the starter solenoid (terminal with the positive battery cable. Attach the **black** wire to the engine block ground stud behind the oil filter.

9. Coil up the extra harness length in front of the starter and secure with bandwraps.
10. Install fuse and return the unit to service.

Figure 7: Electrical connections shown.

Coil and secure excess harness.
Installing the Panel

**NOTE:** Follow “Installation Best Practices” on page 2.

**NOTE:** If installing multiple panels, see page 21.

1. Peel back approximately 4 inches of the backing paper and position solar panel to desired location on fairing.

2. With panel properly positioned, remove remainder of backing paper and firmly press panel down over entire area.
   - Press several times to ensure entire panel is properly adhered to fairing. **This is critical to prevent moisture between the surfaces.**

**Extension Harness**

3. Attach 25 ft. extension harness to solar panel connector.
   - Route and secure harness down rear of cab and over to tractor’s batteries.

**IMPORTANT:** Allow slack in the extension harness going from the cab to the tractor’s frame to allow for normal cab movement.

4. Remove 2-pin connector (attached to harness) and route harness through a rubber grommet and into tractor’s battery box.

5. Attach 2-pin connector to harness by releasing the locking tab, inserting wires until they are fully seated, and closing locking tab securely.
   - White wire (B+) into socket A
   - Black wire (B-) into socket B
**Charge Controller and Battery Harness**

6. Connect charge controller to extension harness.

7. Remove fuse from battery harness and connect to charge controller.

8. Connect terminal rings from battery harness to battery:
   - Black to Negative (-)
   - White to Positive (+)


10. Re-install fuse into harness.
Unit Installation

*NOTE: Follow “Installation Best Practices” on page 2.*

1. Switch unit controls to the off position and disconnect the positive battery cable.
2. Temporarily remove the fuse from solar panel harness.
3. Clean the surface with isopropyl alcohol or appropriate de-greasers to completely clean of dirt and grease before installing panel. All cleaning residue must be removed and the surface completely dry. If the surfaces have degraded due to UV and weather exposure, application and adhesion of solar panels on non-metallic surfaces, even if cleaned thoroughly, may require additional evaluation of adhesion strength. Surfaces showing loose fibers or color fading should be considered to have bond strength reductions. Mechanical fasteners and edge sealant should be added to the install.
4. Position the solar panel as shown - away from exhaust exit.

*NOTE: Adhesive should not be used if the solar panel is to be transferred to another truck - use the fasteners only.*

*IMPORTANT: For the solar panel to adhere properly, both the application surface and air temperature must be above 45 F (7 C).*
5. From Kit, use Item 7 (Drill 4 mm) and Item 11 (Drill 5 mm) in each of the 10 positions to secure the panel to the truck body.

*NOTE: For Plastic truck, body use Item 10 (Drill 4.5 mm).*
6. Apply sealant (Outdoor Grade). Additional sealant may be added around the perimeter of the panel to form a bead between the mounting surface and the panel edge. Take care to not get excess sealant on the panel surface.

7. Install Charge Controller (Item 2) on unit frame, use Cable Ties (Item 4).
NOTE: Refer to Annex (page 20) for more details.
8. Route harness (Item 3) from Charge Controller (Item 2) to control box between compressor and frame following other harness using Cable Ties (Item 4).


CAUTION: Make sure that the fuse is removed from solar panel harness.

9. Safely route, secure, and connect the positive (B+, red) wire to the alternator B+ terminal.
10. Route and connect negative ground (B-, black) connection below control box on chassis (below the cable entry point on truck control box).

11. Install Nameplate (Item 8) on truck battery box (if equipped) or near unit battery connections.

12. Reinstall the harness fuse, connect the positive and negative battery cable and switch unit controls to the on position.
TEST PROCEDURE

To properly test the solar output you must have the following items:

- Halogen lamp (500W or greater) or be outdoors in the daylight
- Voltage meter
- Ammeter

1. Put voltmeter on the battery and measure the voltage.
   - Voltage must be less than 12.8 V for the solar panel controller to turn on.
   - If battery voltage is not less than 12.8 V then put a 12 V load on the battery.

2. If indoors, put at least a 500 W halogen lamp approximately 600 mm above the solar panel and turn it on.

3. Put Ammeter around the positive cable from the solar panel.
   - Voltage reading should begin increasing or stay the same.
   - Amperage reading should be greater than 0.300 mA.

*NOTE: The solar panel controller may take up to a minute to turn on. The solar panel must be connected to the battery in order to turn on the charge controller.*
Figure 8: Trailer Connections Shown, Truck Similar
Troubleshooting

If the amperage reading from the positive cable from the solar panel is reading 0.00, then check the following:

- If the amperage reading at position “B” below is greater than or equal to 0.300 mA, then check the Charge controller.
- If the amperage reading at position “A” and “B” below is equal to 0 also, then check the Solar panel.
Figure 9: Trailer Connections Shown, Truck Similar
ANNEX

Pictures of Charge Controller installed.
EXPANSION PANEL INSTALLATION AND WIRING INFO

Reference the wiring diagram below for detailed information.

1. Place additional panel(s) in their chosen locations and mount according.
2. Connect provided parallel y-cable(s) together and secure using brand wraps and clamps.
   - Up to 72W may be connected into a single 5amp charge controller.
   - Up to 400W may be connected into a single 20amp charge controller.

Wiring Diagram: Expansion Panel Wiring

- **Terminal A** - is always positive + on the Solar Panel side of the charge controller.
- **Terminal B** - is always positive + on the Battery side of the charge controller.

Wiring Diagram: Single Panel Wiring

- **Terminal A** - is always positive + on the Solar Panel side of the charge controller.
- **Terminal B** - is always positive + on the Battery side of the charge controller.
ThermoLite™ Solar Panel Kit Warranty

• Solar panel kits registered within the first 12 months of installation will receive 5 years warranty coverage from date of installation. Panels not registered in that time will automatically receive 5yrs + 90 days coverage from date of manufacture.