



Service Kit

Controls Adapter
For N10X, N84X, N82X, N64X,
N62X, N51X, and N41X Series
Gas Electric Refrigerators

Purpose

The optical display assembly for this refrigerator is no longer supported. Follow the instructions below to install this kit which enables you to replace the outdated optical display assembly with a set of new controls. This kit covers N10X, N84X, N82X, N64X, N62X, N51X and N41X model refrigerators.

Service Kit Contents:

- Power Board/Adapter Plate Assy
- Optical Display
- Lamp/Thermistor Wire
- Service Kit Literature

Tools You Will Need:

- Pliers
- Wire Cutter
- Marker
- Phillips Screw Driver
- Electrical Tape
- 5/16" Nut Driver
- 1/4" Nut Driver



IMPORTANT! It is important that you:

- Read and understand these instructions BEFORE you start the installation of this kit. Contact Customer Service at 1-800-543-1219 if you have questions.
- Locate all the components described in the instructions based on your refrigerator's wiring configuration.
- Read the Notes associated with each step BEFORE performing the instructions.



NOTE: Directions that only apply to specific series and/or models are indicated by the SMS (Series / Model Specific) icon. Read the directions carefully to see how the instructions impact the unit you are servicing.

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Warning! Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. For assistance or additional information, contact a qualified installer or service agency.

Procedures

Follow the steps in the order presented.

Disconnect the Power Supply

Note: If refrigerator has an ice maker, move the water valve to allow access for removing the power board.

1. Turn the refrigerator OFF at the optical display assembly.
2. Turn OFF the refrigerator 12VDC at RV DC power distribution panel.

Remove the Old Power Board

1. Disconnect the +12VDC and -12VDC power supply wiring from power board terminals.
 - Record the initial wire location for easy identification later in the procedure.
 2. Unplug the AC power cord from the RV 120VAC outlet.
 3. Unplug the AC power cord from the power board and disconnect the green safety ground wire from back panel. Keep the screw because it will be re-used.
 4. Disconnect gas valve wires both from the power board and the gas valve. Discard wires as they will be replaced.
 5. Disconnect the spark sense (igniter) wire from high voltage spark transformer.
 6. Remove the power board cover as described below:
 - Remove (3 each) 1/4" hex head screws from the power board cover. Keep the screws for future use.
 - Remove the cover. Keep the screws for later use.
 - Use a marker to circle and identify the location of the bottom two power board cover screw holes on the refrigerator back panel. You will refer to these marks as a guide to mount the new adapter plate later in the procedure.
 7. Disconnect the AC heater wires from the power board.
 8. Unplug the 16-pin connector from power board.
 9. Disconnect DC heater wires from power board at terminals marked FLP/DC_HEAT and DC_HT_GND
- NOTE:** N10X, N84X, N64X, N51X, N41X, 3-way models **only!** If you are working on other models, skip Step 9 and go to Step 10.

10. Remove the power board as described below:
 - Remove the (2 each) 1/4" hex head screws that secure power board base to back panel.
 - Remove the power board and power board base. Keep the screws for future use.



Remove the Old Power Board, Con't.

- Remove the main wire harness from black plastic corrugated tubing.

NOTE: N51X, N41X, series only! If you are working on other models, skip Step 11 and go to Step 1 of **Install the New Power Board**.

- Carefully un-tape the area where the thermistor wires enter the back of the refrigerator and cut wires so thermistor can be removed from inside. Refer to Fig. 1.
- Remove thermistor and clip from fin assembly inside refrigerator and discard, as a new thermistor and clip will be installed.

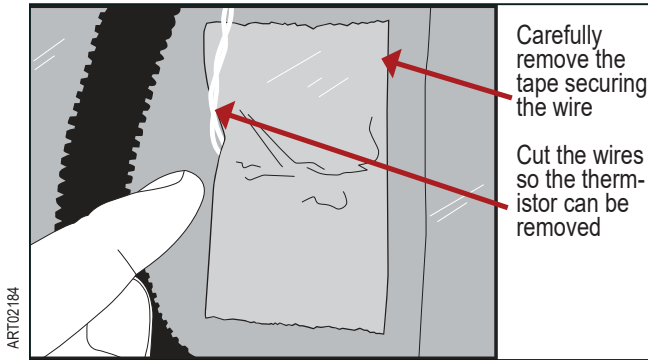


Fig. 1 Carefully untape and cut wires

- Remove and keep cardboard from back of display board. Refer to Fig. 2.

- Disconnect the wire harness from display board and discard harness, as it will be replaced in a later step.
- Remove the two hex head screws securing the display board mounting brackets to the top of the refrigerator. Keep for later use.
- Discard the display board and brackets, as they will be replaced.

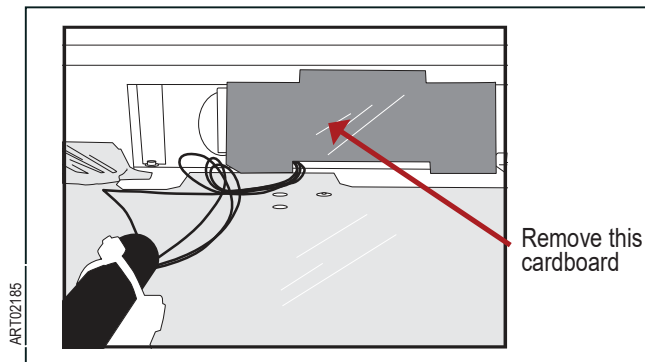


Fig. 2 Remove cardboard from back of display board

Install the New Power Board

- Locate the power board adapter plate assembly from the contents provided in the kit. Refer to Fig. 3 and 4.

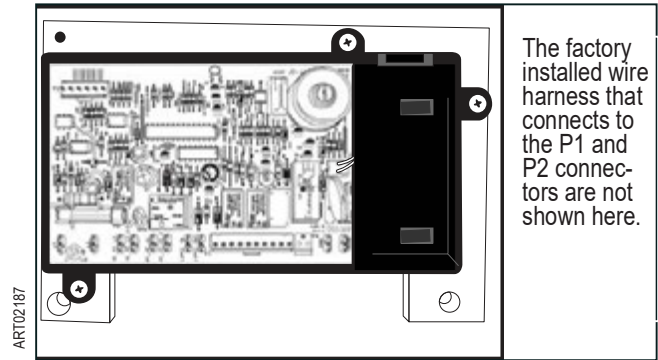


Fig. 3 2-way assembly

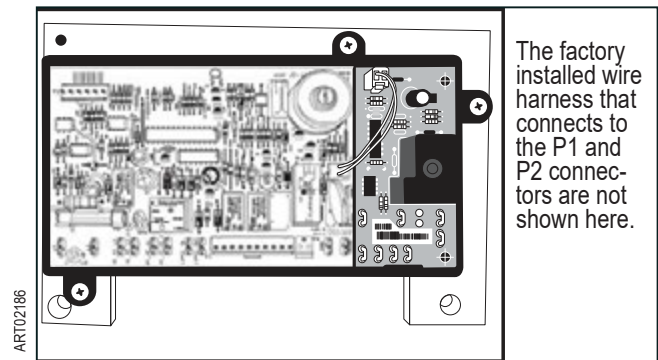


Fig. 4 3-way assembly

- Locate the thermistor/clip assembly from the plastic bag of this kit.

NOTE: N51X, N41X models only! If you are working on other models, skip Step 2 and 3 and go to Step 4.

- Clip thermistor onto 5th fin from the right.
- Insert the terminal end of thermistor wires thru the hole in the back wall of the refrigerator, being very careful not to damage/bend the terminals. Refer to Fig. 5.

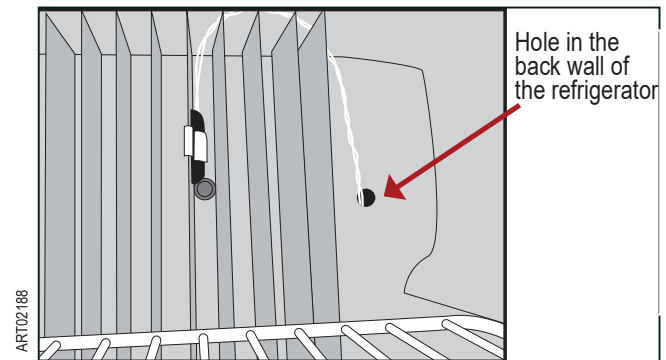


Fig. 5 Insert thermistor wires through the refrigerator back wall

IMPORTANT! Refer to the TIP on the following page BEFORE attempting to insert the wires as described above!!

Install the New Power Board, Con't.

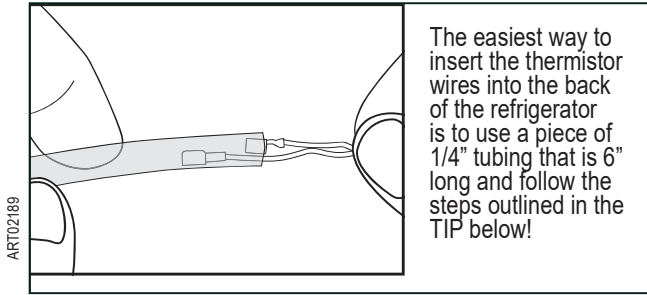


Fig. 6 Insert thermistor wires into 6" long 1/4" tubing

TIP TO AVOID DAMAGE:

- Insert thermistor wires into a 6" long piece of 1/4" tubing as shown in Fig. 6.
 - Push the wires several inches into tubing and then push tubing thru the hole in back wall.
 - From back of refrigerator, pull the tubing to allow the thermistor wires to be pulled thru back wall of refrigerator along with tubing causing no damage to the terminals.
- Using duct tape, tape off area where thermistor wires come out back of refrigerator.
- Insert one of the thermistor terminals into the connector plugged onto P2 of the power board at the number 1 position and the other at the number 6 position. Refer to Fig. 7.

NOTE: Unplugging the connector from the power board will allow for the terminal to be inserted easier.

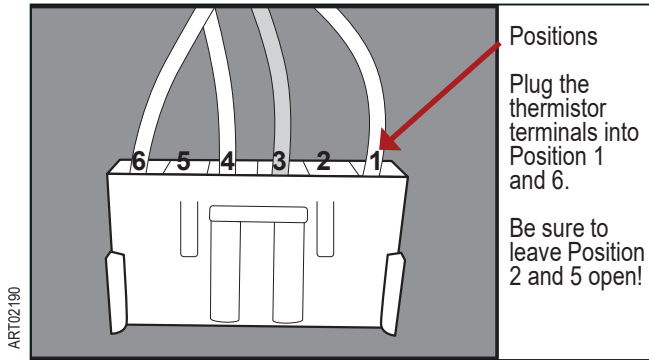


Fig. 7 Insert thermistor terminals into the connector

- Once inserted, pull on the wire to ensure locking tab has seated into connector.
- Plug the connector back onto Power board connector 2.

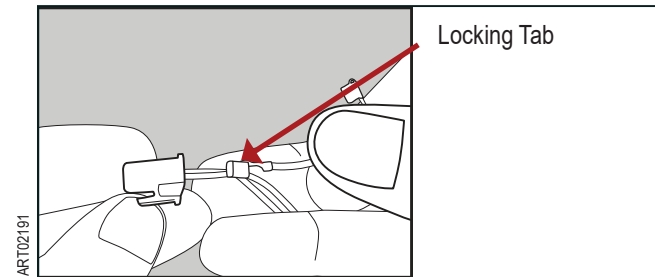


Fig. 8 Lock wire in place

- Mount the adapter plate to the back panel. Refer to Fig. 9.
 - Align the adapter plate so that the bottom two holes line up with existing holes in the back panel that you recorded in Step 6 of **Remove the Old Power Board**.
 - Insert and secure the screws, but be careful not to over tighten!
- After the adapter plate is secured in place, verify that the power board cover fits over the plate.
 - If the cover fits over the plate, remove the cover and go to Step 6 in this procedure.
 - If the cover does not fit over the plate (the spark transformer terminal and cooling unit charging tube could be in the way), leave the adapter plate secured to the back panel and remove the two hex screws used to secure the power board to the adapter plate.
 - Go to Step 6 in this procedure.

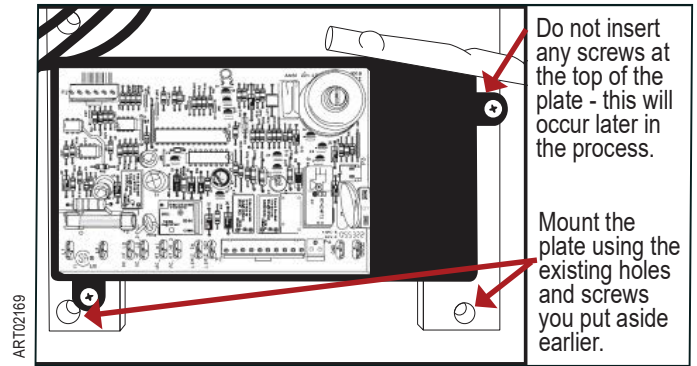


Fig. 9 Mount the adapter plate

- Locate the 2" white jumper wire from the kit. Be sure to read the Note BEFORE you before you continue.
 - Connect the jumper wire to the terminals marked LIMIT_IN and LIMIT_OUT.


NOTE: N51X and N41X only! This wire will already be installed from the factory, for N51X and N41X series - skip Step 6 and go to Step 7.

NOTE: If the refrigerator has been fitted with a high temperature limit switch on the cooling unit (thermal switch mounted to insulation pack of cooling unit), do not use the jumper wire mentioned above. Instead, follow the steps below:


 - Remove the existing red wires from the high temperature limit switch. To avoid pulling the switch off the insulation pack, DO NOT pull on the wires.
 - Locate the pair of long red wires from this kit.
 - Connect the ends of the wires having the smaller terminals to the power board terminals marked LIMIT_IN and LIMIT_OUT.
 - Connect the other ends of the wires to the terminals of the high limit switch.
 - Go to Step 7.
- Connect the AC heater wires to the power board.
 - Connect one heater lead to the terminal on the power board marked AC_HT_LO.
 - Connect the other heater lead to the terminal marked AC_HT-HI.

Install the New Power Board, Con't.

8. Connect the DC wires to the DC board.

 **NOTE: 3-way model series only!** If you are working on other models, skip Step 8 and go to Step 9.


- Connect one heater lead to terminal marked HTR_GND
- Connect the other heater lead to terminal marked DC_HTR.

 **NOTE** Refer to Fig. 17 for all the detail references that are described in the remaining procedures.

9. Connect the gas valve terminals:

- a. Connect the power board adapter harness WHITE wire located at P1-2 to (either) gas valve terminal.
- b. Connect the power board adapter harness WHITE wire located at P1-10 to (unoccupied) gas valve terminal.

10. Connect the 16-pin connector of the power board adapter harness to the existing 16-pin connector of the refrigerators main wire harness.


 **NOTE: N51X OR N41X series only!** Skip Step 10 and go to Step 11.

- Position the 16-pin connectors so that they are under the cover.

Note: If the power board cover did not fit (Step 5 of this procedure), follow the **Install Power Board Cover - ALTERNATE INSTRUCTIONS**. Otherwise, continue as described below.

11. Install power board cover from the kit:

- Make sure loose wires of power board adapter harness are routed under wire chase of power board cover. The 16-pin connectors should be positioned such that they will be under the cover.

 **NOTE:** If you are servicing a 3-way model, route the DC heater wires out the right side of the cover. See Fig. 10.

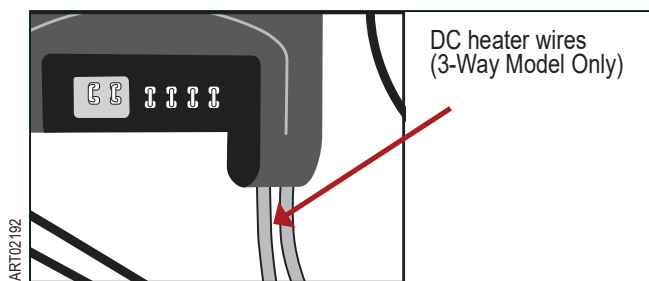


Fig. 10 Route the DC heater wires to the right side on 3-way models


- Locate the #8-15 X 1/2" Hex head screw from small plastic bag of kit and insert screw thru lower right mounting tab of power board cover. Tighten screw ensuring you do not over tighten.
 - Locate the #8-15 X 1" Phillips head screw (screw with tan colored head) from small plastic bag of kit and insert screw thru upper left mounting tab of power board cover. Tighten screw ensuring you do not over tighten.
- Note:** This screw will utilize one of the pre-existing holes of the refrigerators back panel.

12. Install the AC power cord to power board.

- Attach the AC power cords green safety ground wire and green/yellow ground wire of power board adapter harness, connected at P1-1, to back panel of refrigerator using the screw previously removed in Step 3 of **Remove the Old Power Board**.

13. Install the spark igniter wire to the spark transformer terminal that protrudes thru upper right corner of the power board cover.

14. Secure bread tie into place:


 **NOTE: N51X and N41X series only!** If you are working on other models, skip Step 14 and go to Step 15.

- Remove the bread tie from the wire harness.
- Insert the wire harness and thermistor wires into black corrugated tubing.
- Wire tie the corrugated tubing in place using adhesive wire tie mounts.

15. Locate the schematic drawing from the plastic bag in the Kit and attach it to back of refrigerator for future service reference.

16. Follow the procedures outlined in **Install the New Optical Display**. The procedures vary based on the model type you are servicing. Be sure to read the instructions thoroughly before you get started!

Install the New Optical Display Assembly

 **N10X, N84X, N82X, N64X, N62X SERIES ONLY:** If you are NOT servicing one of the units listed above, refer to the **Install the New Optical Display Assembly - N51X, N41X ONLY** instructions.

1. Remove and keep the retaining screw from the front decorative box. The decorative box is located on the left or right of the display assembly (opposite side of the door handles). The location is based on the door swing.
2. Remove (2 each) Phillips head screws holding the existing optical display assembly to the refrigerator. Keep the screws for later use.
3. Disconnect the optical display assembly from existing wire harness and discard.
4. Locate the display assembly from the kit. Connect the 12-pin connector of new display assembly to the 12-pin connector of the existing refrigerator wire harness.
5. Install new optical display assembly to refrigerator using screws from Step 1 of this procedure.

Install the New Optical Display Assembly

N51X, N41X SERIES ONLY: If you are NOT servicing one of the units listed above, refer to the **Install the New Optical Display Assembly - N10X, N84X, N82X, N64X, N62X ONLY** instructions.

1. Locate the anti-static bag provided in the kit and remove the display board with mounting brackets.
2. Install the black connector to P2 Connector on the display board:
 - Insert the black connector of display overlay to the connector of the P2 of display board. Refer to Fig. 11.

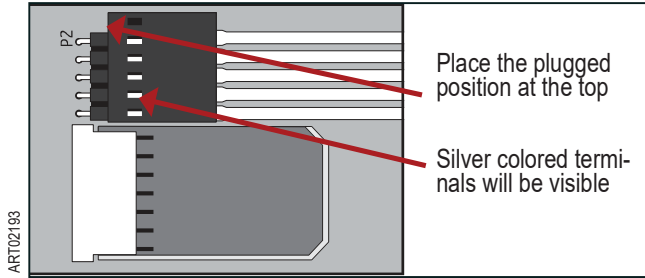


Fig. 11 Insert the black connector display overlay

- Insert the white main wire harness connector to the P1 connector of display board. Refer to Fig. 12 and Fig 13.
NOTE: Harness connector is polarized so it will only fit one way.

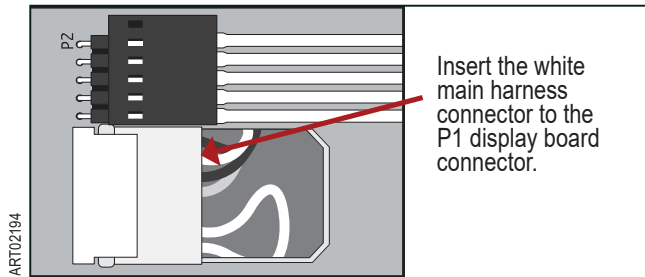


Fig. 12 Insert the white harness connector to the P1 display board connector

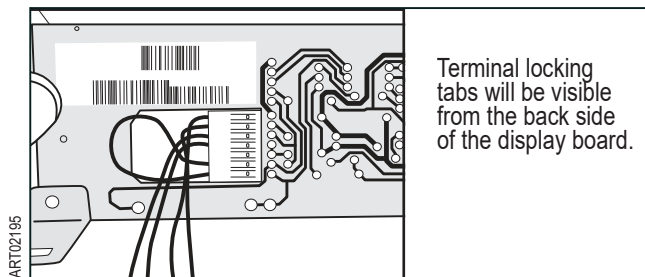


Fig. 13 Locking tabs visible from back of display board

3. Install the display board:
 - Use the cardboard protector and screws that were removed in Step 12 of **Remove the Old Power Board**.
 - Mount the display board to the top of the refrigerator.
 - Install the cardboard protector. Refer to Fig. 14.

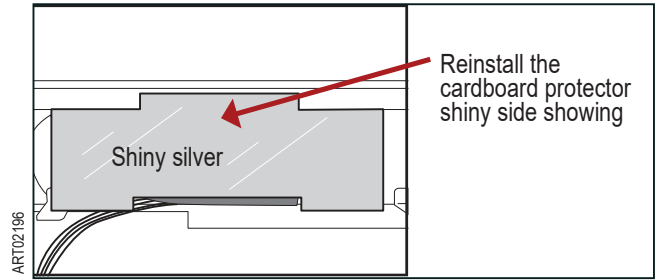


Fig. 14 Reinstall the cardboard protector

Reconnect the DC Power Supply

NOTE: 2-way models only! If you are NOT servicing a 2-way model, follow the directions for 3-WAY models.

1. Connect the battery ground wire or 12V ground from the RV's power distribution panel to the terminal on the power board marked GND. Refer to Fig. 15.

Warning! Be sure to connect the DC input leads EXACTLY as described below. Reversing the input polarity may result in damage either to the power board, the refrigerator wiring or both, **which will not be covered by warranty.**

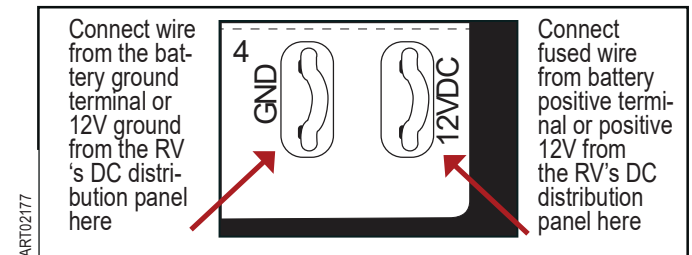


Fig. 15 Connect the battery

2. Connect the fused wire from the battery positive terminal or positive 12V from the RV's power distribution panel to the terminal on the power board marked 12VDC. Refer to Fig. 15.
3. Follow the steps outlined in the **Verify Refrigeration Operation** procedure.

Reconnect the DC Power Supply



NOTE: 3-way models only! If you are NOT servicing a 3-way model, follow the directions for 2-WAY models.

1. Locate the 2 1/4" black wire from the small plastic bag of kit.
 - Connect one end of the black wire to the terminal of the power board marked GND
 - Connect the other end of the black wire to the first terminal from the left of the DC board marked GND. Refer to Fig. 16.



Warning! Be sure to connect the DC input leads EXACTLY as described below. Reversing the input polarity may result in damage either to the power board, the refrigerator wiring or both, **which will not be covered by warranty.**

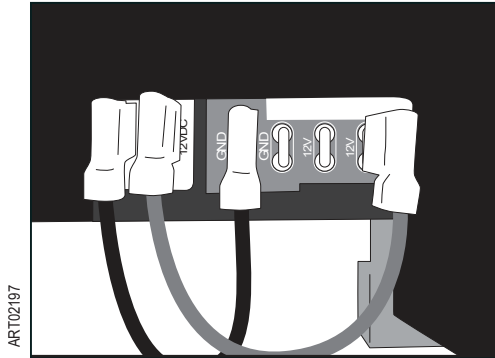


Fig. 16 3-way assembly

2. Locate 2 1/4" red wire from small plastic bag of kit.
 - Connect one end of the red wire to the terminal of the power board marked 12VDC.
 - Connect the other end of the red wire to the fourth terminal from the left of the DC board marked 12V. Refer to Fig. 16.
3. Connect battery ground wire to the vacant terminal on the DC board marked GND.
4. Connect the fused wire from the battery positive terminal to the vacant terminal on the DC board marked 12V.
5. Follow the steps outlined in the **Verify Refrigeration Operation** procedure.

Reconnect the AC Power Supply

NOTE: If the refrigerator has an ice maker, move the water valve back to its original location.

1. Plug the AC power cord into RV 120VAC outlet.

Verify Refrigerator Operation

Follow the steps below to ensure that the installation was successful and the refrigerator is operational.

1. Turn ON the refrigerator 12VDC power at the RV DC power distribution panel.
2. Turn the refrigerator ON by pressing the On/Off button of optical display assembly.
3. Ensure that the refrigerator On/Off, Mode and Temp Set controls are fully operational.

Connections Summary

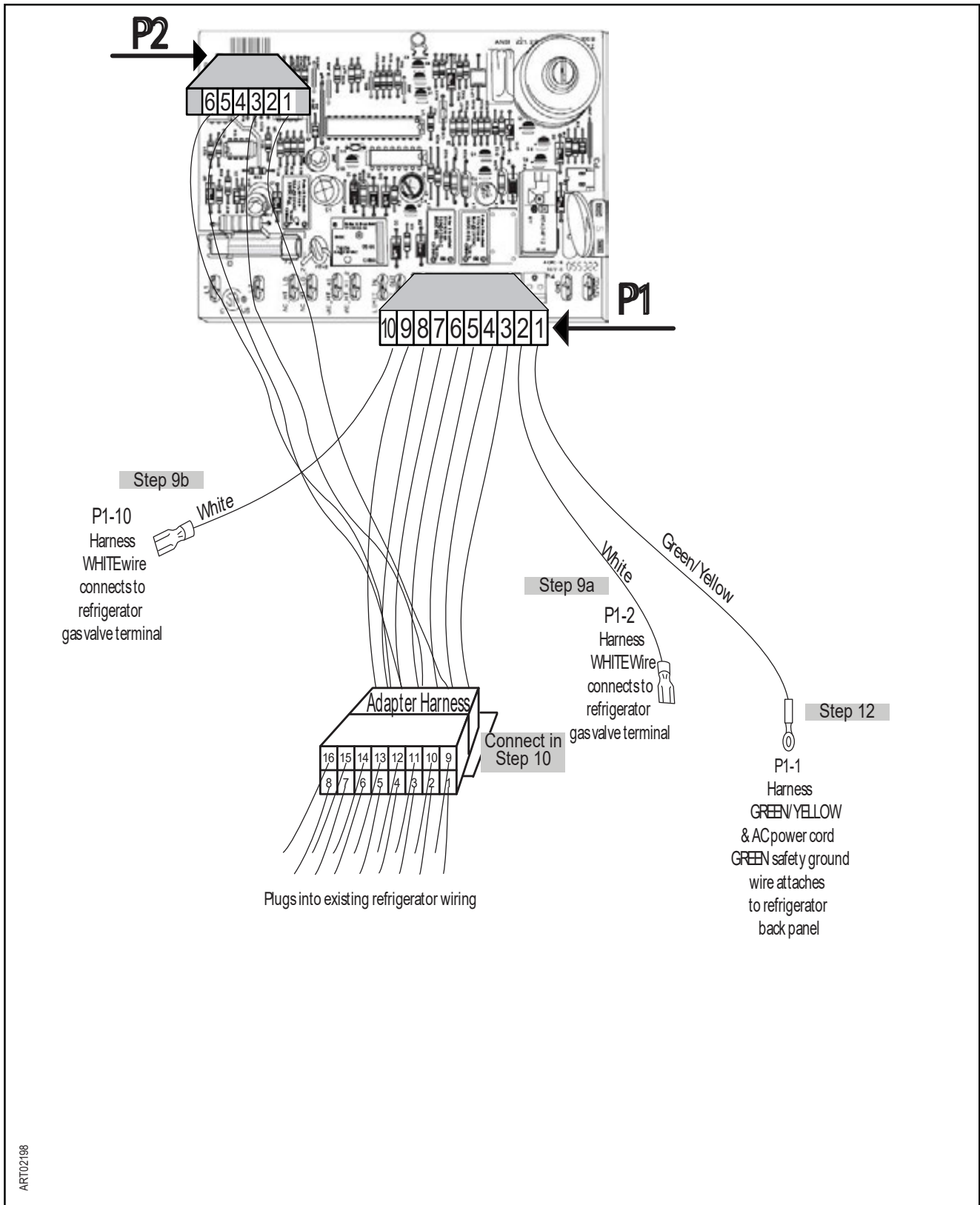


Fig. 17 Power Board with adapter harness connected to existing refrigeration wiring

Install Power Board Cover- ALTERNATE INSTRUCTIONS

The following steps identify an alternate method for installing the power board cover for installations where the cover does not fit as described in the general instructions. **Ignore these steps unless you were directed to this section!** Refer to Fig. 18.

1. Place the power board cover over the power board.
 - Make sure loose wires of power board adapter harness are routed under wire chase of power board cover.
 - The 16-pin connectors should be positioned such that they will be under the cover.
2. Coming in from the left side, position the power board and cover so that the mounting holes line up with the holes in the adapter plate.
3. Using the screws removed in Step 3, **Removed the Old Power Board**, secure the cover to the adapter plate without tightening the screws all the way.
 4. Locate the #8-15 X 1/2" Hex head screw from small plastic bag of kit.
 5. Insert screw thru lower right mounting tab of power board cover but do not tighten all the way.
 6. Locate the #8-15 X 1" Phillips head screw (screw with tan colored head) from small plastic bag of kit.
 7. Insert screw thru upper left mounting tab of power board cover.
 8. Tighten the screw ensuring you do not over tighten.

Note: This screw will utilize one of the pre-existing holes of the refrigerators back panel.
 9. Tighten the remaining three screws ensuring you do not over tighten.
 10. To complete the kit installation:
 - Return to the general instructions beginning with Step 12 of the **Install New Power Board**.
 - Follow all subsequent instructions.

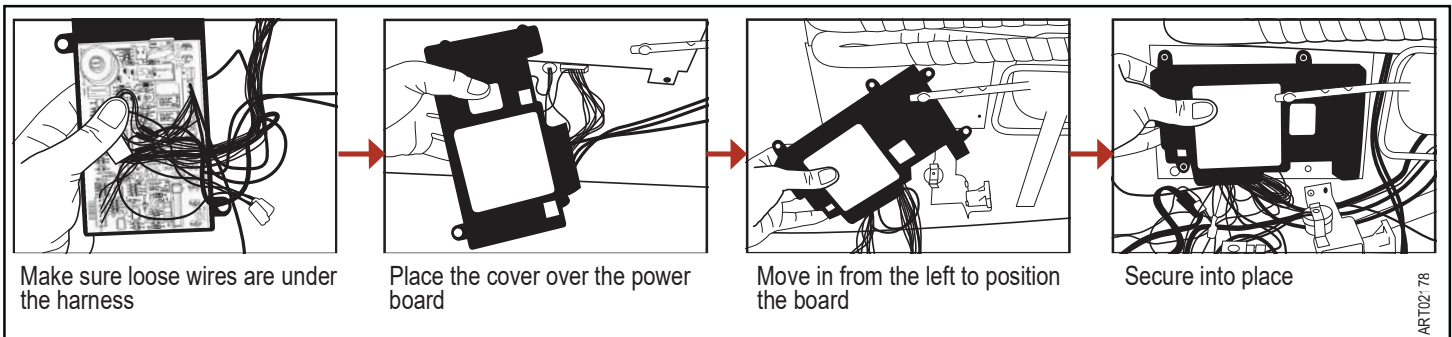


Fig. 18 Install the power board cover

Questions? 1-800-543-1219

See your dealer for more information about Norcold products.
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Over the years of running a mobile RV repair service, having a dedicated place to access service manuals for all the different appliances and components found on RVs was something that I always had a desire to create.

I hope this resource makes your RV repairs easier, as it has mine, but please be careful and follow proper safety practices when attempting to repair your own RV.

If in doubt, please consult with a professional RV technician!



DARREN KOEPP - OWNER, MY RV WORKS, INC.

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