

Replacement Ignition Controller

Applies: Models RA, RAD, RV & RAB

Description / Application

This kit is designed to provide the necessary components required to replace all types of previously used ignition controllers with the Carlin #42230 ignition controller, P/N 208973, on all Model RA, RAD, RV and RAB heaters and boilers. This controller performs the same safety function as the previous controllers. For control specifications, refer to the Carlin literature packaged with the new controller.

Replacement Kit Components

Replacement kit, **P/N 170188**, includes the parts required for replacement of all types of ignition controllers used on Models RA, RAD, RV and RAB.

Qty	P/N	Description
1	208973	Ignition Controller (Carlin #42230)
1	16354	Wire Nut
1	103338	White Wire Assembly (Hour Meter to Electrical Box Terminal #2)
1	96430	Wire Terminal (Amp #2-520405-2)



Tools Required: Flat blade screwdriver & a drill for 3/4" dia. hole; will also need a pencil.

Instructions

1. Turn off the power to the unit and turn the disconnect switch to "OFF".
2. Mark the wires, note the connections and remove the ignition controller.
 - a) At the ignition controller, mark and disconnect the thermostat (TT) and cad cell wires (FF).
 - b) Open the electric box. Locate the wires (orange, white, black and sometimes blue) from the ignition controller and make a note of where each connects in the electric box:
 - **Orange Wire - Terminal #___ or Wire Nut** .
 - **White Wire - Terminal #___.**
 - **Black Wire - Terminal #___ or Relay** .
 - **Blue Wire** (not all units will have a blue wire) - **Terminal #___.**

Disconnect the wires.

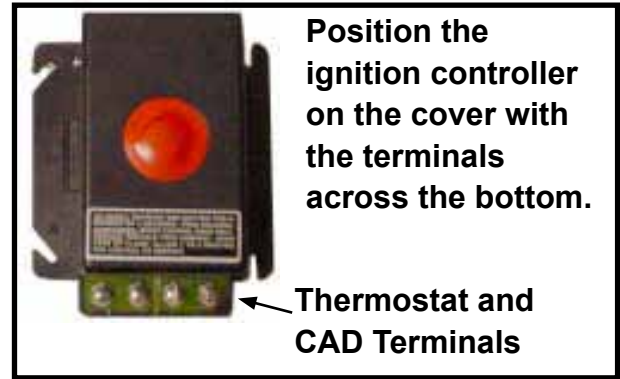
- c) Remove the three screws that hold the fixed cover to the electric box. (Save the screws for re-attaching the cover). Pull the cover loose from the box. Mark (noting either red or green light) and disconnect the wires from the indicator light(s). If there is an hour meter on the cover, disconnect the white wire lead from the terminal lug on the hour meter. Remove the cover. Remove the hour meter and light(s) from the cover and save. Remove the controller and discard. Save the hardware and the cover.

Instructions (cont'd)

3. Using the template on page 4, mark and drill a 3/4" dia. hole in the cover.

4. Install the Replacement Controller

- a) Position the new controller on the outside of the cover with the wires through the center hole and the **thermostat and cad cell terminals towards the bottom.**



Attach the controller

using the screws removed from the discarded controller.

- b) Re-install lights and/or hour meter removed in Step 1c (varies by when the unit was manufactured; perform all the steps that apply). Re-connect the light wire(s). If there are two lights, be sure to attach the wire marked red to red lamp and the wire marked green to the green lamp. **Connect the hour meter.** If there is an hour meter on the electrical box of a unit that had a Phelon controller, re-connect the white wire to the hour meter. If there is an hour meter on the electrical box of a unit that had a Beckett controller, use the white wire assembly in the kit. Connect the push-on terminal end to the terminal lug on the hour meter and connect the other end to Terminal 2 in the main electrical box.
- c) Re-attach the cover with the new controller, light(s) and/or the hour meter.

5. Connect the Wiring

- **All units** - Connect the orange, black and white controller wires to the electrical connections noted in Step 2b. If the black wire attaches to a relay, use the terminal included in the kit.
- **All units except Model RA/RAD 500** - Connect the blue wire to Terminal #8.
- **All Model RA/RAD 500 Units** - The blue wire is not used. Install the wire nut from the kit on the blue wire that is attached to the ignition controller.
- **All units** - Attach the cad cell wires (FF) and the thermostat wires to the terminals on the new controller as marked in Step 2a.

NOTE: If there is a jumper wire between Terminals #5 & #8, remove it.

6. **Installation of the replacement controller is complete.** Turn on the power to the unit and turn the disconnect switch to the "ON" position. Verify correct operation with the **Sequence of Operation** instructions and the **Firing Sequence** (shown below).

Sequence of Operation

1. Turn on the main electric power supply.
2. Set the disconnect switch to the "ON" position. The **GREEN** light near the switch will light up.
3. Reset the ignition controller. On the ignition controller, push in and hold the **RED** reset button for four seconds, then release it.
4. Set the thermostat to call for heat.

FIRING SEQUENCE

1. On a **first call** for heat, **after approximately ten minutes**, the oil heater will exceed the low temperature limit setting, allowing the power to the ignition controller. The **GREEN** light next to the ignition controller will light up. On subsequent calls for heat, the oil heater may already be above the low limit setpoint and the waiting period will not occur.

Sequence of Operation (cont'd)

2. The ignition controller will turn on the ignition transformer, fuel pump, air compressor, burner motor, fuel valve and the optional draft booster (if so equipped).
3. Ignition will occur. If the ignition does not occur within 30 seconds, the ignition controller will lockout. If the unit locks out, reset the controller by pressing and holding down the **RED** reset button for four seconds, then release it. **DO NOT RESET MORE THAN ONE TIME.**

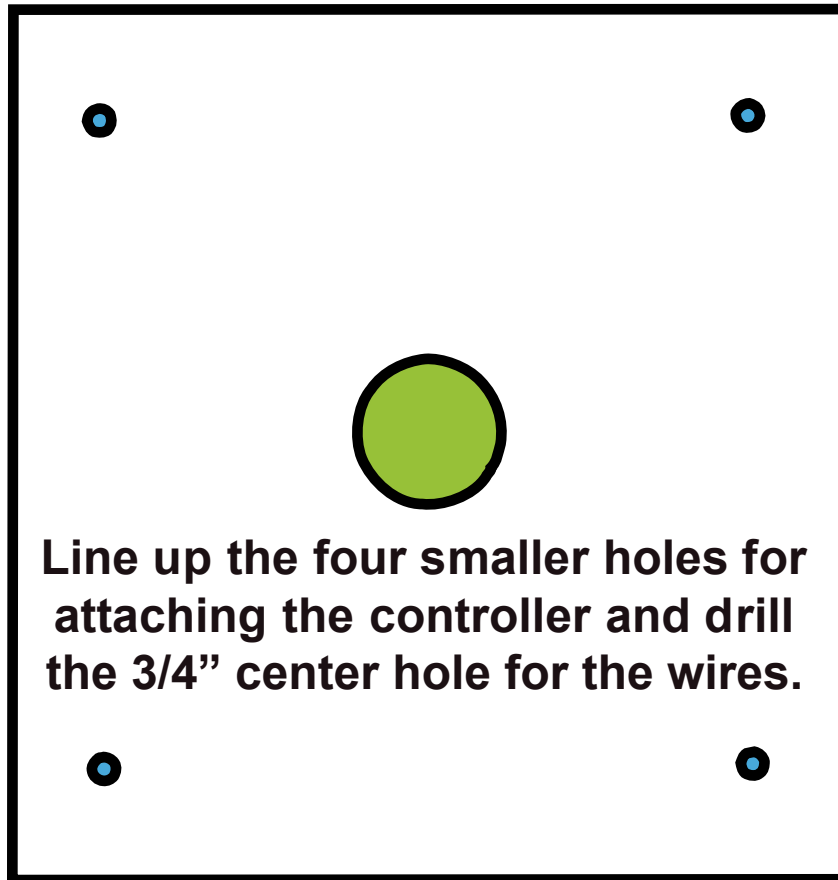
MOMENTARY FUEL OR ELECTRICAL INTERRUPTION

1. If flame failure occurs during a run, the motor will immediately shut off. A 90 second "recycle" period will begin, followed by a new trial for ignition period. (**NOTE:** Allow 60 to 120 seconds for recycle period).
2. Power loss during a run will cause the burner to safety shut down and begin a normal trial for ignition upon power restoration.

THERMOSTAT SATISFIED

1. The fuel pump, air compressor and fuel valve shut off.
2. Blower / fan, burner motor and draft booster (if so equipped) remain on until the heat exchanger cools (approximately three minutes).

**USE THE TEMPLATE BELOW FOR A DRILLING 3/4”
DIA. HOLE IN THE ELECTRICAL BOX FIXED COVER.**



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Specifications & illustrations subject to change without notice or incurring obligations.

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