

# Replacement Ignition Controller for Models RA/RAD 140, 235, and 350

## Description/Application

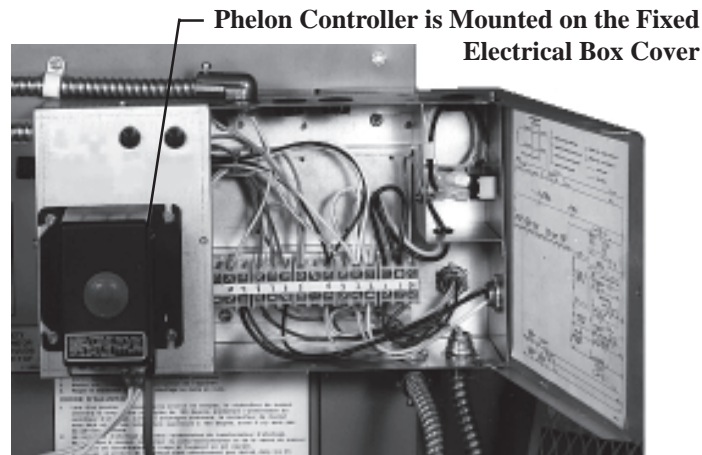
This kit is designed to provide all the necessary components required to replace a Phelon #42230-02A, P/N 123230, ignition controller with the Honeywell #R8284G1302, P/N 157054, on a Model RA/RAD 140, 235, or 350 heater. The controller performs the same safety function as the Phelon controller. For control specifications, refer to the Honeywell manual packaged with the new controller.

**NOTE:** This kit may also be used to replace a Beckett controller. Follow the instructions that apply to heaters with a Beckett controller.

The replacement kit, P/N 170188, includes:

Qty	P/N	Description	Usage
1	157054	Honeywell #R8184G1302 Oil Burner Primary Ignition Controller	Replaces controller on all units.
1	147351	Wiring Diagram Label	For a heater with a CSA rating plate.
1	144851	Wiring Diagram Label	For a heater with a UL rating plate.
1	122116	6", 18 gauge, Blue Wire	Use on all units.
1	16354	Wire Nut	Use on a heater with a CSA rating plate.
1	103338	White Wire Assembly (Hour Meter to Terminal 2)	Use when replacing a Beckett controller on a heater with an hour meter on the electrical box.

**Figure 1 - Illustrations showing Electrical Box and Controllers (The appearance varies depending on when the unit was manufactured and whether it has a UL or CSA rating plate.)**



**Phelon Controller is Mounted on the Fixed Electrical Box Cover**

**Currently manufactured design -- fixed cover on a unit with a CSA rating plate has two lights (illustrated); fixed cover on a unit with a UL rating plate has one light and a hole plug; the hour meter is on the pump assembly**



**Beckett Controller with no lights and hour meter**



**Phelon Controller with two lights and hour meter**



**Phelon Controller with one light and hour meter**

## Instructions

**Tools Required:** Screwdriver; drill for 3/4" hole

1. Turn off the power to the unit and turn the disconnect switch to "OFF".
2. **Remove Phelon or Beckett Controller**
  - a) At the controller, mark and disconnect the thermostat (TT) and cad cell (FF) wires.
  - b) Open the electrical box. Disconnect the following controller wires:
    - **Units with a UL rating plate** - Remove orange wire from Terminal #5
    - **Units with a CSA rating plate** - Remove the wire nut connecting the orange wire
    - **All units** - Remove white wire from Terminal #2
    - **All units** - Remove black wire from Terminal #4
    - **All units** - Remove blue wire from Terminal #8
  - c) Remove the three screws that hold the fixed cover to the electrical 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 the light(s) from the cover and save. Remove the controller and discard. Save the hardware and the cover.

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

### 4. Install the Replacement Controller



- a) Position the Honeywell controller on the cover with the wires through the hole and the **thermostat and cad cell terminals toward the bottom**. Attach the controller using the screws removed from the discarded controller.

## Instructions (cont'd)

### 4. Install the Replacement Controller (cont'd)

b) Replace lights and/or meter removed to drill the hole.

Re-connect the light wires. If there are two lights, be sure to attach the wire marked red to the red lamp and the wire marked green to the green lamp.

**If there is an hour meter on the electrical box of a heater 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 heater 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.

### 5. Connect the Wiring

**All heaters** - connect the following controller wires:

- **Units with a UL rating plate** - Orange wire to Terminal #5

- **Units with a CSA rating plate** - Use the wire nut in the kit to connect the orange wire to the orange fuse wire

- White wire to Terminal #2
- Black wire to Terminal #4
- Blue wire to Terminal #8

**All Heaters** - Using the 6" blue wire in the kit, install a jumper from Terminal #5 to Terminal #8.

**All Heaters** - Re-attach the cad cell wires (FF) and the thermostat wires (TT) to the new controller.

6. Select the wiring diagram for the unit being serviced.

- P/N 147351 for a heater with a CSA rating plate
- P/N 144851 for a heater with a UL rating plate

Locate the original wiring diagram on the inside of the electrical box door. Position the new wiring diagram label so that it covers the original diagram. Remove the backing and adhere the new diagram over the original. Close the electrical box door.

7. Installation of the replacement controller is complete. Turn the power on to the unit and turn the disconnect switch to the "ON" position. Verify correct operation with the Operating and Firing Sequence listed below.

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## Sequence of Operation

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

### FIRING SEQUENCE

1. On a **first call** for heat, **after approximately 10 minutes** the oil heater will exceed the low temperature limit setting, allowing power to the ignition controller. The GREEN light next to the ignition controller will be lit. On subsequent calls for heat the oil heater may already be above the low limit setpoint and the waiting period will not occur.
2. The ignition controller will turn on the ignition transformer, fuel pump, air compressor, burner motor, fuel valve, and optional draft booster (if so equipped).
3. Ignition will occur. If 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 on the RED reset button for four seconds and then releasing it. **DO NOT RESET MORE THAN ONE TIME!**

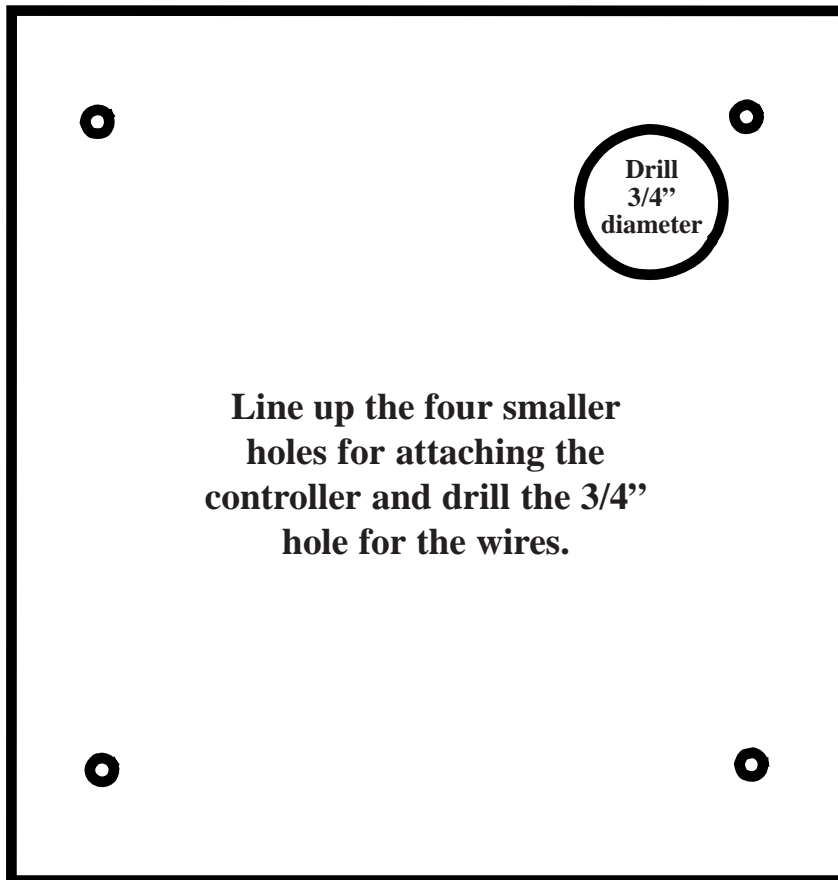
### MOMENTARY FUEL OR ELECTRICAL INTERRUPTION

1. If flame failure occurs during a run, the ignition controller will attempt to re-establish ignition for 30 seconds before locking out.
2. Power loss during a run will cause the burner to safely 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 heat exchanger cools (approximately three minutes).

**Use the template below for  
drilling 3/4" hole in the  
electrical box fixed cover.**



***Thomas & Betts***

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