

# Conversion Package for PV Units Equipped with G13 Ignition System to G770 with Lockout Pilot System for Natural or Propane Gas - Package P/N 54269

## Material List – Package P/N 54269

Item	Qty	P/N	Description
1	1	97547	Ignition Controller, Johnson #G770NGC-4
2	2	90503	Sheetmetal Screws, Type-B, #6 x 1" lg. (for attaching controller)
2	1	41775	Vertical Pilot, Penn #J999HHW-6221 with natural gas orifice
3	1	37801	Propane Gas Pilot Orifice, #4209
4	1	44678	Auxiliary Flame Sensor Bracket, Penn #Y5900-1
5	2	43594	Flame Sensor Probe, Penn #Y75BA-3
6	1	92848	Flame Sensor Wire
1	1	96101	Lighting Instruction Plate
1	1	44698	Blue Wire Assy, 105°C, 18 Ga. X 18" with two terminals (P/N 2461)
1	1	90501	Yellow Wire Assy 105°C, 18 Ga. X 19" with one terminal (P/N 2461)
2	2	95227	Red Wire Assy, 105°C, 18 Ga. X 18" with one terminal (P/N 2461)
1	1	42699	Yellow Wire Assy 105°C, 18 Ga. X 12" with two terminals (P/N 2461)
2	2	43984	Blue Wire Assy, 105°C, 18 Ga. X 18" with one terminal (P/N 2461)
1	1	60161	White Wire Assy, 105°C, 18 Ga. X 18" with two terminals (P/N 2461)
1	1	40329	White Wire Assy, 105°C, 18 Ga. X 18" with one terminal (P/N 2461)
1	1	98419	Green Ground Wire Assy, 105°C, 18 Ga. X 3" with terminals (P/N 1350 and 2461)

**Figure 1 - Items 1-6 of Conversion Package, P/N 54269**



**IMPORTANT:** If the Model PV unit is equipped with a gas valve with a built-in safety pilot, the valve **MUST** be replaced with a redundant gas valve. Consult Valve Replacement Form RGM 714 and /or your Reznor Representative concerning a replacement valve.

**WARNING:** Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury, or death. Read the installation, operation, and maintenance instructions thoroughly before installing or servicing this equipment. Save this form for future reference.

**DANGER:** This replacement ignition controller kit is to be installed by a qualified service agency in accordance with these instructions and in compliance with all codes and requirements of authorities having jurisdiction. Failure to follow instructions could result in death, serious injury, and/or property damage. The qualified agency performing this work assumes responsibility for this installation.

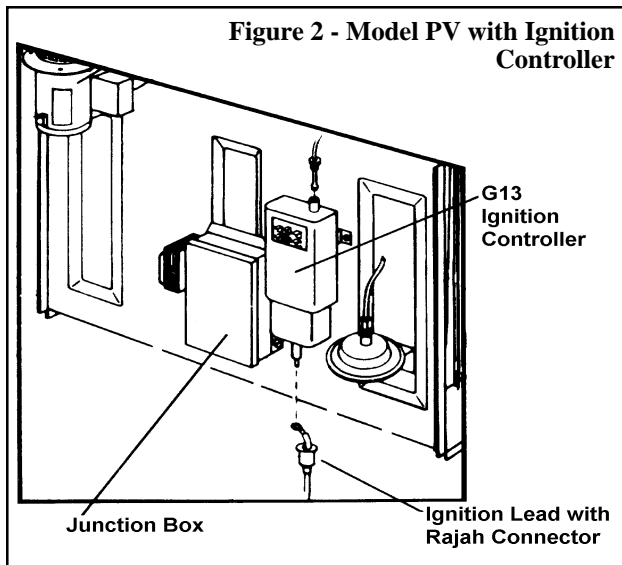
### Installation Instructions

1. Turn off the gas and power supply at the shutoff valve upstream of the electric gas valve and the pilot valve. Disconnect the electrical supply. (See Important Note in Figure 1.)
2. Remove the lower side access panel. Refer to Figures 2 and 3 and locate the identified parts.
3. To remove the present vertical pilot and install the new one, it will be necessary to pull out the burner rack. The burner rack is designed to be pulled out like a drawer, and the pilot assembly can be

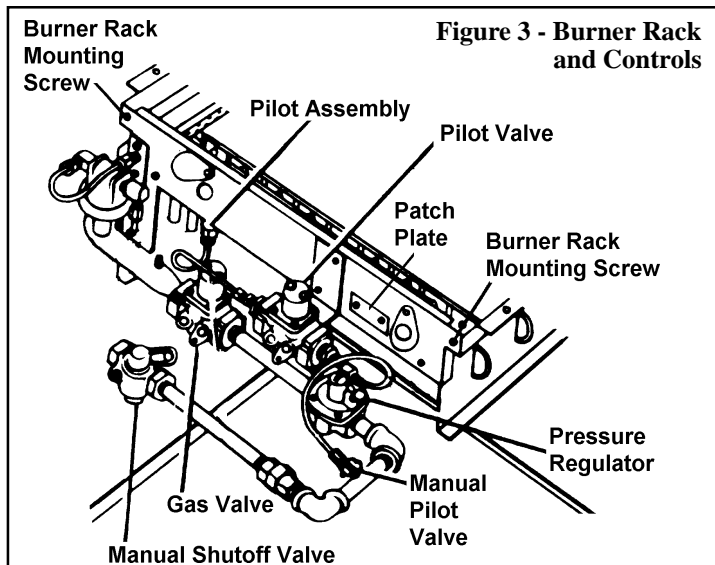
reached with the burner rack drawer pulled out approximately six inches. To pull out the burner rack drawer:

- a) Locate the ignition controller. Disconnect the flame sensor lead and ignitor lead from the ignition controller.
- b) At the gas valve, mark the wires and disconnect.
- c) Uncouple the union in the main gas supply.
- d) Take out the two sheetmetal screws in the top corners of the burner drawer assembly.

**Figure 2 - Model PV with Ignition Controller**



**Figure 3 - Burner Rack and Controls**



## Installation Instructions (cont'd)

- e) Pull the burner drawer out slowly (be careful not to pull it out too far) until the bottom of the pilot assembly is easily reached. Remove the pilot assembly by loosening the two screws that are holding it to the burner rack. Save these screws to use when attaching the new pilot assembly.

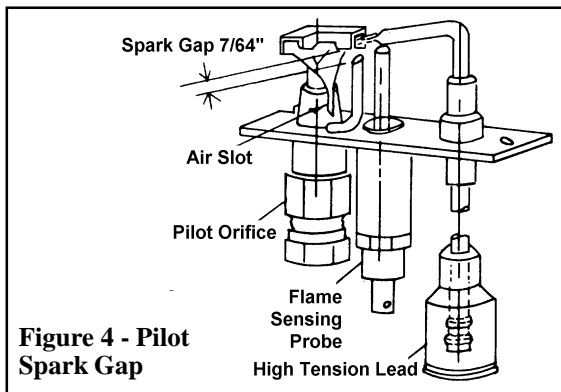
Install the new pilot assembly:

**Natural Gas Units** - Install the new pilot assembly (Item 2) on the burner rack. (The propane pilot orifice (Item 3) included in the kit will not be used.)

**Propane Gas Units** - Remove the pilot orifice from the new pilot assembly (Item 2). Replace it with the propane pilot orifice (Item 3) shipped loose in the kit. Install the new pilot assembly with the propane orifice. (The natural pilot orifice removed from the pilot burner will not be used.)

Insert one of the flame probes (Item 5) in the pilot assembly. Lightly tighten the brass fitting on the probe.

Check the spark gap of the pilot burner. Correct spark gap is 7/64". See Figure 4 for correct measurement.

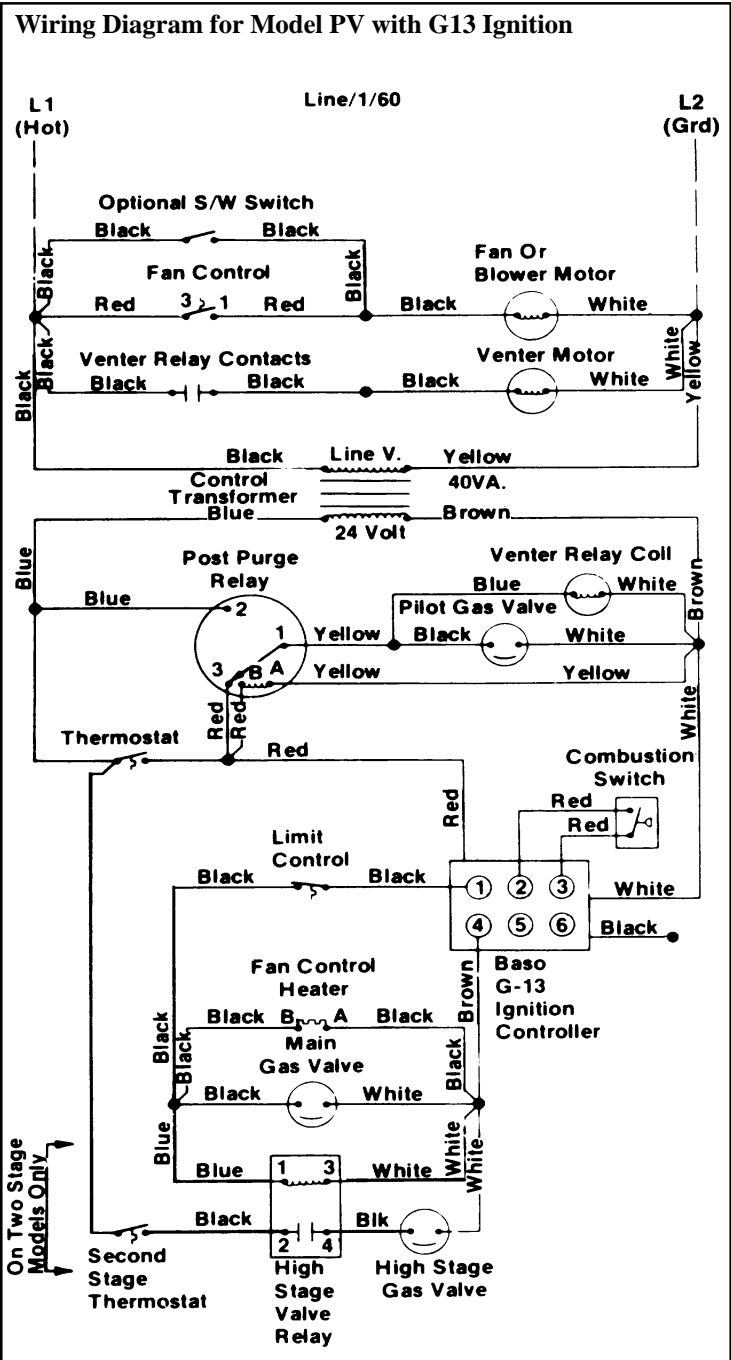


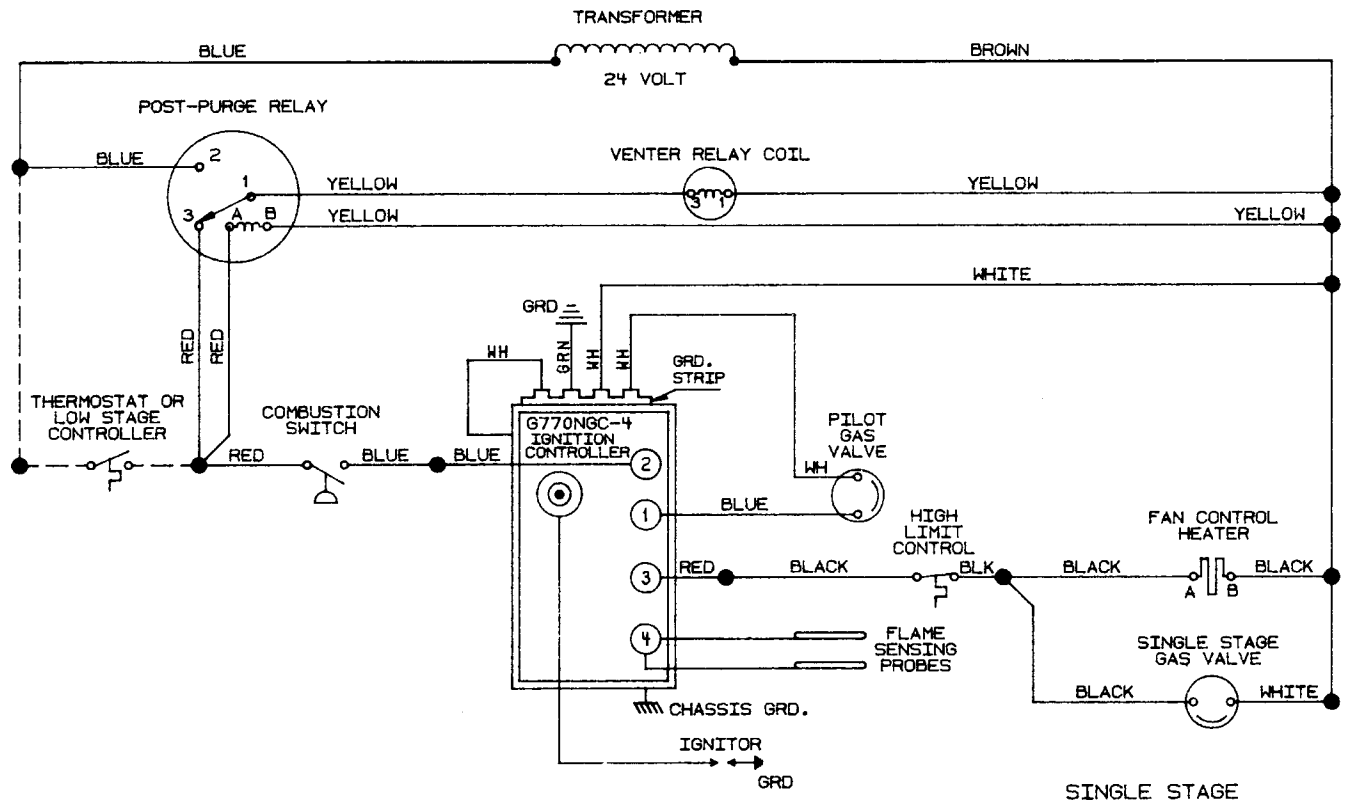
Carefully slide the burner rack drawer back into the unit. Replace the sheetmetal screws in the top corners of the burner rack.

- To install the auxiliary flame probe bracket, remove the patch plate on the front side of the burner rack (See Figure 3). Using the screws that were holding the patch plate, mount the flame probe bracket (Item 4) into the oblong hole. Insert the other flame sensor probe (Item 5) into the bracket. The flame probe rod should extend slightly over the top of the first burner.
- Disconnect and remove the old ignition controller.
- Install the new G770 ignition controller (Item 1) - Connect the ignitor lead from the new pilot assembly to the G770 ignition controller by pushing the wire on to the spike connection. With the ignitor lead attached, position the G770 ignition controller in the same area as the G13 was and as high as the ignitor lead will allow. Mark and drill two 7/64" holes to mount the controller. Using the 1" screws in the kit, mount the new G770 ignition controller. Check the ignitor lead connection to be sure that the spike is fully inserted and wire is secure.
- Remove the junction box cover. Using the wires in the kit, rewire per the wiring diagrams on page 3 or 4. Select the correct diagram for either a single-stage or two-stage unit.
- Turn on the power and the gas supply. Bleed the pilot and main gas lines. Check for gas leaks using a leak-detecting solution.

**WARNING: All components of gas supply system must be leak tested prior to placing equipment in service. NEVER TEST FOR LEAKS WITH AN OPEN FLAME. FAILURE TO COMPLY COULD RESULT IN PROPERTY DAMAGE, SEVERE PERSONAL INJURY OR DEATH.**

- Replace the junction box cover. Adhere the new lighting instruction plate to the control box. Replace the access panel.
- Follow the instructions on the lighting instruction plate to re-light the heater. Check complete operation of the heater. **CHECK ALL SAFETY FEATURES FOR PROPER OPERATION.** Keep the wiring diagrams printed in this manual for future reference.





**Wiring Diagram for Single-Stage Model PV with G770 Ignition Conversion**

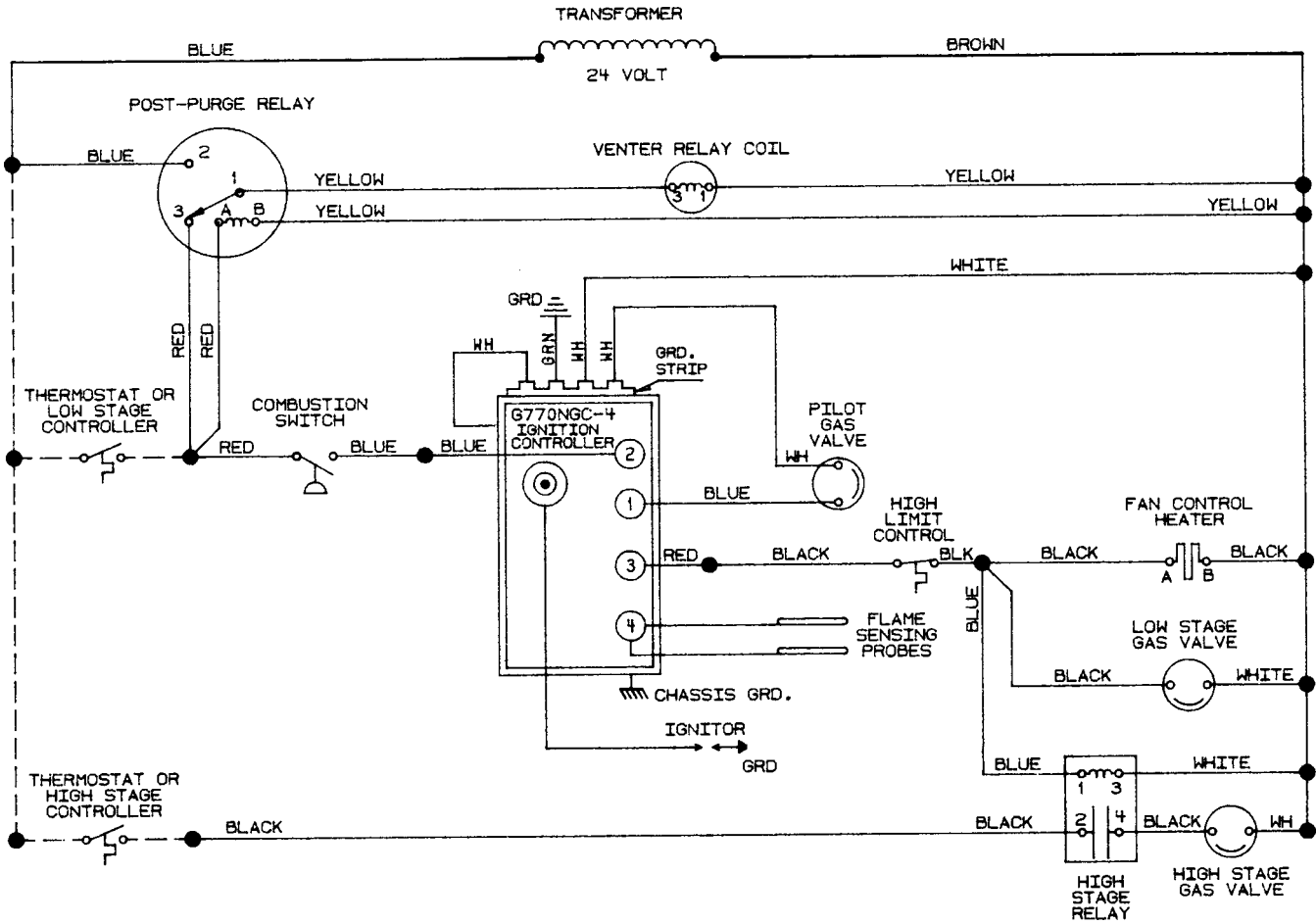
### OPERATING SEQUENCE

1. Set thermostat at lowest level setting.
2. Turn on power to unit.
3. Turn on main and pilot manual gas valves.
4. Set thermostat at desired setting.
5. Thermostat calls for heat.
  - (a) Energizing the venter motor.
  - (b) Powering the post-purge relay coil.
6. Venter flow switch changes position, powering the ignition controller.
7. With power supplied to the ignition controller, the pilot gas valve is energized and pilot lights from ignitor.
8. The sensing probe proves the presence of pilot flame.
  - (a) De-energizing the ignitor.
  - (b) Energizing the high stage relay (two-stage only).
  - (c) Energizing the gas valve.
9. Fan control senses heat exchanger temperature, energizing the blower motor.
10. Thermostat is satisfied.
  - (a) Solenoid gas valve de-energizes.
  - (b) Pilot gas valve de-energizes.
  - (c) Ignition controller de-energizes.
  - (d) Post-purge relay keeps venter motor on for approximately three minutes (post purge).
  - (e) Fan control keeps blower or fan on while unit is hot.
11. If the flame is extinguished during main burner operation, the safety switch closes the main valve and recycles the spark gap. If pilot is not established within 120 seconds (approx.), unit locks out and must be reset by interrupting power to the control circuit (see Lighting Instructions).

### WIRING NOTES

1. **CAUTION:** If any of the original wiring as supplied with the appliance must be replaced, it must be replaced with wiring material having a temperature rating of at least 105°C, except for sensor lead wire, ECO wires, and limit wiring which must be 150°C.
2. Use 14 gauge wire for line and motor wiring on unit.
3. Use 18 gauge wire for control wiring on unit.
4. Dotted wiring supplied and installed by others.
5. Thermostat supplied as optional equipment.
6. **On 208/230V the control transformer has a dual voltage primary.**  
 For 208V units, use black and red leads (cap yellow).  
 For 230V units, use black and yellow leads (cap red).  
 Secondary side of transformer (24V), use blue and brown leads.  
**On 120V units the control transformer is single voltage primary.**  
 Use black and yellow leads for 120V.  
 Secondary side of transformer (24V), use blue and brown leads.
7. Fan or blower motor supplied and installed by others.

FIELD CONTROL WIRING		
Length and Gauge		
Total Wire Length	Distance from Unit to Control	Minimum Recommended Wire Gauge
150'	75'	#18 Ga.
250'	125'	#16 Ga.
350'	175'	#14 Ga.



Wiring Diagram for Two-Stage Model PV with G770 Ignition Conversion

**FOR YOUR SAFETY**

If you smell gas:

1. Open windows.
2. Don't touch electrical switches.
3. Extinguish any open flame.
4. Immediately call your gas supplier.

The use and storage of gasoline or other flammable vapors and liquids in open containers in the vicinity of this appliance is hazardous.

**DANGER:** The gas burner in Reznor gas-fired equipment is designed and equipped to provide safe and economically controlled complete combustion. However, if the installation does not permit the burner to receive the proper supply of combustion air, complete combustion may not occur. The result is incomplete combustion which produces carbon monoxide, a poisonous gas that can cause death. Safe operation of indirect-fired gas burning equipment requires a properly operating vent system which vents all flue products to the outside atmosphere. FAILURE TO PROVIDE PROPER VENTING WILL RESULT IN A HEALTH HAZARD WHICH COULD CAUSE SERIOUS PERSONAL INJURY OR DEATH.

Always comply with the combustion air requirements in the installation codes and instructions. Combustion air at the burner should be regulated only by manufacturer-provided equipment. NEVER RESTRICT OR OTHERWISE ALTER THE SUPPLY OF COMBUSTION AIR TO ANY HEATER. Indoor units installed in a confined space must be supplied with air for combustion as required by Code and in the heater installation manual. MAINTAIN THE VENT SYSTEM IN STRUCTURALLY SOUND AND PROPERLY OPERATING CONDITION.

