

Conversion Package To Convert RPV Series Units Equipped with G29 Controller or T32 Flame Switch to G770 Ignition System, for Natural or Propane Gas -- Package P/N 49491

Material List – Package P/N 49491

Item	Qty	P/N	Description
1	1	97547	Ignition Controller, Johnson #G770ONGC-4
2	2	90503	Sheetmetal Screws, Type B, #6 x 1" long (for attaching the ignition 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 Brkt, Penn Y5900-1
5	2	43954	Flame Sensor Probe, Penn #Y75BA-3
6	1	92848	Flame Sensor Wire
7	1	25787	Pilot Gas Valve, 1/4", with nuts and ferrules
	1	7671	Pilot Tubing, 1/4" x 26" long
	1	8155	Pilot Tubing, 1/4" x 10" long
	1	28499	Varglass Sleeving, 12" long
	1	96101	Lighting Instruction Plate
	1	44698	Blue Wire Assy, 105°C, 18 Ga. X 18" with two terminals (P/N 2461)
	1	90501	Yellow Wire Assy 105°C, 18 Ga. X 19" with one terminal (P/N 2461)
	2	95227	Red Wire Assy, 105°C, 18 Ga. X 18" with one terminal (P/N 2461)
	1	42699	Yellow Wire Assy 105°C, 18 Ga. X 12" with two terminals (P/N 2461)
	2	43984	Blue Wire Assy, 105°C, 18 Ga. X 18" with one terminal (P/N 2461)
	1	60161	White Wire Assy, 105°C, 18 Ga. X 22" with two terminals (P/N 2461)
	1	40329	White Wire Assy, 105°C, 18 Ga. X 18" with one terminal (P/N 2461)
	1	98419	Green Ground Wire Assy, 105°C, 18 Ga. X 3" with two terminals (P/N 1350 and 2461)



**Figure 1 - Items 1-7 of
Conversion Package P/N 49491**

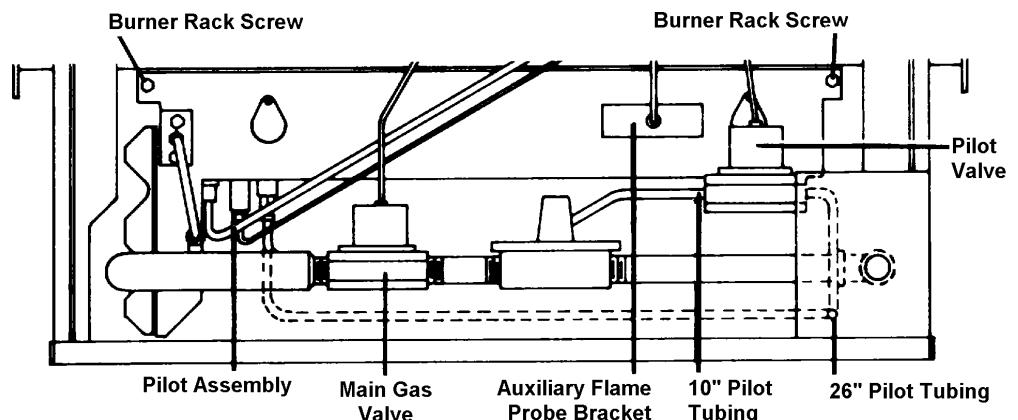
DANGER: This replacement ignition controller kit is to be installed by a qualified service agency in accordance with these instructions and in compliance with all codes and requirements of authorities having jurisdiction. Failure to follow instructions could result in death, serious injury, and/or property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

Installation Instructions

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. Keep these instructions for future reference.

1. Turn off the gas and power supply.
2. Remove the lower access panel from the back of the heater. Refer to Figure 2 and locate the pilot assembly and the gas valve. (NOTE: The other parts are not on the presently equipped unit.)
3. **Install the Pilot**
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 ignition lead from the ignition controller.
 - b) At the gas valve, mark and disconnect the wires.
 - 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 (See Figure 2).
 - 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.

**Figure 2 - Location of
Pilot Assembly, Gas
Valve, Pilot Valve,
Supply Lines and
Auxiliary Flame Probe
Bracket**



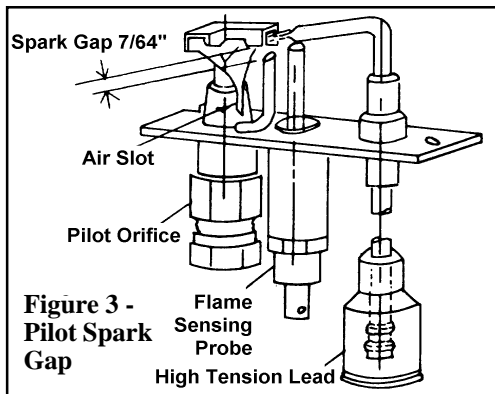
Installation Instructions (cont'd)

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 assembly 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 3 for correct measurement. If spark gap is not correct, hold ceramic base with pliers while carefully adjusting the rod.



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

4. **Install Auxiliary Flame Probe** - Locate the proper position for the auxiliary flame probe bracket (See Figure 2). If there is a patch plate on the burner rack, remove it. Use the same screws, attach the auxiliary flame sensor bracket (Item 4). If there is no patch plate, drill holes to mount the auxiliary flame sensor bracket using the template in Figure 5, page 4. When the bracket is installed, insert the other flame sensor probe (Item 5). The flame probe rod should extend over the top of the first burner.

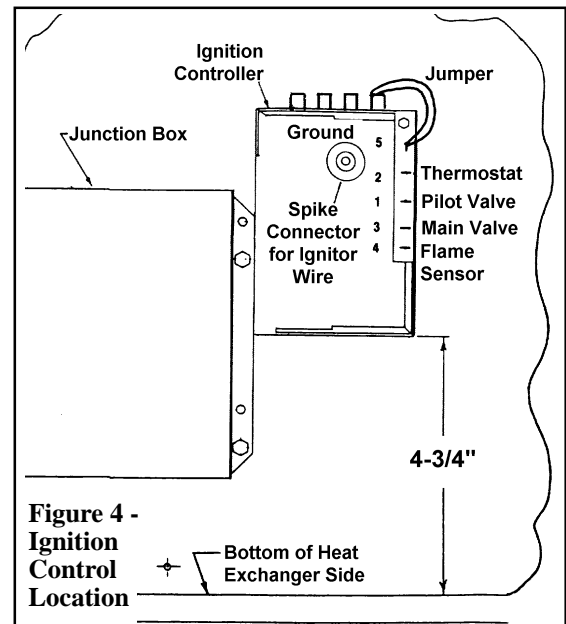
5. **Install the Pilot Valve** (See Figure 2) - Connect the gas supply (10" piece of tubing) from the manual pilot valve to the inlet side of the pilot valve. Connect the pilot gas supply (26" piece of tubing) to the outlet side of the pilot valve and to the pilot assembly.
6. **Install the Ignition Controller** - Remove the old ignition controller. Refer to

Figure 4 and position the new G770 ignition controller (Item 1) in the same location. Mark and drill two 7/64" holes. Using the 1" screws in the kit, attach the new ignition controller.

7. **Connect the Wires** - Remove the cover from the control junction box. Using the wires from the kit, re-wire per the wiring diagram on either page 3 or 4. Select the correct diagram for either a single-stage or two-stage unit. The wires between the junction box and the ignition controller should be inside the varglass sleeving.

Connect the ignitor lead to the ignition controller, by pushing the ignitor wire directly onto the spike connector on the ignition controller. Be sure the spike is fully inserted and the wire secure.

8. 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.

9. Replace the junction box cover. Adhere the new lighting instruction plate to the control box. Replace the access panels.
10. Check complete operation of the heater to ensure safe and reliable operation. Keep the wiring diagrams printed in this sheet for future reference.

FOR YOUR SAFETY

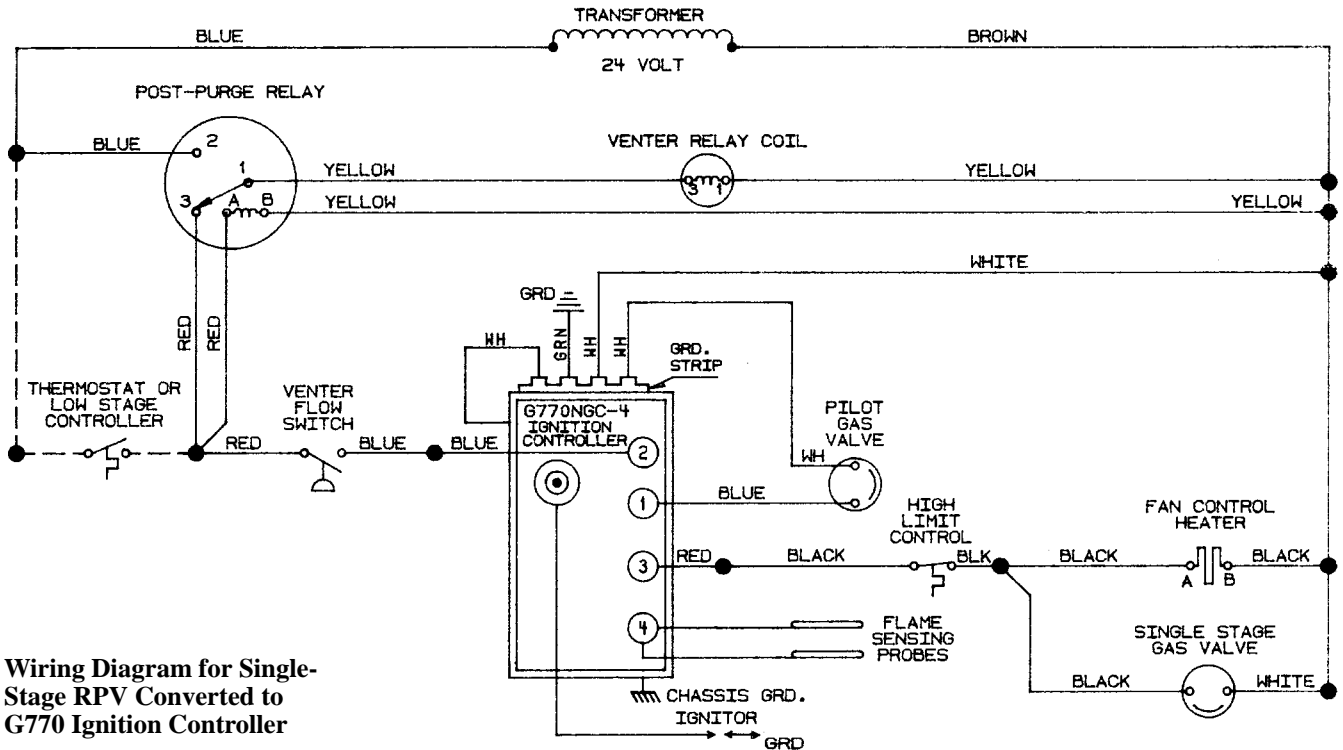
If you smell gas:

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.**



Wiring Diagram for Single-Stage RPV Converted to G770 Ignition Controller

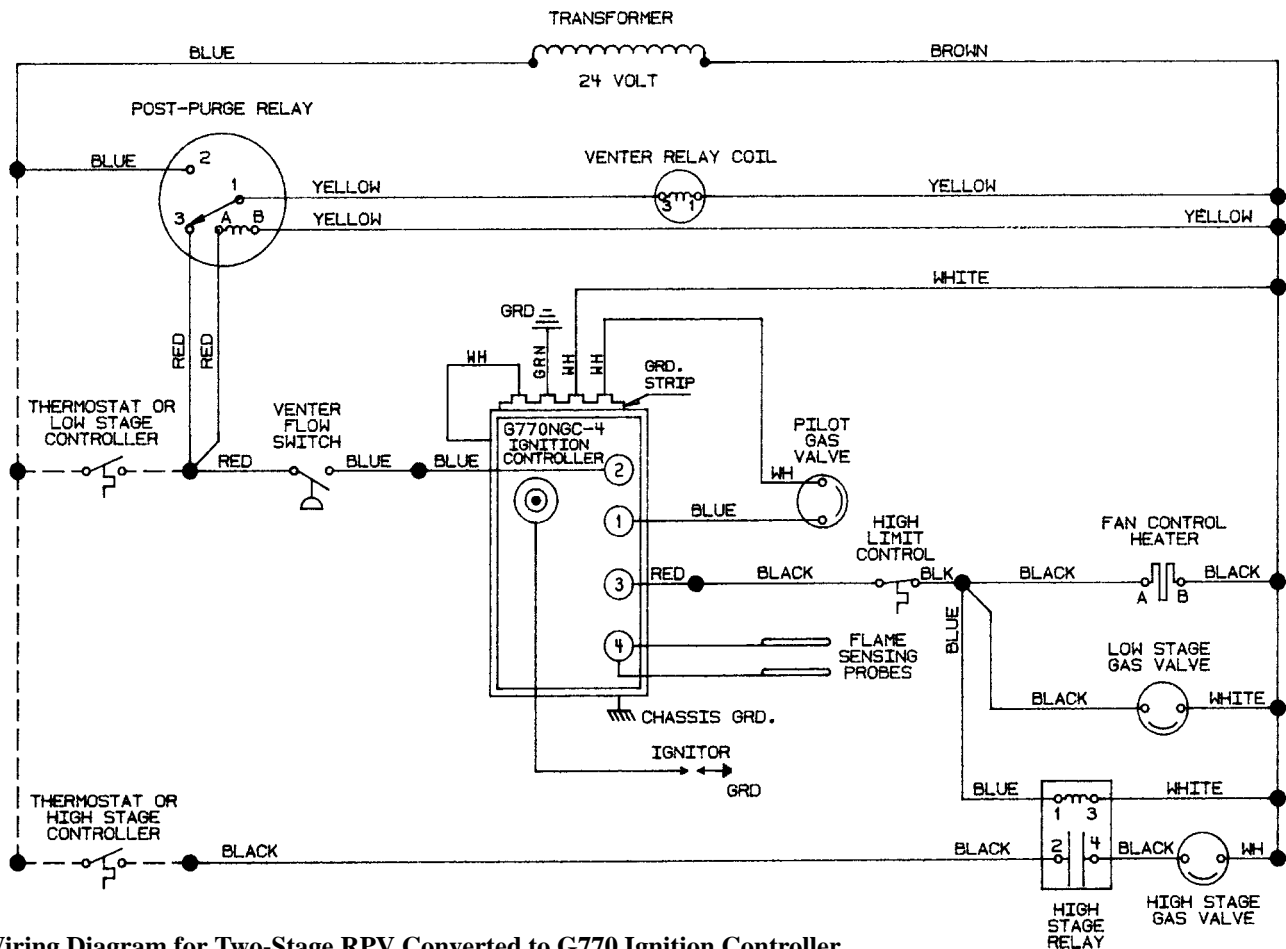
Operating Sequence

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 gas valve.
 - (c) Energizing the high stage relay (two-stage only).
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 wire, and limit wiring which must be 150°C.
2. Use 14 ga. wire for line and motor wiring on unit.
3. Use 18 ga. 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 RPV Converted to G770 Ignition Controller

Figure 5 - Instructions for Locating Auxiliary Flame Sensor Holder

Locate and drill holes B, C, and D by measurement from existing hole "A" or use drawing for template by locating hole "A" over right hand burner rack mounting screw and bottom line along lower edge of burner rack side.

