

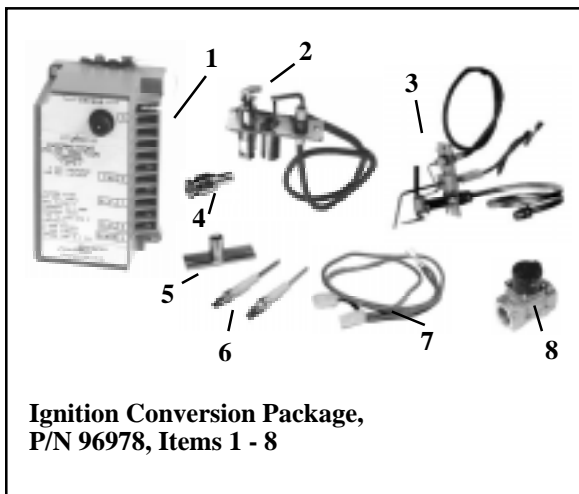
Ignition Conversion Package, Part No. 96978, to Convert the Models in the Following List to a G770 Ignition Controller

Applies to Model Series X and RX Units originally equipped with any of the following safety pilot systems:

*Serial No. Codes	Description
*5, 6, 7	619 Auto Relight System
10	32T Auto Relight System
*01, 02, 03, 04, 05, 06	Remote Push Button System
07	32T Recycling Pilot Switch
17	G18MG02 Ignition Controller
19	G19MG02 Ignition controller
*29	G19 Auto Relight System

*Safety Pilot Serial No. Codes 5, 6, 7, 01, 02, 03, 04, 05, 06, 29, require this package plus either a 115/24/40VA transformer, P/N 103055, or a 230/24/40VA transformer, P/N 103497 (if not already equipped with a 40VA transformer).

This package is suitable for the above models when equipped with either a horizontal or vertical pilot. **DO NOT use this package on Models SC, PV, or RPV Series units.**



DANGER: This replacement ignition controller assembly is to be installed by a Reznor distributor or other qualified 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.

Material List - Package P/N 96978

Item	Qty	P/N	Description
1	1	97547	Ignition Controller, J/C #G770NGC-4
	2	90503	Screw, #6 x 1" (for mounting controller)
2	1	41775	Vertical Pilot, Baso #999HHW-6221 with natural gas orifice
3	1	61145	Horizontal Pilot, Baso #J992HXW-7221, with natural gas orifice
4	1	37801	Propane Gas Orifice, #4209
5	1	44678	Auxiliary Flame Sensor Bracket, Penn #Y59DD-1
	2	38529	Screws, 8-18 x 1/2" (for attaching flame sensor bracket)
6	2	43594	Flame Sensor Probe, Penn #Y75BA-3
7	1	92848	Flame Sensor Wire Assembly
8	1	25787	Pilot Gas Valve, #H91WG-1, 1/4", with nuts and ferrules
	1	7671	Pilot Tubing, 1/4" x 26" long to inlet of pilot valve
	1	8155	Pilot Tubing, 1/4" x 10" long to outlet of pilot valve
	1	96101-A	Lighting Instruction Plate
*	1	28499	Sleeving, Varglas, 12" long
*	1	45146	Blue Wire Assembly, 105°C, 18 ga. x 17" with one terminal (P/N 2461)
*	1	45148	White Wire Assembly, 105°C, 18 ga. x 17" with one terminal (P/N 2461)
*	1	45150	Red Wire Assembly, 105°C, 18 ga. x 17" with one terminal (P/N 2461)
*	1	45154	Blue Wire Assembly, 105°C, 18 ga. x 20" with two terminals (P/N 2461)
*	1	45155	White Wire Assembly, 105°C, 18 ga. x 20" with two terminals (P/N 2461)
	1	14747	RBM Relay, #84-20102-101 (used on 2-stage only)
	2	92851	Screws, 8-32 x 1/2" (for mounting relay)
	2	43926	Terminals, #MMFA

*Wires and sleeving may be factory assembled.

Description

This package is designed to convert the ignition system of any of the applicable units to the currently used ignition controller. (Replacement parts for the original systems are no longer available.) Since this one kit covers several pilot systems, burners with either vertical or horizontal pilots, and units with a variety of original gas valves, here are parts included in the kit that will not be required in all installations. For example, in all cases, since both types of pilots are included, here will be a pilot that is not used.

Installation Instructions

IMPORTANT: Be familiar with the unit being serviced. This kit applies to a variety of types of original pilots and controls. Read instructions, including all notes, and follow carefully.

CAUTION: If the main gas valve has a built-in safety pilot, the gas valve must be changed to a redundant valve before the ignition kit can be installed. Refer to Form RGM 714, Replacement Valves.

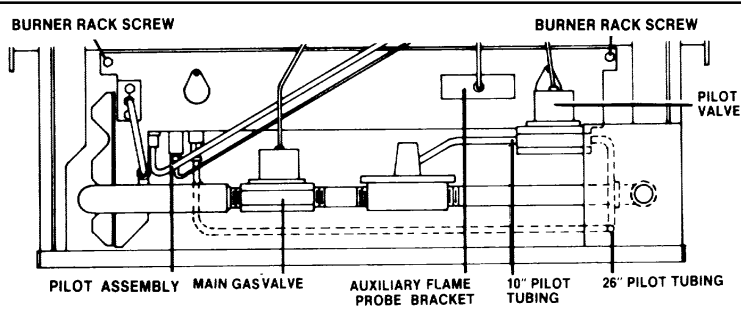
1. Turn off the gas supply at the shutoff valve upstream of the combination valve and turn off the electrical supply.

Installation Instructions

(cont'd)

- Remove the access panel. Refer to Figure 2 and locate the pilot assembly and the gas valve. (NOTE: Some of the other identified parts are not on the pres-

Figure 2 - Location of Pilot Assembly (vertical pilot is illustrated), Gas Valve, Pilot Valve, Supply Lines, and Auxiliary Flame Probe Bracket



ently equipped unit.)

3. Remove the Original Pilot Assembly

Unit with a Vertical 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:

- Locate the ignition controller. Disconnect the flame sensor lead and the ignitor lead.
- Mark the other wires with terminal numbers and disconnect.
- Uncouple the union in the main gas supply.
- Remove the sheet metal screws in the top corners of the burner drawer assembly.
- Pull the burner drawer out slowly until the bottom of the pilot assembly is easily reached. Be careful not to pull the burner rack out too far. Disconnect the pilot tubing. 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.

Unit with a Horizontal Pilot -- With the access panel removed, the horizontal pilot is visible on the end of the burner rack. Disconnect the flame sensor lead and the ignitor lead from the ignition controller. Disconnect the pilot tubing. 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.

Unit equipped with a Remote Push button System -- Remove the push button system.

4. Install the New Pilot Assembly

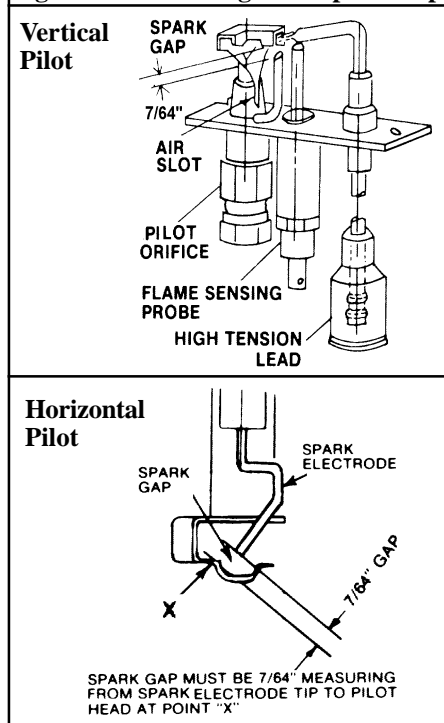
- The kit includes both a vertical and a horizontal replacement pilot. Select the one that applies to the unit being serviced.

Natural Gas Units -- Using the screws from the old pilot assembly, install the new pilot assembly (**Item 2 or 3**) on the burner rack. (The propane pilot orifice included in the kit will not be used.)

Propane Gas Units -Remove the pilot orifice from the new pilot assembly. Replace it with the propane pilot orifice (**Item 4**) in the kit. Using the screws from the old pilot assembly, 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 6**) in the pilot assembly. Lightly tighten the brass fitting on the probe.
- Check the spark gap on the pilot burner. Correct spark gap is 7/64" for both vertical and horizontal pilots. See Figure 3 for correct measurement.

Figure 3 - Measuring Pilot Spark Gap



- Units with Vertical Pilot only** -- Carefully slide the burner rack drawer back into the unit. Re-insert the sheet metal screws in the top corners of the burner rack.

5. Install Auxiliary Flame Probe - Units with Vertical Pilot only

Refer to Figure 2 to determine the correct location on the burner rack for the auxiliary flame probe bracket. If there is a patch plate on the burner rack, remove it. Using the same screws and holes, attach the auxiliary flame sensor bracket (**Item 5**). If there is no patch plate, cut out the template in Figure 5 on page 3. Using the template, drill the holes in the burner rack for the auxiliary flame sensor bracket. Insert the screws in the kit, attach the bracket. Insert the remaining flame sensor probe (**Item 6**) into the bracket and lightly tighten. The flame probe rod should extend over the top of the first burner.

6. Install the Pilot Valve (See NOTE to determine requirement)

NOTE: Depending on date of manufacture, the unit being serviced could be equipped with a variety of types of gas valves. If the unit is already equipped with a redundant valve, the pilot valve is not required.

CAUTION: If the main gas valve has a built-in safety pilot, the valve must be changed to a redundant valve before this ignition kit can be installed.

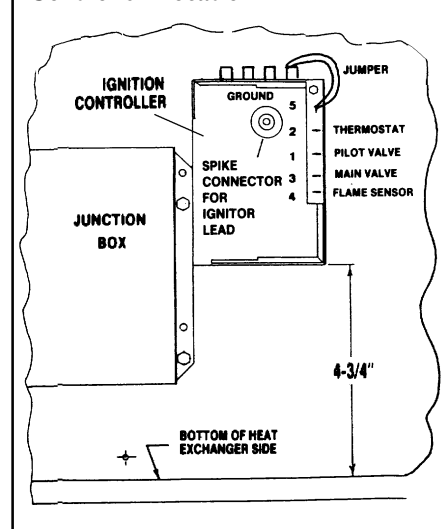
See Figure 2 to determine the proper location of the pilot valve. Connect the gas supply (10" piece of tubing) from the pilot gas cock to the inlet side of the pilot valve. Connect the pilot gas supply (26" piece of tubing) to the outlet side of the pilot valve and to the pilot assembly.

7. Install the Ignition Controller

Remove the original ignition controller. On units with a remote push button system, remove the ignition transformer.

Refer to Figure 4 and position the new ignition controller (**Item 1**). Mark and drill two 7/64" holes. Attach the new ignition controller using the 1" screws in the kit.

Figure 4 - Ignition Controller Location



8. Wiring

Remove the junction box cover. Using the wires in the kit, make connections following either the single-stage or the two-stage wiring diagram on page 4. (Use varglas sleeving for the wires between the junction box and the ignition controller.) On two-stage unit, install the RBM relay in the junction box and wire as shown on the diagram. See Wiring NOTES below.

Ignitor Lead - Connect the ignitor lead to the ignition controller by pushing the wire directly on the spike connector on the ignition controller, being sure that the spike is fully inserted and the wire is secure.

Flame Sensor Wire - If the unit has a vertical pilot with a flame probe and an auxiliary flame probe, connect one of the flame sensor wires in the sensor wire assembly to each flame probe and the common end to the ignition controller (Terminal 4). If the unit has a horizontal pilot which does not require the auxiliary flame probe, the two-wire flame sensor wire assembly in the kit will have to be adapted. Remove one of the sensor wires by cutting it off as close as possible to the uninsulated terminal. Connect the remaining sensor wire to the flame probe in the horizontal pilot and to Terminal 4 on the ignition controller.

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, 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 the unit.
- 4) Dotted wiring is supplied and installed by others.
- 5) Thermostat supplied as optional equipment
- 6) **On 208/230V units**, 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.

9. Turn on the power supply and reconnect the gas. Bleed pilot and main gas line. 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 SEVERE PERSONAL INJURY OR DEATH.

10. Re-attach the junction box cover. Adhere the new lighting instruction plate to the junction box. Re-attach the access panel.

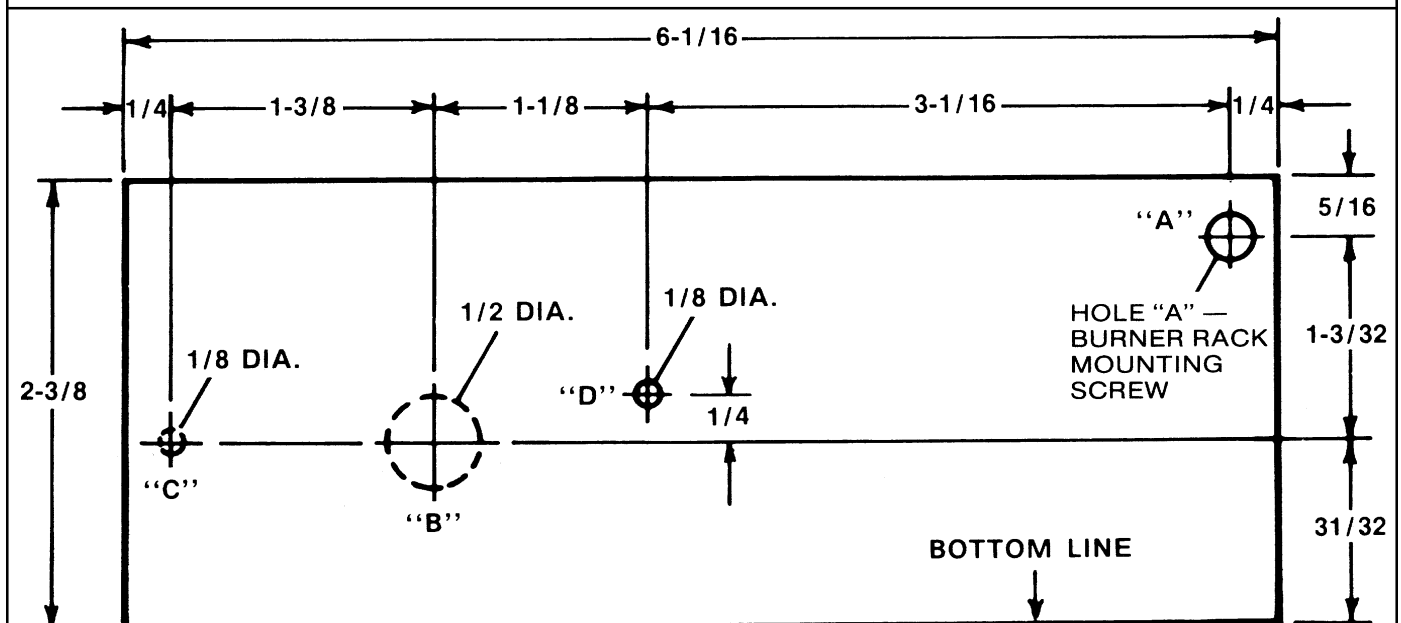
11. Check complete operation of the heater to ensure safe and reliable operation. Keep the wiring diagrams printed in this instruction sheet for future reference.

OPERATING SEQUENCE

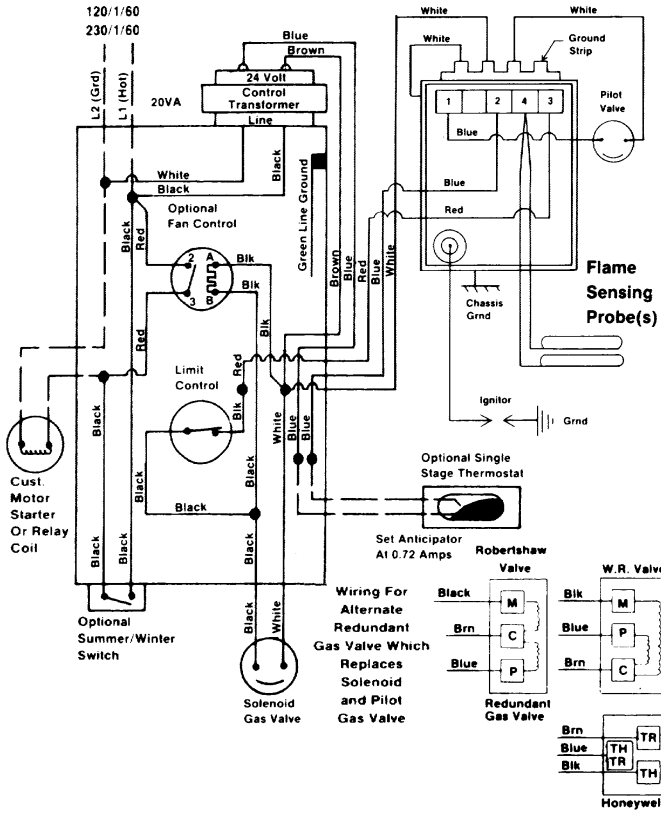
- 1) Set the thermostat at lowest setting.
- 2) Follow the new lighting instructions.
- 3) Set thermostat at desired setting.
- 4) Thermostat calls for heat, energizing the ignition controller; the pilot gas valve is energized, and the pilot lights from ignitor.
- 5) The sensing probe proves the presence of the pilot flame
De-energizing the ignitor
Energizing the solenoid gas valve
Energizing the high state relay (two-stage only)
- 6) Fan control (Optional) senses heat exchanger temperature energizing the blower motor.
- 7) Thermostat is satisfied.
Solenoid gas valve de-energizes.
Pilot gas valve de-energizes.
Ignition controller de-energizes.
Fan control (optional) keeps blower or fan on while the unit is hot.
- 8) If the flame is extinguished during the main burner operation, the safety switch closes the main valve and recycles the spark gap. If the pilot is not established within 120 seconds (approximately), the unit locks out and must be reset by interrupting power to the control circuit (see Lighting Instructions).

Figure 5 - Instructions for Locating Auxiliary Flame Sensor Holder (Units with vertical pilot only).

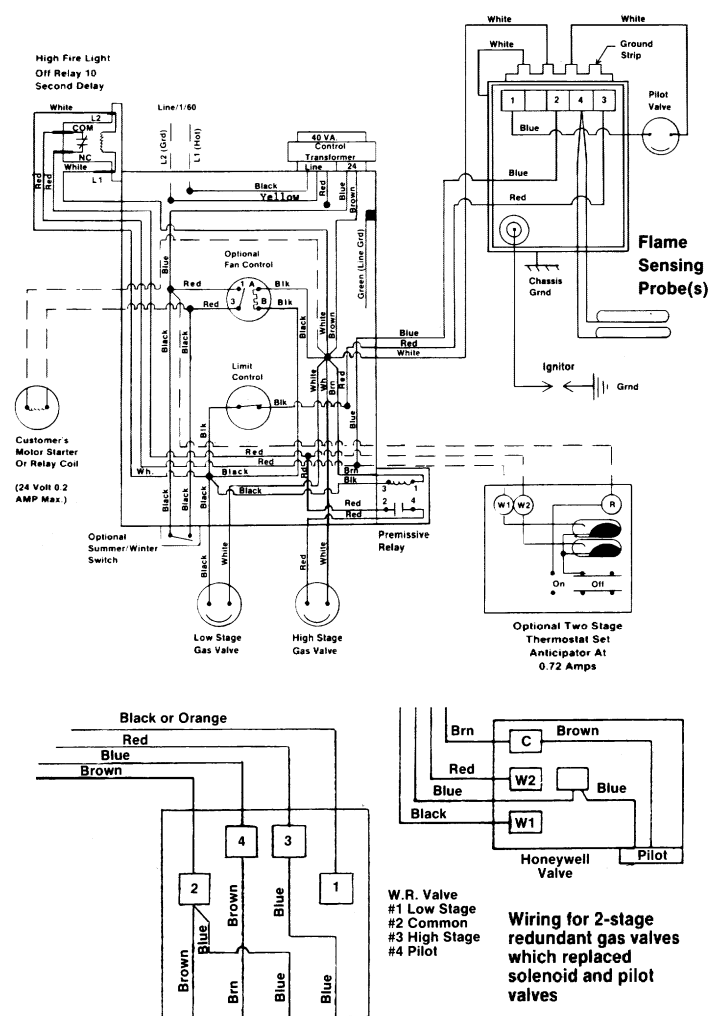
Locate and drill holes B, C, and D by measurement from existing hole "A" or use drawing for template by locating hole "A" over right hand burner rack mounting screw and bottom line along lower edge of burner rack side.



SINGLE -STAGE -Converted to G770 Ignition Controller



TWO- STAGE -Converted to G770 Ignition Controller



Field Control Wiring Length and Gauge		
Total Wire Length	Distance from Unit to Control	Minimum Recommended Wire Gauge
150 ft	75 ft	#18
250 ft	125 ft	#16
350 ft	175 ft	#14

Thomas & Betts