

# Standing Pilot to Hot Surface Ignition Conversion Kit

## INSTALLATION INSTRUCTIONS

### For Model Series M1G Furnaces

#### IMPORTANT SAFETY INFORMATION

Please read all instructions before converting the furnace. Pay attention to all safety warnings and any other special notes highlighted in the manual. Safety markings are used frequently throughout this manual to designate a degree or level of seriousness and should not be ignored. **WARNING** indicates a potentially hazardous situation that if not avoided, could result in personal injury or death. **CAUTION** indicates a potentially hazardous situation that if not avoided, may result in minor or moderate injury or property damage.

- These instructions are primarily intended to assist qualified individuals experienced in the proper installation of this appliance. Some local codes require licensed installation/service personnel for this type of equipment.
- Please read all instructions carefully before starting the installation. If a problem occurs, check the instructions and follow recommendations given.
- The information shown in these instructions must be followed during the installation of this kit. Unqualified individuals should not attempt to interpret these instructions or install this equipment. If you do not possess mechanical skills or tools, call your local dealer for assistance.

#### **WARNING:**

**Shut off the gas supply at the manual gas shutoff valve, before disconnecting the electrical power. A fire or explosion may result causing property damage, personal injury or loss of life. Failure to follow the safety warnings exactly could result in serious injury, death or property damage.**

#### **WARNING:**

**To avoid electric shock, personal injury, or death, turn off the electric power at the disconnect or the main service panel before making any electrical connections.**

#### **WARNING:**

**All electrical wiring must comply with the latest edition of the National Electrical Code ANSI/NFPA 70. Failure to follow these instructions could result in possible damage to equipment, serious personal injury, or death.**

#### ABOUT THE KIT

This kit is designed for converting NORDYNE series M1G standing pilot (SP) furnaces to hot surface ignition (HSI). Check the components of the kit and make sure the following items are included in the kit:

- HSI Burner
- High Temperature Tubing (2)
- Combustion Air Pipe (with Labels)
- Integrated Control Board
- Control Box (Pre-Wired)
- Pressure Switch (with Fasteners)
- Control Box Cover
- Combustion Fan Assembly (with Fasteners & Orifice)
- Several Loose Wires (red, gray, white (2), black)
- 2-Pin Cap
- Installation Instructions
- Combustion Air Baffle

**NOTE:** A combustion fan and pressure switch are already present in the 77,000 and 90,000 Btu/h input M1G series furnaces. The steps for installing the combustion fan and the pressure switch may be skipped if converting those furnaces.

#### BEFORE YOU CONVERT THE GAS VALVE

1. Turn the thermostat OFF or to its lowest temperature setting.
2. Remove the furnace door.
3. Push in the gas control lever and move to OFF. **DO NOT FORCE THE LEVER!**
4. Turn off all electrical power to the appliance.

## **WARNING**

#### FIRE OR EXPLOSION HAZARD

- Failure to follow safety warnings exactly could result in serious injury, death or property damage.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.
- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

#### WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Leave the building immediately.
- Immediately call your gas supplier from a neighbors phone. Follow the gas suppliers instructions.
- If you cannot reach your gas supplier, call the fire department.

**DO NOT DESTROY. PLEASE READ CAREFULLY & KEEP IN A SAFE PLACE FOR FUTURE REFERENCE.**

## INSTALLING THE KIT

### Removing the Air Tube

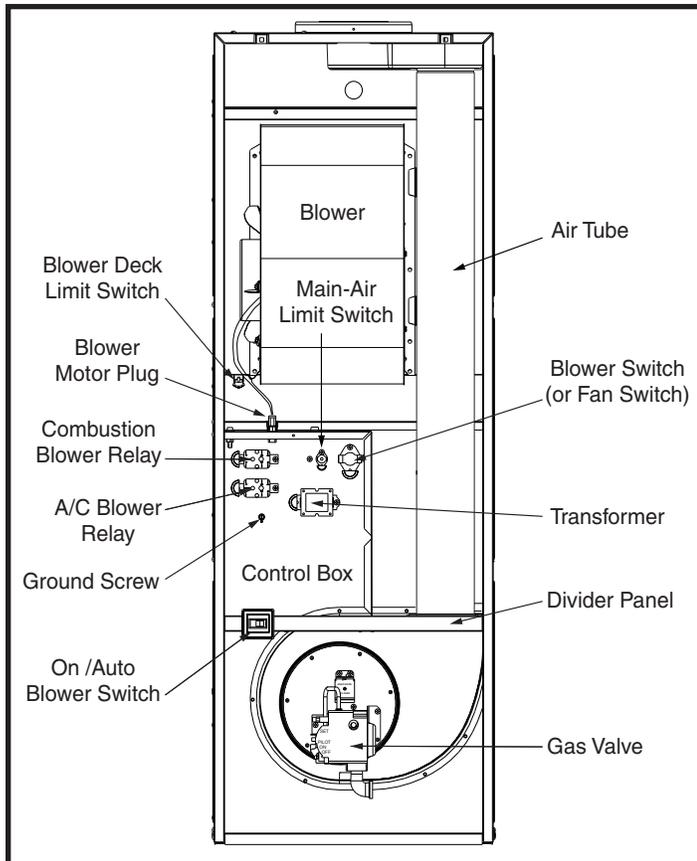
**NOTE:** If converting an M1G series furnace with 77,000 or 90,000 Btu/h input, skip steps 1-6 of this section.

1. Verify the gas supply is shut OFF.
2. Verify the electrical power to the appliance is turned OFF.
3. Disconnect the wires from the vent switch on the air tube.
4. Remove the two fasteners from the base of the air tube that secure it to the divider panel. See Figure 1.
5. Remove the air tube from the unit. **NOTE:** Top and bottom joints were both sealed using a silicone sealant. After the air tube has been removed, clean the silicone sealant from the top and bottom of the unit where the air tube was removed.
6. Using permanent ink, copy the data from the original rating plate into the spaces on the blank rating plate of the replacement air tube. Make sure the information is accurate and properly entered in the spaces.

### Replacing the Control Box

1. Verify the gas supply is shut OFF.
2. Verify the electrical power to the appliance is turned OFF.
3. Disconnect the blower motor plug from the control box.
4. Disconnect the thermostat, **L1**, and **Neutral** wires from the control box.
5. Disconnect all wires from the transformer (including the ground wire under transformer screw), the deck limit, the main-air limit, the blower switch, and the gas valve.

**NOTE:** If the following components are present in the unit, disconnect all wires from the blower on/auto switch, the A/C blower relay, and combustion blower relay.



**Figure 1. Typical M1G Series Furnace Without Combustion Fan**

6. Remove the fasteners that secure the control box to the unit, and remove the control box. Be sure to keep any grommets that were removed.
7. Remove the A/C blower relay, and combustion blower relay, if present.
8. Install the control box from the kit using the fasteners that were removed earlier. Make sure that no wires are between the control box and the air casing.
9. Insert the control board stand-offs into the mating holes in the air casing. Make sure that the control board is securely in place.
10. Secure the transformer and the ground wire from the control board to the air casing using the fastener that was removed earlier.
11. Attach the white wire from the Neutral terminal on the control board to the 3/16 inch **COM** terminal on the line voltage side of the transformer.
12. Attach the black wire from the **L1** terminal on the control board to the 3/16 inch 120V terminal on the line voltage side of the transformer.
13. Attach the **yellow** wire from the **COM** terminal on the control board to the terminal opposite the high voltage **COM** terminal on the low voltage side of the transformer.
14. Attach the **red** wire from the 24V terminal on the control board to the terminal opposite the high voltage 120V terminal on the low voltage side of the transformer.
15. Attach the 2 **blue** wires that exit at the top of the control box to the terminals of the blower deck limit.
16. Attach the **blue** wire that enters the control box from the top to a terminal on the main-air limit switch in the control box.
17. Attach the remaining **blue** wire from the 9-pin plug on the control board to the remaining terminal on the main-air limit.
18. Insert the 2 **yellow** wires terminated with 1/4 inch quick-connects from the 9-pin plug on the control board through the hole in the divider panel.
19. Insert the 2 **black** wires terminated with pin sockets from the 6-pin plug on the control board through the hole in the divider panel.
20. Install the grommet that was removed earlier around the wires and into the divider panel.

### Installing the Pressure Switch

**NOTE:** If converting an M1G series furnace with 77,000 or 90,000 Btu/h input, skip this section.

1. Using the fasteners included in the conversion kit, secure the pressure switch to the air casing of the furnace, as shown in Figure 2. The mounting holes for the pressure switch will be present in the air casing.
2. Attach the 2 **orange** wires that exit at the right hand side of the control box to the terminals on the pressure switch.

### Removing the Burner Assembly

1. Shut off the gas supply at the meter.
2. Disconnect the gas piping to the gas valve.
3. Remove the fasteners that hold the burner mounting plate to the combustion air box. Keep these fasteners for re-assembly.
4. Carefully remove the burner assembly from the unit.

### Installing the Combustion Baffle

1. Remove the 6 top and left screws (#'s 1,2,3,4,5, and 6) of the air box as shown in Figure 3.
2. Insert the combustion air baffle through the air box burner mount hole and then install it while pulling gently up through

top hole in air box. **NOTE:** Align the baffle mounting holes with the air box, the gasket, and the air casing holes using an awl.

3. Fasten the 2 screws (#'s 4 & 5). Tighten the 4 screws (#'s 1,2,3 & 6).

**NOTE:** Make sure the left side of baffle is perpendicular with the air casing. Also verify that the baffle is uniformly bent through the top hole of the air box.

4. Apply silicon around the area where the two baffle taps are located.

### Installing the Combustion Fan

**NOTE 1:** Skip this section if converting an M1G series furnace with 77,000 or 90,000 Btu/h input.

**NOTE 2:** If installing in a 51,000 btuh furnace, remove the orifice from the combustion fan assembly and replace it with the included orifice. No change is necessary if installing in a 70,000 btuh furnace.

1. Using silicone sealant (field supplied), secure the combustion fan to the 4 inch diameter air tube included in this kit.

**NOTE:** No additional fastener will be required to secure the air tube to the combustion fan. Make sure the pressure tap in the 4 inch diameter is aligned with the pressure tap in the combustion fan, and that the taps are as close together as possible, as shown in Figure 2. The taps should point towards the pressure switch.

2. Install the combustion fan/air tube assembly into the unit using the fasteners supplied in the kit.

**NOTE:** Make sure that both labels on the air tube can be read after positioning the air tube. Both connections between the combustion fan/air tube assembly and the furnace are to be sealed air-tight using a silicone sealant.

To ease the installation process, the following procedure is recommended for installing the combustion fan/air tube assembly into the unit.

- a.) Start the left-hand-side fastener into the mounting hole in the divider panel.
  - b.) Position the combustion fan/air tube assembly in the furnace with the flange of the combustion fan underneath the fastener. Install the fastener on the other side of the combustion tube.
  - c.) Tighten both fasteners and make sure the assembly is secure.
3. Plug the 2-pin male plug from the combustion fan motor into the 2-pin female cap from the control box.
  4. Install the rubber hoses provided in the kit. **NOTE:** The first hose should be connected from the tap on the combustion fan housing to the tap (marked V) on the pressure switch. The second hose should be connected from the tap on 4 inch diameter air tube to the tap (marked P) on the pressure switch.

### Removing the Original Burner Orifice from the Standing Pilot Burner

1. Disconnect the pilot tube from the gas valve of the SP burner.
2. Remove the fasteners from the gas valve bracket, and remove the gas valve from the burner.
3. Carefully remove the main burner orifice from the gas valve.

### Replacing Burner Orifice in the HSI Burner

1. Remove the fasteners from the gas valve bracket on the HSI burner and remove the gas valve.
2. Carefully replace the orifice in the gas valve with the one removed from the SP burner in the previous section. Discard the orifice, which was removed from the HSI burner.
3. Reinstall the gas valve onto the HSI burner.

### Replacing the Burner Assembly

1. Insert the burner back into the heat exchanger as shown in Figure 2.
2. Secure the burner plate with the fasteners that were removed earlier.
3. Connect the **yellow** wires from the control box to the terminals on the gas valve.

### Connecting the Thermostat

1. Connect the red wire from the **R** terminal on the control board to the **R** lead from the thermostat.
2. Connect the white wire from the **W** terminal on the control board to the **W** lead from the thermostat.
3. If the unit converted was A/C ready, then connect the green wire from the **G** terminal on the control board to the **G** lead from the thermostat. **NOTE:** If the unit converted was A/C ready, then connect the yellow wire from the **Y** terminal on the control board to the **Y** lead from the thermostat.

## FINISHING THE CONVERSION

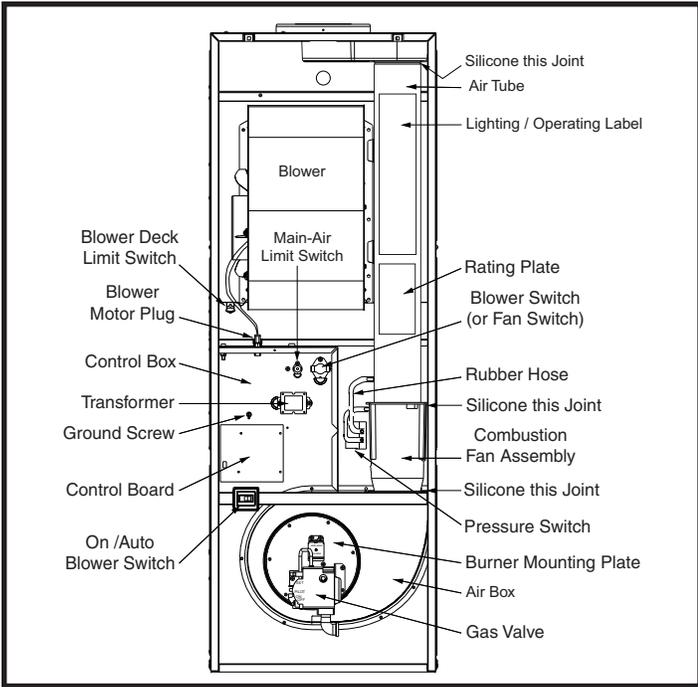
1. Reconnect the 6-pin blower plug into the top of the control box.
2. Insert the sockets of the 2 **black** wires exiting from the control box through the divider panel into the provided 2-pin female cap.
3. Plug the 2-pin male plug from the ignitor into the 2-pin female cap from the control box.
4. Reconnect the gas piping. **NOTE:** Make sure that gas connections are secure and tight. Leak check the gas connections using a mild soap solution or other approved method. DO NOT check for leaks using a lighted match or other flame.
5. Verify all electrical connections. Using the wiring diagram from these instructions, make sure that the electrical connections are secure and tight.
6. Reconnect the electrical supply to the furnace. The line voltage common wire should be connected to the **white** wire from the **Neutral** terminal on the control board. The line voltage wire should be connected to the **black** wire from the **L1** terminal on the control board.
7. Replace the control access cover with the cover included in the kit.

### Operating the Furnace

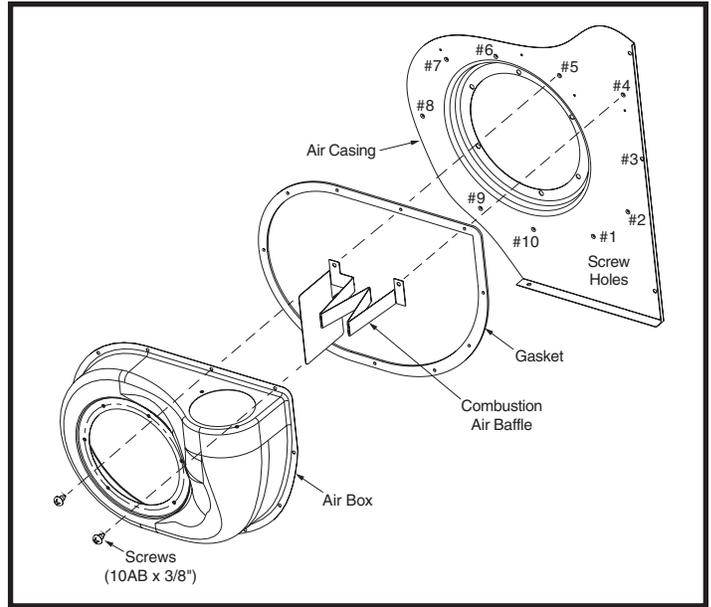
1. Follow the lighting procedure outlined in the Installation Instructions, the Owner's Manual, or on the furnace label.
2. Purge the air from the gas line as done in an initial set-up.

**NOTE:** For troubleshooting, refer to status light flash code on the wiring diagram in these instructions.

3. Run the furnace through a complete cycle to ensure proper operation. Refer to the installation instructions provided with the furnace for the proper operating sequence with an integrated control board.



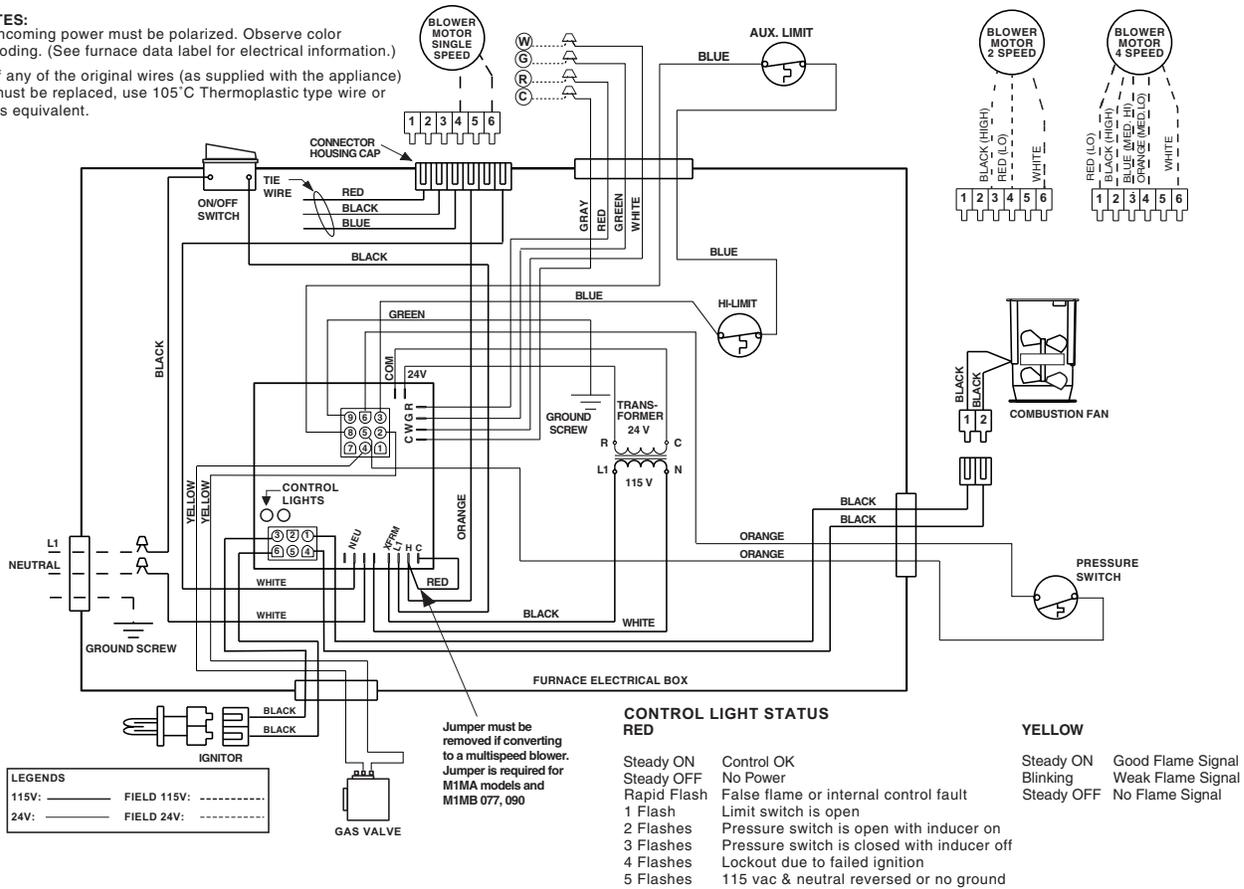
**Figure 2. Typical Converted Furnace**



**Figure 3. Combustion Air Baffle Assembly**

**NOTES:**

1. Incoming power must be polarized. Observe color coding. (See furnace data label for electrical information.)
2. If any of the original wires (as supplied with the appliance) must be replaced, use 105°C Thermoplastic type wire or its equivalent.



**Figure 4. M1G Electrical Diagram**

