



# 90 HORIZONTAL GAS FURNACE INSTALLATION INSTRUCTIONS

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## GAS FURNACE SAFETY

### Your safety and the safety of others are very important.

We have provided many important safety messages in this manual and on your appliance. Always read and obey all safety messages.



This is the safety alert symbol.

This symbol alerts you to potential hazards that can kill or hurt you and others.

All safety messages will follow the safety alert symbol and either the word "DANGER" or "WARNING." These words mean:

**⚠ DANGER**

**You can be killed or seriously injured if you don't immediately follow instructions.**

**⚠ WARNING**

**You can be killed or seriously injured if you don't follow instructions.**

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.



## IMPORTANT SAFETY INSTRUCTIONS

- Use only with type of gas approved for this furnace. Refer to the furnace rating plate.
- Install this furnace only in a location and position as specified in the Location Requirements section of these instructions.
- Provide adequate combustion and ventilation air to the furnace space as specified in the "Venting Requirements" section of these instructions.
- Combustion products must be discharged outdoors. Connect this furnace to an approved vent system only, as specified in the "Venting Requirements" section of these instructions.
- Never test for gas leaks with an open flame. Use a commercially available soap solution made specifically for the detection of leaks to check all connections, as specified in the "Make Gas Connections" section of these instructions.
- Adequate clearance must be provided around the vent-air intake terminals.
- Always install furnace to operate within the furnace's intended temperature-rise range with a duct system which has an external static pressure within the allowable range, as specified in the "Complete Installation" section of these instructions. See furnace rating plate.
- When a furnace is installed so that supply ducts carry air circulated by the furnace to areas outside the space containing the furnace, the return air shall also be handled by duct(s) sealed to the furnace casing and terminating outside the space containing the furnace.
- A gas-fired furnace for installation in a residential garage must be installed as specified in the "Location Requirements" section of these instructions.
- The furnace is not to be used for temporary heating of buildings or structures under construction.
- The furnace shall be installed so the electrical components are protected from water.
- Furnaces for indoor installation on combustible flooring shall not be installed directly on carpeting, tile or other combustible material other than wood flooring.

## SAVE THESE INSTRUCTIONS

The California Safe Drinking Water and Toxic Enforcement Act requires the Governor of California to publish a list of substances known to the State of California to cause cancer, birth defects, or other reproductive harm, and requires businesses to warn of potential exposure to such substances.

**WARNING:** This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm.

This appliance can cause low-level exposure to some of the substances listed, including benzene, formaldehyde, carbon monoxide, toluene, and soot.

## ADDITIONAL SAFETY INFORMATION

In the State of Massachusetts, the following installation instructions apply:

- Installations and repairs must be performed by a qualified or licensed contractor, plumber, or gasfitter qualified or licensed by the State of Massachusetts.
- If using a ball valve, it shall be a T-handle type.
- A flexible gas connector, when used, must not exceed 3 feet.

# INSTALLATION REQUIREMENTS

These instructions are intended as a general guide only for use by qualified persons and do not supersede any national or local codes in any way. Compliance with all local, state, or national codes pertaining to this type of equipment should be determined prior to installation.

Read this entire instruction manual, as well as the instructions supplied in separate equipment, before starting the installation.

The installation of the furnace, wiring, warm air ducts, venting, etc. must conform to the requirements of the National Fire Protection Association; the National Fuel Gas Code, ANSI Z223.1/NFPA No. 54 (latest edition) and the National Electrical Code, ANSI/NFPA No. 70 (latest edition) in the United States, and any state laws, local ordinances (including plumbing or wastewater codes), or local gas utility requirements. Local authorities having jurisdiction should be consulted before installation is made. Such applicable regulations or requirements take precedence over the general instructions in this manual.

This furnace design is certified by CSA International as a Category IV furnace in compliance with the latest edition of American National Standard Z21.47/CSA Standard 2.3 for Gas-Fired Central Furnaces, for operation with natural gas or propane. Consult the rating plate on the furnace for gas type before installing.

## Tools and Parts

Assemble the required tools before starting installation. Read and follow the instructions provided with any tools listed here.

### Tools Needed:

- |                     |  |
|---------------------|--|
| ■ Pipe wrench       | ■ ½ in. Allen wrench   |
| ■ Screw driver      | ■ Non-corrosive leak check solution  |
| ■ Tape measure      | ■ Test gauge with ⅛ in. NPT connection (for measuring gas supply pressure) |
| ■ Thread sealant    |  |
| ■ Adjustable wrench |  |

### Parts Needed:

Check local codes and with gas supplier. Check existing gas supply, electrical supply, and venting, and read "Duct Work Requirements," "Electrical Requirements," "Gas Supply Requirements" and "Venting Requirements" before purchasing parts.

### Parts Supplied

- Flue pipe screen

## Location Requirements

### ⚠ WARNING



#### Explosion Hazard

**Keep flammable materials and vapors, such as gasoline, away from furnace.**

**Place furnace so that burners are at least 18 inches (46 cm) above the floor for a garage installation.**

**Failure to follow these instructions can result in death, explosion, or fire.**

### ⚠ WARNING



#### Explosion Hazard

**Do not install this furnace in a mobile home.**

**Doing so can result in death, explosion, fire, or carbon monoxide poisoning.**

**IMPORTANT:** Do not use the furnace as a heater in a building under construction. The furnace can be severely damaged due to the abnormal environment caused by construction. Chlorides from sources such as paint, stain, or varnish; tile and counter cements; adhesives; and foam insulation are abundant in a structure under construction and can be highly corrosive. Low return air temperature can cause condensation in the furnace and other damage that can shorten the life of the furnace.

- The condensate drain on this furnace is incorporated within the furnace and must be primed before start-up. The condensate system must not be exposed to temperatures under 32°F.
- The furnace is suitable for installation in buildings constructed on site. The furnace should be centralized in respect to the heat distribution system as much as practicable.

- All models are suitable for closet or utility room installation. Utility room installation requires:  
A door opening large enough for the widest part of the furnace.  
A door opening large enough to remove/replace any other appliance located in the utility room, such as a water heater.  
Any other appliances arranged so that each appliance can be removed/replaced without disturbing the furnace.
- In a residential garage, a gas-fired furnace must be installed so the burner(s) and the ignition source are located not less than 18 in. above the floor. The furnace is to be located or protected to avoid physical damage by vehicles.
- If the furnace is to be installed in an attic or other insulated space, it must be kept free and clear of insulating materials.

### Installation Clearances

- All servicing and cleaning of the furnace can be performed from the front (side of the furnace where the controls and the combustion blower are located). Provide at least an 18 in. clearance in the front for servicing. Where servicing clearances are greater than clearances to combustibles, servicing clearances take precedence.
- For the minimum clearances to combustibles required for construction, servicing and proper unit operation see the Minimum Clearances to Combustibles chart.

### Minimum Clearance to Combustibles Chart

Unit Sides	0"
Rear of Unit	0"
Front of Unit (side with gas control valve)	2"
Flue Pipe	0"
Plenum Top	1"

### Suspended Installation Requirements

These models may be installed as suspended units. These furnaces are not designed for direct attachment of suspension rods to the furnace casing.

- The suspending means must be field fabricated, and should consist of two "cradles" made by attaching two rods to a length of angle iron or suitable gauge steel.
- Locate the cradles so that they are as close as possible to the ends of the furnace (this will provide access for removal of major components such as the blower assembly).
- Provide enough clearance between the suspension rods and the furnace to allow removal of access panels.

### High Altitude Installations

- This furnace is approved for operation at altitudes from 0 to 4,500 feet above sea level without any required modifications.
- From 4,500 to 7,500 ft, the gas manifold pressure needs to be adjusted according to the information shown in the Manifold Pressure vs. Altitude charts.

#### IMPORTANT:

For installations above 7,500 ft, the furnace input rate is to be reduced per the requirements of the National Fuel Gas Code (ANSI Z223.1/NFPA 54, latest edition), at the rate of 4 percent for each 1,000 feet above sea level.

The furnace is not recommended for installation above 10,000 ft.

### Installation Configurations

The furnace must be installed in a horizontal position with right to left airflow as viewed from the front side (the front side is the side containing the gas control valve). See "Airflow Conversion" section.

The furnace may be converted for horizontal installation with left to right airflow. See "Airflow Conversion" section.

**IMPORTANT:** The conversion should take place before the furnace is placed in its final location.

## Airflow Conversion

### **⚠ WARNING**



#### **Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

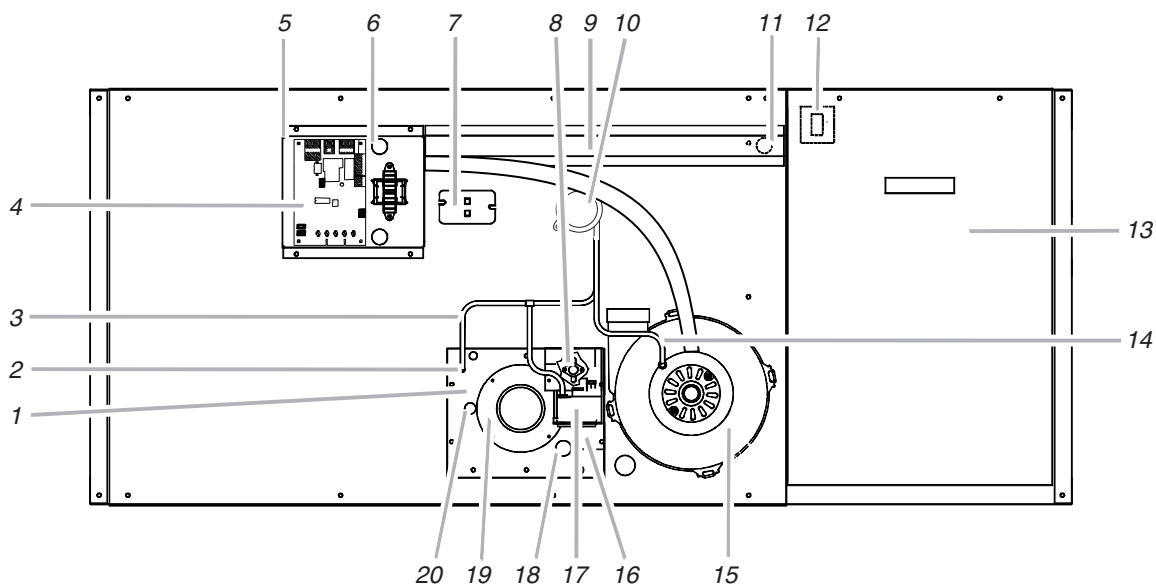
**Failure to do so can result in death or electrical shock.**

This furnace is factory assembled for right to left airflow. It can be converted to left to right airflow. The conversion should be made prior to installing the unit.

#### **IMPORTANT:**

- The sides are identified as the original component side and the new component side. Steps 1 through 12 (following) refer to the original component side.
- Gas leak checking should be performed after the conversion. See the "Make Gas Connections" section.

### **Before Conversion (original component side)**



1. Burner access panel  
2. Pressure tap  
3. Pressure switch tubing  
4. Blower control board  
5. Control box

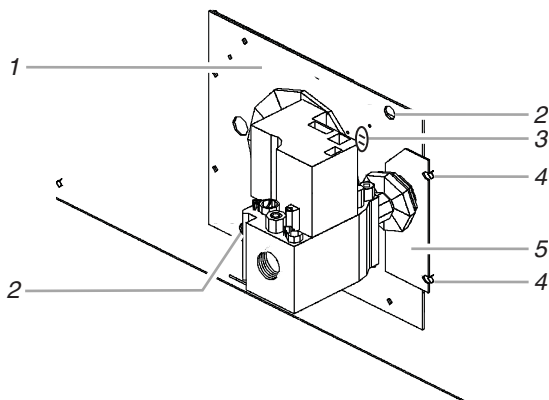
6. Control box bushing  
7. Primary limit switch  
8. Rollout switch  
9. Wire channel guard  
10. Pressure switch

11. Blower wire bushing  
12. Blower door interlock switch  
13. Circulating air blower access door  
14. Combustion blower tubing  
15. Combustion blower

16. Manifold cover  
17. Gas control valve  
18. Igniter wire strain relief bushing  
19. PVC collar  
20. Sight glass

1. Disconnect power.
2. Disconnect 3 connectors at the gas control valve and the strain relief bushing for the cable routed through the burner access cover.
3. Disconnect the wires from the primary limit control, pressure switch, and rollout switch.
4. Remove the control box cover (4 screws).
5. Label wires when disconnected with the name of the terminal on the wiring board where it is connected. Remove the circulating air blower wires last.
6. Disconnect the combustion blower tubing from the combustion blower housing.
7. Disconnect the plastic tubing from the pressure tap at the burner access cover and the gas control valve, leaving all remaining tubing connected to the pressure switch.
8. Remove the control box and combustion blower, leaving the safety circuit/combustion blower circuit wiring attached to the control box (4 screws).
9. Remove the wire channel guard (6 screws). Remove the wire hanger P-clip located on the lower, center screw.
10. Remove the pressure switch.
11. Remove the primary limit switch.

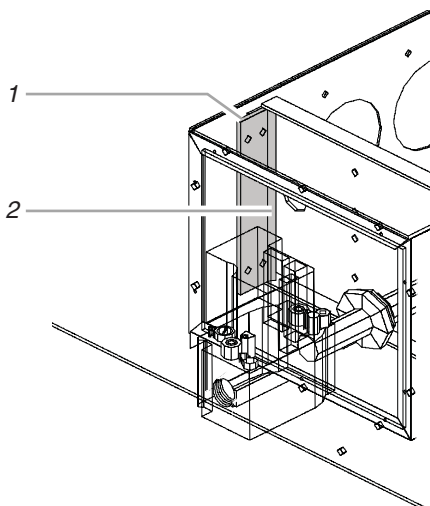
12. Remove the manifold cover (2 screws), and burner access cover (6 screws). Do not remove the screws located in the 2 clearance holes. The rubber grommet remains on the burner tube.



1. Burner access plate  
2. Clearance holes  
3. Rollout switch  
4. Manifold plate screws  
5. Manifold plate

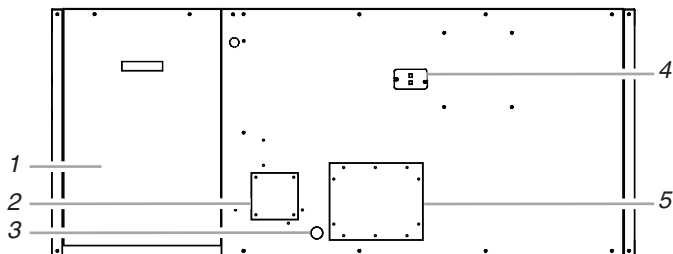
13. Remove the burner locking tab (2 screws).

**NOTE:** The flange is located toward the inside.



1. Burner locking tab  
2. Locking tab flange

14. On the new component side of the furnace, remove the following: rear blower compartment panel, rear burner access cover (do not remove the 2 screws located in the clearance holes), flue cover, the limit control access opening cover, the plug closing the opening for the blower wires, and plastic condensate drain plug (using a 1/2 in. hex-head wrench).

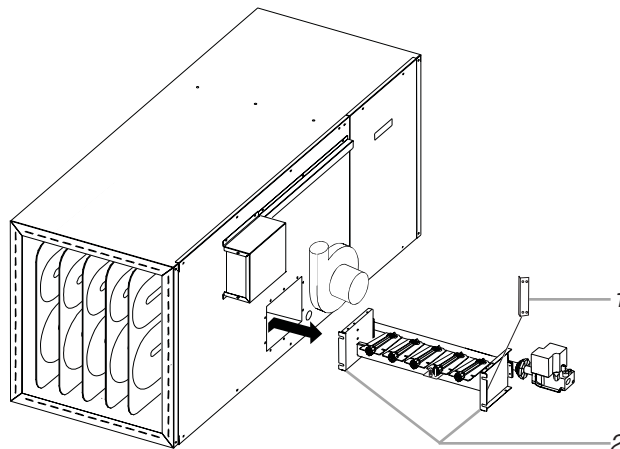


1. Rear blower compartment panel  
2. Flue cover  
3. Condensate drain plug  
4. Limit control access cover  
5. Rear blower access cover

15. Remove the 2 screws securing the burner locking tab behind the burner access cover.

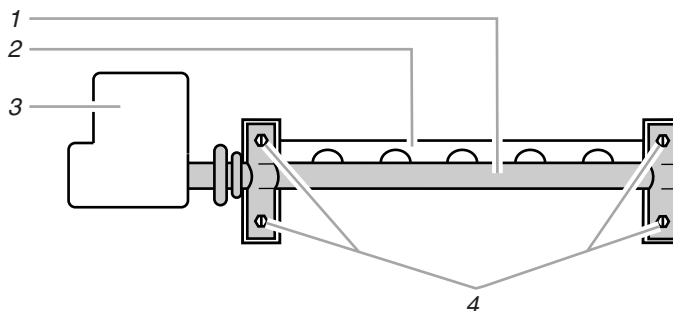
**NOTE:** The flange is located toward the inside.

16. On the original component side of the furnace, remove the burner assembly (gas valve and burner piping) by lifting the assembly from the engagement screws and then pull the assembly straight out of the burner box.



1. Burner locking tab  
2. Manifold support brackets

17. Remove the 4 screws holding the manifold to the burner assembly. (If the furnace will be converted to L.P. gas, the orifice conversion should be performed at this point). See "Accessories" section for Propane Conversion Kit information.



1. Manifold  
2. Burner  
3. Gas control valve  
4. Screws

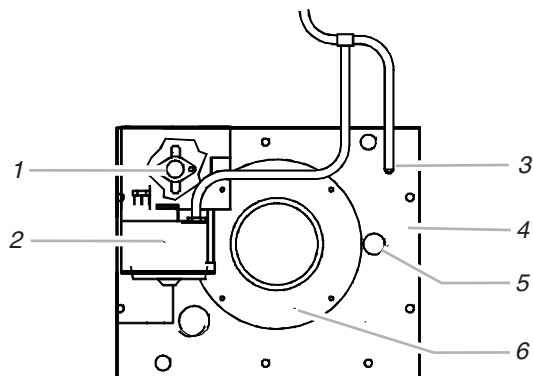
18. Hold the gas control valve with an adjustable wrench. Use a pipe wrench to tighten the manifold clockwise 1/2 revolution (180°), so the vertical axis of the gas control valve is perpendicular (90°) to the burner orifices.

19. Flip the manifold so the gas valve is located on the opposite end. Then install the manifold and gas valve to the burner assembly, using the 4 screws removed earlier, making sure the burner orifices seat in the burners.

20. Connect igniter wires and flame sense wire, then slide the burner assembly into the burner box on the opposite side of the furnace, making sure that the assembly engages onto the alignment screws.

**NOTE:** Ensure the wires are not damaged during assembly or pinched after assembly.

21. Install both locking tabs, using 2 screws, flange side toward the burners with the flange facing out toward the blower end of the furnace.
22. Remove the PVC collar, rollout switch, sight glass (carefully), and pressure tap from the burner access cover.

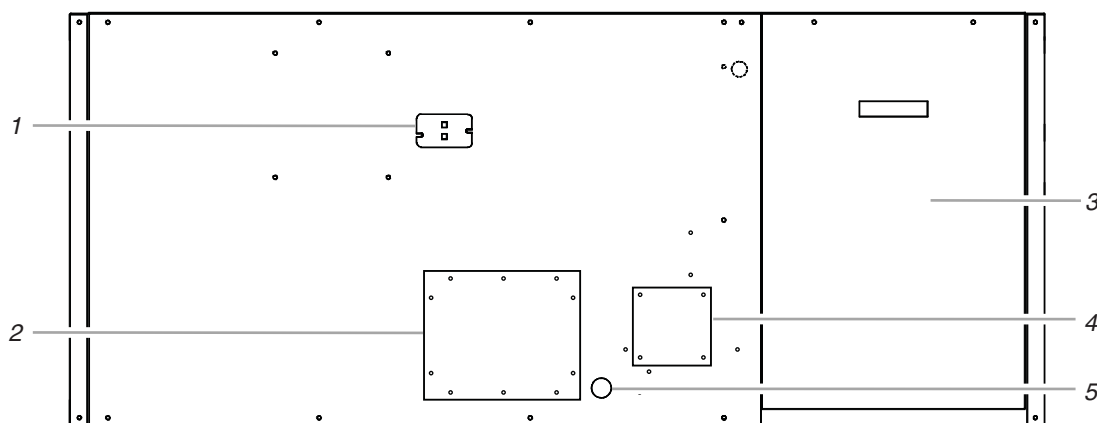


- |                      |                        |
|----------------------|------------------------|
| 1. Rollout switch    | 4. Burner access panel |
| 2. Gas control valve | 5. Sight glass         |
| 3. Pressure tap      | 6. PVC collar          |

23. Install the PVC cover, rollout switch, sight glass (carefully), and pressure tap on the reverse side of the burner access cover.

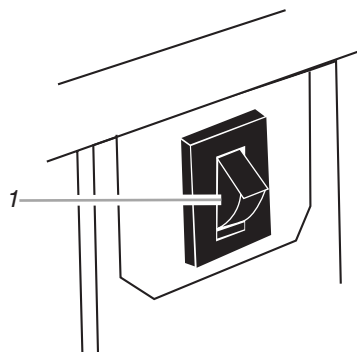
24. Install the burner access cover (6 screws) and manifold cover (2 screws), making sure the covers seal around the manifold grommet.  
**NOTE:** Ensure the wires are not damaged during assembly or pinched after assembly.
25. On the original component side of the furnace, remove the blower access door (2 screws). This door contains most labels.
26. On the same side, feed the blower wires through the bushing into the blower compartment and remove the bushing.
27. Install the bushing in the blower wires access opening in the new component side.
28. Remove the blower door interlock switch (leaving the wires connected to the switch).
29. Cut the wire tie around the blower wiring and route the wires across the top of the blower housing to the opposite side of the furnace, making sure all wiring is clear of the blower intakes.
30. Install the following parts previously removed from the new component side on the original component side: rear blower compartment panel, rear burner access cover, flue cover, limit control access cover, and condensate drain plug.

### After Conversion (original component side)



- |                                  |                          |
|----------------------------------|--------------------------|
| 1. Limit control access cover    | 4. Flue cover            |
| 2. Rear blower access cover      | 5. Condensate drain plug |
| 3. Rear blower compartment panel |                          |

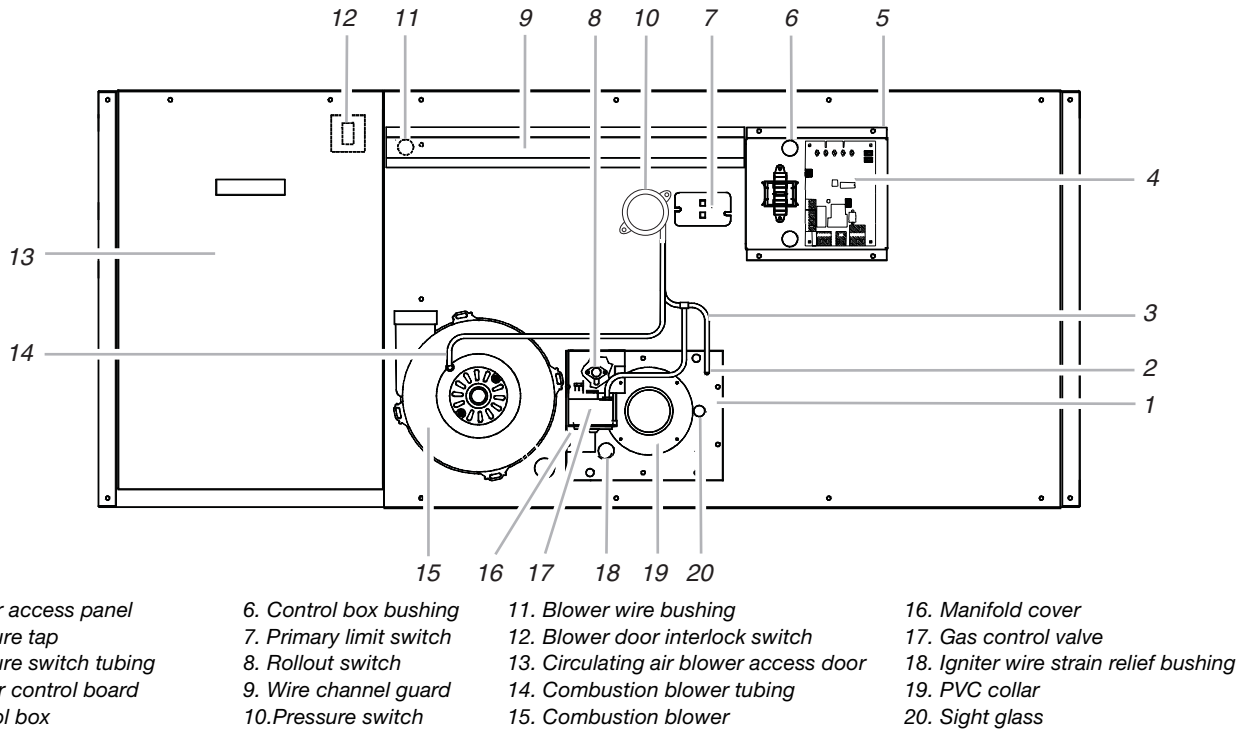
31. On the new component side of the furnace, install the blower door interlock switch (2 screws). Ensure that the switch actuator faces out of the blower compartment.



1. Blower door interlock switch

32. Feed the blower and interlock switch wiring through the hole in the blower compartment.

## After Conversion (new component side)



33. Feed all blower and interlock switch wires through the bushing on the back side of the control box, then install the control box.
34. Using 4 screws, install the combustion blower, making sure the plastic combustion blower orifice seats tightly into the flue opening.
35. Connect the circulating air blower wires to the blower control board. Using the labels previously placed on the wires to connect the wires to the correct terminal. A wiring diagram is provided on the control box cover.
36. Draw wires into the blower compartment and secure with a wire tie to avoid contact with the fan blade.
37. Route the blower wires through the wire channel guard and install the guard making sure not to pinch any wiring between the guard and the side panel. (Do not install the bottom middle screw, reserve this for the P clamp.)
38. Invert the P clamp on the cable and route the combustion blower wire conduit through the P clamp.
39. Install the blower door panel (the panel with the most labels) on the new component side.
40. On the new component side install the limit control. Ensure that the metal disk of the thermostat points toward the heat exchanger end of the furnace.
41. Install the pressure switch (2 screws). The pressure taps (with tubing still installed) points toward the burner box.
42. Attach the tubing to the pressure tap on the burner access cover and the gas valve.
43. Install the tubing to the combustion blower.
44. Connect all wire harnesses to the following components: gas valve plugs, primary limit control terminals, pressure switch terminals, and rollout switch terminals.
45. Install the control box to the furnace (4 screws). Ensure all wires are routed through openings and are not pinched or abraded. Install the control box cover.
46. Check your work to ensure that all parts are installed and connected. Clean up all debris.
47. Complete propane conversion if the orifice conversion was performed in step 17.

## Duct Work Requirements

Install the conditioned air plenum, ducts and air filters (not provided) in accordance with NFPA 90B Standard for the Installation of Warm Air Heating and Air-Conditioning Systems (latest edition).

The furnace is provided with flanges for the connection of the plenum and ducts.

Air Filters must be listed as Class 2 furnace air filters.



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## Electrical Requirements

### **⚠ WARNING**



#### **Electrical Shock Hazard**

**Electrically ground furnace.**

**Connect ground wire to green pigtail lead.**

**Failure to do so can result in death or electrical shock.**

- The furnace must be grounded and wired in accordance with local codes or, in the absence of local codes, with the National Electrical Code ANSI/NFPA No. 70 (latest edition) if an external electrical source is utilized.
- In all instances, other than wiring for the thermostat, the wiring to be done and any replacement of wire shall conform with the temperature limitation for Type T wire – 63°F (35°C) rise.
- The line voltage supply should be routed through a readily accessible disconnect located within sight of the furnace. A junction box on the furnace side panel is provided for line voltage connections. See the furnace wiring diagram for specific connection information.
- Proper polarity of the supply connections (“HOT” and “NEUTRAL”) must be observed to ensure that safety controls provide the protection intended.

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## Gas Supply Requirements

This furnace is equipped for use with natural gas. A conversion kit is required for use with propane. To order the correct conversion kit, see “Accessories.”

- Gas supply piping should be installed in accordance with local codes and the regulations of the utility. Piping must be of adequate size to prevent undue pressure drop. Consult the local utility or gas supplier for complete details on special requirements for sizing gas piping.
- If local codes allow the use of a flexible gas appliance connector, always use a new listed connector. Do not use a connector which has previously serviced another gas appliance.

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## Venting Requirements

Adequate provisions for combustion air and ventilation of furnace must be made. Refer to the National Fuel Gas Code, ANSI Z223.1/NFPA54 (latest edition), Natural Gas and Propane Installation Codes (latest editions), or applicable provisions of the local building codes.

This furnace must be installed only as a direct vent installation. A direct vent (two pipe) installation supplies all of the necessary air for combustion from outside the building through an air intake pipe.

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### **Contaminated Combustion Air**

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These furnaces have been approved for use with outdoor combustion air only. Excessive exposure to the following substances in the combustion air supply will result in performance-related problems:

Permanent wave solutions  
Chlorinated waxes and cleaners  
Chlorine-based swimming pool chemicals  
Water softening chemicals  
Deicing salts or chemicals  
Carbon tetrachloride  
Halogen-type refrigerants  
Cleaning solvents (such as perchloroethylene)  
Printing inks, paint removers, varnishes, etc.  
Cements and glues  
Antistatic fabric softeners for clothes dryers  
Masonry acid washing materials  
Chlorinated laundry products  
Hydrochloric acid

# INSTALLATION INSTRUCTIONS

## ⚠ WARNING



### Explosion Hazard

**Furnace must be installed and serviced by a qualified person.**

**Examples of a qualified person include:**

**licensed heating personnel,  
authorized gas company personnel.**

**Read and follow all instructions provided for  
installation, adjustment, service, alteration, or  
maintenance.**

**Failure to follow these instructions can result in death,  
explosion, fire, or carbon monoxide poisoning.**

## Inspect Shipment

## ⚠ WARNING

### Excessive Weight Hazard

**Use two or more people to move and install furnace.**

**Failure to do so can result in back or other injury.**

This furnace is shipped in one package, completely assembled and wired. The thermostat is shipped in a separate carton when ordered.

- Check the unit rating plate to confirm specifications are as ordered.
- Upon receipt of equipment, carefully inspect it for possible shipping damage. Take special care to examine the unit inside the carton if the carton is damaged.
- If damage is found, it should be noted on the carrier's freight bill. Damage claims should be filed with the carrier immediately. Claims of shortages should be filed with the seller within 5 days.

**NOTE:** If any damages are discovered and reported to the carrier do not install the unit, as your claim may be denied.

## Plan Vent System

The high efficiency of this furnace is accomplished by the removal of both sensible and latent heat from the flue gases. The removal of latent heat results in the condensation of moisture in the flue gases. This condensation occurs in the secondary heat exchanger and in the vent system. Therefore, this furnace requires special venting considerations and the instructions must be followed to insure proper operation. All venting must be in accordance with the codes having jurisdiction in the area and these instructions.

### IMPORTANT:

- The venting system must be supported with mounting straps to prevent any weight load from being applied to the vent blower. Horizontal vent pipe must be supported every 5 ft and vertical pipe should be supported every 10 ft to prevent sagging and provide rigid support.
- This furnace must not be connected to any Type B, BW, or L vent or vent connector and must not be connected to any portion of a factory-built or masonry chimney.
- This furnace is not to be common vented with any other appliance. The vent pipe must not be connected to a chimney flue serving a separate appliance designed to burn solid fuel.
- All vents passing through floors, ceilings, and walls must be installed in accordance with National Fuel Gas Code, ANSI Z223.1/NFPA 54 (latest edition). In all applications where the flue pipe is run through an unconditioned space, ½ in. insulation must be used over the pipe. In extremely cold climates, ¾ in. insulation is recommended.

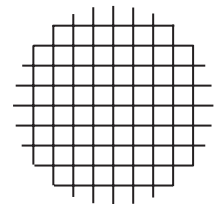
## Flue Pipe Screen

A flue pipe screen designed to keep objects out of the flue pipe is included in the plastic bag.

In all installations, this screen should be installed at the termination of the flue pipe.

### Flue Pipe Screen

The flue pipe screen should be installed at the termination of the flue pipe in all installations.



## Materials

- All pipe, fittings, primer, and solvent cement must conform with American National Standard Institute and the American Society for Testing and Materials (ANSI/ASTM) standards. The solvent shall be free flowing and contain no lumps, undissolved particles, or any foreign matter that adversely affects the joint strength or chemical resistance of the cement. The cement shall show no gelatinization, stratification, or separation that cannot be removed by stirring. See "Piping and Fitting Specifications" for approved piping and fitting materials.

### Piping and Fitting Specifications

Piping and Fitting Material	ASTM Specification
Schedule 40 PVC (Pipe)	D1785
Schedule 40 PVC (Cellular Core Pipe)	F891
Schedule 40 PVC (Fittings)	D2466
SDR-26 (Pipe)	D2241
Schedule 40 ABS (Pipe)	D1527
Schedule 40 ABS (Fittings)	D2468
Schedule 40 & 80 CPVC (Pipe)	F441
ABS-DWV Drain Waste & Vent (Pipe & Fittings)	D2661
PVC-DWV Drain Waste & Vent (Pipe & Fittings)	D2665

- The primers and solvents used must also meet ASTM specifications. PVC primer is specified in ASTM F656. Use PVC solvent as specified in ASTM D2564 and ABS solvent cement as specified ASTM D2235. Low temperature solvent cement is recommended. Metal or plastic strapping may be used for vent pipe hangers.
  - When making ABS joints, pieces can be prepared with a cleaner. When joining ABS to PVC materials, use PVC solvent cement as specified in ASTM D3138.
  - Use high temperature RTV silicone sealant to attach the air intake pipe into the connector on the burner box so the air intake pipe can be removed if service is required.
- NOTE:** Do not use cement.
- Preferred fittings are DWV style or long sweep. Seal all joints gas tight with appropriate cement. In areas where vent and air intake pipes are exposed to abnormal stress or are subject to damage, schedule 80 pipe should be used.

## Vent Pipe Size and Length

The vent pipe and air intake pipe should be sized in accordance with the information found in the "Vent Tables." One 90° elbow is equivalent to 5 ft of pipe. Two 45° elbows are equivalent to one 90° elbow. The minimum length certified for use with this furnace is 5 ft and one elbow, not including the vent and air intake terminals.

### Vent Table- 50,000 BTU/HR Models

Vent Pipe Length (ft)	Minimum Pipe Diameter (in.)									
5	2	2	2	2	2	2	2	2	2	2
10	2	2	2	2	2	2	2	2	2	2
20	2	2	2	2	2	2	2	2	2	2.5
30	2	2	2	2	2	2	2	2.5	2.5	2.5
40	2	2	2	2	2.5	2.5	2.5	2.5	2.5	2.5
50	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
60	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
70	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
80	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
90	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Number of 90° Elbows	0	1	2	3	4	5	6	7	8	9

### Vent Table - 75,000 BTU/HR Models

Vent Pipe Length (ft)	Minimum Pipe Diameter (in.)									
5	2	2	2	2	2	2	2	2	2	2
10	2	2	2	2	2	2	2	2	2	2
20	2	2	2	2	2	2	2	2	2	2.5
30	2	2	2	2	2	2	2	2.5	2.5	2.5
40	2	2	2	2	2.5	2.5	2.5	2.5	2.5	2.5
50	2	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
60	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
70	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
80	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
90	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Number of 90° Elbows	0	1	2	3	4	5	6	7	8	9

**Vent Table - 100,000 BTU/HR Models**

Vent Pipe Length (ft)	Minimum Pipe Diameter (in.)									
5	2	2	2	2	2	2	2	2	2.5	2.5
10	2	2	2	2	2	2	2	2.5	2.5	2.5
20	2	2	2	2	2	2.5	2.5	2.5	2.5	2.5
30	2	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
40	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
50	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
60	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3
70	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3	3	3
80	2.5	2.5	2.5	2.5	2.5	3	3	3	3	3
90	2.5	2.5	2.5	3	3	3	3	3	3	3
Number of 90° Elbows	0	1	2	3	4	5	6	7	8	9

**Vent Table - 125,000 BTU/HR Models**

Vent Pipe Length (ft)	Minimum Pipe Diameter (in.)									
5	2.5	2.5	2.5	2.5	3	3	3	3	3	3
10	2.5	2.5	2.5	3	3	3	3	3	3	3
20	2.5	2.5	3	3	3	3	3	3	NR	NR
30	3	3	3	3	3	3	3	NR	NR	NR
40	3	3	3	3	3	NR	NR	NR	NR	NR
50	3	3	3	NR	NR	NR	NR	NR	NR	NR
60	3	3	NR	NR	NR	NR	NR	NR	NR	NR
Number of 90° Elbows	0	1	2	3	4	5	6	7	8	9
NR = Not Recommended										

In the event that the pipe length is in between the lengths listed in the Vent Table, use the next larger length listed. For example, if a length of pipe needed to install the furnace is 27 ft, use the diameter values for the 30 ft row in the tables.

If the vent and air intake pipe are not equal in length and number of elbows, then determine the minimum pipe diameter for both the vent and air intake. If the results indicate different diameters, use the larger of the two for both the vent and air intake.

**NOTE:** Under no circumstances should the vent and air intake pipe size be different in diameter. See "Install Vent System" for the unit model and type of installation.

## Determine Vent Pipe Direction

The vent system of the furnace must be self-supporting and must not apply any weight load to the combustion blower.

### Vertical Venting

A vertical vent should extend through the roof a minimum of 2 ft and not be obstructed a minimum of 10 ft in any direction.

### Horizontal Venting

The vent terminal location shall comply with Section 7.8 of the National Fuel Gas Code (ANSI Z223.1) or local requirement, whichever takes precedence. For informational purposes, the applicable sections of Section 7.8 are reprinted here:

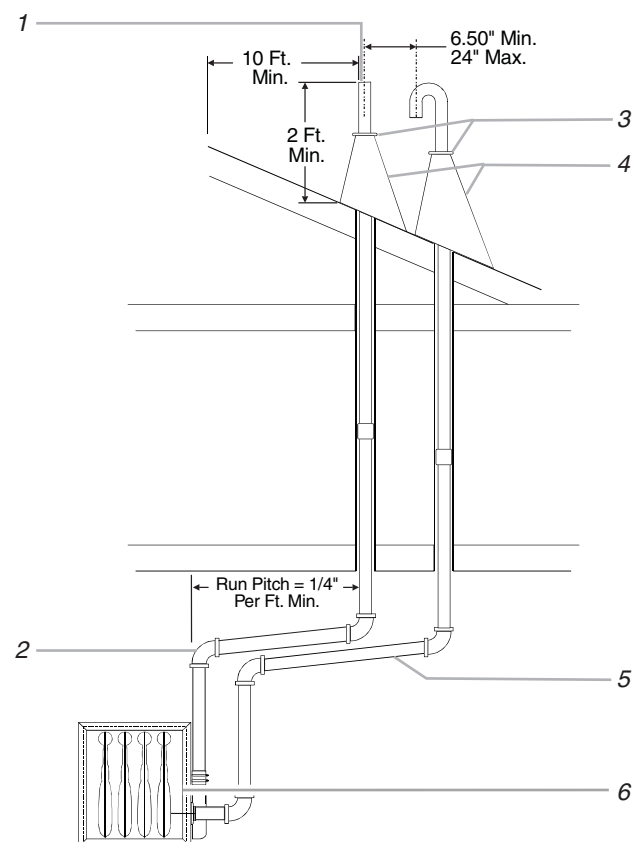
The venting system shall terminate at least 3 ft (0.9 m) above any forced air inlet located within 10 ft (3.1 m). This provision shall not apply to the combustion air inlet of a direct vent appliance or to the separation of the circulating air inlet and vent discharge of a listed outdoor appliance.

For direct vent installation of models with an input rating of 50,000 BTUH or less, the vent system shall terminate at least 9 in. (23 cm) from any opening through which flue gases could enter a building. For direct vent installation of models with an input greater than 50,000 BTUH, the vent system shall terminate at least 12 in. (30 cm) from any opening through which flue gases could enter a building.

The vent terminal and air intake shall terminate at least 12 in. (30 cm) above grade or maximum expected snow depth.

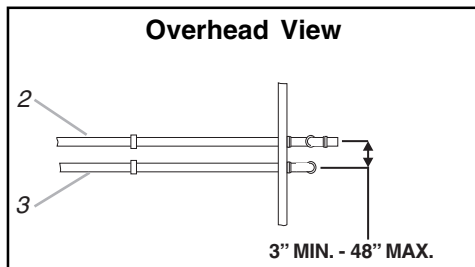
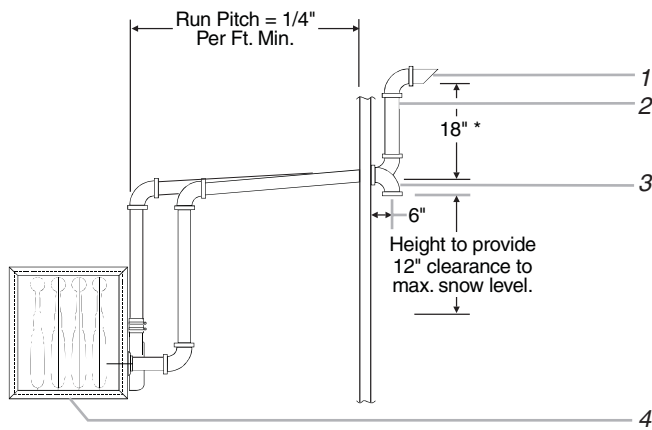
The vent system, regardless of installation type, shall terminate a minimum horizontal clearance of 4 ft from electric meters, gas meters, regulators, and relief equipment.

### Vertical Venting



- 1. Flue pipe screen (inside flue pipe)
- 2. Flue pipe
- 3. Storm collars
- 4. Flashing
- 5. Air intake pipe
- 6. Furnace

## Horizontal Venting



- |   |                    |
|---|--------------------|
| 1. Flue pipe screen<br>(inside flue pipe) | 3. Air intake pipe |
| 2. Flue pipe                              | 4. Furnace         |

## Existing Venting Systems

When an existing furnace is removed or replaced, the original venting system may no longer be sized to properly vent the attached appliances. An improperly sized venting system can result in spillage of flue products into the living space, the formation of condensate, leakage, etc. See "Adjust Blower Speed" section for the "Carbon Monoxide Poisoning Hazard" for proper test procedure.



### WARNING:

#### CARBON MONOXIDE POISONING HAZARD

Failure to follow the steps outlined below for each appliance connected to the venting system being placed into operation could result in carbon monoxide poisoning or death.

The following steps shall be followed for each appliance connected to the venting system being placed into operation, while all other appliances connected to the venting system are not in operation:

1. Seal any unused openings in the venting system.
2. Inspect the venting system for proper size and horizontal pitch, as required in the National Fuel Gas Code, ANSI Z223.1/NFPA 54 or the CSA B149.1, Natural Gas and Propane Installation Codes and these instructions. Determine that there is no blockage or restriction, leakage, corrosion and other deficiencies which could cause an unsafe condition.
3. As far as practical, close all building doors and windows and all doors between the space in which the appliance(s) connected to the venting system are located and other spaces of the building.
4. Close fireplace dampers.
5. Turn on clothes dryers and any appliance not connected to the venting system. Turn on any exhaust fans, such as range hoods and bathroom exhausts, so they are operating at maximum speed. Do not operate a summer exhaust fan.
6. Follow the lighting instructions. Place the appliance being inspected into operation. Adjust the thermostat so appliance is operating continuously.
7. Test for spillage from draft hood equipped appliances at the draft hood relief opening after 5 minutes of main burner operation. Use the flame of a match or candle.
8. If improper venting is observed during any of the above tests, the venting system must be corrected in accordance with the National Fuel Gas Code, ANSI Z223.1/NFPA 54 and/or CSA B149.1, Natural Gas and Propane Installation Codes.
9. After it has been determined that each appliance connected to the venting system properly vents when tested as outlined above, return doors, windows, exhaust fans, fireplace dampers and any other gas-fired burning appliance to their previous conditions of use.

---

## Connect Venting

1. Run venting to the furnace, see "Plan Vent System."
2. Attach the air intake pipe to the furnace connector.  
Use high temperature RTV silicone sealant to attach the air intake pipe into the connector on the burner box so the air intake pipe can be removed if service is required.  
**NOTE:** Do not use cement.
3. Attach the flue pipe connector to the furnace.
4. Install the flue pipe screen at the outside end of the flue pipe.
5. Make sure all vent connections do not leak.
6. Check that the exhaust vent pipe terminates outside the building.
7. Prime the trap system by slowly pouring 1 cup of water down the vent pipe. The vent pipe on horizontal runs must slope upward, away from the furnace, at a minimum pitch of 1/4 in. per foot of run, to prevent accumulation of condensate.  
**NOTE:** On initial start-up of the unit, some of the water used to prime the trap system may run down into the combustion blower and cause noise.

2. Glue the 1/2 in. 90° PVC street elbow (supplied) to the trap (supplied). Be sure to glue it so that the trap outlet will be oriented in the desired direction for drainage.  
**NOTE:** When the furnace is installed in an attic, above a finished ceiling, or any instance where condensate overflow would result in property damage, a secondary drain pan must be provided by the installer. The secondary drain pan must be connected to a drainage system separate from the furnace's primary condensate drain.
3. Glue the trap assembly to the 1/2 in. PVC adapter installed in Step 1.
4. Screw the 1/2 in. NPT barbed adapter (supplied) into the trap using Teflon® tape to seal the connection watertight.  
**NOTE:** Do not use PVC solvent or glue at this joint; use only Teflon® tape.
5. Attach one end of the 3/8 in. polyethylene tubing (supplied) to the drain on the flue drain boot. Pulling the tube taught, cut the tube so it is still long enough to connect to the barbed adapter, but short enough not to allow sagging to occur. Connect the remaining end of the tube to the barbed adapter.
6. From the elbow at the end of the trap, install the drain to the disposal area.

---

## Install Condensate Disposal

**IMPORTANT:** The condensate drain should be routed directly to a locally acceptable disposal area. The condensate drain line should not be run directly to the outdoors especially in colder climates where temperatures may cause the condensate to freeze in the drain line.

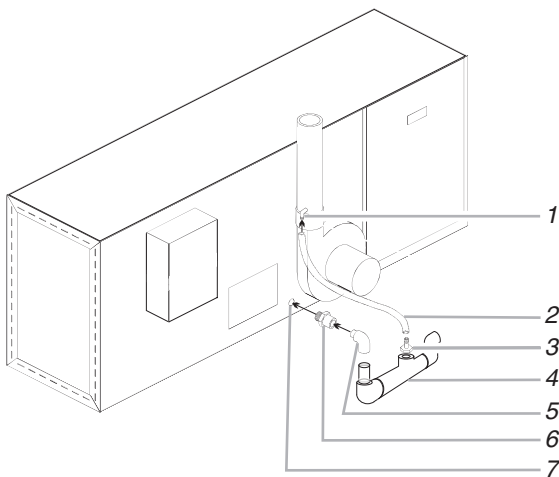
The furnace is factory set to drain out the front side.

### To install the drain trap:

All PVC joints must be glued with PVC primer and PVC glue to ensure a watertight seal, except where noted.

1. Install the 1/2 in. NPT x 1/2 in. PVC adapter (supplied) by screwing it into the drain line using thread sealing tape to seal the connection watertight.

### Condensate Disposal



- |                                |                                      |
|--------------------------------|--------------------------------------|
| 1. Flue drain boot             | 5. 1/2 in. 90° PVC street elbow      |
| 2. 3/8 in. Polyethylene tubing | 6. 1/2 in. NPT x 1/2 in. PVC adapter |
| 3. 1/2 in. NPT barbed adapter  | 7. Threaded drain tap                |
| 4. Trap                        |                                      |

## Install Duct Work

**IMPORTANT:** Install duct work in accordance with NFPA 90B and any local codes.

- When the furnace is installed so that the supply ducts carry air circulated by the furnace to areas outside the space containing the furnace, the return air shall be handled by a duct or ducts sealed to the furnace casing and terminated outside the space containing the furnace.
- If there is no complete return air duct system, the return air connection must be sealed to the furnace casing and run full size to a location outside the utility room or space housing the furnace to prevent a negative pressure on the venting system.

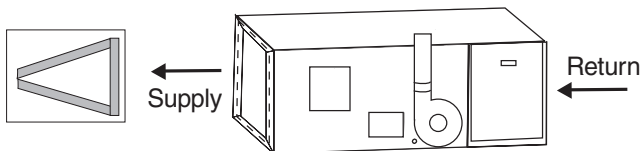
### Installation with Return Ducts

A return air duct system is recommended. If the unit is installed in a confined space or closet, a return connection must be run, full size, to a location outside the closet. The air duct in the closet must be tight to prevent any entrance of air from the closet into the circulating air.

### Installation with an Evaporator Coil

**IMPORTANT:** When an air conditioning unit is used in conjunction with the furnace, the evaporator coil must be installed in the discharge (supply) air. Do not install an evaporator coil in the return air; excessive condensation will occur within the furnace.

When installing a WEC coil in a horizontal position with a horizontal gas furnace, the open end of the A-coil must face the supply air outlet of the furnace (blow into the open end of the A-coil). The A-coil should point away from the supply air outlet of the furnace as shown.



### Installation without an Evaporator Coil

If a cooling coil is not installed with the furnace, then a removable access panel should be provided in the supply plenum for purposes of inspecting the heat exchanger. This opening must be accessible when the furnace is installed. It must be large enough that the heat exchanger can be viewed for possible openings using light assistance or so that a probe can be inserted for sampling the airstream. The cover for the opening must be leak tight.

## Filter Specifications

Filters are not supplied with these furnaces; however, filters must be used. It is the installer's responsibility to install a filter rack with the duct work and to install properly sized filters in accordance with the "Minimum Filter Requirements Chart."

- The Airflow Descriptor is the 2 digits immediately preceding the hyphen (-) in the furnace model number. Example: 16 is the Airflow Descriptor for furnace model WFAT075B16-1A. The model number is located on the rating plate inside the access panel.
- Areas and dimensions shown for cleanable filters are based on filters rated at 600 ft per minute face velocity.
- Typical filter sizes are shown; however, any combination of filters whose area equals or exceeds the minimum area shown is satisfactory.
- If a central return air filter-grille is used, the furnace does not require a filter.

**Minimum Filter Requirements Chart**

Airflow Descriptor	Disposable Filters			Permanent Filters		
	Min. Area (sq. in.)	Size (in.)	Qty.	Min. Area (sq. in.)	Size (in.)	Qty.
12	576	16 x 20	2	288	16 x 20	1
14	672	20 x 20	2	336	20 x 20	1
20	960	20 x 25	2	480	20 x 25	1



## Make Electrical Connections

### ⚠ WARNING



#### Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

#### Thermostat

Install a room thermostat according to the instructions furnished with it. Select a location on an inside wall that is not subject to drafts, direct sunshine, or other heat sources.

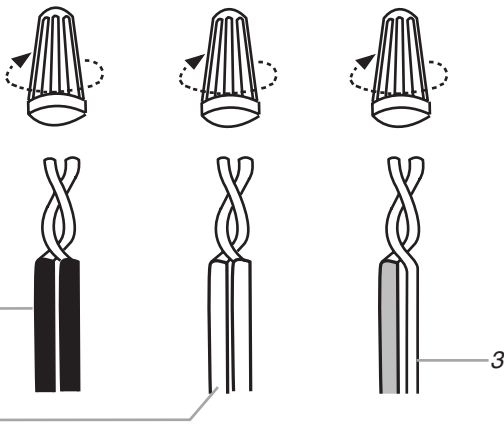
Make the low voltage thermostat connections to the blower control board as indicated on the Wiring Connection Diagram.

#### Continuous Low Speed Blower

If continuous blower operation on low speed is desired, connect the low speed motor tap to the CONT (constant) air terminal on the blower control board. See the Wiring Connection Diagram. The blower will operate on low speed whenever the main power is connected to the furnace, except when it operates on heating or cooling speed during thermostat call for heat or cooling.

**NOTE:** The constant air terminal is to be connected to the low speed motor tap only. If a motor is wired for a higher speed, the increased amp draw could cause the board control to fail and void the warranty.

1. Disconnect power.
2. Remove the screws from the furnace electrical connection box.
3. Remove the cover from the furnace electrical connection box.
4. Route the field supply wires to the furnace electrical connection box.
5. Using UL listed wire nuts, connect the field supply wires to the furnace (black to black and white to white).



1. Connect black to black
2. Connect white to white
3. Connect green to ground

### ⚠ WARNING



#### Electrical Shock Hazard

Electrically ground furnace.

Connect ground wire to green pigtail lead.

Failure to do so can result in death or electrical shock.

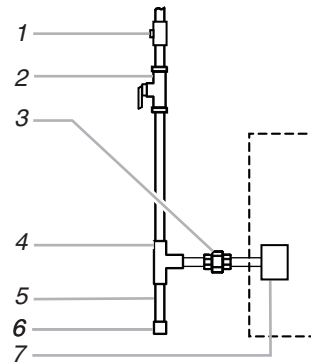
6. Using UL listed wire nuts, connect the ground wire to green pigtail lead.
7. Replace the furnace electrical connection box cover and screws.

## Make Gas Connections

**IMPORTANT:** This furnace requires conversion for use with propane. To order the correct conversion kit, see "Accessories."

1. Install the field gas supply as shown.
2. Provide a drip leg on the outside of the furnace.
3. Install a shutoff valve in the gas line, outside the unit, 5 ft above the floor, or in accordance with any local codes.
4. Install a test gauge connection with a 1/8 in. NPT plugged tapping immediately upstream of the shutoff valve as shown.
5. Connect the gas pipe to the furnace controls providing a ground joint union as close to the controls as possible to facilitate removal of controls and manifold.

Pipe-joint compounds suitable for use with L.P. gas must be used. Do not use Teflon® tape.



1. 1/8 in. NPT plugged tapping
2. Shutoff valve
3. Union
4. Tee
5. Drip leg
6. Cap
7. Gas control valve (inside furnace)



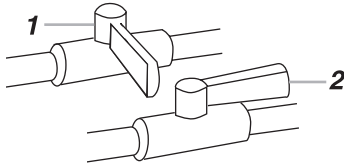
## WARNING

### FIRE OR EXPLOSION HAZARD

Failure to follow the safety warnings exactly could result in serious injury, death or property damage.

Never test for gas leaks with an open flame. Use a commercially available soap solution made specifically for the detection of leaks to check all connections. A fire or explosion may result causing property damage, personal injury or loss of life.

6. Turn off the gas supply at the manual gas valve.



1. Closed valve  
2. Open valve

7. Remove the inlet pressure tap plug on the gas control valve and connect pressure gauge to the 1/8 in. NPT inlet pressure tap.
8. Turn on the gas supply at the manual gas valve.
9. Observe the inlet pressure.

The minimum inlet gas supply pressure is 5 in. W.C. for natural gas and 11 in. W.C. for propane gas.

The maximum inlet gas supply pressure is 10.5 in. W.C. for natural gas and 13 in. W.C. for propane gas.

10. Turn off the gas supply at the manual gas valve.

**IMPORTANT:** If the inlet gas supply pressure is not within the minimum and maximum range as shown on the rating plate, contact your gas supplier.

11. Disconnect the pressure gauge from the 1/8 in. NPT inlet pressure tap.
12. Replace the inlet pressure tap plug on the gas control valve.
13. Turn on the gas supply at the manual gas valve.
14. Test all connections by brushing on an approved non-corrosive leak-detection solution. Bubbles will show a leak. Correct any leak found.

- At test pressures greater than 1/2 psig (3.5 kPa), the furnace and the manual gas valve must be disconnected from the gas supply piping system.
- At test pressures less than or equal to 1/2 psig (3.5 kPa), the furnace must be isolated from the gas supply piping system by closing the manual gas valve.

15. Replace the burner access door.

## Check the Furnace Input Rate (if required)

### IMPORTANT:

- The furnace input rate must not exceed the input rating on the furnace rating plate.
  - At altitudes from 2,000 to 7,500 ft the furnace input rate must not exceed that on the rating plate multiplied by the Input Factor in the Manifold Pressure vs. Altitude chart.
  - This furnace is equipped for rated input at manifold pressures of 3.5 in. W.C. for natural gas and 10.0 in. W.C. for propane gas.
1. For natural gas, check the furnace rate by observing the gas meter, making sure all other gas appliances are turned off. The test hand on the meter should be timed for at least one revolution.

$$\text{BTU/HR} = \frac{\text{Cubic feet per Revolution} \times 3600 \times \text{Heating Value}}{\text{\# Seconds per Revolution}}$$

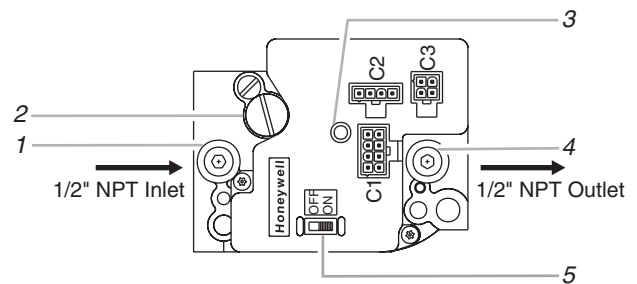
2. The actual heating value of your gas can be obtained from your local utility company.

## Adjust the Furnace Input Rate (if required)

For altitudes 4,500 to 7,500 feet above sea level.

1. The gas control valve is located on the outside front of the furnace.
2. Move the gas control switch to the OFF position. Use only your hand to move the gas control switch; tools are not required.
3. Remove the outlet pressure tap plug on the gas control valve and connect pressure gauge to the 1/8 in. NPT outlet pressure tap.

### Gas Control Valve



1. 1/8" NPT Inlet pressure tap  
2. Regulator adjusting cap  
3. Diagnostic LED  
4. 1/8" NPT Outlet pressure tap  
5. Gas control switch

4. Be sure the gas control switch has been in the OFF position for at least 5 minutes before starting the unit.
5. Move the gas control switch to the ON position.

**NOTE:** This furnace is equipped with an ignition device which automatically lights the burner. This furnace cannot be lighted manually. Do not try to light the burner by hand.

6. Turn on the electrical power to the furnace.
7. Set the room thermostat to a point above room temperature to light the main burners.
8. Observe the pressure reading on the pressure gauge.
9. Refer to the Manifold Pressure vs. Altitude chart for the correct manifold pressure. If necessary, remove the regulator adjusting cap on the gas valve and turn the regulator adjusting screw clockwise to increase pressure and input, or counterclockwise to decrease pressure and input.

**IMPORTANT:** If the manifold pressure cannot be adjusted to the correct value, contact your gas supplier.

10. Move the gas control switch to the OFF position.
11. Disconnect the pressure gauge from the 1/8 in. NPT outlet pressure tap.
12. Replace outlet pressure tap plug and the regulator adjusting cap on the gas valve.
13. Move the gas control switch to the ON position.
14. Set the room thermostat to the desired temperature necessary to achieve optimum temperature rise.

#### Manifold Pressure vs. Altitude Chart

Natural Gas			
Altitude (ft)	Heating Value (BTU/ft <sup>3</sup> )	Manifold Pressure (in. W.C.)	Input Factor
2000	948	3.50	0.9666
3000	914	3.50	0.9499
4000	881	3.50	0.9332
4500	865	3.50	0.9249
5000	849	3.29	0.8900
5500	833	3.27	0.8790
6000	818	3.25	0.8680
6500	802	3.23	0.8570
7000	787	3.21	0.8460
7500	771	3.19	0.8350

For Altitudes 7,500 to 10,000 feet above sea level.

Do not adjust manifold pressure. An orifice change is required. For the correct orifice size, see Table F.4 in Appendix F of the National Fuel Gas Code (ANSI Z223.1/NFPA 54, latest edition).

## Complete Installation

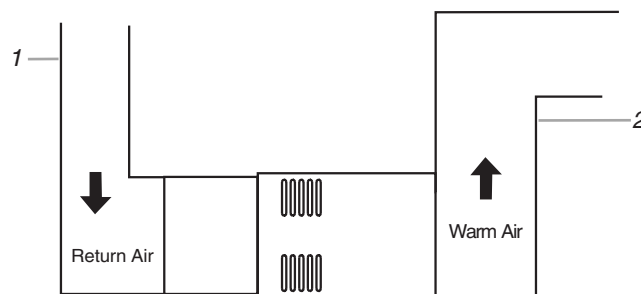
**IMPORTANT:** Do not use this furnace if any part has been under water. Immediately call a qualified person to inspect the furnace and to replace any part of the control system and gas control which has been under water.

1. Check to be sure you have all of your tools.
2. Dispose of all packaging materials.
3. Check the furnace in its final location. Be sure the vent is not blocked.

### Measure Temperature Rise

1. After 20 minutes of heating operation, measure the furnace temperature rise. Take air temperature readings in both the return air ducts and the heated air ducts (about 6 ft from the furnace where they will not be affected by radiant heat) as shown.

**NOTE:** If more than one run of return or heated air ducts is used, air temperature measurements should be taken in each duct. These measurements can be converted to an average to obtain the temperature rise of the whole system.



1. Measure return air here.
2. Measure supply temperature here.

2. If furnace doesn't maintain temperature rise within the range shown on the furnace rating plate, adjust the blower speed.

---

## Adjust Blower Speed

---

### **WARNING**



#### **Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

**NOTE:** See the Wiring Diagram and Wiring Schematic while performing the following procedure.

#### **To increase temperature rise:**

1. Disconnect power.
2. Remove control box cover.
3. The furnace is factory configured for medium speed (blue wire) for heating. Connect a lower speed wire (Med/Lo or Lo) to the Heat terminal.
4. Replace control box cover.
5. Recheck the temperature rise. If the temperature rise cannot be adjusted within the limits as listed on the furnace rating plate, see the "Troubleshooting" section.

#### **To decrease temperature rise:**

1. Disconnect power.
2. Remove control box cover.
3. The furnace is factory configured for medium speed (blue wire) for heating. Remove the blue wire from the Heat terminal and place it at M1 or M2 on the blower control board.
4. Connect a higher blower speed wire (Med/Hi or High) to the Heat terminal.
5. Replace control box cover.
6. Recheck the temperature rise. If the temperature rise cannot be adjusted within the limits as listed on the furnace rating plate, see the "Troubleshooting" section.

**NOTE:** If low speed (LO) is required for proper temperature rise, the continuous fan feature should not be used.

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## Shut Down the Furnace

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1. Set the room thermostat to the lowest setting.
2. Disconnect power.
3. Shut off the gas by moving the gas control switch to the OFF position.

---

## Sequence of Operation

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### **Heating**

A call for heat from the thermostat closes R to W on the blower control board, which begins the ignition sequence. The induced draft blower output energizes. The pressure switch senses normal combustion airflow, and closes. After a 15-second pre-purge, the control energizes the hot surface igniter. After an igniter warm-up period, the main gas valve energizes. Upon main burner ignition, the circulating air blower energizes following a 30-second delay.

When the call for heat is satisfied, R to W opens and the gas to the burners shuts off. The control turns off the inducer after a 5-second post-purge delay and the heating speed blower output turns off following the blower "off" delay.

In the event the limit control senses an abnormally high temperature and opens, the ignition control de-energizes, and the combustion blower and circulating air blower heating speed continue to energize.

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### **Fan On**

A call for fan from the thermostat closes R to G on the control board. The control waits for a 1-second thermostat debounce delay before responding by energizing the heat speed blower. When the call for fan is turned off, the control de-energizes the heating speed blower after a 60-second delay.

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### **Cooling**

A call for cooling from the thermostat closes R to Y and R to G on the blower control board. The control waits for a 1-second thermostat debounce delay before energizing the cool speed blower. When the call for cooling is satisfied, the control de-energizes the cooling speed blower after a 60-second delay.

## Controls

### Pressure Switch

The pressure switch is a normally open switch that monitors combustion airflow. If there is adequate airflow, the pressure switch closes. Inadequate airflow resulting from excessive venting system restriction or a failed combustion blower will cause the switch to remain open.

### Rollout Switch(es)

The rollout switch(es) are normally closed switch(es) that open when abnormal temperatures exist in the burner area. This can be caused by a restricted heat exchanger causing main burner flame to “roll out” into the vestibule area or burner box.

The rollout switch(es) must be manually reset by pushing the button on top to restore furnace operation.

### Primary Limit Control

This is a normally closed control that opens if abnormally high circulating air temperatures occur. It is an automatic reset control.

### Safety Interlock Switch

When the blower door is removed, the safety interlock switch breaks the power supply to the burner controls and blower motor.

### Blower Control Board

## ⚠ WARNING



### Electrical Shock Hazard

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

The blower control board operates the circulating air blower, the combustion blower and any accessories connected to it. There is a fixed blower “off” delay of 90 seconds, which is one-time adjustable to 150 seconds. See Wiring Connection Diagram.

### Gas Control Valve

The gas control valve contains control logic to sense proper operating conditions and provides gas flow and ignition only when all conditions are properly met. The gas control valve also regulates the manifold gas pressure.

# TROUBLESHOOTING

### Furnace Fails to Operate Properly

Review “Sequence of Operation” and visually inspect the following before troubleshooting:

Is the power to the furnace on?

Is the blower compartment door securely closed?

Are the manual shutoff valves in the gas line to the furnace open?

### Failure Codes

The system has a built-in, self-diagnostic capability. The control continuously monitors its own operation and the operation of the system. If a system problem occurs, a failure code is indicated by the LED on the gas control valve. See the Failure Codes chart for a description of the flash codes.

**IMPORTANT:** Do not remove the blower compartment door or turn off the power to the furnace because either action will clear the control’s memory of the failure.

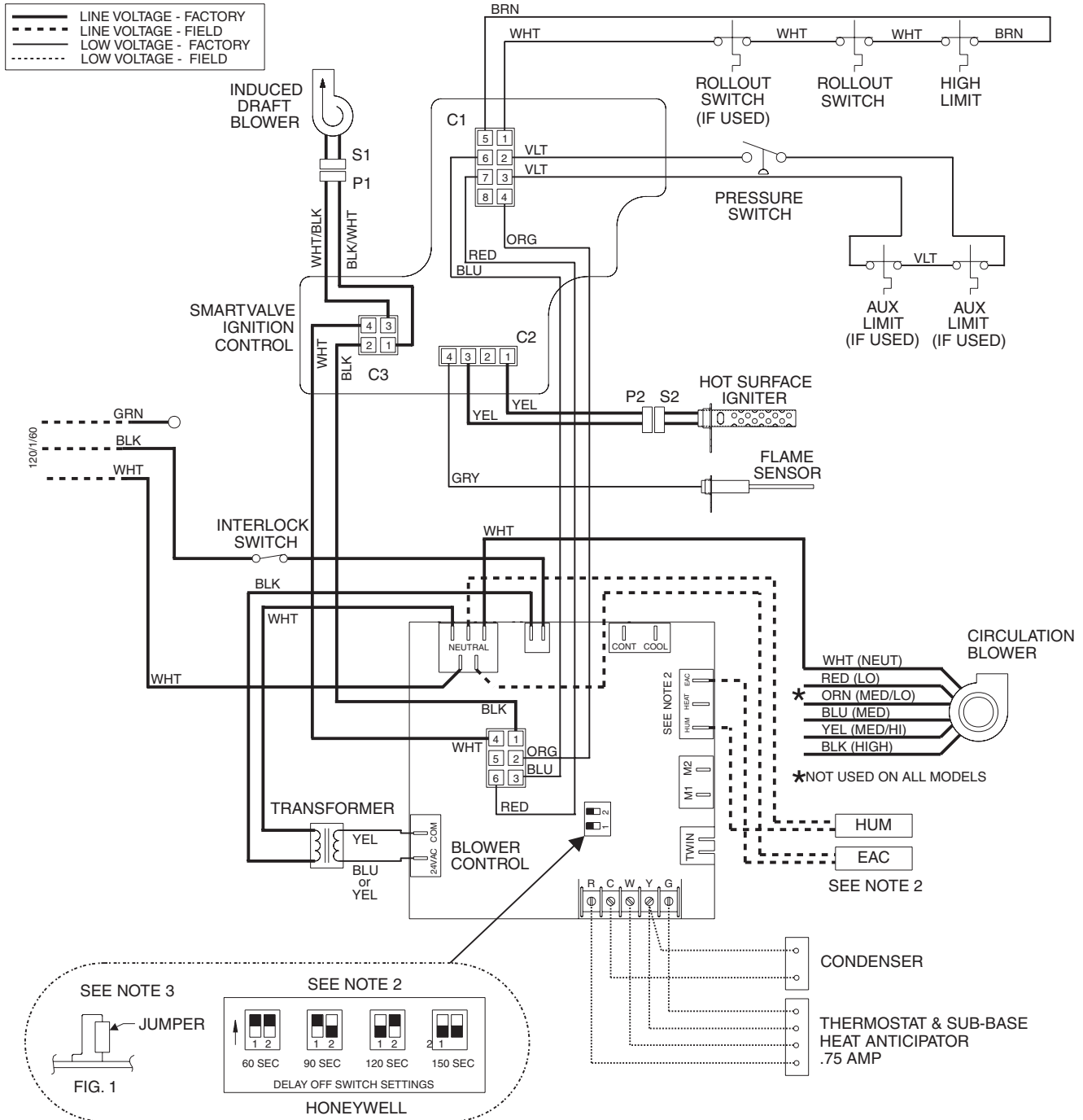
1. Start the system by setting the thermostat above the room temperature.
2. Observe the system’s response.
3. Use the information provided in this section to check the system’s operation.

### Failure Codes

LED Status (Flash Codes)	Fault Description
Off	No Power to the System Control
Steady Flash*	Normal Operation (Standby or call for heat)
2 Flashes	Pressure switch closed when it should be open
3 Flashes	Pressure switch stuck open 30 seconds or longer after call for heat (system in 5-minute delay mode before next call for heat). On/off switch in OFF position during a call for heat will generate this code.
4 Flashes	Open Limit Switch or Limit Switch Circuit
5 Flashes	Flame Sense Signal sensed out of proper sequence

\* 11 or more flashes with no pause

# Wiring Connection Diagram - Honeywell® SmartValve II® Ignition System



## ⚠ WARNING



### Electrical Shock Hazard

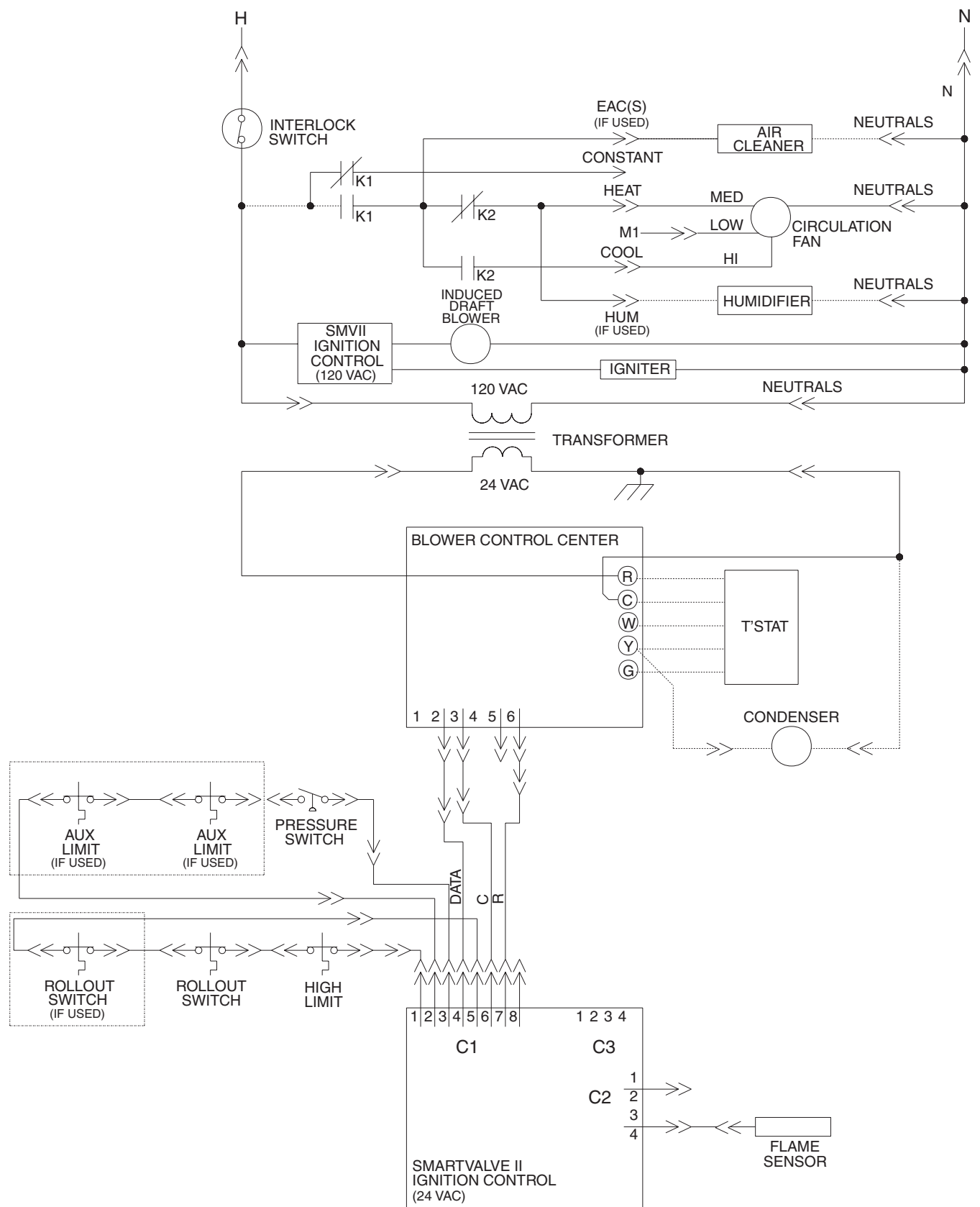
Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

Check codes for proper wiring and circuit protection before installation.

Wiring Schematic - Honeywell® SmartValve II® Ignition System



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# ASSISTANCE OR SERVICE

If you need further assistance, you can write to the below address with any questions or concerns:

Whirlpool® Home Cooling and Heating  
7901 S.W. 6th Court  
Plantation, Florida 33324

Please include a daytime phone number in your correspondence.

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## Accessories

To order accessories ask for the appropriate part number listed below or contact your authorized Whirlpool® Home Cooling and Heating dealer.

ALPKT572-2      Natural Gas to Propane Conversion Kit

