



# 80% 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.

Whirlpool® Models  
WFAU, WFAR, WFAT,  
WFLU, WFLR, WFLT  
46924B008

Whirlpool® Home Cooling and Heating  
14610 Breakers Drive  
Jacksonville, FL 32258



## 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

### WARNING:

#### FIRE OR EXPLOSION HAZARD

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

- 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 neighbor’s phone. Follow the gas supplier’s instructions.
  - If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.

**WARNING:** Gas leaks cannot always be detected by smell.

Gas suppliers recommend that you use a gas detector approved by UL or CSA.

For more information, contact your gas supplier.

If a gas leak is detected, follow the “What to do if you smell gas” 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 I 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

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

#### Tools needed


- Pipe wrench
- Screwdriver
- Tape measure
- Thread sealant
- Level
- Noncorrosive leak check solution
- Test gauge with 1/8" NPT connection (for measuring gas supply pressure)
- Allen wrench

#### Parts needed

Check local codes and with gas supplier. Check existing gas supply, electrical supply, and venting, and read “Ductwork Requirements,” “Electrical Requirements,” “Gas Supply Requirements” and “Venting Requirements” before purchasing parts.

## 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.**

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 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" (45.7 cm) above the floor. The furnace is to be located or protected to avoid physical damage by vehicles.
- Furnaces may be installed as suspended units in the horizontal position. These furnaces are not designed for direct attachment of suspension rods to the furnace casing. See "Installation Configurations."
- 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

- A 2" (5.1 cm) minimum clearance is required in front for air openings into the combustion chamber.
- All servicing and cleaning of the furnace can be performed from the front. If the furnace is installed in a closet or utility room, provide 24" (61 cm) clearance in front for service if the door to the room is not in line with the front of the furnace. Where servicing clearances are greater than clearances to combustibles, servicing clearances take precedence.

**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

### Minimum Clearance to Combustibles Chart

All measurements in inches (centimeters)

#### Upflow and Counterflow Installations

Cabinet Width	Front	Back	Top	Vent	Sides	
					Left	Right
14½ (36.9)	4 (10.2) <sup>1</sup>	0	1 (2.5)	6 (15.2) <sup>2</sup>	3 (7.6) <sup>3</sup>	0
17½ (44.4)	4 (10.2) <sup>1</sup>	0	1 (2.5)	6 (15.2) <sup>2</sup>	2 (5.1) <sup>3</sup>	0
21 (53.3)	4 (10.2) <sup>1</sup>	0	1 (2.5)	6 (15.2) <sup>2</sup>	1 (2.5)	0
24½ (62.3)	4 (10.2) <sup>1</sup>	0	1 (2.5)	6 (15.2) <sup>2</sup>	0	0

#### Horizontal Installations (Models WFAT and WFLT only)

Cabinet Width	Front	Back	Vent	Airflow			
				R to L		L to R	
				Top	Bottom	Top	Bottom
14½ (36.9)	4 (10.2) <sup>1</sup>	0	6 (15.2) <sup>2</sup>	1 (2.5)	3 (7.6) <sup>1</sup>	3 (7.6) <sup>1</sup>	0
17½ (44.4)	4 (10.2) <sup>1</sup>	0	6 (15.2) <sup>2</sup>	1 (2.5)	2 (5.1) <sup>2</sup>	2 (5.1) <sup>2</sup>	0
21 (53.3)	4 (10.2) <sup>1</sup>	0	6 (15.2) <sup>2</sup>	1 (2.5)	0	1 (2.5)	0

## Minimum Clearance to Combustibles Chart

All measurements in inches (centimeters)

### Horizontal Installations (Models WFAR and WFLR only)

Cabinet Width	Front	Back	Vent	Airflow			
				R to L		L to R	
				Top	Bottom	Top	Bottom
14½ (36.9)	4 (10.2) <sup>1</sup>	0	6 (15.2) <sup>2</sup>	3 (7.6) <sup>2</sup>	0	3 (7.6) <sup>1</sup>	3 (7.6) <sup>2</sup>
17½ (44.4)	4 (10.2) <sup>1</sup>	0	6 (15.2) <sup>2</sup>	2 (5.1) <sup>2</sup>	0	2 (5.1) <sup>2</sup>	2 (5.1) <sup>2</sup>
21 (53.3)	4 (10.2) <sup>1</sup>	0	6 (15.2) <sup>2</sup>	1 (2.5)	0	1 (2.5)	0
24½ (62.3)	4 (10.2) <sup>1</sup>	0	6 (15.2) <sup>2</sup>	1 (2.5)	0	1 (2.5)	0

<sup>1</sup> May be 2" (5.1 cm) when Type B-1 vent pipe is used.

<sup>2</sup> May be 1" (2.5 cm) when Type B-1 vent pipe is used.

<sup>3</sup> Where values greater than 0 are shown, may be 0" when Type B-1 vent pipe is used.

#### ■ High Altitude Installations

- This furnace is approved for operation at altitudes from 0 to 4,500 ft (1,371.6 m) above sea level without any required modifications.
- From 4,500 to 7,500 ft (1,371.6 m to 2,286 m), 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 (2,286 m), 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 ft (305 m) above sea level.

The furnace is not recommended for installation above 10,000 ft (3,048 m).

## Installation Configurations

Models WFAU and WFLU must be installed only as an upflow furnace. Models WFAT and WFLT may be installed as an upflow or horizontal furnace. Models WFAR and WFLR may be installed as either a counterflow or a horizontal furnace.

Models WFAR, WFLR, WFAT and WFLT furnaces can be horizontally installed for airflow right to left or left to right.

### Upflow Installations

WFAU, WFLU, WFAT and WFLT model furnaces can be installed with either a side or bottom air return. For bottom air return the bottom air return knockout plate must be removed. For units that do not include a side or bottom return filter rack, kit no. AFILT524-1 (side return) or kit no. AFILT529-1 (bottom return) can be used.

To provide sufficient filter area for installations requiring more than 1,600 CFM nominal air delivery, return air will have to be brought through both sides of the furnace, or through one side and the bottom, or an optional filter rack WAFILTHA7 may be used.

### Installation for Counterflow (Downflow) Models

## ⚠ WARNING



#### Fire Hazard

**Before installing counterflow (downflow) furnace on combustible surface, such as wood, install one of the following kits:**

**WABASE 511 (14.5" cabinets)**

**WABASE 512 (17.5" cabinets)**

**WABASE 568 (21" cabinets)**

**WABASE 569 (24.5" cabinets)**

**Contact your local dealer.**

**Failure to do so can result in death or fire.**

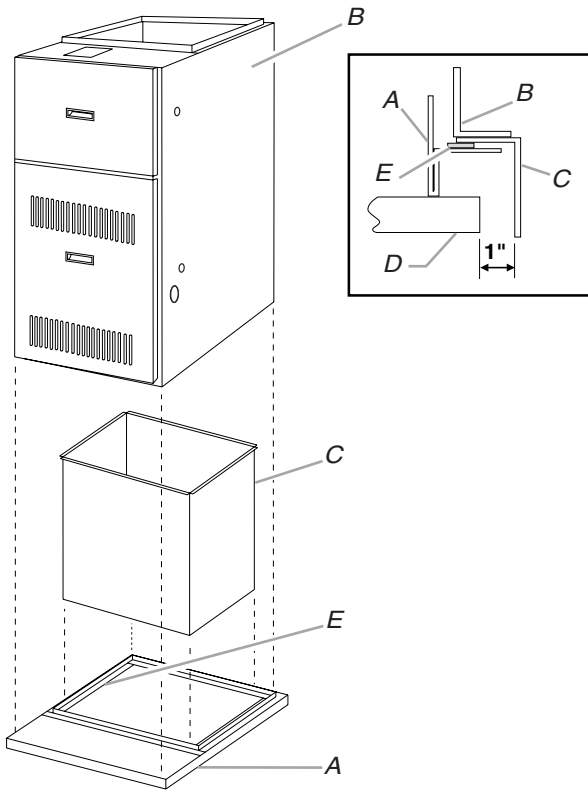
#### IMPORTANT:

- The furnace may be installed directly on the supply plenum or coil cabinet if the furnace is installed on a noncombustible floor.

- For installations on combustible flooring, a special base must be ordered and used. See “Accessories.”

1. Cut, size and frame opening in floor to fit the Combustible floor base and provide a minimum 1" (2.5 cm) clearance between the supply duct and combustible materials. The 4 legs on the base assembly should be recessed into the floor, and the base should rest on all 4 outside flanges.
2. Construct duct connections with 1" to 1¼" (2.5 cm to 4.4 cm) right angle flanges, and long enough to extend below the floor joists.
3. Drop the duct connections through the top of the base assembly with the right angle flanges in good contact with the glass tape on top of the base assembly.
4. Position the furnace over the right angle duct flanges.

### Combustible Floor Installation (Counterflow Models only)



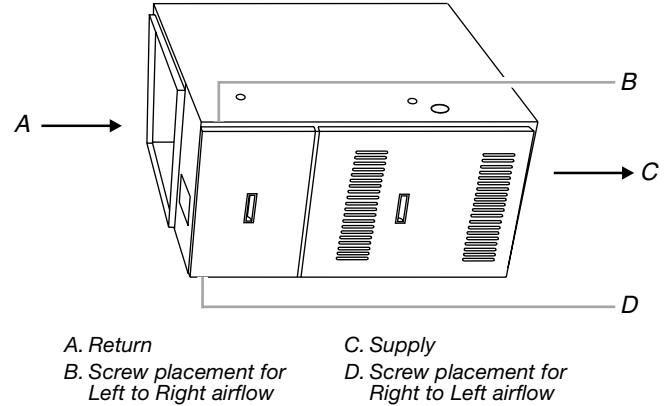
- A. Base assembly
- B. Furnace
- C. Outlet duct (drops into base assembly)
- D. Combustible floor
- E. Woven glass tape (between flanges of outlet duct and base assembly)

### Horizontal Installations

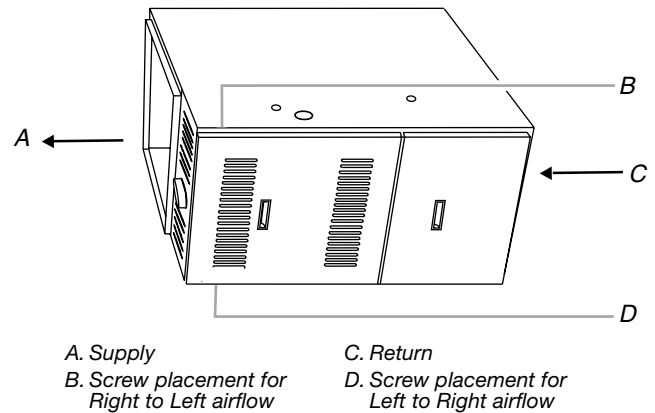
WFAR, WFLR, WFAT and WFLT model furnaces can be horizontally installed for airflow right to left or left to right. To ensure access to parts for servicing, install upflow and counterflow furnaces so that the burner and blower access panels are readily accessible.

**NOTE:** When installed horizontally, the installer must install a sheet metal screw to retain the upper door as shown following, in either Position B or D, depending on installation configuration.

#### Horizontal Installation (WFAR and WFLR models)



#### Horizontal Installation (WFAT and WFLT models)



#### Horizontal Installation—Suspended

WFAR, WFLR, WFAT and WFLT model furnaces may be installed as suspended units in the horizontal position. 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 2 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.

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## Ductwork Requirements

- Install all conditioned air plenums, ducts and air filters (if not provided on the furnace) 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.
- All air filters must be listed as Class 2 furnace air filters.
- All ductwork must be made of materials and insulated to meet local, state and national codes. Ductwork installed outdoors must be sealed, weatherproofed and protected against physical damage. Caulking, flashing or other means of adequately providing a permanent weather seal should be used where duct penetrates a building or structure opening.

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## Electrical Requirements

**⚠ WARNING**



**Electrical Shock Hazard**

**Electrically ground furnace.**

**Connect ground wire to green ground screw.**

**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).

- 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 [17°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 Wiring Connection Diagram in the “Troubleshooting” section for specific connection information.
- Proper polarity of the supply connections (“HOT” and “NEUTRAL”) must be observed to be sure that the control system provides 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, state and national codes and the regulations of the utility. Piping must be of adequate size to avoid 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, use a CSA design-certified outdoor flexible stainless steel appliance connector or rigid gas supply line as needed. 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 Section 5.3, “Air for Combustion and Ventilation,” of the National Fuel Gas Code, ANSI Z223.1/NFPA54 (latest edition), or applicable provisions of the local building codes. For Category 1 furnaces, vent installations shall be in accordance with parts 7 and 11 of the National Fuel Gas Code, ANSI Z223.1/NFPA 54, the local building codes, and the furnace and vent manufacturer’s instructions.

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### Existing Venting Systems

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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 the spilling of flue products into the living space, the formation of condensate, leakage, etc. See 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 appliances to their previous conditions of use.

### Unconfined Space

An unconfined space is defined as “a space whose volume is more than 50 cu. ft (1.4 m<sup>3</sup>) per 1,000 Btu/h of the combined input rating of all appliances installed in that space.”

When a furnace is installed in an unconfined space in a building, it can be assumed that the infiltration will be sufficient to supply the required air.

If the furnace is installed in a ventilated attic or crawl space, it is assumed that the air infiltration is sufficient to supply the required combustion air. However, in a building of unusually tight construction, additional outdoor air should be provided.

### Confined Space

A confined space is defined as “a space whose volume is less than 50 cu. ft (1.4 m<sup>3</sup>) per 1,000 Btu/h of the combined input rating of all appliances installed in that space.”

### Contaminated Combustion Air

Excessive exposure to contaminated combustion air will result in performance-related problems. The recommended source of combustion air is outdoor air.

#### Outdoor air as the source of combustion air

If the furnace is installed in a confined space, it is recommended that the necessary combustion air come from the outdoors by way of an attic, crawl space, air duct, or direct opening.

Outdoor air is required as the source of combustion air when the indoor air is contaminated with chemical substances and in the following types of installations:

- Furnaces installed in commercial buildings
- Furnaces installed in buildings with indoor pools
- Furnaces installed in hobby or craft rooms
- Furnaces installed near chemical storage areas
- Furnaces installed in laundry rooms
- Furnaces installed in hair salons

#### Indoor air as the source of combustion air

Indoor air as the source of combustion air is acceptable in most applications if the following guidelines are met:

- All provisions for indoor combustion air must meet the requirements for combustion air indicated in the National Fuel Gas Code, ANSI Z223.1/NFPA 54 (latest edition), and/or any applicable local codes.
- If indoor combustion air is used, the air supply to the furnace should not be exposed to the following substances:

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 indoor thermostat and accessories are shipped in a separate carton when ordered.

1. Check the furnace rating plate to confirm specifications are as ordered.
2. Upon receipt of the furnace, inspect it for possible shipping damage. Examine the furnace 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 furnace, because your claim may be denied.

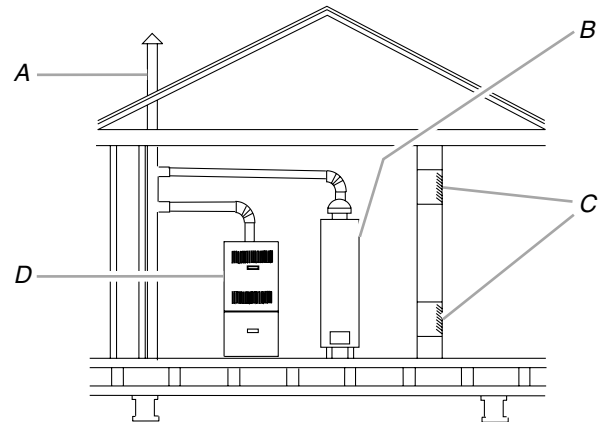
## Plan Vent System

### Confined Space Installation—Nondirect Venting Air from Inside

If the furnace is installed in a confined space within the building and combustion air is taken from a heated space, the combustion air and ventilating air must enter and leave the space through two permanent openings of equal area. One opening shall be located within 12" (30.5 cm) of the ceiling and the other within 12" (30.5 cm) of the floor.

**NOTE:** Each opening must have a free area of at least 1 sq. in. (6.4 cm<sup>2</sup>) per 1,000 Btu/h of total input rating of all equipment in the enclosure, and not less than 100 sq. in. (645 cm<sup>2</sup>) each.

### Equipment in Confined Space—All Air from Inside



A. Chimney or gas vent  
B. Water heater

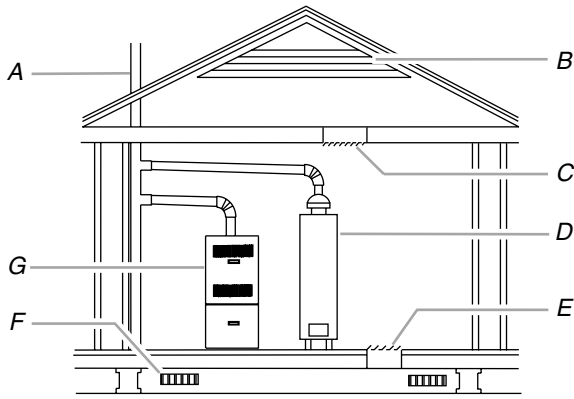
C. Openings  
D. Furnace

### Confined Space Installation—Nondirect Venting Air from Outside

If air from outside is brought in for combustion, the confined space shall be provided with two permanent openings. One opening shall be within 12" (30.5 cm) of the ceiling and one opening within 12" (30.5 cm) of the floor. Several methods can be used to bring the outside air in through these openings. The openings must open directly or by ducts to the outdoors, through spaces (crawl space or attic) that freely open to the outdoors, or indirectly through vertical ducts.

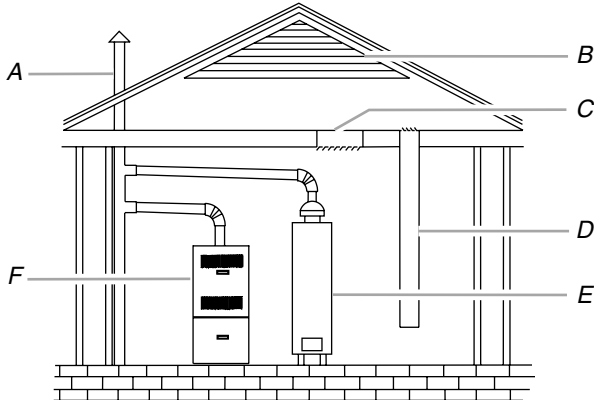
**NOTE:** If any of these methods are used, the inlet and outlet air openings must each have a free area of 1 sq. in. (6.4 cm<sup>2</sup>) per 4,000 Btu/h of the total input rating of all equipment within the enclosure.

**Equipment in Confined Space—All Air from Outside  
(Inlet air from crawl space and outlet air to ventilated attic)**



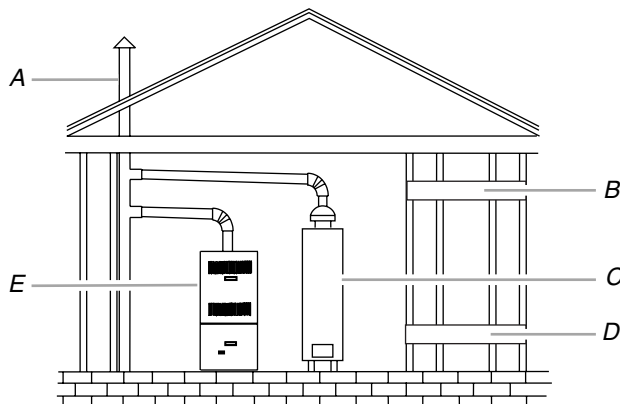
- A. Chimney or gas vent
- B. Ventilation louvers (each end of attic)
- C. Outlet air
- D. Water heater
- E. Inlet air
- F. Ventilation louvers (for unheated crawl space)
- G. Furnace

**Equipment in Confined Space—All Air from Outside  
(All air through ventilated attic)**



- A. Chimney or gas vent
- B. Ventilation louvers (each end of attic)
- C. Outlet air
- D. Inlet air (ends 12" [30.5 cm] above bottom)
- E. Water heater
- F. Furnace

**Equipment in Confined Space—All Air from Outside  
(All air from horizontal ducts)**



- A. Chimney or gas vent
- B. Outlet air
- C. Water heater
- D. Inlet air
- E. Furnace

**NOTE:** Another option is to use horizontal combustion ducts. If horizontal combustion ducts are run, 1 sq. in. (6.4 cm<sup>2</sup>) per 2,000 Btu/h of the total input rating of all equipment in the enclosure is required. If the equipment room is located against an outside wall and the air openings communicate directly with the outdoors, each opening shall have a free area of at least 1 sq. in. (6.4 cm<sup>2</sup>) per 4,000 Btu/h of the total input rating of all other equipment in the enclosure.

**Vertical Venting**

Category I furnaces must be vented vertically or nearly vertically. Common venting and multistory venting are permitted when done in accordance with applicable codes, such as local and national codes.

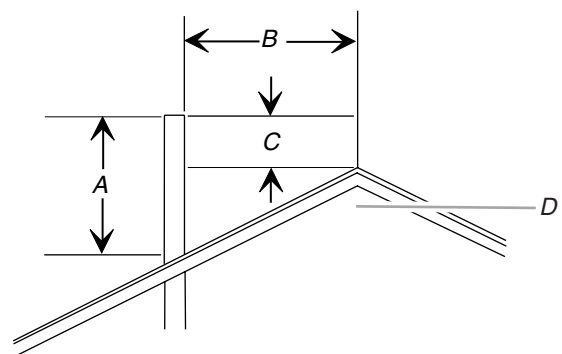
The venting system should be designed in accordance with the "FAN" columns in the venting tables in the latest editions of the National Fuel Gas Code, ANSI Z223.1/ NFPA 54.

- Consult local building codes for installation requirements.
- The vent connector should be as short as possible with the least number of elbows and angles to do the job.
- It is recommended that a minimum of 26-gauge galvanized flue pipe be used. Use of single-wall vent pipe for the vent connector is permissible only in conditioned space. The vent material used should be in accordance with the National Fuel Gas Code, ANSI Z223.1/ NFPA 54 (latest edition) and local codes. Fan-assisted combustion system Category I furnaces shall not be vented into single wall metal vents.

**NOTE:** Use Doublewall Type B vent pipe through unconditioned space such as attics and crawl spaces.

- The vent connector must have an upward slope toward the chimney on all horizontal runs of at least 1/4" (6.4 mm) per ft (m) of horizontal run and should be supported by a sheet metal strap. The vent pipe connection must be secured to the induced draft blower outlet.
- A factory-built chimney must extend 36" (91.4 cm) above the highest point where it passes through a roof of a building and at least 24" (61 cm) higher than any portion of a building within a horizontal distance of 10 ft (3 m) as shown.

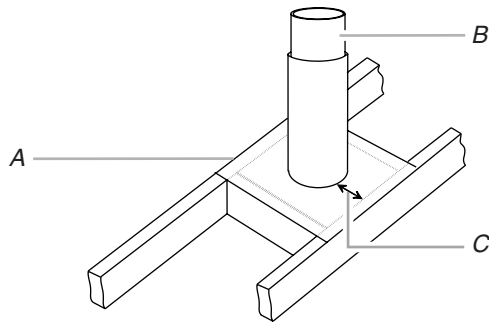
**Vent Option—Vent Through Roof**



- A. 36" (9.14 cm) minimum
- B. Less than 10 ft (3 m)
- C. 24" (6.1 cm) minimum
- D. Ridge

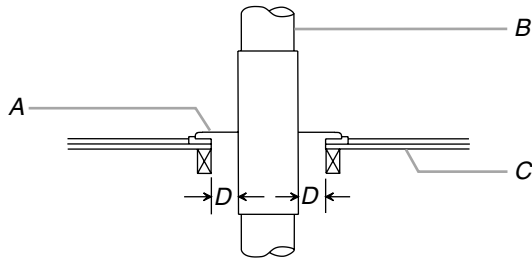
- All vents passing through floors, ceilings, and walls must be fire stopped according to the requirements of the National Fuel Gas Code. See vent options.

## Vent Option—Vent Through Ceiling



- A. 26-gauge galvanized firestop on top of framed opening
- B. Flue pipe
- C. 1" (2.5 cm) clearance between flue pipe and frame

## Vent Option—Vent Through Floor



- A. Pipe collar (Firestop)
- B. Flue pipe
- C. Floor
- D. 1" (2.5 cm)

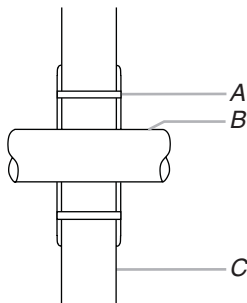
## Sidewall Venting

This furnace can be sidewall (horizontally) vented with a listed sidewall venter such as Field Controls Model SWG-4HD with CK-43 Control Kit, or Tjernlund Model GPAK-JT. See the Sidewall Venter Limitations Chart following.

Category I venting classification is maintained when vented in this manner. The furnace, power venter and control kit (where applicable) must be installed in accordance with their installation instructions and all applicable codes.

For horizontal runs of vent pipe, supports are required at 5 ft (1.5 m) intervals.

## Vent Through Wall



- A. Thimble
- B. Flue pipe
- C. Combustible wall

## Sidewall Venter Limitations Chart

Vent pipe diameter	4" (10.1 cm)
Minimum vent pipe length	48" (121.9 cm)
Maximum vent pipe length	25 ft* (7.6 m)
Maximum number of 90° elbows	4

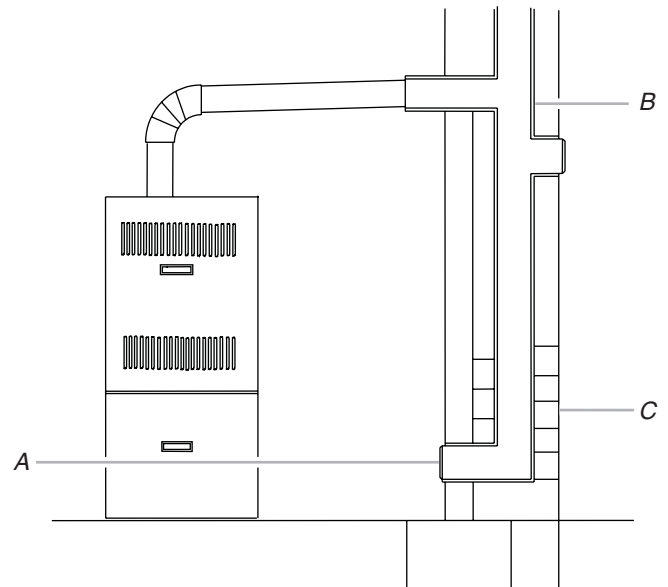
\*When fewer than 4 elbows are used, maximum vent pipe length can be increased by 5 ft (1.5 m) per unused elbow.

## Chimney Options

The furnace must be connected to a factory-built chimney or vent complying with a recognized standard, or a masonry or concrete chimney lined with a lining material acceptable to the authority with jurisdiction.

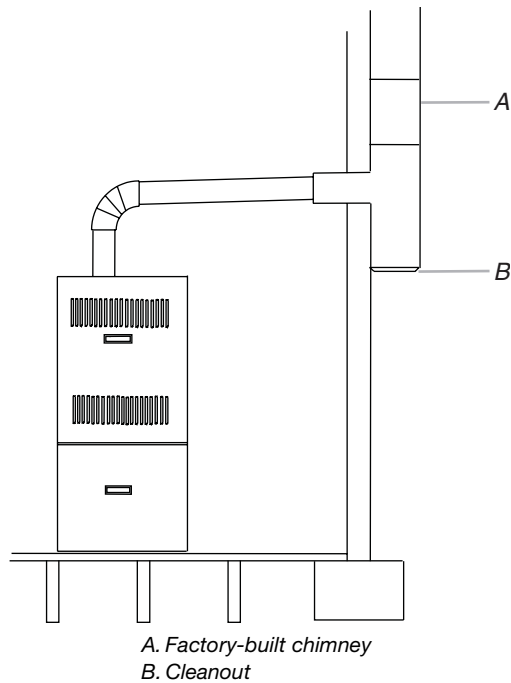
**NOTE:** Venting into an unlined masonry chimney or a single wall metal vent is prohibited in all cases. A lined masonry chimney may be used.

## Lined (Masonry) Chimney Venting



- A. Cleanout
- B. Liner
- C. Lined masonry chimney

## Factory-Built Chimney Venting



**NOTE:** All vent pipe run outside shall be constructed of factory-built chimney sections.

- Extend the vent connector into the chimney so that it is flush with the inside of the flue liner. Seal the joint between the pipe and the liner.
- Masonry chimneys serving fireplaces cannot be used for venting purposes unless the fireplace opening is permanently sealed.
- A vent connector serving this appliance must not be connected into any portion of mechanical draft systems operating under positive pressure.
- The vent pipe must not be connected to a chimney flue serving a solid fuel appliance.
- A manual damper, barometric draft regulator, or flue restrictor must not be installed between the furnace and the chimney.
- Where local experience indicates that condensate may be a problem, the vent shall be constructed to keep condensation from entering the combustion blower. Provision shall be made to drain off the condensate.
- All unused chimney openings should be closed.
- Multistory venting is allowed as permitted by the National Fuel Gas Code or local codes.
- Install all vents in accordance with the vent manufacturer's instructions. For unlisted material, install in accordance with the National Fuel Gas Code.
- Vent terminals must be installed in accordance with the vent terminals listing or in accordance with the National Fuel Gas Code, ANSI Z223.1/NFPA 54 (latest edition), and local codes.

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## 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.

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### Combustion Air Sources

There are 2 sources for combustion air:

1. From outside the building (Direct Vent)
2. From inside the building (Nondirect Vent)

Please read the information provided here about Vertical and Horizontal Venting, then find and follow the instructions for your venting configuration.

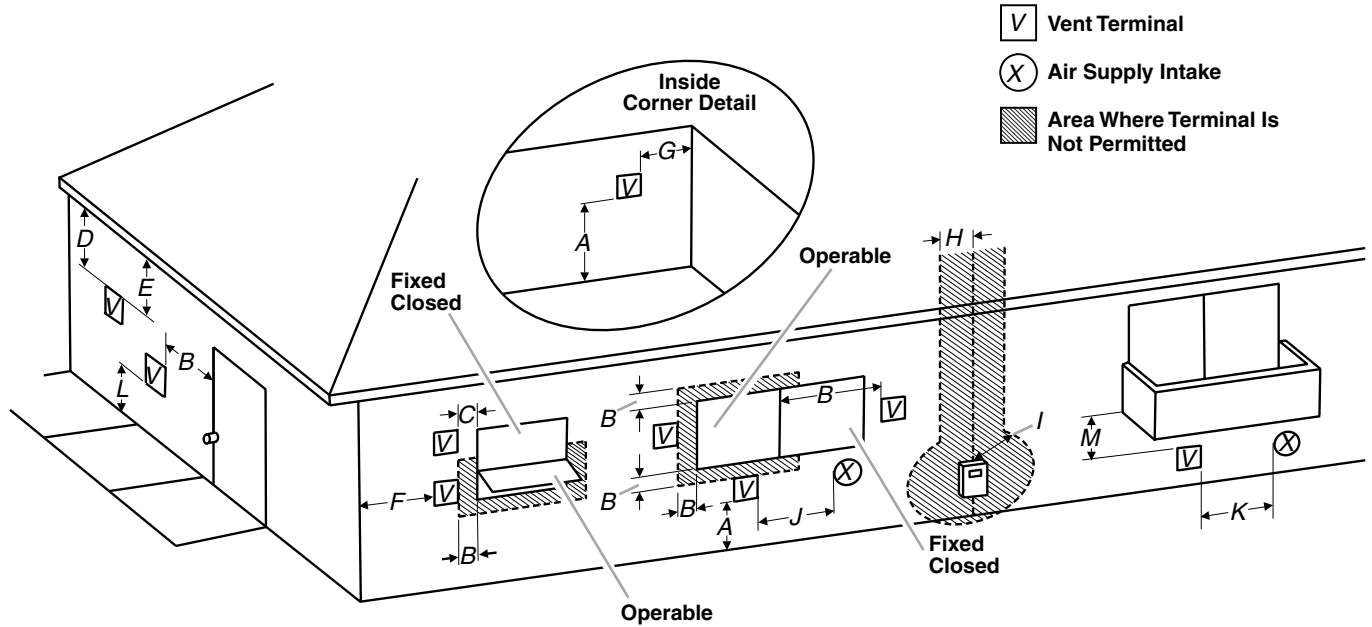
#### Vertical Venting

A vertical vent should extend through the roof a minimum of 24" (61 cm) and not be obstructed a minimum of 10 ft (3 m) in any direction.

#### Horizontal Venting

The vent terminal location shall comply with the National Fuel Gas Code (ANSI Z223.1) or local requirements. For informational purposes, the side wall terminal vent clearances are shown in the Sidewall Vent Terminal Clearances tables.

## Sidewall Vent Terminal Clearances—Nondirect Vented Furnaces (Horizontal Venting)



### U.S. Installations<sup>1</sup>

<b>A</b>	Clearance above grade, veranda, porch, deck, or balcony	12" (30.5 cm)
<b>B</b>	Clearance to window or door that may be opened	48" (121.9 cm) below or to side of opening; 12" (30.5 cm) above opening
<b>C</b>	Clearance to permanently closed window	*
<b>D</b>	Vertical clearance to ventilated soffit located above the terminal within a horizontal distance of 24" (61 cm) from the center line of the terminal	*
<b>E</b>	Clearance to unventilated soffit	*
<b>F</b>	Clearance to outside corner	*
<b>G</b>	Clearance to inside corner	*
<b>H</b>	Clearance to each side of center line extended above meter/regulator assembly	*
<b>I</b>	Clearance to service regulator vent outlet	*
<b>J</b>	Clearance to nonmechanical air supply inlet to building or the combustion air inlet to any other appliance	48" (121.9 cm) below or to side of opening; 12" (30.5 cm) above opening
<b>K</b>	Clearance to a mechanical air supply inlet	36" (91.4 cm) above if within 10 ft (3 m) horizontally
<b>L</b>	Clearance above paved sidewalk or paved driveway located on public property	7 ft (2.1 m)
<b>M</b>	Clearance under veranda, porch, deck, or balcony	*

<sup>1</sup> In accordance with the current ANSI Z2223.1/NFPA 54, National Fuel Gas Code.

\*Clearance in accordance with local installation codes and the requirements of the gas supplier and the manufacturer's installation instructions.

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## Connect Venting

1. Using a 1/4" (6.4 mm) sheet metal screw, secure the vent pipe to the inducer blower outlet.
  2. Make sure all vent connections do not leak.
  3. Check that the venting is open, and that it is the correct size.
  4. Check that the vent pipe terminates outside the building.
- 

## 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 avoid 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 avoid any entrance of air from the closet into the circulating air.

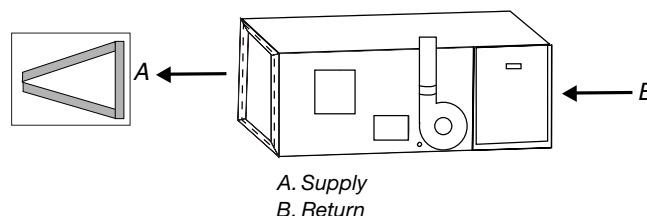
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### Installation with an Evaporator Coil

**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.

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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.

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## Filter Specifications

### Upflow Models

Some model furnaces can be installed with either a side or bottom air return. For bottom air return the bottom air return knockout plate must be removed. For units that do not include a side or bottom return filter rack, kit no. AFILT524-1 (side return) or kit no. AFILT529-1 (bottom return) can be used.

To provide sufficient filter area for installations requiring more than 1,600 CFM nominal air delivery, return air will have to be brought through both sides of the furnace, or through one side and the bottom, or an optional filter rack WAFILTHA7 may be used.

### Counterflow Models

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 ductwork 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. 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 (182.9 m) 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.

## Minimum Filter Requirements Chart

Airflow Descriptor	Disposable Filters			Cleanable Filters		
	Minimum Area—sq. in. (cm <sup>2</sup> )	Size—in. (cm)	Quantity	Minimum Area—sq. in. (cm <sup>2</sup> )	Size—in. (cm)	Quantity
09	480 (3,096.8)	20 x 25 (50.8 x 63.5)	1	240 (1,548.4)	16 x 20 (40.6 x 50.8)	1
10	480 (3,096.8)	20 x 25 (50.8 x 63.5)	1	240 (1,548.4)	16 x 20 (40.6 x 50.8)	1
12	576 (3,716.1)	16 x 20 (40.6 x 50.8)	2	288 (1,858.1)	16 x 20 (40.6 x 50.8)	1
14	672 (4,335.5)	20 x 20 (50.8 x 50.8)	2	336 (2,167.7)	20 x 20 (50.8 x 50.8)	1
16	768 (4,954.8)	20 x 20 (50.8 x 50.8)	2	384 (2,477.4)	20 x 20 (50.8 x 50.8)	1
20, 22	960 (6,193.5)	20 x 25 (50.8 x 63.5)	2	480 (3,096.8)	20 x 25 (50.8 x 63.5)	1

If a central return air filter-grille is used, the furnace does not require a filter.


To install a filter at the furnace only, use the following kits:

- AFILT524 for side return on upflow installations.

- AFILT529 for bottom return on upflow furnace installations.
- WAFILTHA7 for single side return in installations requiring more than 1,600 CFM nominal air delivery.

## 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.**

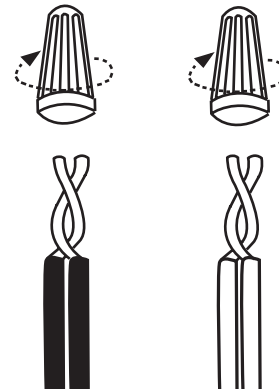
### Thermostat

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 ignition control board as indicated on the Wiring Connection Diagram in the “Troubleshooting” section.

1. Disconnect power.
2. Remove the screw 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 connectors, connect the field supply wires to the furnace (black to black and white to white).



**⚠ WARNING**



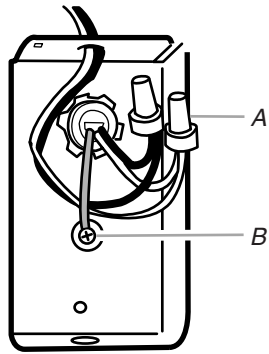
**Electrical Shock Hazard**

**Electrically ground furnace.**

**Connect ground wire to green ground screw.**

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

6. Connect ground wire to green ground screw.



A. Connect white to white and black to black  
B. Green ground screw

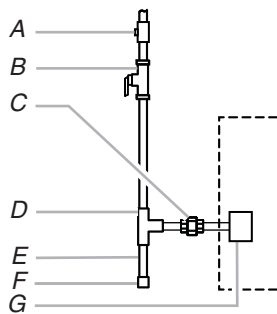
- Replace the furnace electrical connection box cover and screw.

## Make Gas Connections

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

- Install the field gas supply as shown.
- Provide a sediment trap on the outside of the furnace.
- Install a manual gas shutoff valve in the gas line, outside the furnace, 5 ft (1.5 m) above the floor, or in accordance with any local codes.
- Install a test gauge connection with a 1/8" (3.2 mm) NPT plugged tap immediately upstream of the manual gas shutoff valve as shown.
- 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 Natural and LP gas must be used. Do not use Teflon® tape.



A. 1/8" (3.2 mm) NPT plugged tap  
B. Manual gas shutoff valve  
C. Ground joint union  
D. Tee  
E. Sediment trap  
F. Cap  
G. Gas control valve (inside furnace)

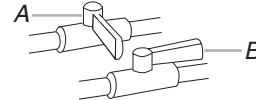
## ⚠ WARNING

### 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.

- Turn off the gas supply at the manual gas shutoff valve.



A. Closed valve  
B. Open valve

- Remove the inlet pressure tap plug on the gas control valve and connect pressure gauge to the 1/8" NPT inlet pressure tap.
- Turn on the gas supply at the manual gas shutoff valve.
- Observe the inlet pressure.  
The minimum inlet gas supply pressure is 5" (12.7 cm) W.C. for Natural gas and 11" (27.9 cm) W.C. for propane gas.  
The maximum inlet gas supply pressure is 10 1/2" (26.7 cm) W.C. for Natural gas and 13" (33 cm) W.C. for propane gas.
- Turn off the gas supply at the manual gas shutoff 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.
- Disconnect the pressure gauge from the 1/8" (3.2 mm) NPT inlet pressure tap.
- Replace the inlet pressure tap plug on the gas control valve.
- Turn on the gas supply at the manual gas shutoff valve.
- Test all connections by brushing on an approved noncorrosive 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 shutoff 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 shutoff valve.
- 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.
- This furnace is equipped for rated input at manifold pressures of 1.7" (4.32 cm) W.C. (1<sup>st</sup> stage) and 3.5" (8.89 cm) W.C. (2<sup>nd</sup> stage) for Natural gas. When an LP conversion kit is used, it is equipped for rated input at manifold pressures of 4.9" (12.45 cm) W.C. (1<sup>st</sup> stage) and 10.0" (25.4 cm) W.C. (2<sup>nd</sup> stage) for propane gas.

- 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.

$$\text{Btu/h Input} = \frac{\text{Cu. ft per Revolution}}{\# \text{ Seconds per Revolution}} \times 3600 \times \text{Heating Value}$$

- At altitudes from 2,000 to 7,500 ft (609.6 m to 2,286 m) the furnace input rate must not exceed that on the rating plate.

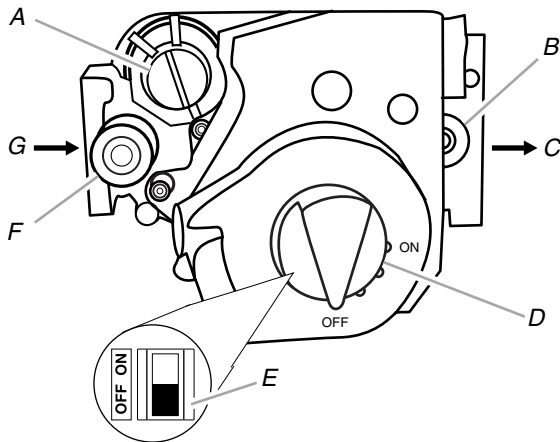
**NOTE:** The actual heating value of your gas can be obtained from your local utility company. Typical values are shown in the Manifold Pressure vs. Altitude Chart in "Adjust the Furnace Input Rate."

## Adjust the Furnace Input Rate (if required)

### For Altitudes 4,500 to 7,500 ft (1,371.6 m to 2,286 m) Above Sea Level

1. Remove the burner access door.
2. Move the gas control to the OFF position. Use only your hand to move the gas control; tools are not required.
3. Remove the outlet pressure tap plug on the gas control valve and connect pressure gauge to the 1/8" (3.2 mm) NPT outlet pressure tap.

### Gas Control Valve



A. Regulator adjusting cap

B. 1/8" (3.2 mm) NPT outlet pressure tap

C. 1/2" (1.3 cm) NPT outlet

D. Gas control

E. Alternate gas control

F. 1/8" (3.2 mm) NPT inlet pressure tap

G. 1/2" (1.3 cm) NPT inlet

4. Be sure the gas control has been in the OFF position for at least 5 minutes before starting the unit.
5. Move the gas control 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 charts for the correct manifold pressure. If necessary, remove the regulator adjusting cap on the gas control 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 to the OFF position.
11. Disconnect the pressure gauge from the 1/8" (3.2 mm) NPT outlet pressure tap.
12. Replace outlet pressure tap plug and the regulator adjusting cap on the gas control valve.
13. Move the gas control to the ON position.
14. Replace the burner access door.
15. Set the room thermostat to the desired temperature necessary to achieve optimum temperature rise.

**Manifold Pressure vs. Altitude Chart—  
Models WFAR, WFAT, WFLU, WFLR, WFLT Only**

**Natural Gas**

Altitude—ft (m)	Heating Value (Btu/ft <sup>3</sup> )	Manifold Pressure— in. (cm) W.C.	Input Factor
2,000 (609.6)	948	3.5 (8.89)	0.9666
3,000 (914.4)	914	3.5 (8.89)	0.9499
4,000 (1,219.2)	881	3.5 (8.89)	0.9332
4,500 (1,371.6)	865	3.5 (8.89)	0.9249
5,000 (1,524)	849	3.29 (8.36)	0.8900
5,500 (1,676.4)	833	3.27 (8.31)	0.8790
6,000 (1,828.8)	818	3.25 (8.25)	0.8680
6,500 (1,981.2)	802	3.23 (8.2)	0.8570
7,000 (2,133.6)	787	3.21 (8.15)	0.8460
7,500 (2,286)	771	3.19 (8.1)	0.8350

**Manifold Pressure vs. Altitude Chart—  
Model WFAU 150 only**

**Natural Gas**

Altitude—ft (m)	Heating Value (Btu/ft <sup>3</sup> )	Manifold Pressure— in. (cm) W.C.	Input Factor
2,000 (609.6)	948	3.41 (8.66)	0.9666
3,000 (914.4)	914	3.41 (8.66)	0.9499
4,000 (1,219.2)	881	3.41 (8.66)	0.9332
4,500 (1,371.6)	865	3.41 (8.66)	0.9249
5,000 (1,524)	849	3.2 (8.13)	0.8900
5,500 (1,676.4)	833	3.18 (8.08)	0.8790
6,000 (1,828.8)	818	3.16 (8.03)	0.8680
6,500 (1,981.2)	802	3.14 (7.98)	0.8570
7,000 (2,133.6)	787	3.12 (7.92)	0.8460
7,500 (2,286)	771	3.11 (7.9)	0.8350

**For Altitudes 7,500 to 10,000 ft (1,371.6 m to 2,286 m)  
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**

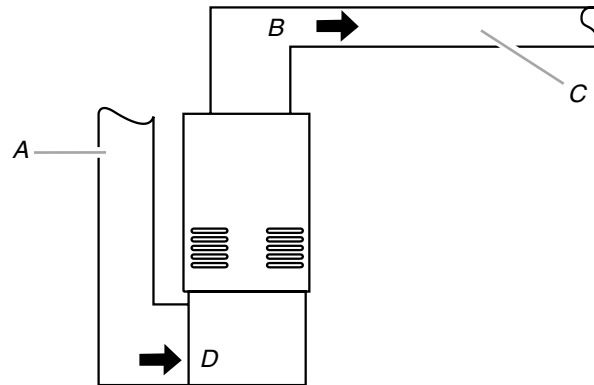
**IMPORTANT:** Do not use this furnace if any part has been under water. Immediately call a qualified person to inspect the furnace and to replace any part of the control system and gas control which has been under water.

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

**Measure Temperature Rise**

1. Adjust room thermostat to the highest temperature setting possible.
2. 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 72" [182.9 cm] 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 are 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.



- A. Measure return air here.      C. Measure supply temperature here.  
B. Warm air      D. Return air

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

---

## Adjust Blower Speed

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### **⚠ 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.**

1. Disconnect power.
2. For heating speed, check the temperature rise and make the necessary adjustments to the blower speed tap. See the wiring diagrams in the “Troubleshooting” section.
3. Reconnect power.
4. Recheck the temperature rise. Repeat the procedure as necessary to achieve optimum temperature rise.
5. If the furnace does not begin to heat the room, see the “Troubleshooting” section.

**NOTE:** See the wiring diagrams in the “Troubleshooting” section while performing the following procedure.

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### Shut Down

If the construction will continue or the furnace will not be used for a period of time, follow the shut down procedure.

1. Set the thermostat to the lowest setting.
2. Disconnect power.

3. Remove burner access panel.
  4. Turn off the gas supply at the manual gas shutoff valve.
  5. Replace the burner access panel.
- 

## SEQUENCE OF OPERATION

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### Heating

During a call for heat, the thermostat closes R - W circuit of the control board. The control board verifies limit switches are closed and pressure switch is open. The induced draft blower relay closes, causing the blower to run. As vent pressure is developed by the induced draft blower, the pressure switch closes. After a 15-second pre-purge, the control energizes the hot surface igniter. After the 7-second warm-up time, the control energizes the main gas control valve, causing the main burners to ignite. The hot surface igniter is de-energized 3 seconds after the main valve opens.

If flame is sensed during this time, the main valve remains energized and the control starts the 30-second heat blower “on” delay.

As heating demand is met, the thermostat de-energizes the R - W circuit. The control de-energizes the main valve, causing the burners to shut off. The induced draft blower shuts off after a 15-second post-purge delay. The circulating air blower will continue to operate until the user-selectable heat blower “off” delay expires. The control returns to standby mode once the heat blower “off” delay expires.

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### Fan On

During a fan on call, the thermostat energizes the R - G circuit of the control board, immediately causing the fan to energize the COOL speed. The fan remains energized as long as the thermostat calls for fan on operation.

At the end of the fan on call, the thermostat de-energizes the R - G circuit of the control, causing the fan to be de-energized immediately.

If a call for cooling is energized during a fan on call, the fan continues to operate at the COOL speed. If a call for heat is energized during a fan on call, the control de-energizes the fan immediately and begins the heat call/ignition sequence.

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## Cooling

During a call for cooling, the thermostat energizes the R - Y circuit of the control board. After a 1-second cooling “on” delay, the control energizes the cooling fan speed. If the fan is already energized, it remains running and does not de-energize for the 1-second cooling fan “on” delay.

The call for cooling has priority over continuous fan operation while a call for heating has priority over both a call for cooling or continuous fan. Ignition lockouts for any reason do not affect cooling operation.

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As cooling demand is met, the thermostat de-energizes the R - Y circuit of the control board. After a 60-second cooling “off” delay, the control de-energizes the cooling speed fan. At the end of the cooling “off” delay period, the control returns to the standby mode.

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# CONTROLS

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## Pressure Switch

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

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## Rollout Switch(es)

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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.

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## Primary Limit Control

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

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## Safety Interlock Switch

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

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## Ignition Control Board

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### **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.**

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The ignition control board operates the gas control valve, circulating air blower, combustion blower and any accessories connected to it. The ignition control contains control logic to sense proper operating conditions and provides ignition only when all conditions are properly met.

These models feature user-selectable blower “off” delay times (60, 90, 120 and 180 seconds) that are factory set to provide a 120-second blower “off” delay on heating. See “Wiring Connection Diagram.”

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## Gas Control Valve

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The gas control valve regulates the manifold gas pressure and provides gas flow.

# TROUBLESHOOTING

## Furnace Fails to Operate Properly

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

**⚠ 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.**

- Is the integrated ignition/blower control board and 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?
- Are all wiring connections secure?

Start the system by setting the thermostat above the room temperature. Observe system response. Then use the information provided in this section to check the system operation.

## Fault Code History Button

The control stores the last 5 fault codes in memory. A pushbutton switch is located on the control. When the pushbutton switch is pressed and released, the control flashes the stored fault codes. The most recent fault code is flashed first; the oldest fault code is flashed last. To clear the fault code history, press and hold the pushbutton switch in for more than 5 seconds before releasing.

## 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 ignition control. See the Failure Codes chart for a description of the flash codes.

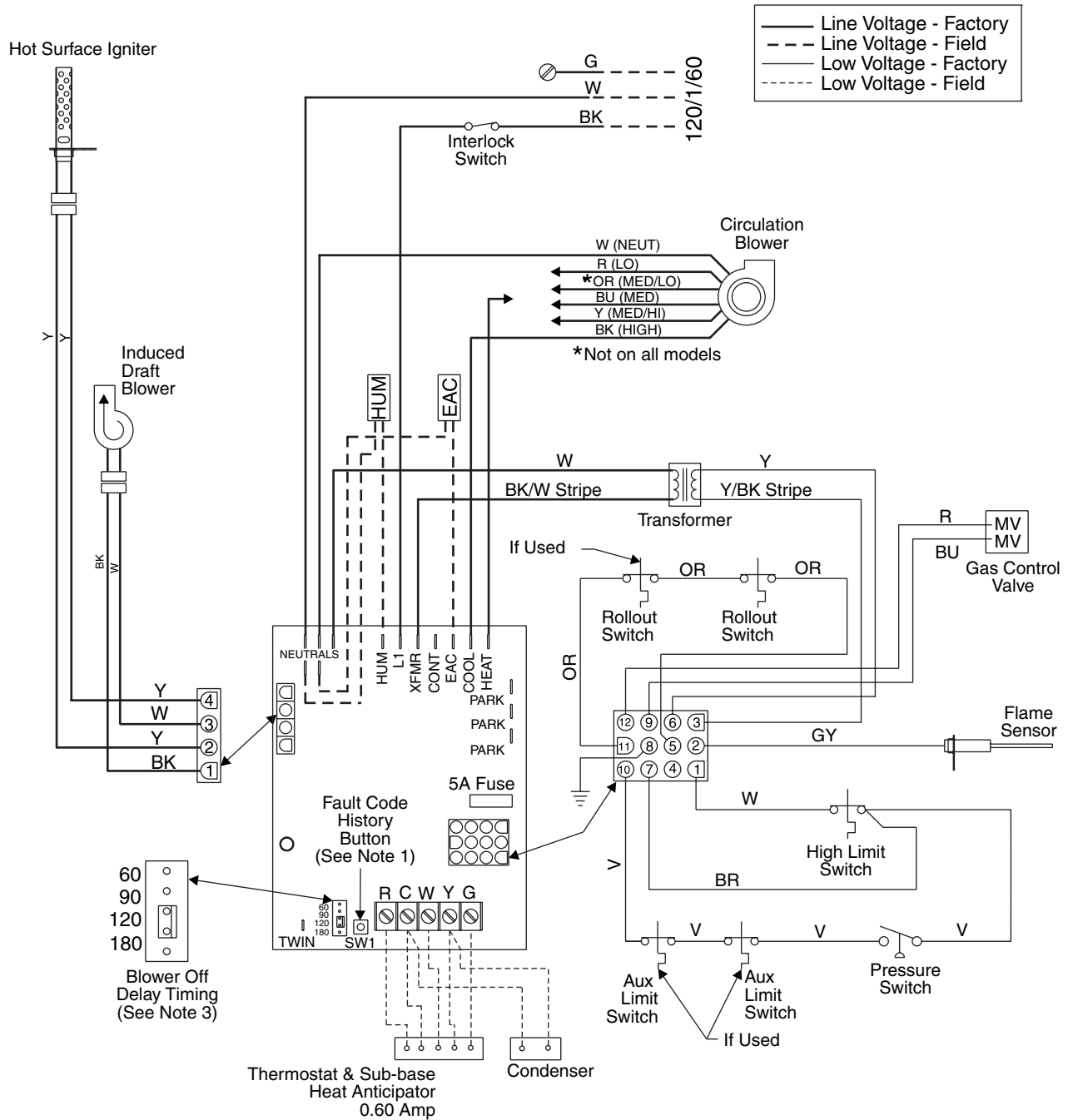
**IMPORTANT:** Do not remove the blower compartment door or turn off the power to the furnace because either action will clear the control’s memory of the failure.

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 Chart

LED Status	Fault Description
LED Off	No power to control or control hardware fault detected
LED On	Normal operation
1 Flash	Flame present with gas control valve off
2 Flashes	Pressure switch closed with inducer off
3 Flashes	Pressure switch open with inducer on
4 Flashes	High limit switch open
5 Flashes	Rollout switch open
6 Flashes	Pressure switch cycle lockout
7 Flashes	Lockout due to no ignition
8 Flashes	Lockout due to too many flame dropouts
9 Flashes	Incorrect line voltage phasing

# Wiring Connection Diagram—Honeywell® VR 8205 System



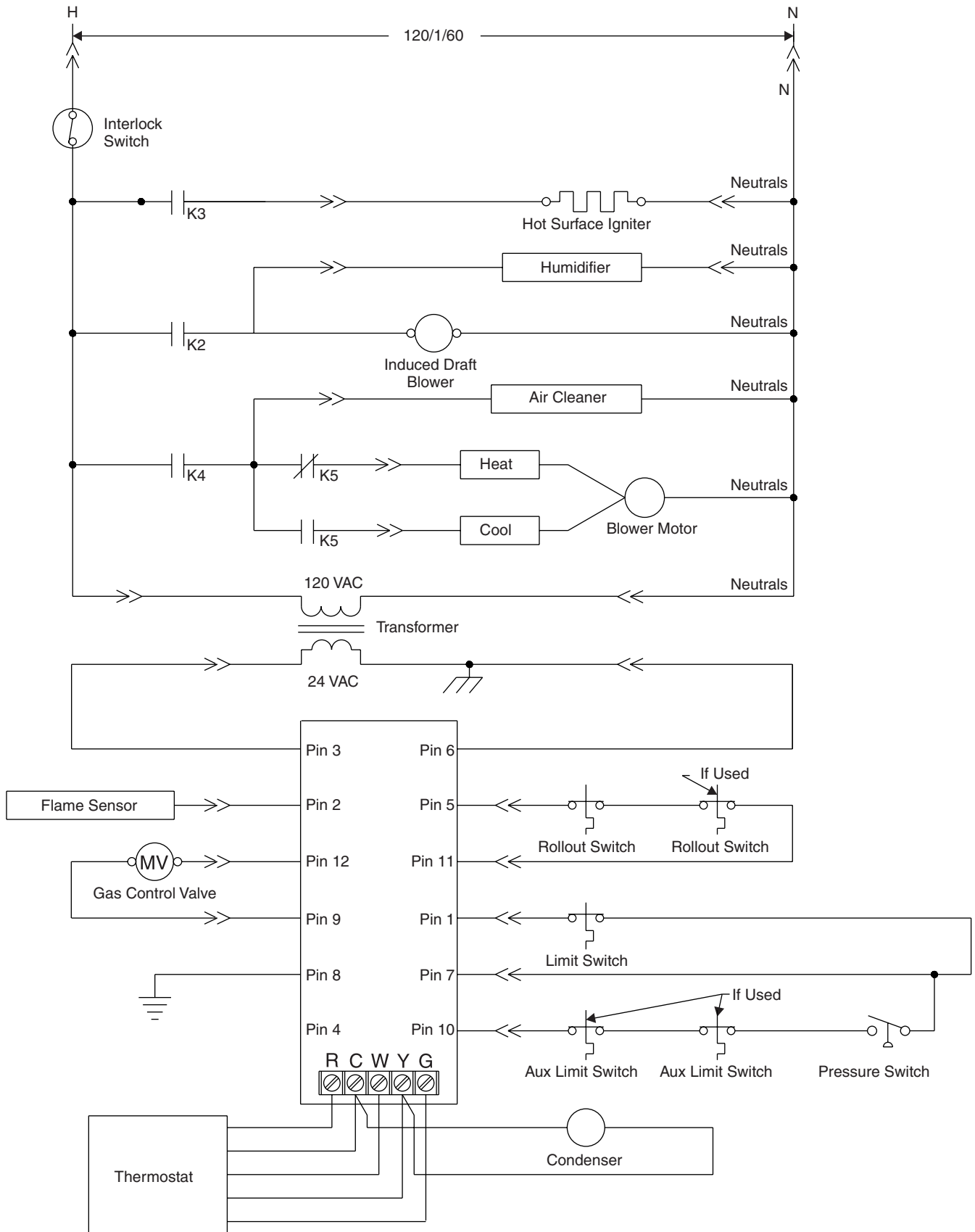
Check codes for proper wiring and circuit protection before installation.

**NOTES:**

1. Press and release fault code history button to display fault codes. To erase codes, press and hold button in for more than 5 seconds.

2. If any of the original wire as supplied with the furnace must be replaced, it must be replaced with wiring material having a temperature rating of at least 194°F (90°C).
3. Blower off delay timing is factory set at 120 seconds. To change, move the jumper to the pins adjacent to the desired setting.

# Wiring Schematic—Honeywell® HR 8205 System



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# ASSISTANCE OR SERVICE

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

Whirlpool® Home Cooling and Heating  
14610 Breakers Drive  
Jacksonville, FL 32258

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 Whirlpool® Home Cooling and Heating dealer.

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ALPKT572-3 Natural Gas to Propane Conversion Kit

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ALPKT574-2 Natural Gas to Propane Conversion Kit

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WAFILTHA7-2 Filter Frame Kit

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AFILT524-1 Side Return Filter Kit

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AFILT529-1 Bottom Return Filter Kit

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WABASE511 Combustible Floor Base (14½" [36.9 cm] cabinets)

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WABASE512 Combustible Floor Base (17½" [44.4 cm] cabinets)

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WABASE568 Combustible Floor Base (21" [53.4 cm] cabinets)

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WABASE569 Combustible Floor Base (24½" [62.3 cm] cabinets)

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