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Dallas, Texas, USA

INSTALLATION INSTRUCTIONS

G60DF(X) Series



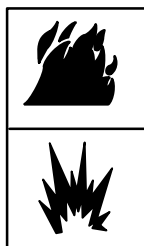
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**RETAIN THESE INSTRUCTIONS
FOR FUTURE REFERENCE**



⚠ 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.

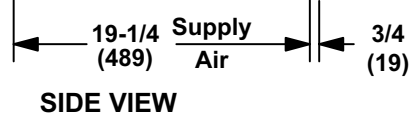
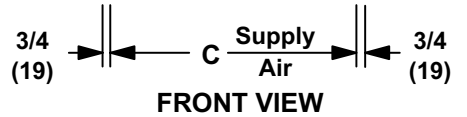
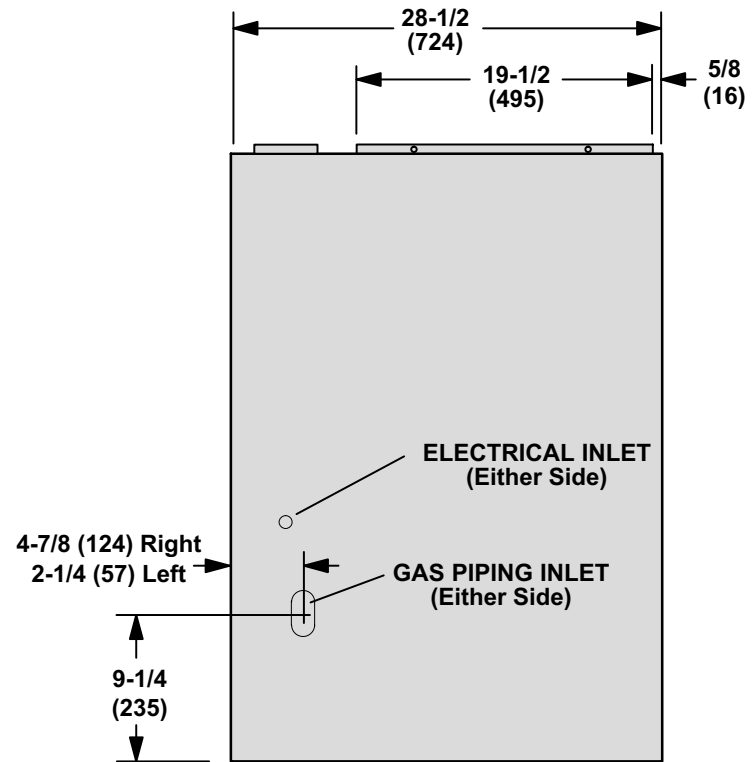
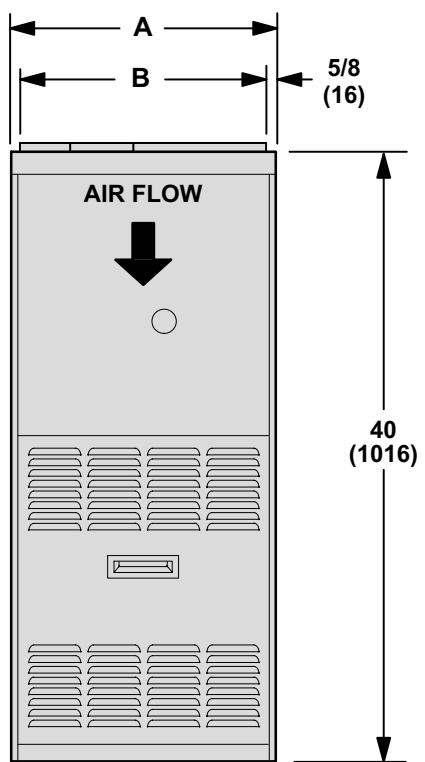
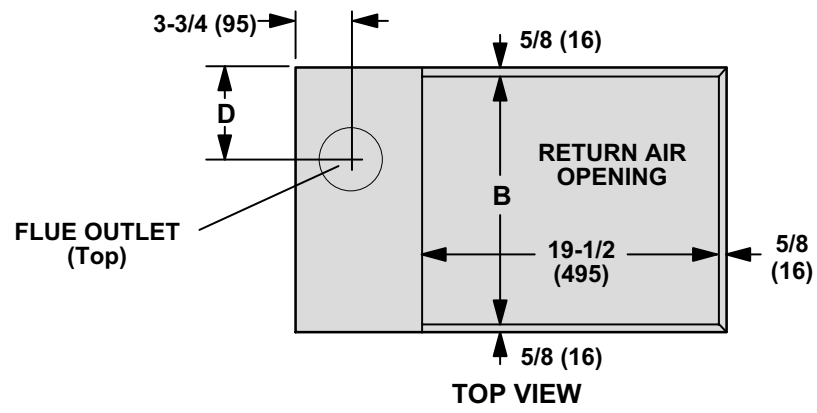
Installation and service must be performed by a qualified installer, service agency or the gas supplier.

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.**



G60DF(X) Unit Dimensions - inches (mm)



| Model No. | A | | B | | C | | D | |
|------------------|--------|-----|--------|-----|--------|-----|-------|-----|
| | in. | mm | in. | mm | in. | mm | in. | mm |
| G60DF(X)-36A-070 | 14-1/2 | 368 | 13-1/4 | 337 | 13 | 330 | 4-1/2 | 114 |
| G60DF-36B-090 | 17-1/2 | 446 | 16-1/4 | 413 | 16 | 406 | 6 | 152 |
| G60DF(X)-48C-110 | 21 | 533 | 19-1/4 | 502 | 19-1/2 | 495 | 7-3/4 | 197 |

G60DF(X) Parts Arrangement

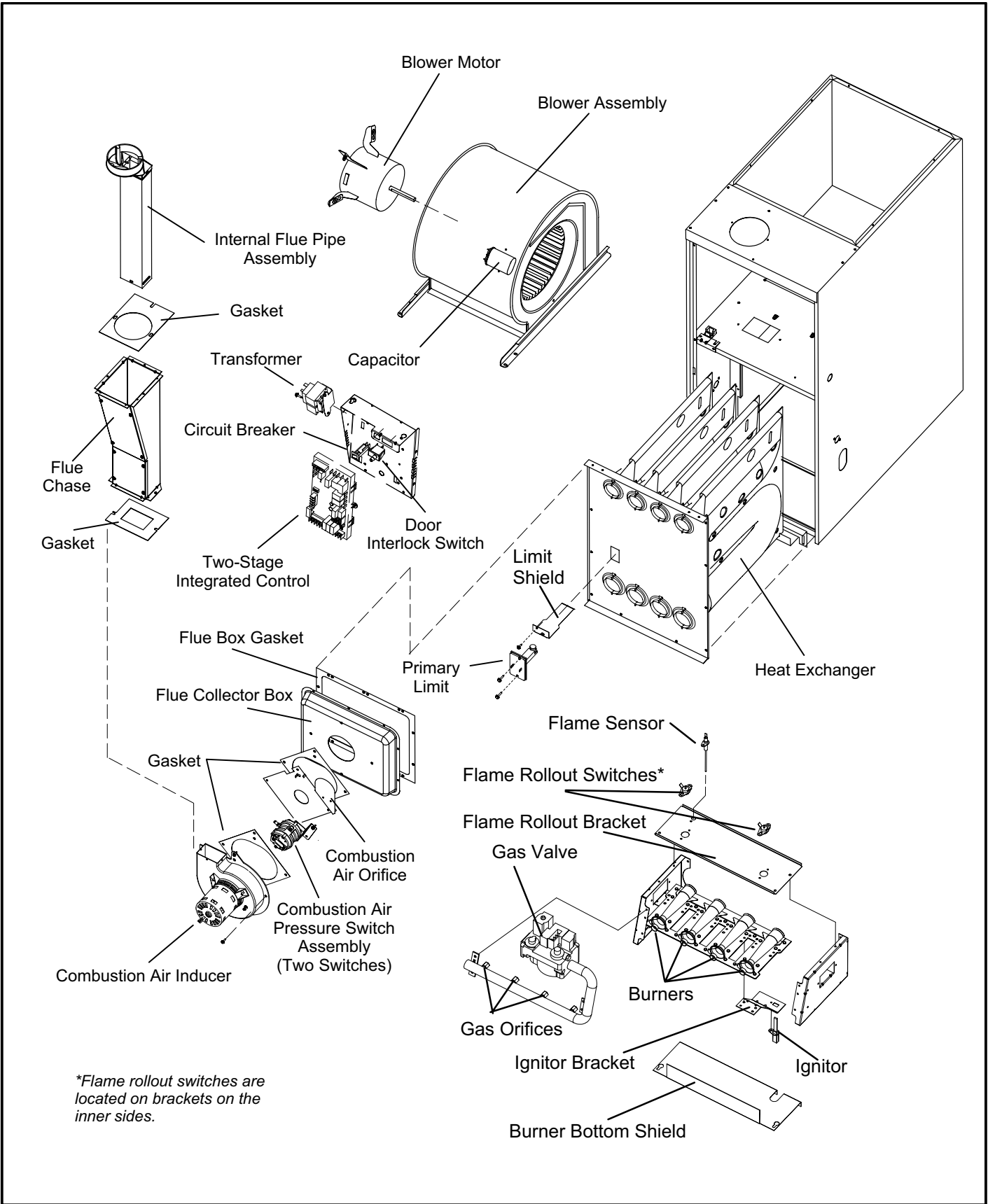


FIGURE 1

G60DF(X) Gas Furnace

The G60DF(X) gas furnace is equipped with a two-stage integrated control. Each G60DF(X) unit is shipped ready for installation in the downflow position.

Shipping and Packing List

Package 1 of 1 contains

- 1 - Assembled G60DF(X) unit
- 1 - Bag assembly containing the following:
 - 2 - Screws
 - 3 - Wire nuts
 - 1 - Snap bushing
 - 1 - Snap plug
 - 1 - Wire tie
 - 1 - Vent warning label
 - 1 - Owner's manual and warranty card

The following items may be ordered separately:

- 1 - Thermostat
- 1 - Propane/LP changeover kit
- 1 - Additive base
- 1 - High altitude kit

Check equipment for shipping damage. If you find any damage, immediately contact the last carrier.

DANGER

Danger of explosion.

There are circumstances in which odorant used with LP/propane gas can lose its scent. In case of a leak, LP/propane gas will settle close to the floor and may be difficult to smell. An LP/propane leak detector should be installed in all LP applications.

Requirements

WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a licensed professional installer (or equivalent), service agency or the gas supplier.

CAUTION

As with any mechanical equipment, personal injury can result from contact with sharp sheet metal edges. Be careful when you handle this equipment.

The G60DF is designed for installation as a Non-Direct Vent gas central furnace.

NOTE - In Non-Direct Vent installations, combustion air is taken from indoors and flue gases are discharged outdoors.

Use only the type of gas approved for use with this furnace. Refer to unit nameplate.

G60DF(X) units are CSA International certified to ANSI Z21.47 and CSA 2.3 standards.

In the USA, installation of gas furnaces must conform with local building codes. In the absence of local codes, units must be installed according to the current National Fuel Gas Code (ANSI Z223.1/NFPA 54). The National Fuel Gas Code is available from the following address:

American National Standards Institute, Inc.
11 West 42nd Street
New York, NY 10036

In Canada, installation must conform with current National Standard of Canada CSA-B149 installation codes for natural gas and propane gas burning appliances and equipment, local plumbing or waste water codes and other applicable local codes.

Adequate clearance must be made around the air openings into the vestibule area. In order to ensure proper unit operation, combustion and ventilation air supply must be provided according to the current National Fuel Gas Code or CSA-B149 standards.

Vent installations must be consistent with the venting tables (in this instruction) and applicable provisions of local building codes.

This furnace is CSA International certified for installation clearances to combustible material as listed on the unit nameplate and in the tables in figure 9. Accessibility and service clearances must take precedence over fire protection clearances.

For installation in a residential garage, the furnace must be installed so that the burner(s) and the ignition source are located no less than 18 inches (457 mm) above the floor. The furnace must be located or protected to avoid physical damage by vehicles. When a furnace is installed in a public garage, hangar, or other building that has a hazardous atmosphere, the furnace must be installed according to recommended good practice requirements and current National Fuel Gas Code or CSA B149 standards.

NOTE - Furnace must be adjusted to obtain a temperature rise (high and low fire) within the range(s) specified on the unit nameplate. Failure to do so may cause erratic limit operation and may lead to premature heat exchanger failure.

This G60DF(X) furnace must be installed so that its electrical components are protected from water.

When this furnace is used with cooling units, it shall be installed in parallel with, or on the upstream side of, cooling units to avoid condensation in the heating compartment. With a parallel flow arrangement, a damper (or other means to control the flow of air) must adequately prevent chilled air from entering the furnace. If the damper is manually operated, it must be equipped to prevent operation of either the heating or the cooling unit, unless it is in the full **HEAT** or **COOL** setting.

When installed, this furnace must be electrically grounded according to local codes. In addition, in the United States, installation must conform with the current National Electric Code, ANSI/NFPA No. 70. The National Electric Code (ANSI/NFPA No. 70) is available from the following address:

National Fire Protection Association
1 Battery March Park
Quincy, MA 02269

In Canada, all electrical wiring and grounding for the unit must be installed according to the current regulations of the Canadian Electrical Code Part I (CSA Standard C22.1) and/or local codes.

NOTE - This furnace is designed for a minimum continuous return air temperature of 60°F (16°C) or an intermittent operation down to 55°F (13°C) dry bulb for cases where a night setback thermostat is used. Return air temperature must not exceed 85°F (29°C) dry bulb.

The G60DF(X) furnace may be installed in alcoves, closets, attics, basements, garages, and utility rooms in the downflow position.

This furnace design has not been CSA International certified for installation in mobile homes, recreational vehicles, or outdoors.

Never use an open flame to test for gas leaks. Check all connections using a commercially available soap solution made specifically for leak detection.

Use of Furnace as a Construction Heater

Lennox does not recommend the use of G60DF(X) units as a construction heater during any phase of construction. Very low return air temperatures, harmful vapors and operation of the unit with clogged or misplaced filters will damage the unit.

G60DF(X) units may be used for heating of buildings or structures under construction, if the following conditions are met:

- *The vent system must be permanently installed per these installation instructions.*

- *A room thermostat must control the furnace. The use of fixed jumpers that will provide continuous heating is not allowed.*
- *The return air duct must be provided and sealed to the furnace.*
- *Return air temperature range between 60°F (16°C) and 80°F (27°C) must be maintained.*
- *Air filters must be installed in the system and must be maintained during construction.*
- *Air filters must be replaced upon construction completion.*
- *The input rate and temperature rise must be set per the furnace rating plate.*
- *One hundred percent (100%) outdoor air must be provided for combustion air requirements during construction. Temporary ducting may supply outdoor air to the furnace. Do not connect duct directly to the furnace. Size the temporary duct following these instructions in section for Combustion, Dilution and Ventilation Air in a confined space with air from outside.*
- *The furnace heat exchanger, components, duct system, air filters and evaporator coils must be thoroughly cleaned following final construction clean-up.*
- *All furnace operating conditions (including ignition, input rate, temperature rise and venting) must be verified according to these installation instructions.*

NOTE - The Commonwealth of Massachusetts stipulates these additional requirements:

- **Gas furnaces shall be installed by a licensed plumber or gas fitter only.**
- **The gas cock must be "T handle" type.**
- **When a furnace is installed in an attic, the passage-way to and service area surrounding the equipment shall be floored.**

General

These instructions are intended as a general guide and do not supersede local codes in any way. Consult authorities having jurisdiction before installation.

In addition to the requirements outlined previously, the following general recommendations must be considered when installing a G60DF(X) furnace:

- Place the furnace as close to the center of the air distribution system as possible. The furnace should also be located close to the chimney or vent termination point.
- Do not install the furnace where drafts might blow directly into it. This could cause improper combustion and unsafe operation.
- Do not block the furnace combustion air openings with clothing, boxes, doors, etc. Air is needed for proper combustion and safe unit operation.
- When the furnace is installed in an attic or other insulated space, keep insulation away from the furnace.

⚠️ WARNING

Product contains fiberglass wool.

Disturbing the insulation in this product during installation, maintenance, or repair will expose you to fiberglass wool. Breathing this may cause lung cancer. (Fiberglass wool is known to the State of California to cause cancer.)

Fiberglass wool may also cause respiratory, skin, and eye irritation.

To reduce exposure to this substance or for further information, consult material safety data sheets available from address shown below, or contact your supervisor.

**Lennox Industries Inc.
P.O. Box 799900
Dallas, TX 75379-9900**

Combustion, Dilution & Ventilation Air

In the past, there was no problem in bringing in sufficient outdoor air for combustion. Infiltration provided all the air that was needed. In today's homes, tight construction practices make it necessary to bring in air from outside for combustion. Take into account that exhaust fans, appliance vents, chimneys, and fireplaces force additional air that could be used for combustion out of the house. Unless outside air is brought into the house for combustion, negative pressure (outside pressure is greater than inside pressure) will build to the point that a downdraft can occur in the furnace vent pipe or chimney. As a result, combustion gases enter the living space creating a potentially dangerous situation.

In the absence of local codes concerning air for combustion and ventilation, use the guidelines and procedures in this section to install G60DF(X) furnaces to ensure efficient and safe operation. You must consider combustion air needs and requirements for exhaust vents. A portion of this information has been reprinted with permission from the National Fuel Gas Code (ANSI Z223.1/NFPA 54). This reprinted material is not the complete and official position of the ANSI on the referenced subject, which is represented only by the standard in its entirety.

In Canada, refer to the current CSA B149 standards.

⚠️ CAUTION

Do not install the furnace in a corrosive or contaminated atmosphere. Meet all combustion and ventilation air requirements, as well as all local codes.

⚠️ CAUTION

Insufficient combustion air can cause headaches, nausea, dizziness or asphyxiation. It will also cause excess water in the heat exchanger resulting in rusting and premature heat exchanger failure. Excessive exposure to contaminated combustion air will result in safety and performance related problems. Avoid exposure to the following substances in the combustion air supply:

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

All gas-fired appliances require air for the combustion process. If sufficient combustion air is not available, the furnace or other appliances will operate inefficiently and unsafely. Enough air must be provided to meet the needs of all fuel-burning appliances and appliances such as exhaust fans which force air out of the house. When fireplaces, exhaust fans, or clothes dryers are used at the same time as the furnace, much more air is necessary to ensure proper combustion and to prevent a downdraft. Insufficient air causes incomplete combustion which can result in carbon monoxide.

In addition to providing combustion air, fresh outdoor air dilutes contaminants in the indoor air. These contaminants may include bleaches, adhesives, detergents, solvents and other contaminants which can corrode furnace components.

The requirements for providing air for combustion and ventilation depend largely on whether the furnace is installed in an unconfined or a confined space.

Unconfined Space

An unconfined space is an area such as a basement or large equipment room with a volume greater than 50 cubic feet (1.42 m³) per 1,000 Btu (.29 kW) per hour of the combined input rating of all appliances installed in that space. This space also includes adjacent rooms which are not separated by a door. Though an area may appear to be unconfined, it might be necessary to bring in outdoor air for combustion if the structure does not provide enough air by

infiltration. If the furnace is located in a building of tight construction with weather stripping and caulking around the windows and doors, follow the procedures in the air from outside section.

Confined Space

A confined space is an area with a volume less than 50 cubic feet (1.42 m³) per 1,000 Btu (.29 kW) per hour of the combined input rating of all appliances installed in that space. This definition includes furnace closets or small equipment rooms.

When the furnace is installed so that supply ducts carry air circulated by the furnace to areas outside the space containing the furnace, the return air must be handled by ducts which are sealed to the furnace casing and which terminate outside the space containing the furnace. This is especially important when the furnace is mounted on a platform in a confined space such as a closet or small equipment room. Even a small leak around the base of the unit at the platform or at the return air duct connection can cause a potentially dangerous negative pressure condition. Air for combustion and ventilation can be brought into the confined space either from inside the building or from outside.

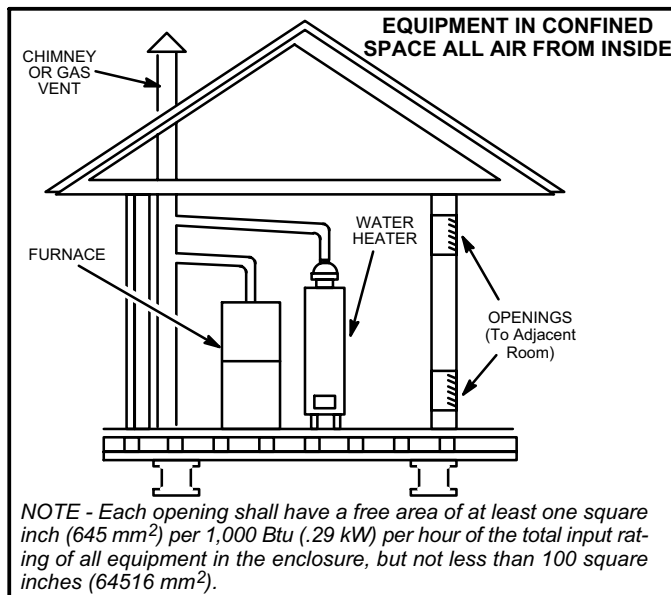


FIGURE 2

Air from Inside

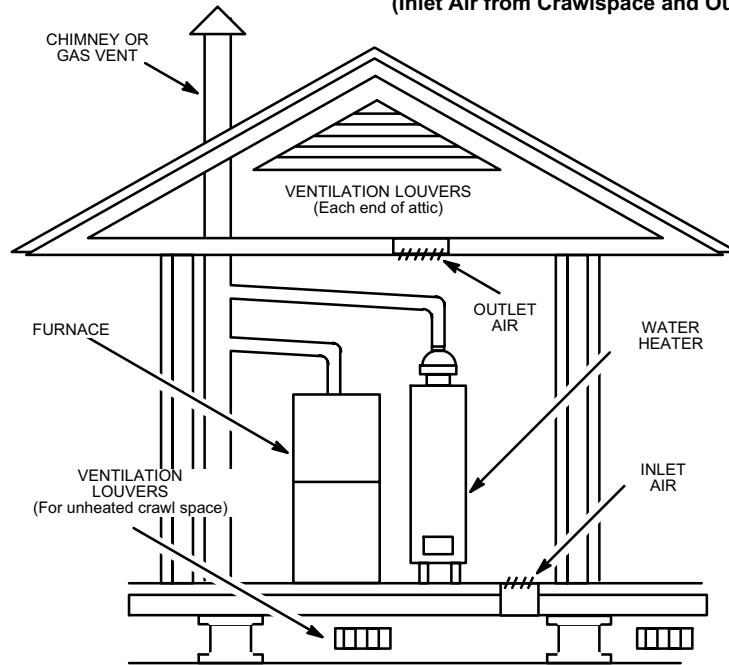
If the confined space that houses the furnace adjoins a space categorized as unconfined, air can be brought in by providing two permanent openings between the two spaces. Each opening must have a minimum free area of 1 square inch (645 mm²) per 1,000 Btu (.29 kW) per hour of total input rating of all gas-fired equipment in the confined space. Each opening must be at least 100 square inches (64516 mm²). One opening shall be within 12 inches (305 mm) of the top of the enclosure and one opening within 12 inches (305 mm) of the bottom. See figure 2.

Air from Outside

If air from outside is brought in for combustion and ventilation, the confined space must have two permanent openings. One opening shall be within 12 inches (305 mm) of the top of the enclosure and one opening within 12 inches (305 mm) of the bottom. These openings must communicate directly or by ducts with the outdoors or spaces (crawl or attic) that freely communicate with the outdoors or indirectly through vertical ducts. Each opening shall have a minimum free area of 1 square inch (645 mm²) per 4,000 Btu (1.17 kW) per hour of total input rating of all equipment in the enclosure. See figures 3 and 4. When communicating with the outdoors through horizontal ducts, each opening shall have a minimum free area of 1 square inch (645 mm²) per 2,000 Btu (.56 kW) per total input rating of all equipment in the enclosure. See figure 5.

When ducts are used, they shall be of the same cross-sectional area as the free area of the openings to which they connect. The minimum dimension of rectangular air ducts shall be no less than 3 inches (75 mm). In calculating free area, the blocking effect of louvers, grilles, or screens must be considered. If the design and free area of protective covering is not known for calculating the size opening required, it may be assumed that wood louvers will have 20 to 25 percent free area and metal louvers and grilles will have 60 to 75 percent free area. Louvers and grilles must be fixed in the open position or interlocked with the equipment so that they are opened automatically during equipment operation.

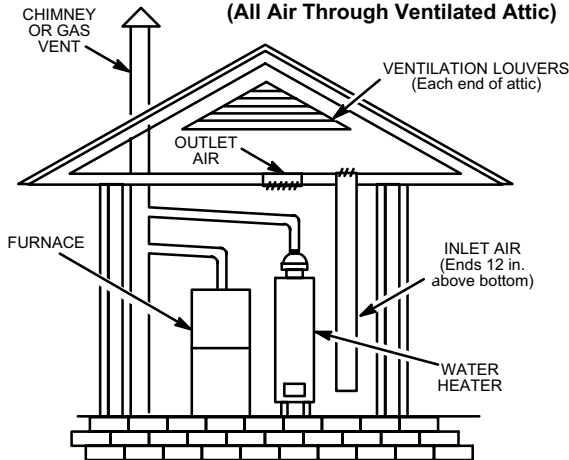
**EQUIPMENT IN CONFINED SPACE
ALL AIR FROM OUTSIDE
(Inlet Air from Crawlspace and Outlet Air to Ventilated Attic)**



NOTE-The inlet and outlet air openings shall each have a free area of at least one square inch (645 mm²) per 4,000 Btu (1.17 kW) per hour of the total input rating of all equipment in the enclosure.

FIGURE 3

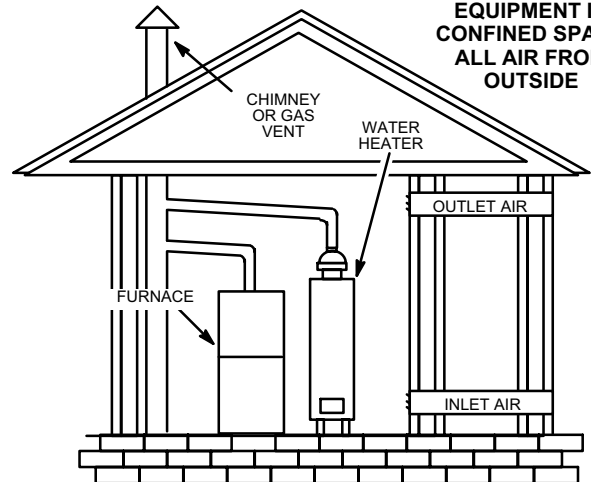
**EQUIPMENT IN CONFINED SPACE
ALL AIR FROM OUTSIDE
(All Air Through Ventilated Attic)**



NOTE-The inlet and outlet air openings shall each have a free area of at least one square inch (645 mm²) per 4,000 Btu (1.17 kW) per hour of the total input rating of all equipment in the enclosure.

FIGURE 4

**EQUIPMENT IN CONFINED SPACE
ALL AIR FROM OUTSIDE**



NOTE - Each air duct opening shall have a free area of at least one square inch (645 mm²) per 2,000 Btu (.59 kW) per hour of the total input rating of all equipment in the enclosure. 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 one square inch (645 mm²) per 4,000 Btu (1.17 kW) per hour of the total input rating of all other equipment in the enclosure.

FIGURE 5

Downflow Installation

Downflow unit installs in three ways: on non-combustible flooring, on combustible flooring using an additive base, or on a reverse-flow cooling cabinet. Do not drag the unit across the floor.

Installation on Non-Combustible Flooring

- 1 - Cut floor opening keeping in mind clearances listed on unit rating plate. Also keep in mind gas supply connections, electrical supply, flue and air intake connections and sufficient installation and servicing clearances. See table 1 for correct floor opening size.
- 2 - Flange warm air plenum and lower the plenum into the opening.
- 3 - Set the unit over the plenum and seal the plenum to the unit.
- 3 - Ensure that the seal is adequate.

**TABLE 1
NON-COMBUSTIBLE FLOOR OPENING SIZE**

| Model No. | Front to Rear | | Side to Side | |
|-------------------|---------------|-----|--------------|-----|
| | in. | mm | in. | mm |
| A Cabinet (14.5") | 19 - 3/4 | 502 | 13 - 1/4 | 337 |
| B Cabinet (17.5") | 19 - 3/4 | 502 | 16 - 1/4 | 413 |
| C Cabinet (21") | 19 - 3/4 | 502 | 19 - 3/4 | 502 |

NOTE - Floor opening dimensions listed are 1/4 inch (6 mm) larger than the unit opening. See unit dimensions on page 2.

Installation on Combustible Flooring

- 1 - When unit is installed on a combustible floor, an additive base must be installed between the furnace and the floor. The base must be ordered separately for the following cabinet sizes:
 - A cabinet 14.5" - # 11M59
 - B cabinet 17.5" - # 11M60
 - C cabinet -21" # 11M61
- See table 2 for opening size to cut in floor.

CAUTION

The furnace and additive base shall not be installed directly on carpeting, tile, or other combustible material other than wood flooring.

**TABLE 2
ADDITIVE BASE FLOOR OPENING SIZE**

| Model No. | Front to Rear | | Side to Side | |
|-------------------|---------------|-----|--------------|-----|
| | in. | mm | in. | mm |
| A Cabinet (14.5") | 22 | 559 | 15 - 3/4 | 400 |
| B Cabinet (17.5") | 22 | 559 | 18 - 3/4 | 476 |
| C Cabinet (21") | 22 | 559 | 22 - 3/4 | 578 |

NOTE - Floor opening dimensions listed are 1/4 inch (6 mm) larger than unit opening. See unit dimensions on page 2.

- 2 - After opening is cut, set additive base into opening.
 - 3 - Check fiberglass strips on additive base to make sure they are properly glued and positioned.
 - 4 - Lower supply air plenum into additive base until plenum flanges seal against fiberglass strips.
- NOTE - Be careful not to damage fiberglass strips. Check for a tight seal.*
- 5 - Set the furnace over the plenum.
 - 6 - Ensure that the seal between the furnace and plenum is adequate.

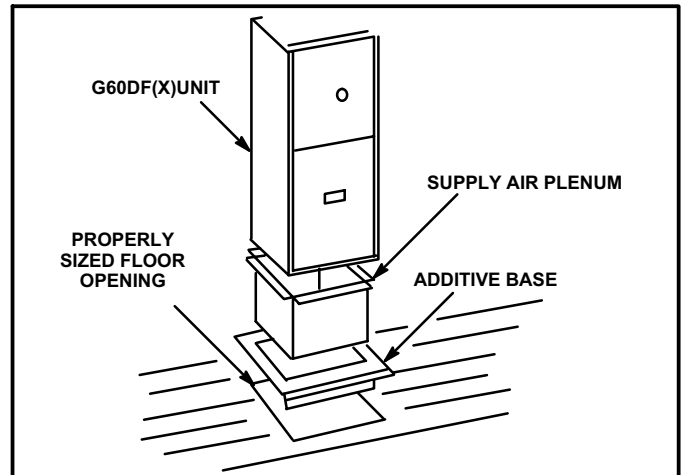


FIGURE 6

Installation on Cooling Cabinet

- 1 - Refer to reverse-flow coil installation instructions for correctly sized opening in floor and installation of cabinet.
- 2 - When cooling cabinet is in place, set and secure the furnace according to the instructions that are provided with the cooling coil. Secure the furnace to the cabinet.
- 3 - Seal the cabinet and check for air leaks.

Return Air Opening -- Downflow Units

The following steps should be taken when installing plenum:

- 1 - Bottom edge of plenum should be flanged with a hemmed edge (See figure 7).

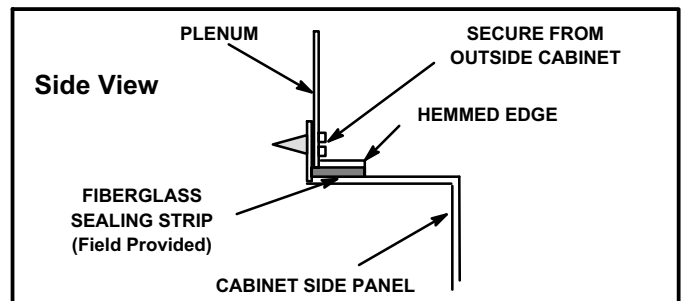


FIGURE 7

- 2 - Fiberglass sealing strips should be used.
- 3 - In all cases, plenum should be secured to top flanges of furnace with sheet metal screws.

- 4 - In closet installations, it may be impossible to install sheet metal screws from the outside. In this case, make plenum with a removable front and install screws from the inside (See figure 8).
- 5 - Make certain that an adequate seal is made.

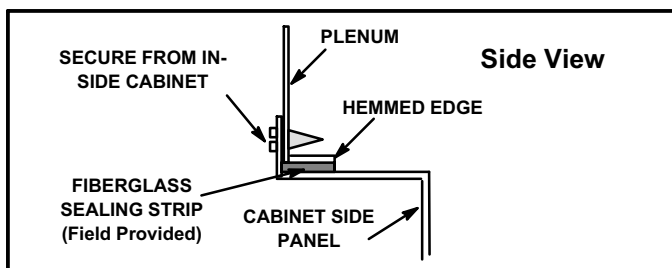


FIGURE 8

Setting Equipment

⚠ WARNING

Do not install the furnace on its front or its back. Do not connect the return air ducts to the back of the furnace. Doing so will adversely affect the operation of the safety control devices, which could result in personal injury or death.

Install the G60DF(X) gas furnace as shipped. **Do not install the furnace horizontally.**

Select a location that allows for the required clearances that are listed on the unit nameplate. Also consider gas supply connections, electrical supply, vent connection, and installation and service clearances [24 inches (610 mm) at unit front]. *The unit must be level.*

*NOTE - Units with 1/2 hp blower motors are equipped with three flexible legs and one rigid leg. The rigid leg is equipped with a shipping bolt and a flat white plastic washer (rather than the rubber mounting grommet used with a flexible mounting leg). **The bolt and washer must be removed before the furnace is placed into operation.** After the bolt and washer have been removed, the rigid leg will not touch the blower housing.*

Downflow Application

Allow for clearances to combustible materials as indicated on the unit nameplate. Minimum clearances for closet or alcove installations are shown in figure 9.

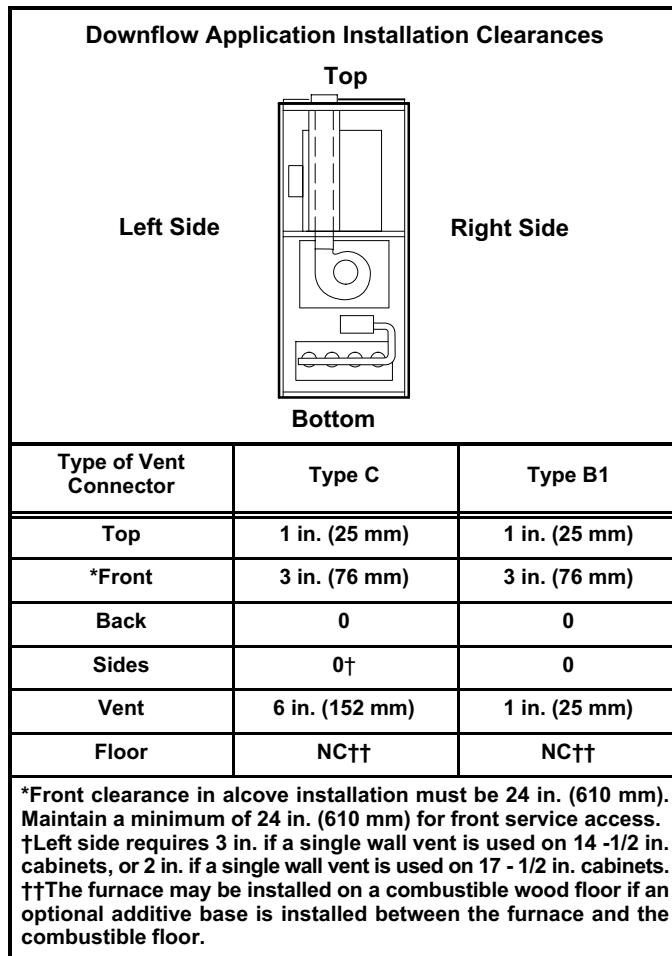


FIGURE 9

⚠ WARNING

Improper installation of the furnace can result in personal injury or death. Combustion and flue products must never be allowed to enter the return air system or the living space. Use screws and joint tape to seal the return air system to the furnace.

In platform installations with bottom return air, the furnace should be sealed airtight to the return air plenum. A door must never be used as a portion of the return air duct system. The base must provide a stable support and an airtight seal to the furnace. Allow absolutely no sagging, cracks, gaps, etc. The return and supply air duct systems must never be connected to or from other heating devices such as a fireplace or stove, etc. Fire, explosion, carbon monoxide poisoning, personal injury and/or property damage could result.

⚠ WARNING

The blower access panel must be securely in place when the blower and burners are operating. Gas fumes, which could contain carbon monoxide, can be drawn into living space resulting in personal injury or death.

Filters

This unit is not equipped with a filter or rack. A field-provided high-velocity filter is required for the unit to operate properly. Table 3 lists recommended filter sizes.

A filter must be in place any time the unit is operating.

TABLE 3

| Furnace Cabinet Width | Return Air Filter Size (inches) |
|-----------------------|---------------------------------|
| 14-1/2" | 14 X 25 X 1 (1) |
| 17-1/2" | 16 X 25 X 1 (1) |
| 21" | 20 X 25 X 1 (1) |

Duct System

Use industry-approved standards (such as those published by Air Conditioning Contractors of America or American Society of Heating, Refrigerating and Air Conditioning Engineers) to size and install the supply and return air duct system. This will result in a quiet and low-static system that has uniform air distribution.

NOTE - Do not operate the furnace with an external static pressure that exceeds 0.5 inches w.c. Higher external static pressures may cause erratic limit operation.

Ensure that you have made a seal between the supply air plenum and the furnace and between the furnace and the return air plenum.

Return Air Plenum

NOTE - Return air must not be drawn from a room where this furnace, or any other gas-fueled appliance (i.e., water heater), or carbon monoxide-producing device (i.e., wood fireplace) is installed.

When return air is drawn from a room, a negative pressure is created in the room. If a gas appliance is operating in a room with negative pressure, the flue products can be pulled back down the vent pipe and into the room. This reverse flow of the flue gas may result in incomplete combustion and the formation of carbon monoxide gas. This toxic gas might then be distributed throughout the house by the furnace duct system.

Venting

A 4-inch diameter flue transition is factory-installed on all models. **Modifying or removing the flue transition will cause the unit to operate unsafely and will void the unit certification.** The vent connector does not require insulation.

The G60DF(X) series units are classified as fan-assisted Category I furnaces when vertically vented according to the latest edition of National Fuel Gas Code (ANSI Z223.1/NFPA 54) in the USA and the current standards of the CSA B149 Natural Gas and Propane Installation Codes in Canada. A fan-assisted Category I furnace is an appliance equipped with an integral mechanical means to either draw or force combustion products through the combustion chamber and/or heat exchanger.

NOTE - Use these instructions as a guide. They do not supersede local codes. This furnace must be vented according to all local codes these installation instructions, and the provided venting tables in these instructions

The venting tables in this manual were extracted from the National Fuel Gas Code (ANSI Z223.1/NFPA 54) and are provided as a guide for proper vent installation. Proper application, termination, construction and location of vents must conform to local codes having jurisdiction. In the absence of local codes, the NFGC serves as the defining document.

Refer to the tables and the venting information contained in these instructions to properly size and install the venting system.

⚠ IMPORTANT

Once the venting system is installed, attach the "Disconnected Vent" warning sticker to a visible area of the plenum near the vent pipe. The warning sticker is provided in the bag assembly.

⚠ WARNING

Asphyxiation hazard. The exhaust vent for this furnace must be securely connected to the furnace flue transition at all times.

Use self-drilling sheet metal screws or a mechanical fastener to firmly secure the vent pipe to the round collar of the flue transition. If self-drilling screws are used to attach the vent pipe, it is recommended that three be used. Drive one self-drilling screw through the front and one through each side of the vent pipe and collar. See figure 10.

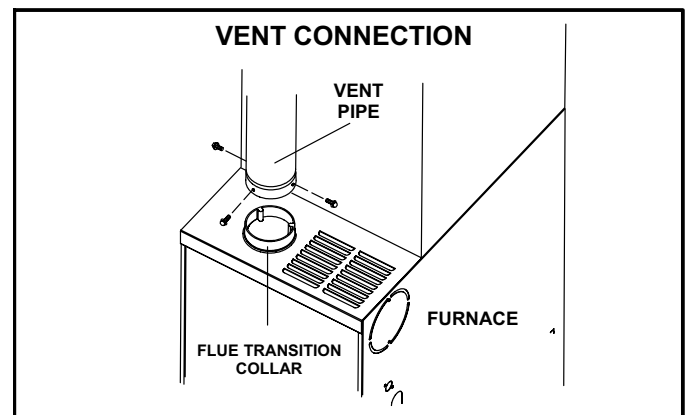


FIGURE 10

Install the first vent connector elbow at a minimum of six inches (152 mm) from the furnace vent outlet.

Venting Using a Masonry Chimney

The following additional requirements apply when a lined masonry chimney is used to vent this furnace.

Masonry chimneys used to vent Category I central furnaces must be either tile-lined or lined with a listed metal lining system or dedicated gas vent. Unlined masonry chimneys are prohibited. See figures 11 and 12 for common venting.

A chimney with one or more sides exposed to the outside of the structure is considered to be an exterior chimney.

An exterior masonry chimney that is not tile-lined must be lined with B1 vent or a listed insulated flexible metal vent.

An exterior tile-lined chimney that is sealed and capped may be lined with a listed uninsulated flexible metal vent.

If the existing chimney will not accommodate a listed metal liner, either the chimney must be rebuilt to accommodate one of these liners or an alternate approved venting method must be found.

Insulation for the flexible vent pipe must be an encapsulated fiberglass sleeve recommended by the flexible vent pipe manufacturer. See figure 11.

⚠ IMPORTANT

SINGLE appliance venting of a fan-assisted furnace into a tile-lined masonry chimney (interior or outside wall) is PROHIBITED. The chimney must first be lined with either type B1 vent or an insulated single wall flexible vent lining system which has been sized according to the provided venting tables and the vent pipe manufacturer's instructions.

DO NOT insulate the space between the liner and the chimney wall with puffed mica or any other loose granular insulating material

A fan-assisted furnace may be commonly vented into an existing lined masonry chimney if the following conditions are met:

- The chimney is currently serving at least one draffhood equipped appliance
- The vent connectors and chimney are sized according to the provided venting tables for the USA, and the appropriate venting tables in the standards of CSA B149 Natural Gas and Propane Installation Codes in Canada.

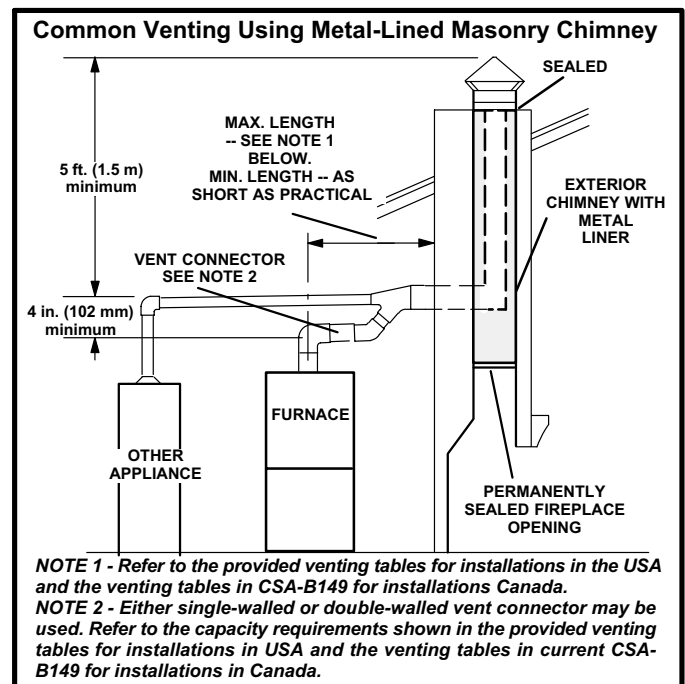


FIGURE 11

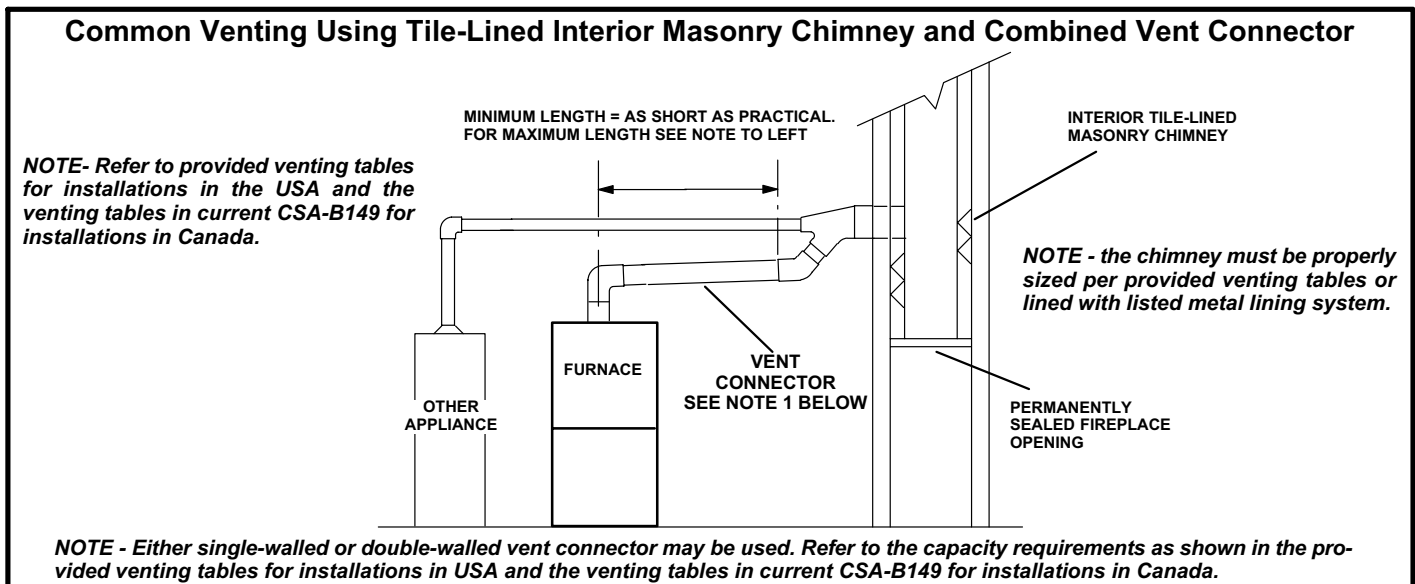


FIGURE 12

If type B1 double-wall vent is used inside a chimney, no other appliance can be vented into the chimney. The outer wall of type B1 vent pipe must not be exposed to flue products. A type B1 vent or masonry chimney liner shall terminate above the roof surface with a listed cap or a listed roof assembly according to the terms of their respective listings and the vent manufacturer's instructions.

When inspection reveals that an existing chimney is not safe for the intended purpose, it shall be rebuilt to conform to nationally recognized standards, lined or relined with suitable materials, or replaced with a gas vent or chimney suitable for venting G60DF(X) series units. The chimney passageway must be checked periodically to ensure that it is clear and free of obstructions.

Do not install a manual damper, barometric draft regulator, or flue restrictor between the furnace and the chimney.

Never connect a Category I appliance to a chimney that is servicing a solid-fuel appliance. If a fireplace chimney flue is used to vent this appliance, the fireplace opening must be permanently sealed.

A type B or listed chimney lining system that passes through an unused masonry chimney flue is not considered to be exposed to the outdoors.

General Venting Requirements

Vent all G60DF(X) furnaces according to these instructions:

- 1 - Vent diameter recommendations and maximum allowable piping runs are found in the provided venting tables for the USA, and the appropriate venting tables in the standards of CSA B149 Natural Gas and Propane Installation Codes for Canada.
- 2 - In no case should the vent or vent connector diameter be less than the diameter specified in the provided venting tables for the USA, and the appropriate venting tables in the standards of CSA B149 Natural Gas and Propane Installation Codes for Canada.
- 3 - The minimum vent capacity determined by the sizing tables must be less than the low fire input rating and the maximum vent capacity must be greater than the high fire input rating.
- 4 - *Single appliance vents* - If the vertical vent or tile-lined chimney has a larger diameter or flow area than the vent connector, use the **vertical vent diameter** to determine the **minimum vent capacity** and the **vent connector diameter** to determine the **maximum vent capacity**. The flow area of the vertical vent, however, shall not exceed 7 times the flow area of the listed appliance categorized vent area, draft hood outlet area or flue collar area unless designed according to approved engineering methods.
- 5 - *Multiple appliance vents* - The flow area of the largest section of vertical vent or chimney shall not exceed 7 times the smallest listed appliance categorized vent area, draft hood outlet area or flue collar area unless designed according to approved engineering methods.
- 6 - The entire length of single wall metal vent connector shall be readily accessible for inspection, cleaning, and replacement.
- 7 - Single appliance venting configurations with zero lateral lengths (tables 5 and 6) are assumed to have no elbows in the vent system. For all other vent configurations, the vent system is assumed to have two 90° elbows. For each additional 90° elbow or equivalent (for example two 45° elbows equal one 90° elbow) beyond two, the maximum capacity listed in the venting table should be reduced by 10% (0.90 x maximum listed capacity).
- 8 - The common venting tables (7, 8, 9, and 10) were generated using a maximum horizontal vent connector length of 1-1/2 feet (.46 m) for each inch (25 mm) of connector diameter as follows:

TABLE 4

| Connector Diameter inches (mm) | Maximum Horizontal Connector Length feet (m) |
|--------------------------------|--|
| 3 (76) | 4-1/2 (1.37) |
| 4 (102) | 6 (1.83) |
| 5 (127) | 7-1/2 (2.29) |
| 6 (152) | 9 (2.74) |
| 7 (178) | 10-1/2 (3.20) |

- 9 - If the common vertical vent is offset, the maximum common vent capacity listed in the common venting tables should be reduced by 20%, the equivalent of two 90° elbows (0.80 x maximum common vent capacity). The horizontal length of the offset shall not exceed 1-1/2 feet (.46 m) for each inch (25 mm) of common vent diameter.
- 10 - The vent pipe should be as short as possible with the least number of elbows and angles required to complete the job. Route the vent connector to the vent using the shortest possible route.
- 11 - A vent connector shall be supported without any dips or sags and shall slope a minimum of 1/4 inch (6.4 mm) per linear foot (305 mm) of connector, back toward the appliance.

- 12 - Vent connectors shall be firmly attached to the furnace flue collar by self-drilling screws or other approved means, except vent connectors of listed type B vent material which shall be assembled according to the manufacturer's instructions. Joints between sections of single wall connector piping shall be fastened by screws or other approved means.
- 13 - When the vent connector used for Category I appliances must be located in or pass through a crawlspace or other areas which may be cold, that portion of the vent connector shall be constructed of listed double-wall type B vent material or material having equivalent insulation qualities.
- 14 - All venting pipe passing through floors, walls, and ceilings must be installed with the listed clearance to combustible materials and be fire stopped according to local codes. In absence of local codes, refer to NFPA (ANSI Z223.1/NFPA 54).
- 15 - No portion of the venting system can extend into, or pass through any circulation air duct or plenum.
- 16 - Vent connectors serving Category I appliances shall not be connected to any portion of mechanical draft systems operating under positive pressure such as Category III or IV venting systems.
- 17 - If vent connectors are combined prior to entering the common vent, the maximum common vent capacity listed in the common venting tables must be reduced by 10%, the equivalent of one 90° elbow (0.90 x maximum common vent capacity).
- 18 - The common vent diameter must always be at least as large as the largest vent connector diameter.
- 19 - In no case, shall the vent connector be sized more than two consecutive table size diameters over the size of the draft hood outlet or flue collar outlet.
- 20 - Do not install a manual damper, barometric draft regulator or flue restrictor between the furnace and the chimney.
- 21 - When connecting this appliance to an existing dedicated or common venting system, you must inspect the venting system's general condition and look for signs of corrosion. The existing vent pipe size must conform to these instructions and the provided venting tables for the USA, and the appropriate venting tables in the standards of CSA B149 Natural Gas and Propane Installation Codes for Canada. If the existing venting system does not meet these requirements, it must be resized.

TABLE 5
Capacity of Type B Double-Wall Vents with Type B Double-Wall Connectors
Serving a Single Category I Appliance

| Height H (feet) | Lateral L (feet) | Vent and Connector Diameter - D (inches) | | | | | | | |
|-----------------------|------------------------|---|-----|--------|-----|--------|-----|--------|-----|
| | | 3 Inch | | 4 Inch | | 5 Inch | | 6 Inch | |
| | | Appliance Input Rating in Thousands of Btu Per Hour | | | | | | | |
| | | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX |
| 6 | 0 | 0 | 78 | 0 | 152 | 0 | 251 | 0 | 375 |
| | 2 | 13 | 51 | 18 | 97 | 27 | 157 | 32 | 232 |
| | 4 | 21 | 49 | 30 | 94 | 39 | 153 | 50 | 227 |
| | 6 | 25 | 46 | 36 | 91 | 47 | 149 | 59 | 223 |
| 8 | 0 | 0 | 84 | 0 | 165 | 0 | 276 | 0 | 415 |
| | 2 | 12 | 57 | 16 | 109 | 25 | 178 | 28 | 263 |
| | 5 | 23 | 53 | 32 | 103 | 42 | 171 | 53 | 255 |
| | 8 | 28 | 49 | 39 | 98 | 51 | 164 | 64 | 247 |
| 10 | 0 | 0 | 88 | 0 | 175 | 0 | 295 | 0 | 447 |
| | 2 | 12 | 61 | 17 | 118 | 23 | 194 | 26 | 289 |
| | 5 | 23 | 57 | 32 | 113 | 41 | 187 | 52 | 280 |
| | 10 | 30 | 51 | 41 | 104 | 54 | 176 | 67 | 267 |
| 15 | 0 | 0 | 94 | 0 | 191 | 0 | 327 | 0 | 502 |
| | 2 | 11 | 69 | 15 | 136 | 20 | 226 | 22 | 339 |
| | 5 | 22 | 65 | 30 | 130 | 39 | 219 | 49 | 330 |
| | 10 | 29 | 59 | 40 | 121 | 51 | 206 | 64 | 315 |
| | 15 | 35 | 53 | 48 | 112 | 61 | 195 | 76 | 301 |
| 20 | 0 | 0 | 97 | 0 | 202 | 0 | 349 | 0 | 540 |
| | 2 | 10 | 75 | 14 | 149 | 18 | 250 | 20 | 377 |
| | 5 | 21 | 71 | 29 | 143 | 38 | 242 | 47 | 367 |
| | 10 | 28 | 64 | 38 | 133 | 50 | 229 | 62 | 351 |
| | 15 | 34 | 58 | 46 | 124 | 59 | 217 | 73 | 337 |
| | 20 | 48 | 52 | 55 | 116 | 69 | 206 | 84 | 322 |
| 30 | 0 | 0 | 100 | 0 | 213 | 0 | 374 | 0 | 587 |
| | 2 | 9 | 81 | 13 | 166 | 14 | 283 | 18 | 432 |
| | 5 | 21 | 77 | 28 | 160 | 36 | 275 | 45 | 421 |
| | 10 | 27 | 70 | 37 | 150 | 48 | 262 | 59 | 405 |
| | 15 | 33 | 64 | 44 | 141 | 57 | 249 | 70 | 389 |
| | 20 | 56 | 58 | 53 | 132 | 66 | 237 | 80 | 374 |
| | 30 | NR | NR | 73 | 113 | 88 | 214 | 104 | 346 |

NOTE - Single appliance venting configurations with zero lateral lengths are assumed to have no elbows in the vent system. For all other vent configurations, the vent system is assumed to have two 90° elbows. For each additional 90° elbow or equivalent (for example two 45° elbows equal one 90° elbow) beyond two, the maximum capacity listed in the venting table should be reduced by 10 percent (0.90 x maximum listed capacity).

TABLE 6
Capacity of Type B Double-Wall Vents with Single-Wall Metal Connectors
Serving a Single Category I Appliance

| Height H (feet) | Lateral L (feet) | Vent and Connector Diameter - D (inches) | | | | | | | |
|-----------------------|------------------------|---|-----|--------|-----|--------|-----|--------|-----|
| | | 3 Inch | | 4 Inch | | 5 Inch | | 6 Inch | |
| | | Appliance Input Rating in Thousands of Btu Per Hour | | | | | | | |
| | | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX |
| 6 | 0 | 38 | 77 | 59 | 151 | 85 | 249 | 126 | 373 |
| | 2 | 39 | 51 | 60 | 96 | 85 | 156 | 123 | 231 |
| | 4 | NR | NR | 74 | 92 | 102 | 152 | 146 | 225 |
| | 6 | NR | NR | 83 | 89 | 114 | 147 | 163 | 220 |
| 8 | 0 | 37 | 83 | 58 | 164 | 83 | 273 | 123 | 412 |
| | 2 | 39 | 56 | 59 | 108 | 83 | 176 | 121 | 261 |
| | 5 | NR | NR | 77 | 102 | 107 | 168 | 151 | 252 |
| | 8 | NR | NR | 90 | 95 | 122 | 161 | 175 | 243 |
| 10 | 0 | 37 | 87 | 57 | 174 | 82 | 293 | 120 | 444 |
| | 2 | 39 | 61 | 59 | 117 | 82 | 193 | 119 | 287 |
| | 5 | 52 | 56 | 76 | 111 | 105 | 185 | 148 | 277 |
| | 10 | NR | NR | 97 | 100 | 132 | 171 | 188 | 261 |
| 15 | 0 | 36 | 93 | 56 | 190 | 80 | 325 | 116 | 499 |
| | 2 | 38 | 69 | 57 | 136 | 80 | 225 | 115 | 337 |
| | 5 | 51 | 63 | 75 | 128 | 102 | 216 | 144 | 326 |
| | 10 | NR | NR | 95 | 116 | 128 | 201 | 182 | 308 |
| | 15 | NR | NR | NR | NR | 158 | 186 | 220 | 290 |
| 20 | 0 | 35 | 96 | 54 | 200 | 78 | 346 | 114 | 537 |
| | 2 | 37 | 74 | 56 | 148 | 78 | 248 | 113 | 375 |
| | 5 | 50 | 68 | 73 | 140 | 100 | 239 | 141 | 363 |
| | 10 | NR | NR | 93 | 129 | 125 | 223 | 177 | 344 |
| | 15 | NR | NR | NR | NR | 155 | 208 | 216 | 325 |
| | 20 | NR | NR | NR | NR | 186 | 192 | 254 | 306 |
| 30 | 0 | 34 | 99 | 53 | 211 | 76 | 372 | 110 | 584 |
| | 2 | 37 | 80 | 55 | 164 | 76 | 281 | 109 | 429 |
| | 5 | 49 | 74 | 72 | 157 | 98 | 271 | 136 | 417 |
| | 10 | NR | NR | 91 | 144 | 122 | 255 | 171 | 397 |
| | 15 | NR | NR | 115 | 131 | 151 | 239 | 208 | 377 |
| | 20 | NR | NR | NR | NR | 181 | 223 | 246 | 357 |
| | 30 | NR | NR | NR | NR | NR | NR | NR | NR |

NOTE - Single appliance venting configurations with zero lateral lengths are assumed to have no elbows in the vent system. For all other vent configurations, the vent system is assumed to have two 90° elbows. For each additional 90° elbow or equivalent (for example two 45° elbows equal one 90° elbow) beyond two, the maximum capacity listed in the venting table should be reduced by 10 percent (0.90 x maximum listed capacity).

TABLE 7
Vent Connector Capacity
Type B Double-Wall Vents with Type B Double-Wall Connectors
Serving Two or More Category I Appliances

| Vent Height H (feet) | Connector Rise R (feet) | Vent and Connector Diameter - D (inches) | | | | | | | |
|----------------------|-------------------------|---|-----|--------|-----|--------|-----|--------|-----|
| | | 3 Inch | | 4 Inch | | 5 Inch | | 6 Inch | |
| | | Appliance Input Rating in Thousands of Btu Per Hour | | | | | | | |
| | | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX |
| 6 | 1 | 22 | 37 | 35 | 66 | 46 | 106 | 58 | 164 |
| | 2 | 23 | 41 | 37 | 75 | 48 | 121 | 60 | 183 |
| | 3 | 24 | 44 | 38 | 81 | 49 | 132 | 62 | 199 |
| 8 | 1 | 22 | 40 | 35 | 72 | 49 | 114 | 64 | 176 |
| | 2 | 23 | 44 | 36 | 80 | 51 | 128 | 66 | 195 |
| | 3 | 24 | 47 | 37 | 87 | 53 | 139 | 67 | 210 |
| 10 | 1 | 22 | 43 | 34 | 78 | 49 | 123 | 65 | 189 |
| | 2 | 23 | 47 | 36 | 86 | 51 | 136 | 67 | 206 |
| | 3 | 24 | 50 | 37 | 92 | 52 | 146 | 69 | 220 |
| 15 | 1 | 21 | 50 | 33 | 89 | 47 | 142 | 64 | 220 |
| | 2 | 22 | 53 | 35 | 96 | 49 | 153 | 66 | 235 |
| | 3 | 24 | 55 | 36 | 102 | 51 | 163 | 68 | 248 |
| 20 | 1 | 21 | 54 | 33 | 99 | 46 | 157 | 62 | 246 |
| | 2 | 22 | 57 | 34 | 105 | 48 | 167 | 64 | 259 |
| | 3 | 23 | 60 | 35 | 110 | 50 | 176 | 66 | 271 |
| 30 | 1 | 20 | 62 | 31 | 113 | 45 | 181 | 60 | 288 |
| | 2 | 21 | 64 | 33 | 118 | 47 | 190 | 62 | 299 |
| | 3 | 22 | 66 | 34 | 123 | 48 | 198 | 64 | 309 |

TABLE 8
Common Vent Capacity
Type B Double-Wall Vents with Type B Double-Wall Connectors
Serving Two or More Category I Appliances

| Vent Height H (feet) | Common Vent Diameter - D (inches) | | | | | | | |
|----------------------|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 4 Inch | | 5 Inch | | 6 Inch | | 7 Inch | |
| | Appliance Input Rating in Thousands of Btu Per Hour | | | | | | | |
| | FAN + FAN | FAN + NAT | FAN + FAN | FAN + NAT | FAN + FAN | FAN + NAT | FAN + FAN | FAN + NAT |
| 6 | 92 | 81 | 140 | 116 | 204 | 161 | 309 | 248 |
| 8 | 101 | 90 | 155 | 129 | 224 | 178 | 339 | 275 |
| 10 | 110 | 97 | 169 | 141 | 243 | 194 | 367 | 299 |
| 15 | 125 | 112 | 195 | 164 | 283 | 228 | 427 | 352 |
| 20 | 136 | 123 | 215 | 183 | 314 | 255 | 475 | 394 |
| 30 | 152 | 138 | 244 | 210 | 361 | 297 | 547 | 459 |

TABLE 9
Vent Connector Capacity
Type B Double-Wall Vents with Single-Wall Metal Connectors
Serving Two or More Category I Appliances

| Vent Height H (feet) | Connector Rise R (feet) | Vent and Connector Diameter - D (inches) | | | | | | | |
|----------------------|-------------------------|---|-----|--------|-----|--------|-----|--------|-----|
| | | 3 Inch | | 4 Inch | | 5 Inch | | 6 Inch | |
| | | Appliance Input Rating in Thousands of Btu Per Hour | | | | | | | |
| | | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX |
| 6 | 1 | NR | NR | NR | NR | NR | NR | NR | NR |
| | 2 | NR | NR | NR | NR | NR | NR | 168 | 182 |
| | 3 | NR | NR | NR | NR | 121 | 131 | 174 | 198 |
| 15 | 1 | NR | NR | 79 | 87 | 116 | 138 | 177 | 214 |
| | 2 | NR | NR | 83 | 94 | 121 | 150 | 185 | 230 |
| | 3 | NR | NR | 87 | 100 | 127 | 160 | 193 | 243 |
| 30 | 1 | 47 | 60 | 77 | 110 | 113 | 175 | 169 | 278 |
| | 2 | 50 | 62 | 81 | 115 | 117 | 185 | 177 | 290 |
| | 3 | 54 | 64 | 85 | 119 | 122 | 193 | 185 | 300 |

TABLE 10
Common Vent Capacity
Type B Double-Wall Vents with Single-Wall Metal Connectors
Serving Two or More Category I Appliances

| Vent Height H (feet) | Common Vent Diameter - D (inches) | | | | | | | |
|----------------------|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 4 Inch | | 5 Inch | | 6 Inch | | 7 Inch | |
| | Appliance Input Rating in Thousands of Btu Per Hour | | | | | | | |
| | FAN + FAN | FAN + NAT | FAN + FAN | FAN + NAT | FAN + FAN | FAN + NAT | FAN + FAN | FAN + NAT |
| 6 | 89 | 78 | 136 | 113 | 200 | 158 | 304 | 244 |
| 8 | 98 | 87 | 151 | 126 | 218 | 173 | 331 | 269 |
| 10 | 106 | 94 | 163 | 137 | 237 | 189 | 357 | 292 |
| 15 | 121 | 108 | 189 | 159 | 275 | 221 | 416 | 343 |
| 20 | 131 | 118 | 208 | 177 | 305 | 247 | 463 | 383 |
| 30 | 145 | 132 | 236 | 202 | 350 | 286 | 533 | 446 |

Removal of the Furnace from Common Vent

In the event that an existing furnace is removed from a venting system commonly run with separate gas appliances, the venting system is likely to be too large to properly vent the remaining attached appliances.

Conduct the following test while each appliance is operating and the other appliances (which are not operating) remain connected to the common venting system. If the venting system has been installed improperly, you **must** correct the system as indicated in the general venting requirements section.

- 1 - Seal any unused openings in the common venting system.
- 2 - Inspect the venting system for proper size and horizontal pitch. Determine that there is no blockage, restriction, leakage, corrosion, or other deficiencies which could cause an unsafe condition.
- 3 - Close all building doors and windows and all doors between the space in which the appliances remaining connected to the common venting system are located

and other spaces of the building. Turn on clothes dryers and any appliances not connected to the common venting system. Turn on any exhaust fans, such as range hoods and bathroom exhausts, so they will operate at maximum speed. Do not operate a summer exhaust fan. Close fireplace dampers.

- 4 - Follow the lighting instructions. Turn on the appliance that is being inspected. Adjust the thermostat so that the appliance operates continuously.
- 5 - After the main burner has operated for 5 minutes, test for leaks of flue gases at the draft hood relief opening. Use the flame of a match or candle, or smoke from a cigarette, cigar, or pipe.
- 6 - After determining that each appliance connected to the common venting system is venting properly, (step 3) return all doors, windows, exhaust fans, fireplace dampers, and any other gas-burning appliances to their previous mode of operation.
- 7 - If a venting problem is found during any of the preceding tests, the common venting system must be modified to correct the problem.

Resize the common venting system to the minimum vent pipe size determined by using the appropriate tables in Appendix G. (These are in the current standards of the National Fuel Gas Code ANSI Z223.1/NFPA 54 in the USA, and the appropriate Category 1 Natural Gas and Propane appliances venting sizing tables in the current standards of the CSA B149 Natural Gas and Propane Installation Codes in Canada.)

Gas Piping

⚠ CAUTION

If a flexible gas connector is required or allowed by the authority that has jurisdiction, black iron pipe shall be installed at the gas valve and extend outside the furnace cabinet.

Gas Supply

- 1 - This unit is shipped standard for left or right side installation of gas piping. Connect the gas supply to the piping assembly.
- 2 - When connecting the gas supply piping, consider factors such as length of run, number of fittings, and furnace rating to avoid excessive pressure drop. Table 11 lists recommended pipe sizes for typical applications.

- 3 - The gas piping must not run in or through air ducts, clothes chutes, gas vents or chimneys, dumb waiters, or elevator shafts.
- 4 - The piping should be sloped 1/4 inch (6.4 mm) per 15 feet (4.57 m) upward toward the meter from the furnace. The piping must be supported at proper intervals [every 8 to 10 feet (2.44 to 3.01 m)] with suitable hangers or straps. Install a drip leg inside vertical pipe runs to the unit.
- 5 - In some localities, codes may require the installation of a manual main shut-off valve and union (furnished by the installer) external to the unit. The union must be of the ground joint type.

⚠ IMPORTANT

Compounds used on threaded joints of gas piping must be resistant to the actions of liquefied petroleum gases.

NOTE - Install a 1/8 inch NPT plugged tap in the field piping upstream of the gas supply connection to the unit. The tap must be accessible for test gauge connection. See figure 13.

NOTE - If emergency shutoff is necessary, shut off the main manual gas valve and disconnect main power to the furnace. The installer should properly label these devices.

**TABLE 11
Gas Pipe Capacity - ft³/hr (m³/hr)**

| Nominal Iron Pipe Size inches (mm) | Internal Diameter inches (mm) | Length of Pipe - feet (m) | | | | | | | | | |
|------------------------------------|-------------------------------|---------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|--------------|
| | | 10 (3.048) | 20 (6.096) | 30 (9.144) | 40 (12.192) | 50 (15.240) | 60 (18.288) | 70 (21.336) | 80 (24.384) | 90 (27.432) | 100 (30.480) |
| 3/8 (9.53) | .493 (12.522) | 95 (2.69) | 65 (1.84) | 52 (1.47) | 45 (1.27) | 40 (1.13) | 36 (1.02) | 33 (.73) | 31 (.88) | 29 (.82) | 27 (.76) |
| 1/2 (12.7) | .622 (17.799) | 175 (4.96) | 120 (3.40) | 97 (2.75) | 82 (2.32) | 73 (2.07) | 66 (1.87) | 61 (1.73) | 57 (1.61) | 53 (1.50) | 50 (1.42) |
| 3/4 (19.05) | .824 (20.930) | 360 (10.19) | 250 (7.08) | 200 (5.66) | 170 (4.81) | 151 (4.28) | 138 (3.91) | 125 (3.54) | 118 (3.34) | 110 (3.11) | 103 (2.92) |
| 1 (25.4) | 1.049 (26.645) | 680 (919.25) | 465 (13.17) | 375 (10.62) | 320 (9.06) | 285 (8.07) | 260 (7.36) | 240 (6.80) | 220 (6.23) | 205 (5.80) | 195 (5.52) |
| 1-1/4 (31.75) | 1.380 (35.052) | 1400 (39.64) | 950 (26.90) | 770 (21.80) | 660 (18.69) | 580 (16.42) | 530 (15.01) | 490 (13.87) | 460 (13.03) | 430 (12.18) | 400 (11.33) |
| 1-1/2 (38.1) | 1.610 (40.894) | 2100 (59.46) | 1460 (41.34) | 1180 (33.41) | 990 (28.03) | 900 (25.48) | 810 (22.94) | 750 (21.24) | 690 (19.54) | 650 (18.41) | 620 (17.56) |
| 2 (50.8) | 2.067 (52.502) | 3950 (111.85) | 2750 (77.87) | 2200 (62.30) | 1900 (53.80) | 1680 (47.57) | 1520 (43.04) | 1400 (39.64) | 1300 (36.81) | 1220 (34.55) | 1150 (32.56) |
| 2-1/2 (63.5) | 2.469 (67.713) | 6300 (178.39) | 4350 (123.17) | 3520 (99.67) | 3000 (84.95) | 2650 (75.04) | 2400 (67.96) | 2250 (63.71) | 2050 (58.05) | 1950 (55.22) | 1850 (52.38) |
| 3 (76.2) | 3.068 (77.927) | 11000 (311.48) | 7700 (218.03) | 6250 (176.98) | 5300 (150.07) | 4750 (134.50) | 4300 (121.76) | 3900 (110.43) | 3700 (104.77) | 3450 (97.69) | 3250 (92.03) |

NOTE - Capacity given in cubic feet (m³) of gas per hour and based on 0.60 specific gravity gas.

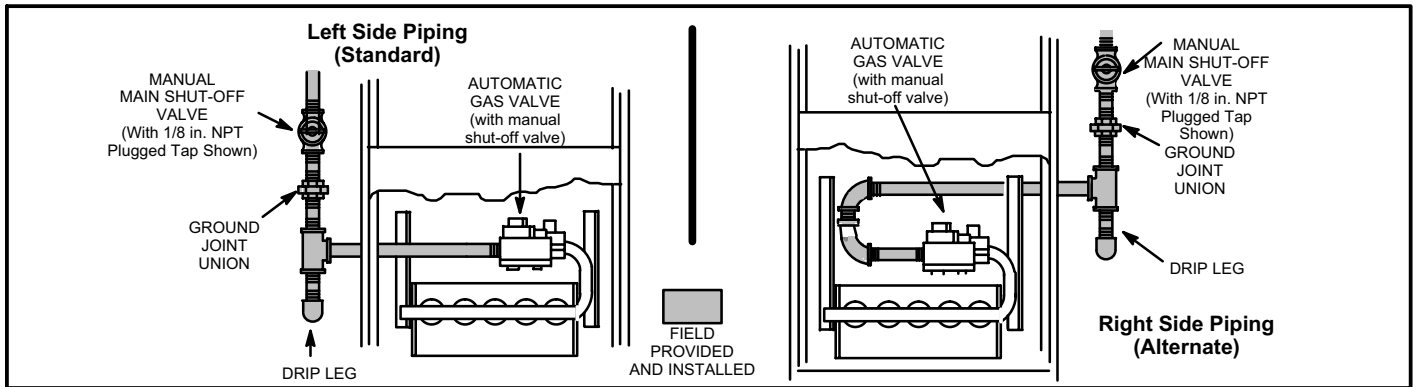


FIGURE 13

Leak Check

After gas piping is completed, carefully check all piping connections (factory- and field-installed) for gas leaks. Use a leak detecting solution or other preferred means.

NOTE - If emergency shutoff is necessary, shut off the main manual gas valve and disconnect the main power to the furnace. The installer should properly label these devices.

⚠ WARNING

FIRE OR EXPLOSION HAZARD

Failure to follow the safety warnings exactly could result in serious injury, death, or property damage. Never use an open flame to test for gas leaks. Check all connections using a commercially available soap solution made specifically for leak detection. Some soaps used for leak detection are corrosive to certain metals. Carefully rinse piping thoroughly after leak test has been completed.

The furnace must be isolated from the gas supply system by closing its individual manual shut-off valve during any pressure testing of the gas supply system at pressures less than or equal to 1/2 psig (3.48 kPa, 14 inches w.c.).

⚠ IMPORTANT

When testing pressure of gas lines, gas valve must be disconnected and isolated. See figure 14. Gas valves can be damaged if subjected to pressures greater than 1/2 psig (3.48 kPa, 14 inches w.c.).

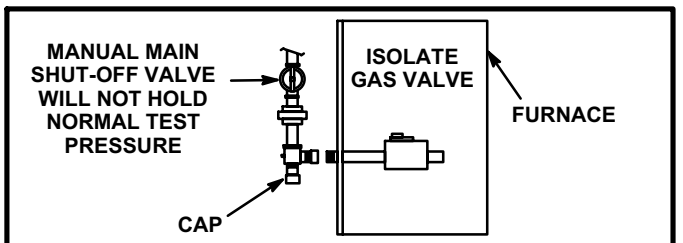


FIGURE 14

Electrical

ELECTROSTATIC DISCHARGE (ESD)

Precautions and Procedures

⚠ CAUTION

Electrostatic discharge can affect electronic components. Take precautions during furnace installation and service to protect the furnace's electronic controls. Precautions will help to avoid control exposure to electrostatic discharge by putting the furnace, the control and the technician at the same electrostatic potential. Neutralize electrostatic charge by touching hand and all tools on an unpainted unit surface, such as the gas valve or blower deck, before performing any service procedure.

The unit is equipped with a field make-up box. The make-up box may be moved to the right side of the furnace to facilitate installation. Secure the excess wire to the existing harness to protect it from damage.

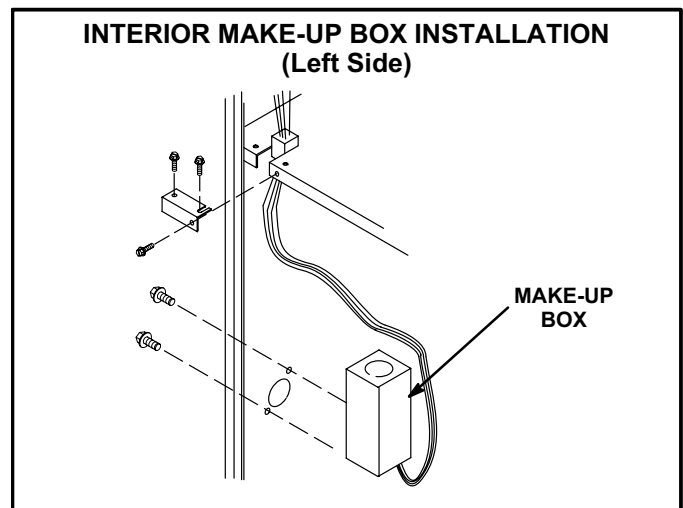


FIGURE 15

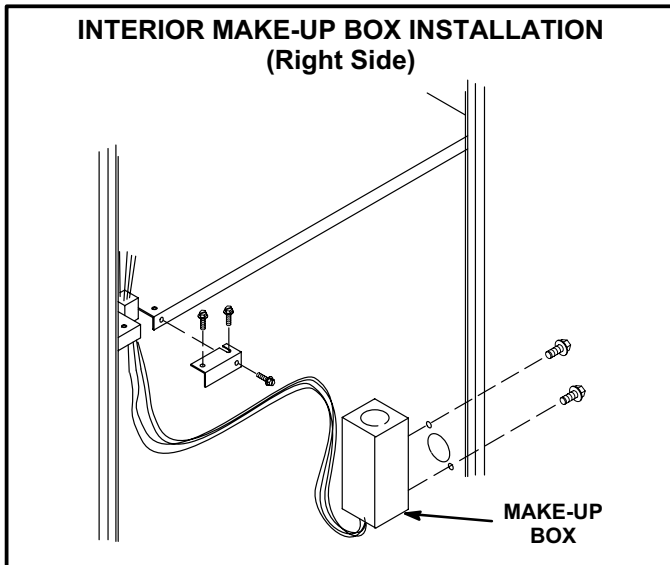


FIGURE 16

Refer to figure 17 for schematic wiring diagram and troubleshooting and table 12 and figure 18 for field wiring.

- 1 - Select circuit protection and wire size according to the unit nameplate. The power supply wiring must meet Class I restrictions.
- 2 - Holes are on both sides of the furnace cabinet to facilitate wiring.
- 3 - Install a separate disconnect switch (protected by either fuse or circuit breaker) near the furnace so that power can be turned off for servicing.
- 4 - Before connecting the thermostat or the power wiring, check to make sure the wires will be long enough for servicing at a later date. Remove the blower access panel to check the length of the wire.
- 5 - Complete the wiring connections to the equipment. Use the provided unit wiring diagram and the field wiring diagrams shown in table 12 and figure 18. Use 18-gauge wire or larger that is suitable for Class II rating for thermostat connections.
- 6 - Electrically ground the unit according to local codes or, in the absence of local codes, according to the current

National Electric Code (ANSI/NFPA No. 70) for the USA and current Canadian Electric Code part 1 (CSA standard C22.1) for Canada. A green ground wire is provided in the field make-up box.

NOTE - The G60DF(X) furnace contains electronic components that are polarity sensitive. Make sure that the furnace is wired correctly and is properly grounded.

- 7 - One line voltage "HUM" 1/4" spade terminal is provided on the furnace integrated control. Any humidifier rated up to one amp can be connected to this terminal with the neutral leg of the circuit being connected to one of the provided neutral terminals. See figure 19 for control configuration. This terminal is energized in the heating mode when the combustion air inducer is operating.
- 8 - One line voltage "EAC" 1/4" spade terminal is provided on the furnace integrated control. Any electronic air cleaner rated up to one amp can be connected to this terminal with the neutral leg of the circuit being connected to one of the provided neutral terminals. See figure 19 for control configuration. This terminal is energized when the indoor blower is operating.
- 9 - One 24V "H" terminal is provided on the furnace control terminal block. Any humidifier rated up to 0.5 amp can be connected to this terminal with the ground leg of the circuit being connected to either ground or the "C" terminal. See figure 19 for control configuration.
- 10 - Install the room thermostat according to the instructions provided with the thermostat. See table 12 for field wiring connections in varying applications. If the furnace is being matched with a heat pump, refer to the instruction packaged with the dual fuel thermostat.

Indoor Blower Speeds

- 1 - When the thermostat is set to "FAN ON," the indoor blower will run continuously on the low speed when there is no cooling or heating demand.
- 2 - When the G60DF(X) is operating in the high-fire or low-fire heating mode, the indoor blower will run on the corresponding heating speed.
- 3 - When there is a cooling demand, the indoor blower will run on the cooling speed.

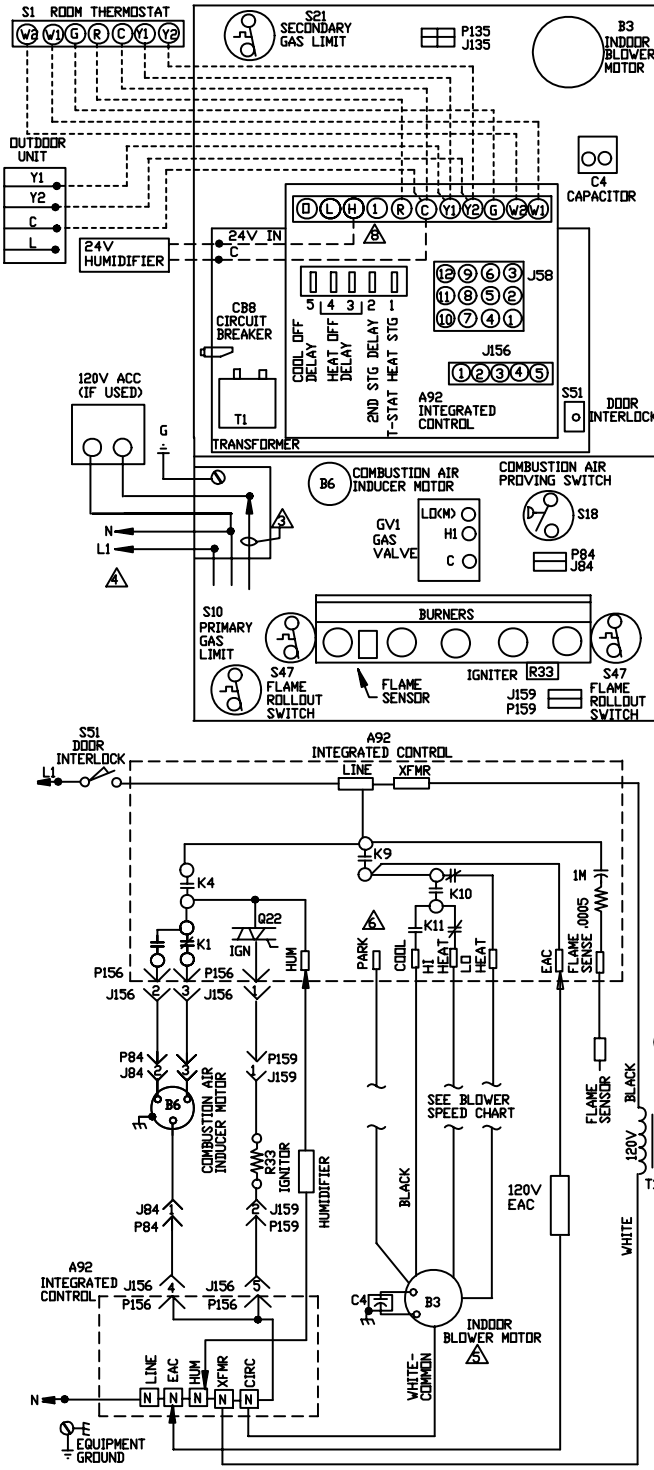
TABLE 12
Field Wiring Applications

| Thermostat | DIP Switch Settings and On-Board Links (See figure 19) | | | Wiring Connections |
|---|--|--|--------------------------------|--------------------|
| | DIP Switch 1 | W915 (Y1 to Y2) Two-Stage Cooling | W951 (O to R) Heat Pumps | |
| 1 Heat / 1 Cool <i>NOTE - Use DIP switch 2 to set second-stage heat ON delay. OFF-10 minutes. ON-15 minutes.</i> | ON | Intact | Intact | |
| 1 Heat / 2 Cool <i>NOTE - Use DIP switch 2 to set second-stage heat ON delay. OFF-10 minutes. ON-15 minutes.</i> | ON | Cut | Intact | |

TABLE 12
Field Wiring Applications (Continued)

| Thermostat | DIP Switch Settings and On-Board Links (See figure 19) | | | Wiring Connections |
|-----------------|--|--|--------------------------------|--------------------|
| | DIP Switch 1 | W915 (Y1 to Y2) Two-Stage Cooling | W951 (O to R) Heat Pumps | |
| 2 Heat / 2 Cool | OFF | Cut | Intact | |
| 2 Heat / 1 Cool | OFF | Intact | Intact | |

G60DF(X) Schematic Wiring Diagram



| BLOWER SPEED CHART | | | | |
|--------------------|------------------------------|------|-------|------------------------|
| UNIT | FACTORY CONNECTED SPEED TAPS | | | MOTOR SPEEDS AVAILABLE |
| | COOL | HEAT | PARK | |
| 36A-070 | YELLOW | RED | BROWN | 4 |
| 36B-090 | YELLOW | RED | BROWN | 4 |
| 48C-110 | YELLOW | RED | BROWN | 4 |

| BLOWER SPEED SELECTION | |
|------------------------|--------------------------|
| HI | 1 |
| SPEED TAPS | BLACK BROWN YELLOW RED 4 |

| JACKPLUG CHART | |
|----------------|----------------------------|
| J/P58 | JACK/PLUG-IGNITION CONTROL |
| J/P84 | JACK/PLUG-COMB AIR INDUCER |
| J/P35 | JACK/PLUG-SECONDARY LIMIT |
| J/P156 | JACK/PLUG-INDUCER/IGNITER |
| J/P159 | JACK/PLUG-IGNITER |

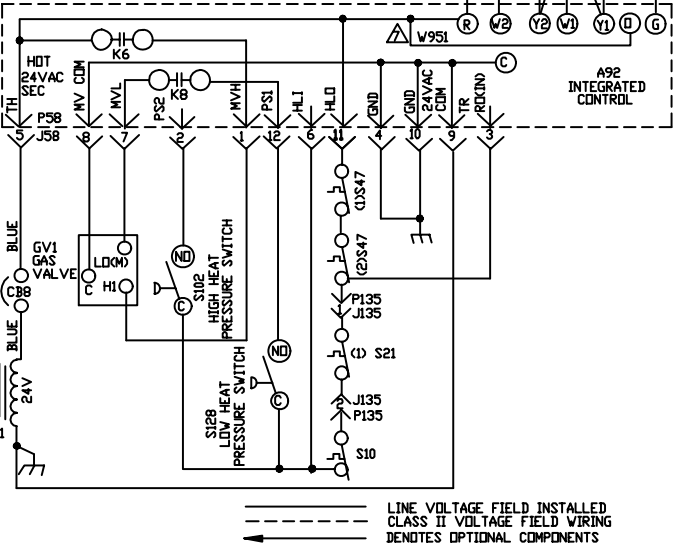
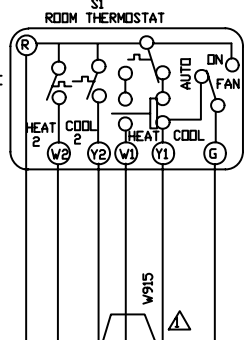
| THERMOSTAT HEAT ANTICIPATION SETTING | |
|--------------------------------------|-----------------|
| .65 AMP | HONEYWELL VALVE |

TYPICAL SYSTEM SHOWN FOR 2 HEAT/2 COOL WITH A CONVENTIONAL THERMOSTAT. SEE INSTALLATION INSTRUCTIONS FOR CONNECTION TO OTHER EQUIPMENT AND ACCESSORIES.

WARNING-
ELECTRIC SHOCK HAZARD, CAN CAUSE INJURY OR DEATH. UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING, INSULATION THICKNESS, AND TERMINATION.

- ⚠ JUMPER W915 FROM Y1 TO Y2 IS FACTORY INSTALLED AT A92 CONTROL BOARD. LEAVE IN FOR ONE STAGE COOL THERMOSTAT. CUT JUMPER Y1 TO Y2 FOR TWO STAGE COOL THERMOSTAT
- ⚠ FACTORY DEFAULT IS FOR A 2 STAGE THERMOSTAT
- ⚠ FIELD SUPPLIED ACC WIRE
- ⚠ USE COPPER CONDUCTORS ONLY
- ⚠ IMPORTANT - TO PREVENT MOTOR BURNDOUT, NEVER CONNECT MORE THAN ONE MOTOR LEAD TO ANY ONE CONNECTION.
- ⚠ PARK TERMINAL IS A UNPOWERED TERMINAL. ALL UNUSED MOTOR LEADS MUST BE WIRED TO THE PARK TERMINAL.
- ⚠ CUT W951 JUMPER FROM O TO R, LABELED "HEAT PUMP", AT A92 CONTROL BOARD, WHEN USED FOR DUAL FUEL APPLICATIONS.
- ⚠ TERMINAL #1 IS USED FOR ERROR CODE RECALL ONLY. SEE INSTALLATION INSTRUCTIONS FOR DETAILS.



— LINE VOLTAGE FIELD INSTALLED
 - - - CLASS II VOLTAGE FIELD WIRING
 ← DENOTES OPTIONAL COMPONENTS

FIGURE 17

TYPICAL FIELD WIRING DIAGRAM

WARNING-
ELECTRIC SHOCK HAZARD, CAN CAUSE INJURY OR DEATH. UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING, INSULATION THICKNESS, AND TERMINATION.

JUMPER W915 FROM Y1 TO Y2 IS FACTORY INSTALLED AT A92 CONTROL BOARD. LEAVE IN FOR ONE STAGE COOL THERMOSTAT. CUT JUMPER Y1 TO Y2 FOR TWO STAGE COOL THERMOSTAT

USE COPPER CONDUCTORS ONLY

IMPORTANT-
TO PREVENT MOTOR BURNOUT, NEVER CONNECT MORE THAN ONE MOTOR LEAD TO ANY ONE CONNECTION.

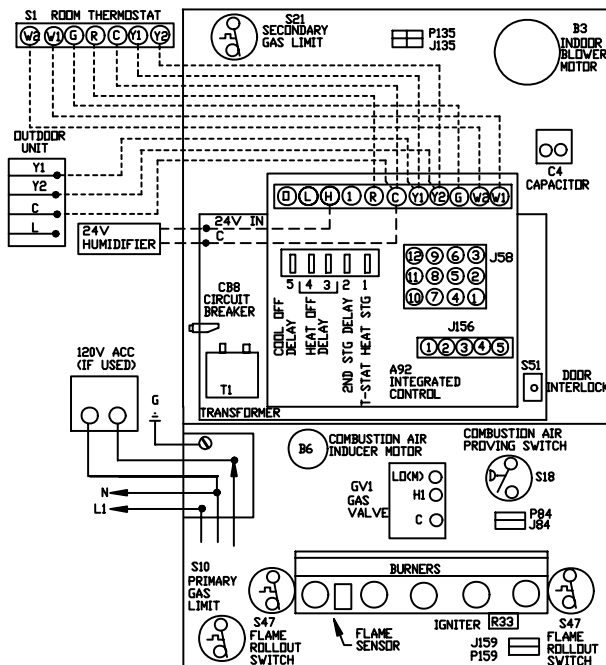


FIGURE 18

TWO-STAGE INTEGRATED CONTROL

1/4" QUICK CONNECT TERMINALS

HUM = 120 VAC OUTPUT TO HUMIDIFIER
 EAC = 120 VAC OUTPUT TO ELECTRONIC AIR CLEANER
 XMFR = 120 VAC OUTPUT TO TRANSFORMER
 L1 = 120 VAC INPUT TO CONTROL
 SENSE = 120 VAC OUTPUT TO FLAME SENSER

NEUTRALS = 120 VAC NEUTRAL

PARK = DEAD TERMINAL FOR UNUSED BLOWER LEAD
 HEAT LOW = 120 VAC OUTPUT TO CIRC BLWR -- LOW HT SPEED
 HEAT HIGH/ COOL LOW = 120 VAC OUTPUT TO CIRC BLWR -- HIGH HEAT AND LOW COOL SPEED
 COOL HIGH = 120 VAC OUTPUT TO CIRC BLWR -- HIGH COOL SPEED

THERMOSTAT CONNECTIONS (TB1)

W1 = HEAT DEMAND FROM 1ST STAGE T'STAT
 W2 = HEAT DEMAND FROM 2ND STAGE T'STAT
 G = MANUAL FAN FROM T'STAT
 Y2 = THERMOSTAT 2nd STAGE COOL SIGNAL
 Y1 = THERMOSTAT 1st STAGE COOL SIGNAL
 C = THERMOSTAT SIGNAL GROUND CONNECTED TO TRANSFORMER GROUND (TR) & CHASIS GROUND (GRD)
 R = CLASS 2 VOLTAGE TO THERMOSTAT
 1 = ERROR CODE RECALL
 H = 24V HUMIDIFIER OUTPUT
 L = LENNOX SYSTEM OPERATION MONITOR
 0 = THERMOSTAT SIGNAL TO HEAT PUMP REVERSING VALVE

DIP SWITCH FUNCTIONS

| DIP SWITCH(ES) | FUNCTION |
|-------------------------|---|
| 1 -- 2 Stage T'stat | Selects t'stat type (single or two-stage) |
| 2 -- 2nd Stage Delay | Second stage ON delay (single-stage t'stat) |
| 3 & 4 -- Heat Off Delay | Heating fan OFF delay |
| 5 -- Cool Off Delay | Cooling fan OFF delay |

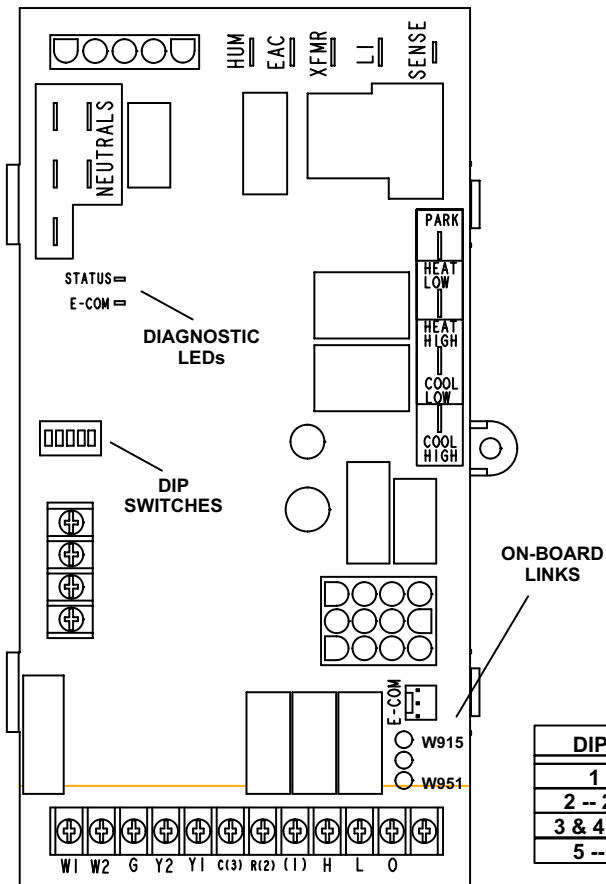


FIGURE 19

Integrated Control

G60DF units are equipped with a two-stage integrated control. This control manages ignition timing and fan off delays based on selections made using the control DIP switches. The control includes an internal watchdog feature which automatically resets the ignition control when it has been locked out. After one hour of continuous thermostat demand for heat, the watchdog will break and remake thermostat demand to the furnace and automatically reset the control to relight the furnace.

DIP Switch Settings

Switch 1 -- Thermostat Selection -- This unit may be used with either a single-stage or two-stage thermostat. The thermostat selection is made using a DIP switch which must be properly positioned for the particular application. The DIP switch is factory-positioned for use with a two-stage thermostat. If a single-stage thermostat is to be used, the DIP switch must be repositioned.

- a - Select "OFF" for two-stage heating operation controlled by a two-stage heating thermostat (factory setting);
- b - Select "ON" for two-stage heating operation controlled by a single-stage heating thermostat. This setting provides a timed delay before second-stage heat is initiated.

Switch 2 -- Second Stage Delay (Used with Single-Stage Thermostat Only) -- This switch is used to determine the second stage on delay when a single-stage thermostat is being used. The switch is factory-set in the OFF position, which provides a 10-minute delay before second-stage heat is initiated. If the switch is toggled to the ON position, it will provide a 15-minute delay before second-stage heat is initiated. This switch is only activated when the thermostat selector jumper is positioned for SINGLE-stage thermostat use.

Switches 3 and 4 -- Heating Blower-Off Delay -- The heating blower-on delay of 45 seconds is not adjustable. The heating blower-off delay (time that the blower operates after the heating demand has been satisfied) can be adjusted by moving switches 3 and 4 on the integrated control. The unit is shipped from the factory with a heating blower-off delay of 90 seconds. The heating blower off delay affects comfort and is adjustable to satisfy individual applications. Adjust the blower off delay to achieve a supply air temperature between 90° and 110°F at the exact moment that the blower is de-energized. Longer off delay settings provide lower supply air temperatures; shorter settings provide higher supply air temperatures. Table 13 provides the blower off timings that will result from different switch settings.

TABLE 13
Heating Blower-Off Delay Switch Settings

| Blower Off Delay (Seconds) | Switch 3 | Switch 4 |
|----------------------------|----------|----------|
| 60 | Off | On |
| 90 | Off | Off |
| 120 | On | Off |
| 180 | On | On |

Switch 5 -- Cooling Blower-Off Delay -- The cooling blower-off delay (time that the blower operates after the cooling demand has been satisfied) can be adjusted by moving switch 5 on the integrated control. The switch is factory-set in the OFF position, which provides a cooling blower-off delay of 45 seconds. If the switch is toggled to the ON position, it will provide a 2-second cooling blower-off delay

On-Board Link W951

On-board link W951 is a clippable connection between terminals R and O on the integrated control. W951 must be cut when the furnace is installed in applications which include a heat pump unit and a thermostat which features dual fuel use. If the link is left intact, terminal "O" will remain energized eliminating the HEAT MODE in the heat pump.

On-Board Link W915

On-board link W915 is a clippable connection between terminals Y1 and Y2 on the integrated control. W915 must be cut if two-stage cooling will be used. If the link is not cut the outdoor unit will operate in second-stage cooling only.

Unit Start-Up

FOR YOUR SAFETY READ BEFORE LIGHTING

⚠ WARNING

Do not use this furnace if any part has been underwater. A flood-damaged furnace is extremely dangerous. Attempts to use the furnace can result in fire or explosion. Immediately call a licensed professional service technician (or equivalent) to inspect the furnace and to replace all gas controls, control system parts, and electrical parts that have been wet or to replace the furnace, if deemed necessary.

⚠ WARNING



Danger of explosion. Can cause injury or product or property damage. Should the gas supply fail to shut off or if overheating occurs, shut off the gas valve to the furnace before shutting off the electrical supply.

⚠ CAUTION

Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch.

BEFORE LIGHTING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

The gas valve on the G60DF(X) unit may be equipped with either a gas control knob or gas control switch. Use only your hand to move the control switch or to turn the gas control knob. Never use tools. If the knob will not turn or if the control switch will not move by hand, do not try to repair it. Call a licensed professional service technician. Force or attempted repair may result in a fire or explosion.

Placing the furnace into operation:

G60DF(X) units are equipped with a n automatic ignition system. Do not attempt to manually light burners on these furnaces. Each time the thermostat calls for heat, the burners will automatically light. The ignitor does not get hot when there is no call for heat on units with this ignition system.

⚠ WARNING

If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or death.

Gas Valve Operation (Figures 20 and 21)

- 1 - **STOP!** Read the safety information at the beginning of this section.
- 2 - Set the thermostat to the lowest setting.
- 3 - Turn off all electrical power to the unit.
- 4 - This furnace is equipped with an ignition device which automatically lights the burners. Do **not** try to light the burners by hand.
- 5 - Remove the upper access panel.
- 6 - *White Rodgers 36E Gas Valve* - Move gas valve control switch to **OFF**. See figure 20.
Honeywell VR8205 Gas Valve - Turn knob on gas valve clockwise ↻ to **OFF**. Do not force. See figure 21.
- 7 - Wait five minutes to clear out any gas. If you then smell gas, **STOP!** Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions. If you do not smell gas go to next step.

- 8 - *White Rodgers 36E Gas Valve* - Move gas valve control switch to **ON**. See figure 20.
Honeywell VR8205 Gas Valve - Turn knob on gas valve counterclockwise ↻ to **ON**. Do not force. See figure 21.
- 9 - Replace the upper access panel.

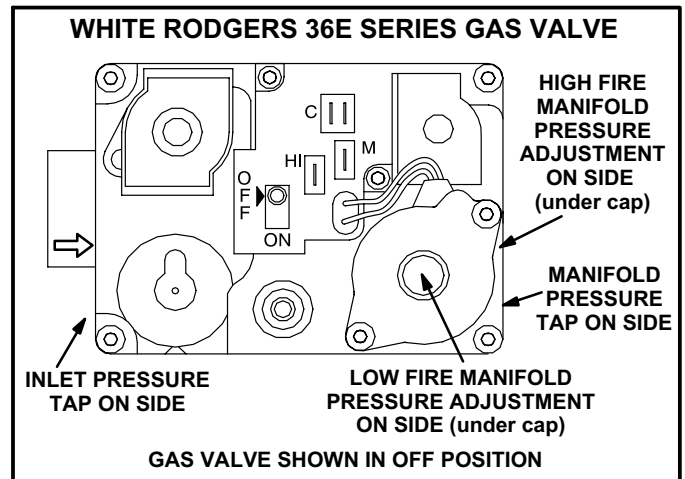


FIGURE 20

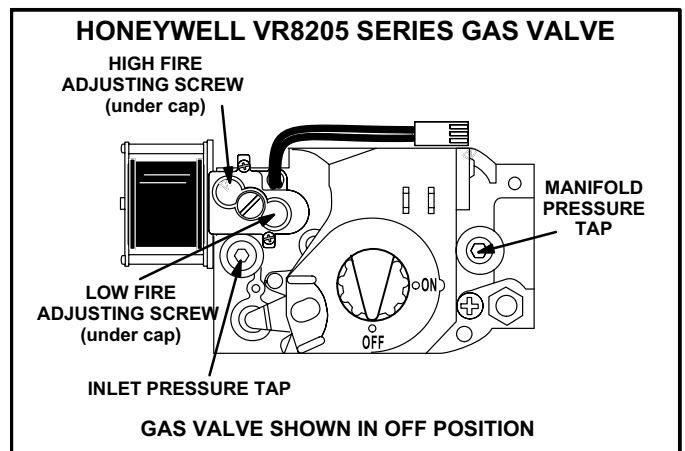


FIGURE 21

- 10- Turn on all electrical power to the unit.
 - 11- Set the thermostat to desired setting.
- NOTE - When unit is initially started, steps 1 through 11 may need to be repeated to purge air from gas line.*
- 12- If the appliance will not operate, follow the instructions "Turning Off Gas to Unit" and call the gas supplier.

Turning Off Gas to Unit

- 1 - Set the thermostat to the lowest setting.
- 2 - Turn off all electrical power to the unit if service is to be performed.
- 3 - Remove the upper access panel.
- 4 - *White Rodgers 36E Gas Valve* - Move gas valve control switch to **OFF**.
Honeywell VR8205 Gas Valve - Turn knob on gas valve clockwise ↻ to **OFF**. Do not force.
- 5 - Replace the upper access panel.

Gas Pressure Adjustment

Gas Flow (Approximate)

- Operate unit at least 15 minutes before checking gas flow. Determine the time in seconds for one revolutions of gas through the meter. A portable LP gas meter (17Y44) is available for LP applications.

TABLE 14

| Gas Flow Rate (Ft. ³ /Hr.) | | |
|---------------------------------------|----------------|--------------|
| Seconds for 1 Revolution | Gas Meter Size | |
| | 1/2 cu ft Dial | 1 cu ft Dial |
| 10 | 180 | 360 |
| 12 | 150 | 300 |
| 14 | 129 | 257 |
| 16 | 113 | 225 |
| 18 | 100 | 200 |
| 20 | 90 | 180 |
| 22 | 82 | 164 |
| 24 | 75 | 150 |
| 26 | 69 | 138 |
| 28 | 64 | 129 |
| 30 | 60 | 120 |
| 32 | 56 | 113 |
| 34 | 53 | 106 |
| 36 | 50 | 100 |
| 38 | 47 | 95 |
| 40 | 45 | 90 |
| 42 | 43 | 86 |
| 44 | 41 | 82 |
| 46 | 39 | 78 |
| 48 | 38 | 75 |
| 50 | 36 | 72 |
| 52 | 35 | 69 |
| 54 | 33 | 67 |
| 56 | 32 | 64 |
| 58 | 31 | 62 |
| 60 | 30 | 60 |

- Compare the number of seconds and the gas meter size in table 14 to determine the gas flow rate. Multiply the gas flow rate by the heating value to determine the unit input rate. If manifold pressure is correct and the unit input rate is incorrect, check gas orifices for proper size and restriction.

- Remove temporary gas meter if installed.

NOTE - To obtain accurate reading, shut off all other gas appliances connected to meter.

Gas Pressure

- Check the gas line pressure with the unit firing at maximum rate. A minimum of 4.5 in. w.c. for natural gas or 11.0 in. w.c. for LP/propane gas should be maintained.
- After the line pressure has been checked and adjusted, check the low fire and high fire manifold pressures. See figures 20 and 21 for the location of the manifold pressure adjustment screws. Low and high fire manifold pressures are given in table 15. A natural gas to LP/propane gas changeover kit is required to convert the unit.

High Altitude Information

Refer to table 15 for high altitude requirements and manifold pressure settings at all altitudes.

NOTE - In Canada, certification for installations at elevations over 4500 feet (1372 m) is the jurisdiction of local authorities.

NOTE - A natural to L.P. propane gas changeover kit is necessary to convert this unit. Refer to the changeover kit installation instruction for the conversion procedure.

TABLE 15
High Altitude Requirements / Manifold Pressure Settings

| Model Input Size | Gas | Altitude | | | | Manifold Pressure at all altitudes | | | |
|---------------------|------|------------------------------|-----------------|------------------------------------|-----------------|------------------------------------|------|-----------|------|
| | | 0 - 7500 ft. (0 - 2285 m) | | 7501-10,000 ft. (2286 - 3048 m) | | Low Fire | | High Fire | |
| | | Required Conversion Kit | Pressure Switch | Required Conversion Kit | Pressure Switch | in. w.g. | kPa | in. w.g. | kPa |
| | | | | | | | | | |
| -070, -090, -110 | Nat. | N/A | No Change | 44W51 | 44W31 | 1.7 | 0.42 | 3.5 | 0.87 |
| | LPG | 44W48 | No Change | 44W50 | 44W31 | 4.9 | 1.22 | 10.0 | 2.5 |

Pressure switch is factory set. No adjustment necessary. All models use the factory installed pressure switch from 0-7500 feet (0-2285 m).

Other Unit Adjustments

Primary and Secondary Limits

The primary limit is located on the heating compartment vestibule panel. The secondary limits (if equipped) are located in the blower compartment, attached to the back side of the blower. These limits are factory set and require no adjustment.

Flame Rollout Switches (Two)

These manually reset switches are located on (or inside of) the burner box. If tripped, check for adequate combustion air before resetting.

Pressure Switches

The pressure switch assembly (includes two switches) is located in the heating compartment adjacent to the combustion air inducer. These switches check for proper combustion air inducer operation before allowing ignition trial. The switches are factory-set and require no adjustment.

Temperature Rise

Unit must be adjusted for the temperature rise range and within the allowable external static pressure as listed on unit nameplate.

Place the unit into operation with a second-stage heating demand. After supply and return air temperatures have stabilized, check the temperature rise. If necessary, adjust the heating blower speed to maintain the temperature rise within the range shown on the unit nameplate. Increase the blower speed to decrease the temperature rise. Decrease the blower speed to increase the temperature rise. Failure to properly adjust the temperature rise may cause erratic limit operation and may result in premature heat exchanger failure.

Blower Speeds

NOTE - CFM ratings are taken external to unit with a dry evaporator coil and without accessories. See blower performance data on page 30.

Thermostat Heat Anticipation

Set the heat anticipator setting (if adjustable) according to the amp draw listed on the wiring diagram that is attached to the unit.

Electrical

- 1 - Check all wiring for loose connections.
- 2 - Check for the correct voltage at the furnace (furnace operating).
- 3 - Check amp-draw on the blower motor.
Motor Nameplate _____ Actual _____

NOTE - Do not secure the electrical conduit directly to the air ducts or structure.

Electronic Ignition

The two-stage integrated control used in G60DF units has an added feature of an internal Watchguard control. The feature serves as an automatic reset device for ignition control lockout caused by ignition failure. This type of lockout is usually due to low gas line pressure. After one hour of continuous thermostat demand for heat, the Watchguard will break and remake thermostat demand to the furnace and automatically reset the control to begin the ignition sequence.

Flue And Chimney

- 1 - Check flue pipe, chimney and all connections for tightness and to make sure there is no blockage.
- 2 - Check unit for proper draft.
- 3 - Is pressure switch closed? Obstructed flue will cause unit to shut off at pressure switch. Check flue and outlet for blockages.
- 4 - Reset manual flame rollout switches on burner box.

Failure To Operate

If the unit fails to operate, check the following:

- 1 - Is the thermostat calling for heat?
- 2 - Are access panels securely in place?
- 3 - Is the main disconnect switch closed?
- 4 - Is there a blown fuse or tripped circuit breaker?
- 5 - Is the filter dirty or plugged? Dirty or plugged filters will cause the limit control to shut the unit off.
- 6 - Is gas turned on at the meter?
- 7 - Is the manual main shut-off valve open?
- 8 - Is the internal manual shut-off valve open?
- 9 - Is the unit ignition system in lock out? If the unit locks out again, inspect the unit for blockages.

Blower Performance Data

G60DF-36A-070X PERFORMANCE

| External Static Pressure in. w.g. | Air Volume / Watts at Different Blower Speeds | | | | | | | |
|--------------------------------------|---|------|-------------|------|------------|------|-----|------|
| | High | | Medium-High | | Medium-Low | | Low | |
| | cfm | Watt | cfm | Watt | cfm | Watt | cfm | Watt |
| 0.00 | 1475 | 616 | 1345 | 554 | 1150 | 495 | 990 | 415 |
| 0.05 | 1450 | 606 | 1320 | 543 | 1140 | 481 | 985 | 407 |
| 0.10 | 1425 | 595 | 1300 | 532 | 1125 | 466 | 975 | 398 |
| 0.15 | 1395 | 585 | 1275 | 521 | 1115 | 452 | 970 | 390 |
| 0.20 | 1375 | 574 | 1255 | 510 | 1105 | 437 | 965 | 381 |
| 0.25 | 1345 | 563 | 1230 | 494 | 1090 | 428 | 955 | 371 |
| 0.30 | 1320 | 552 | 1205 | 478 | 1075 | 418 | 945 | 360 |
| 0.40 | 1250 | 528 | 1150 | 455 | 1040 | 395 | 920 | 346 |
| 0.50 | 1200 | 508 | 1095 | 432 | 1000 | 374 | 880 | 331 |
| 0.60 | 1110 | 475 | 1035 | 409 | 950 | 354 | 830 | 313 |
| 0.70 | 1030 | 455 | 970 | 390 | 855 | 338 | 720 | 280 |
| 0.80 | 960 | 434 | 875 | 359 | 735 | 299 | 665 | 266 |
| 0.90 | 770 | 389 | 715 | 321 | 665 | 278 | 590 | 244 |

G60DF-36B-090 PERFORMANCE

| External Static Pressure in. w.g. | Air Volume / Watts at Different Blower Speeds | | | | | | | |
|--------------------------------------|---|------|-------------|------|------------|------|-----|------|
| | High | | Medium-High | | Medium-Low | | Low | |
| | cfm | Watt | cfm | Watt | cfm | Watt | cfm | Watt |
| 0.00 | 1600 | 608 | 1410 | 526 | 1165 | 436 | 965 | 355 |
| 0.05 | 1580 | 599 | 1400 | 518 | 1165 | 428 | 965 | 351 |
| 0.10 | 1560 | 589 | 1390 | 509 | 1160 | 420 | 970 | 346 |
| 0.15 | 1530 | 573 | 1370 | 497 | 1155 | 413 | 965 | 341 |
| 0.20 | 1495 | 556 | 1350 | 485 | 1150 | 406 | 965 | 335 |
| 0.25 | 1465 | 544 | 1325 | 473 | 1135 | 398 | 955 | 329 |
| 0.30 | 1430 | 532 | 1300 | 460 | 1125 | 389 | 945 | 323 |
| 0.40 | 1370 | 509 | 1250 | 438 | 1095 | 373 | 935 | 313 |
| 0.50 | 1295 | 482 | 1200 | 420 | 1055 | 355 | 900 | 302 |
| 0.60 | 1215 | 456 | 1140 | 397 | 1010 | 343 | 860 | 285 |
| 0.70 | 1140 | 437 | 1055 | 371 | 915 | 313 | 800 | 272 |
| 0.80 | 1000 | 401 | 950 | 342 | 850 | 295 | 730 | 251 |
| 0.90 | 900 | 374 | 820 | 313 | 740 | 272 | --- | --- |

NOTE - All air data is measured external to unit with 1 in. (25 mm) cleanable filter (not furnished - field provided) in place.

G60DF-48C-110 PERFORMANCE

| External Static Pressure in. w.g. | Air Volume / Watts at Different Blower Speeds | | | | | | | |
|--------------------------------------|---|-------|-------------|-------|------------|-------|------|-------|
| | High | | Medium-High | | Medium-Low | | Low | |
| | cfm | Watts | cfm | Watts | cfm | Watts | cfm | Watts |
| 0.00 | 2035 | 846 | 1790 | 712 | 1510 | 595 | 1225 | 477 |
| 0.05 | 2000 | 825 | 1760 | 694 | 1495 | 581 | 1225 | 470 |
| 0.10 | 1970 | 803 | 1730 | 675 | 1475 | 567 | 1220 | 463 |
| 0.15 | 1925 | 781 | 1710 | 657 | 1475 | 555 | 1220 | 455 |
| 0.20 | 1880 | 758 | 1685 | 638 | 1465 | 542 | 1215 | 447 |
| 0.25 | 1835 | 736 | 1655 | 618 | 1440 | 528 | 1200 | 437 |
| 0.30 | 1795 | 714 | 1625 | 597 | 1420 | 514 | 1185 | 427 |
| 0.40 | 1680 | 669 | 1550 | 564 | 1360 | 483 | 1135 | 400 |
| 0.50 | 1620 | 630 | 1445 | 524 | 1280 | 447 | 1065 | 371 |
| 0.60 | 1445 | 592 | 1310 | 479 | 1165 | 404 | 1000 | 343 |
| 0.70 | 1290 | 545 | 1180 | 434 | 1055 | 369 | 905 | 319 |
| 0.80 | 1155 | 502 | 1065 | 406 | 955 | 348 | 815 | 296 |
| 0.90 | 1010 | 472 | 930 | 372 | 840 | 320 | 690 | 265 |

NOTE - All air data is measured external to unit with 1 in. (25 mm) cleanable filter (not furnished - field provided) in place.

Heating Sequence of Operation

NOTE - The thermostat jumper on the integrated control is factory-set in the "TWO-STAGE" position.

Applications Using a Two-Stage Thermostat

A - Heating Sequence -- Control Thermostat Selection DIP switch in "Two-Stage" Position (Factory Setting)

- 1 - On a call for heat, thermostat first-stage contacts close sending a signal to the integrated control. The integrated control runs a self-diagnostic program and checks high temperature limit switches for normally closed contacts and pressure switches for normally open contacts. The combustion air inducer is energized at low speed and the humidifier terminal is energized.
- 2 - Once the control receives a signal that the low pressure switch has closed, the combustion air inducer begins a 15-second pre-purge in low speed.
- 3 - After the pre-purge is complete, a 20-second initial ignitor warm-up period begins. The combustion air inducer continues to operate at low speed.
- 4 - After the 20-second warm-up period has ended, the gas valve is energized on low fire (first stage) and ignition occurs. At the same time, the control module sends a signal to begin an indoor blower 45-second ON-delay. When the delay ends, the indoor blower motor is energized on the low fire heating speed. The furnace will continue this operation as long as the thermostat has a first-stage heating demand.
- 5 - If second-stage heat is required, the thermostat second-stage heat contacts close and send a signal to the integrated control. The integrated control initiates a 30-second second-stage recognition delay.
- 6 - At the end of the recognition delay, the integrated control energizes the combustion air inducer at high speed. The control also checks the high-fire (second stage) pressure switch to make sure it is closed. The high-fire (second stage) gas valve is energized and the indoor blower motor is energized for operation at the high-fire heating speed.
- 7 - When the demand for high-fire (second stage) heat is satisfied, the combustion air inducer is switched to the low-fire heating speed and the high-fire (second stage) gas valve is de-energized. The low-fire (first stage) gas valve continues operation. The indoor blower motor is switched to the low-fire heating speed.
- 8 - When the thermostat demand for low-fire (first stage) heat is satisfied, the gas valve is de-energized and the field-selected indoor blower off delay begins. The combustion air inducer begins a 5-second post-purge period.

- 9 - When the combustion air post-purge period is complete, the inducer and humidifier terminal are de-energized. The indoor blower is de-energized at the end of the off delay.

Applications Using A Single-Stage Thermostat

B - Heating Sequence -- Integrated Control Thermostat Selection DIP switch in "Single-Stage" Position

NOTE - In these applications, two-stage heat will be initiated by the integrated control if heating demand has not been satisfied after the field adjustable period (10 or 15 minutes).

- 1 - On a call for heat, thermostat first-stage contacts close sending a signal to the integrated control. The integrated control runs a self-diagnostic program and checks high temperature limit switches for normally closed contacts and pressure switches for normally open contacts. The combustion air inducer is energized at low speed and the humidifier terminal is energized.
- 2 - Once the control receives a signal that the low pressure switch has closed, the combustion air inducer begins a 15-second pre-purge in low speed.
- 3 - After the pre-purge is complete, a 20-second initial ignitor warm-up period begins. The combustion air inducer continues to operate at low speed.
- 4 - After the 20-second warm-up period has ended, the gas valve is energized on low fire (first stage) and ignition occurs. At the same time, the control module sends a signal to begin an indoor blower 45-second ON-delay. When the delay ends, the indoor blower motor is energized on the low-fire heating speed. The integrated control also initiates a second-stage on delay (factory-set at 10 minutes; adjustable to 15 minutes).
- 5 - If the heating demand continues beyond the second-stage on delay, the integrated control energizes the combustion air inducer at high speed. The control also checks the high-fire (second stage) pressure switch to make sure it is closed. The high-fire (second stage) gas valve is energized and the indoor blower motor is energized for operation at the high-fire heating speed.
- 6 - When the thermostat heating demand is satisfied, the combustion air inducer begins a 5-second post-purge. The field-selected indoor blower off delay begins.
- 7 - When the combustion air post-purge period is complete, the inducer and humidifier terminal are de-energized. The indoor blower is de-energized at the end of the off delay.

Service

⚠ WARNING

Disconnect power before servicing unit.

⚠ CAUTION

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

At the beginning of each heating season, a licensed professional technician (or equivalent) should check the system as follows:

Blower

Check the blower wheel for debris and clean if necessary. The blower motors are prelubricated for extended bearing life. No further lubrication is needed.

⚠ WARNING

The blower access panel must be securely in place when the blower and burners are operating. Gas fumes, which could contain carbon monoxide, can be drawn into living space resulting in personal injury or death.

Filters

All G60DF(X) filters are installed external to the unit. Filters should be inspected monthly. Clean or replace the filters when necessary to ensure that the furnace operates properly. Replacement filters must be rated for high velocity air-flow. Table 3 lists recommended filter sizes.

Flue And Chimney

Check the flue pipe, chimney and all connections for tightness and to make sure there is no blockage.

Electrical

- 1 - Check all wiring for loose connections.
- 2 - Check for the correct voltage at the furnace (furnace operating).
- 3 - Check amp-draw on the blower motor.
Motor Nameplate _____ Actual _____

Cleaning the Heat Exchanger and Burners

NOTE - Use papers or protective covering in front of the furnace during cleaning.

Cleaning the heat exchanger requires a steel spring "snake," a reversible drill and a vacuum cleaner. The steel spring snake may be constructed by purchasing a 4 ft. long by 1/4 inch diameter steel wire cable and a 1/4 inch diameter wire brush. These items are available at a hardware store. Insert wire end of brush into the open end of the

spring cable. Crimp the cable around the brush so that the brush is secured and will not come off during cleaning. Attach the other end of the cable to the reversible drill to complete the tool for cleaning the heat exchanger.

- 1 - Turn off both electrical and gas power supplies to furnace.
- 2 - Remove flue pipe and top cap from the unit. Label the pressure switch wires, then disconnect them.
- 3 - Remove the four screws that secure the combustion air inducer. Carefully remove the combustion air inducer to avoid damaging blower gasket. If gasket is damaged, it must be replaced to prevent leakage. See figure 1.
- 4 - Remove the collector box located behind the combustion air inducer. Be careful with the collector box gasket. If the gasket is damaged, it must be replaced to prevent leakage.
- 5 - Label the wires from gas valve and rollout switches, then disconnect them.
- 6 - Disconnect gas supply piping. Remove six screws securing the burner box / manifold assembly to the vestibule panel and remove the assembly from the unit. Take care not to damage the gasket.
- 7 - **NOx units only** - Remove the three screws that attach the NOx insert to the corbel at the entrance to each heat exchanger section. Carefully remove the NOx insert from each section. See figure 23.
- 8 - Insert the brush end of cable snake into the top of one of the heat exchanger openings. **Do not force the cable into the heat exchanger.** Insert the cable and operate the drill on slow speed. Move the cable in and out of the heat exchanger section three or four times or until sufficient cleaning is accomplished. Reverse drill and slowly work the cable out of opening.
- 9 - Repeat procedure for each heat exchanger section.
- 10- After each of the top heat exchanger sections has been cleaned, insert the brush end of the cable snake into the bottom openings of each of the heat exchanger sections and clean as described in step 8.
- 11- Remove the cable from the heat exchanger. Use a vacuum cleaner to remove debris knocked loose during cleaning.
- 12- Attach the exhaust end (positive pressure) of the vacuum cleaner to the top of the heat exchanger section. Any loose debris will be forced to the bottom of the heat exchanger section. Vacuum debris from bottom openings.
- 13- Replace collector box and combustion air inducer. Check gaskets for damage. Damaged gaskets must be replaced to avoid heat exchanger leaks. Replace all screws to the collector box and combustion air inducer. Failure to replace all screws may cause leaks.
- 14- To clean the burner, run a vacuum cleaner with a soft brush attachment over the face of burners. Visually inspect inside the burners and crossovers for any blockage caused by foreign matter. Remove any blockage.

G60DF(X) COMBUSTION AIR INDUCER, BURNER & HEAT EXCHANGER REMOVAL

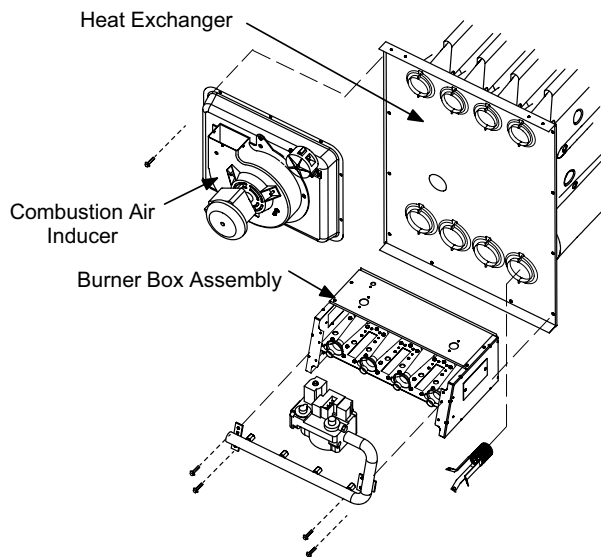


FIGURE 22

NOx INSERTS (X models only)

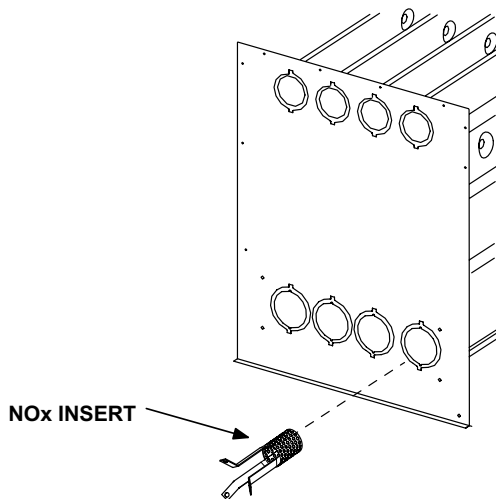


FIGURE 23

- 15- **NOx units only** - Reattach the NOx inserts to the corbels at the entrance to each heat exchanger opening. See figure 23.
- 16- Re-install burner box / manifold assembly onto the vestibule panel.
- 17- Reconnect wires to pressure switch, roll-out switches, gas valve and combustion air inducer. Refer to unit wiring diagram.
- 18- Re-install top cap and re-secure vent pipe to combustion air inducer outlet.

- 19- Reconnect gas supply piping.
- 20- Turn on power and gas supply to unit.
- 21- Set thermostat and check for proper operation.
- 22- Check all piping connections, factory and field, for gas leaks. Use a leak detecting solution or other preferred means.

⚠ CAUTION

Some soaps used for leak detection are corrosive to certain metals. Carefully rinse piping thoroughly after leak test has been completed. Do not use matches, candles, flame or other sources of ignition to check for gas leaks.

- 23- If a leak is detected, shut gas and electricity off and repair leak.
- 24- Repeat steps 23 and 24 until no leaks are detected.
- 25- Replace front access panel.

Planned Service

The service technician should check the following during an annual inspection. Power to the unit must be shut off for the service technician's safety.

Fresh air grilles and louvers (on the unit and in the room where the furnace is installed) - Must be open and unobstructed to provide combustion air.

Burners - Must be inspected for rust, dirt, or signs of water.

Vent pipe - Must be inspected for signs of water, damaged or sagging pipe, or disconnected joints.

Unit appearance - Must be inspected for rust, dirt, signs of water, burnt or damaged wires, or components.

Blower access door - Must be properly in place and provide a seal between the return air and the room where the furnace is installed.

Return air duct - Must be properly attached and provide an air seal to the unit.

Operating performance - Unit must be observed during operation to monitor proper performance of the unit and the vent system.

Combustion gases - Flue products must be analyzed and compared to the unit specifications.

Problems detected during the inspection may make it necessary to temporarily shut down the furnace until the items can be repaired or replaced.

Instruct the homeowners to pay attention to their furnace. Situations can arise between annual furnace inspections that may result in unsafe operation.

Integrated Control Diagnostic Codes

| FLASH CODE (X + Y) | STATUS / ERROR DESCRIPTION |
|--------------------------------|--|
| FLASH CODE DESCRIPTIONS | |
| Pulse | A 1/4 second flash followed by four seconds of off time. |
| Heartbeat | Constant 1/2 second bright and 1/2 second dim cycles. |
| X + Y | LED flashes X times at 2Hz, remains off for two seconds, flashes Y times at 2Hz, remains off for four seconds, then repeats. |
| Pulse | Power on - Standby. |
| Heartbeat | Normal operation - signaled when heating demand initiated at thermostat. |
| FLAME CODES | |
| 1 + 2 | Low flame current -- run mode. |
| 1 + 3 | Flame sensed out of sequence -- flame still present. |
| PRESSURE SWITCH CODES | |
| 2 + 3 | Low pressure switch failed open. |
| 2 + 4 | Low pressure switch failed closed. |
| 2 + 5 | High pressure switch failed open. |
| 2 + 6 | High pressure switch failed closed. |
| 2 + 7 | Low pressure switch opened during ignition trial or heating demand. |
| LIMIT CODE | |
| 3 + 1 | Limit switch open. |
| WATCHGUARD CODES | |
| 4 + 1 | Watchguard -- Exceeded maximum number of retries. |
| 4 + 2 | Watchguard -- Exceeded maximum number of retries or last retry was due to pressure switch opening. |
| 4 + 3 | Watchguard -- Exceeded maximum number of retries or last retry was due to flame failure. |
| 4 + 5 | Watchguard -- Limit remained open longer than three minutes. |
| 4 + 6 | Watchguard -- Flame sensed out of sequence; flame signal gone. |
| 4 + 7 | Ignitor circuit fault -- Failed ignitor or triggering circuitry. |
| 4 + 8 | Low line voltage. |
| HARD LOCKOUT CODES | |
| 5 + 1 | Hard lockout -- Rollout circuit open or previously opened. |
| 5 + 2 | Control failed self check, internal error (control will restart if error recovers). |
| 5 + 3 | No Earth ground (control will restart if error recovers). |
| 5 + 4 | Reversed line voltage polarity (control will restart if the error recovers). |
| 5 + 6 | Low secondary (24VAC) voltage. |

Error Code Storage

The ignition control stores the last ten error codes in memory. The codes are retained in case of power loss.

Error Code Review

- 1 - Short R (2) to (1). Within 1/2 second, the STATUS LED will stay lit continuously to indicate that the short was sensed.
- 2 - Continue to hold the short between R (2) to (1). After 5 seconds, STATUS LED will go from being continuously lit to off. This indicates that error code review is pending.
- 3 - Remove R (2) to (1) short within ten seconds of STATUS LED turning off. This activates error code review.
- 4 - Last ten error codes will be flashed on the STATUS LED.

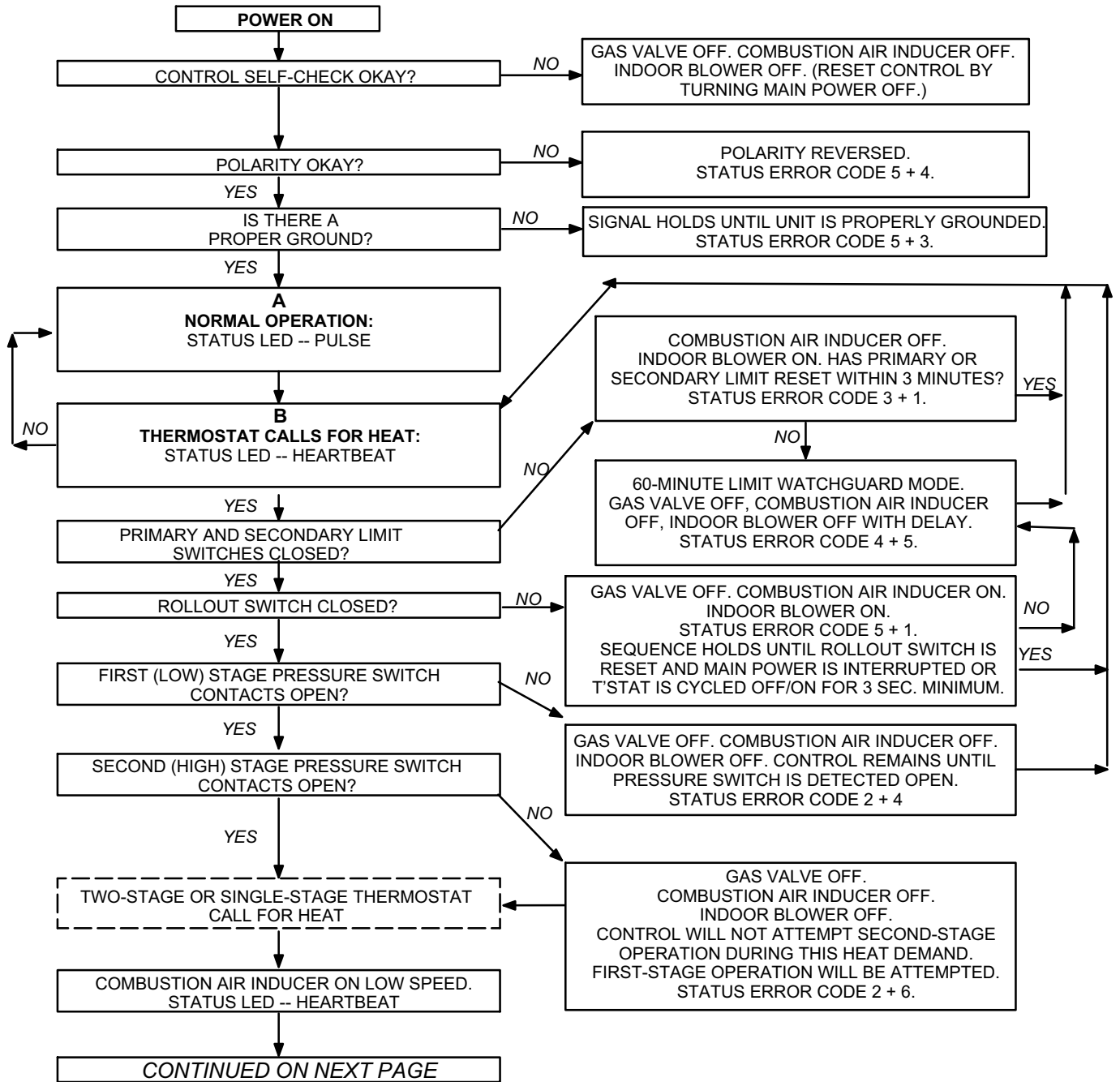
- 5 - After final error code is indicated, STATUS LED will flash to indicate normal operation.

Clearing Error Codes

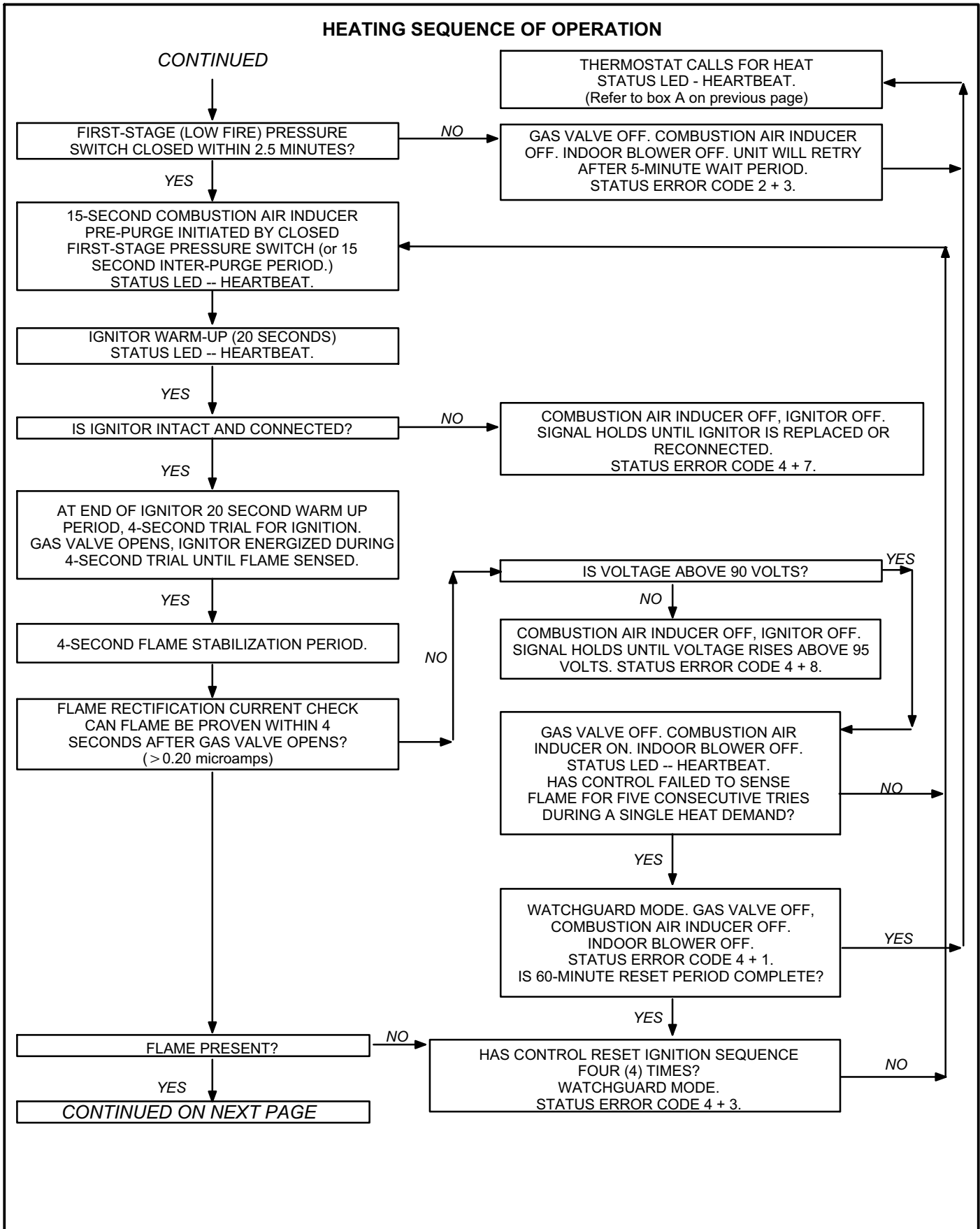
- 1 - Short R (2) to (1). Within 1/2 second, the STATUS LED will stay lit continuously to indicate that the short was sensed.
- 2 - Continue to hold the short between R (2) to (1). After 5 seconds, STATUS LED will go from being continuously lit to off.
- 3 - Continue to hold the short between R (2) to (1) beyond ten seconds after STATUS LED has turned off. STATUS LED will turn on, indicating that error codes have been cleared.
- 4 - Remove R (2) to (1) short. STATUS LED will flash to indicate normal operation.

Troubleshooting: Heating Sequence of Operation

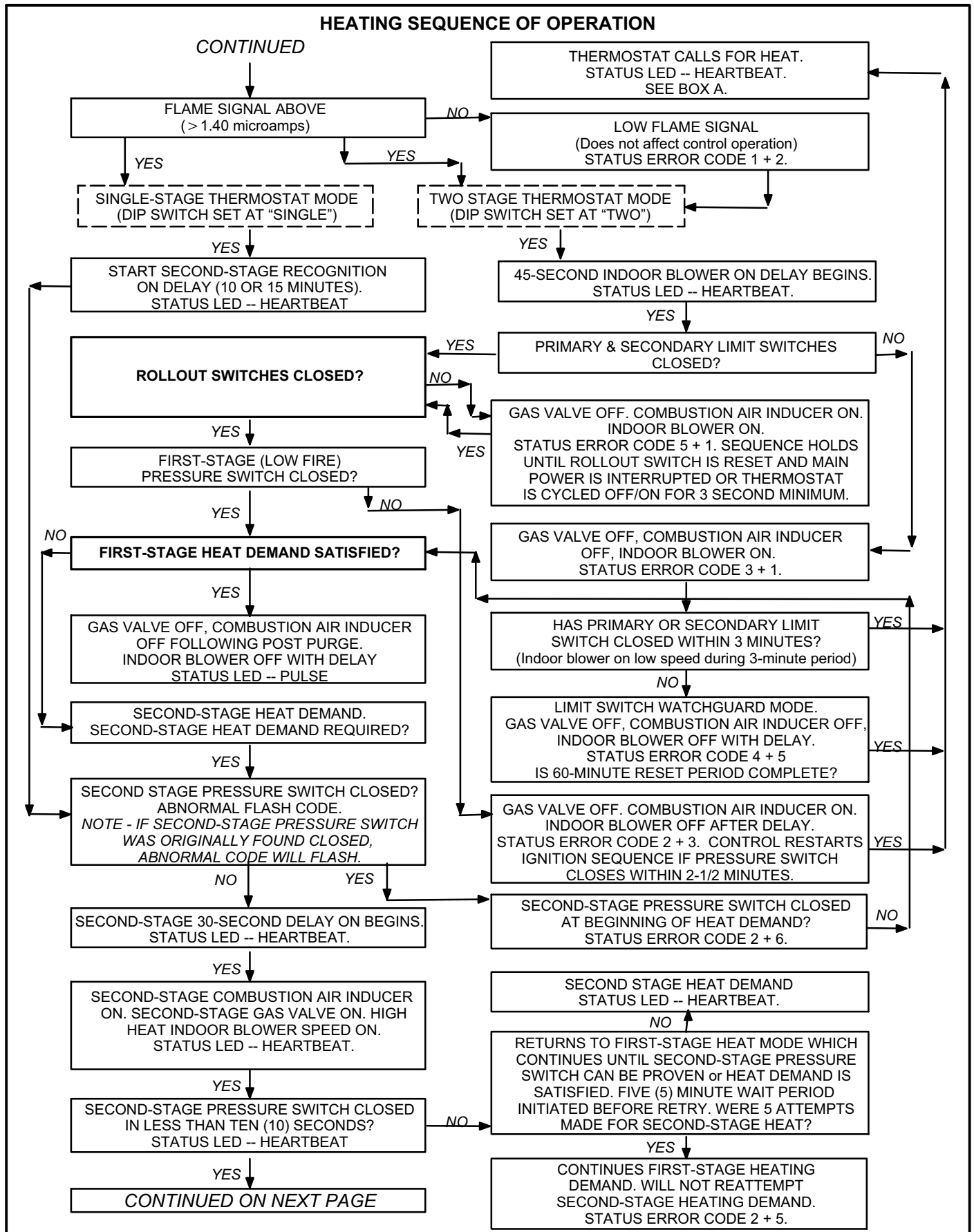
HEATING SEQUENCE OF OPERATION NORMAL AND ABNORMAL HEATING MODE



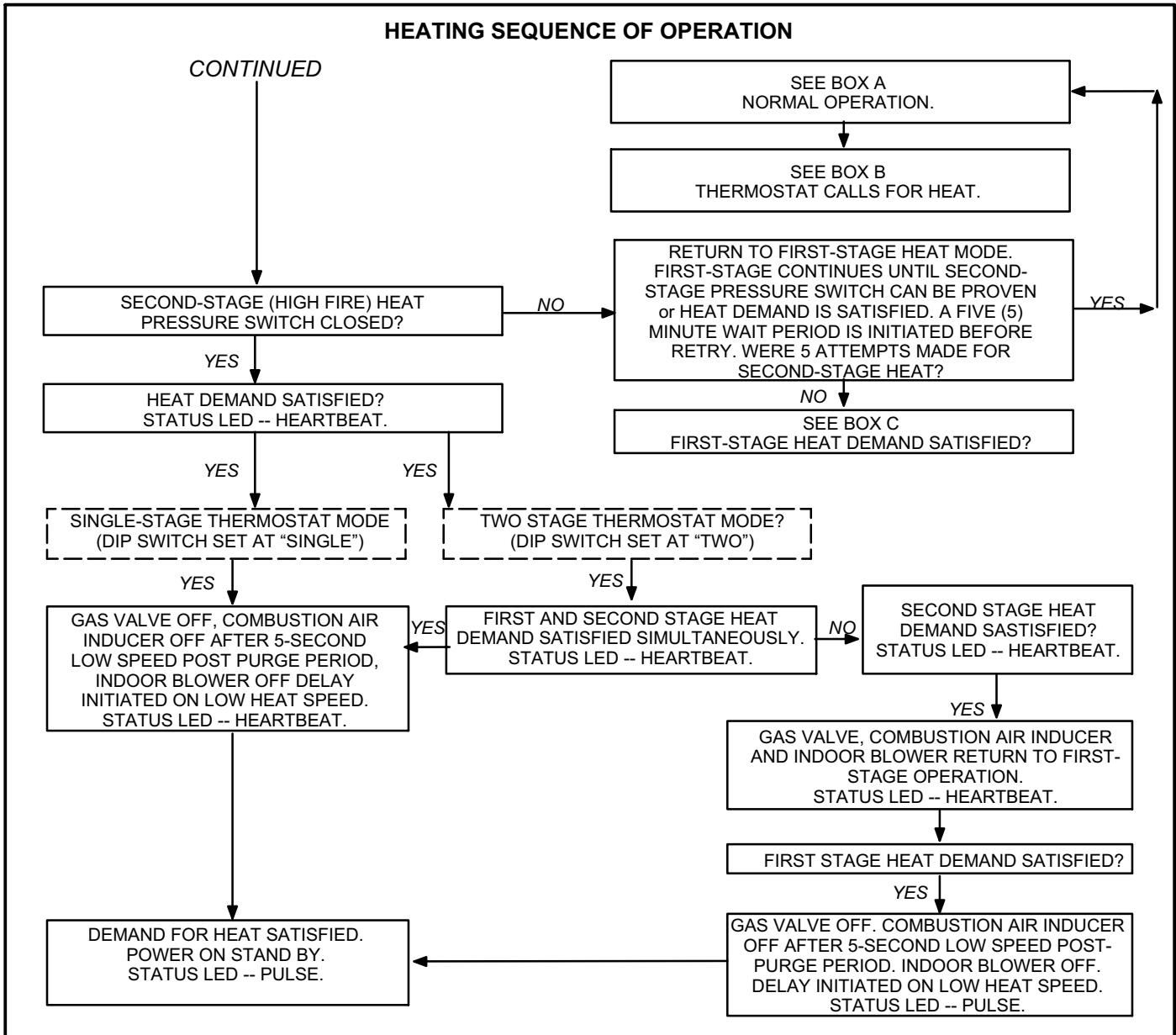
Troubleshooting: Heating Sequence of Operation (Continued)



Troubleshooting: Heating Sequence of Operation (Continued)

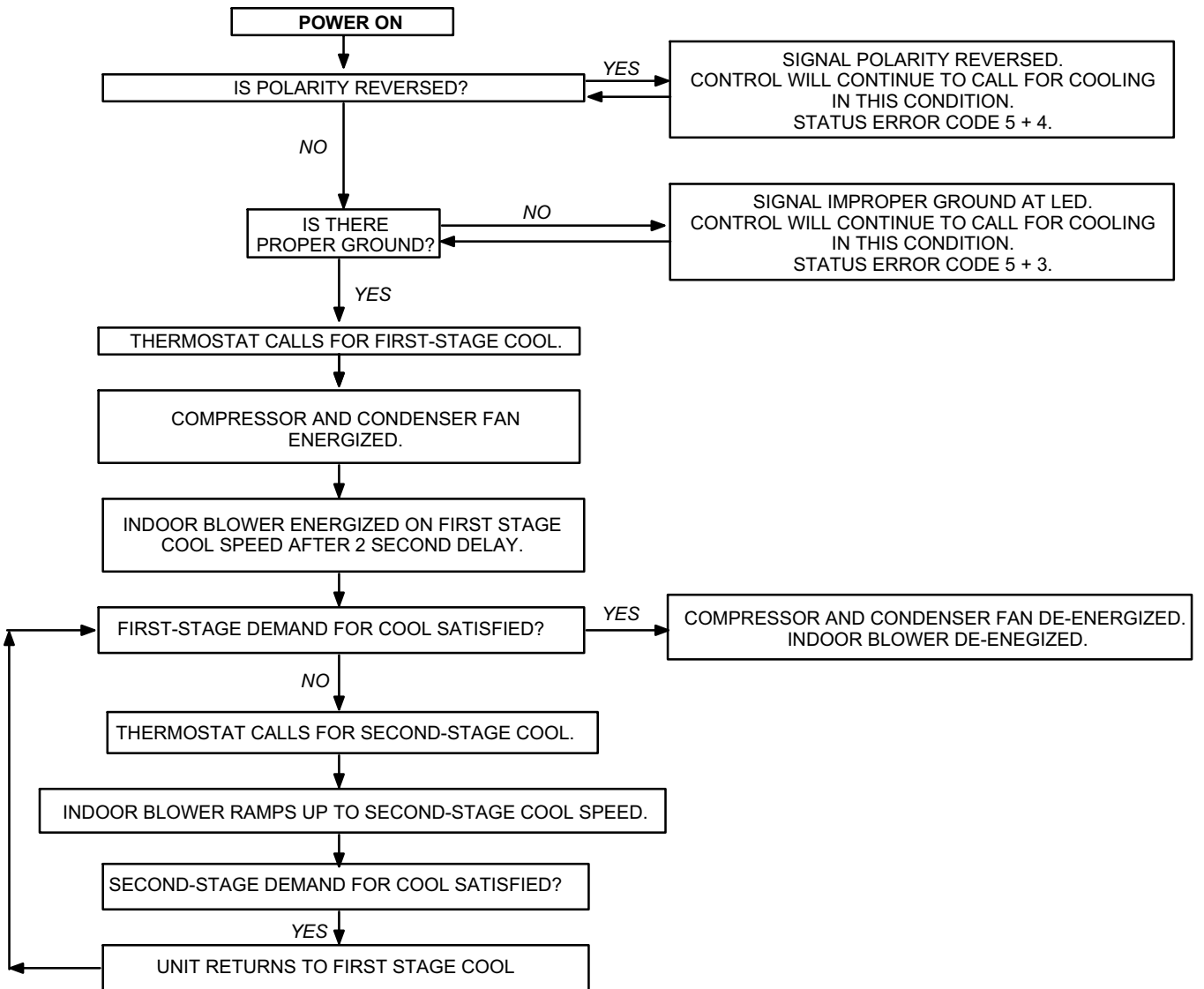


Troubleshooting: Heating Sequence of Operation (Continued)

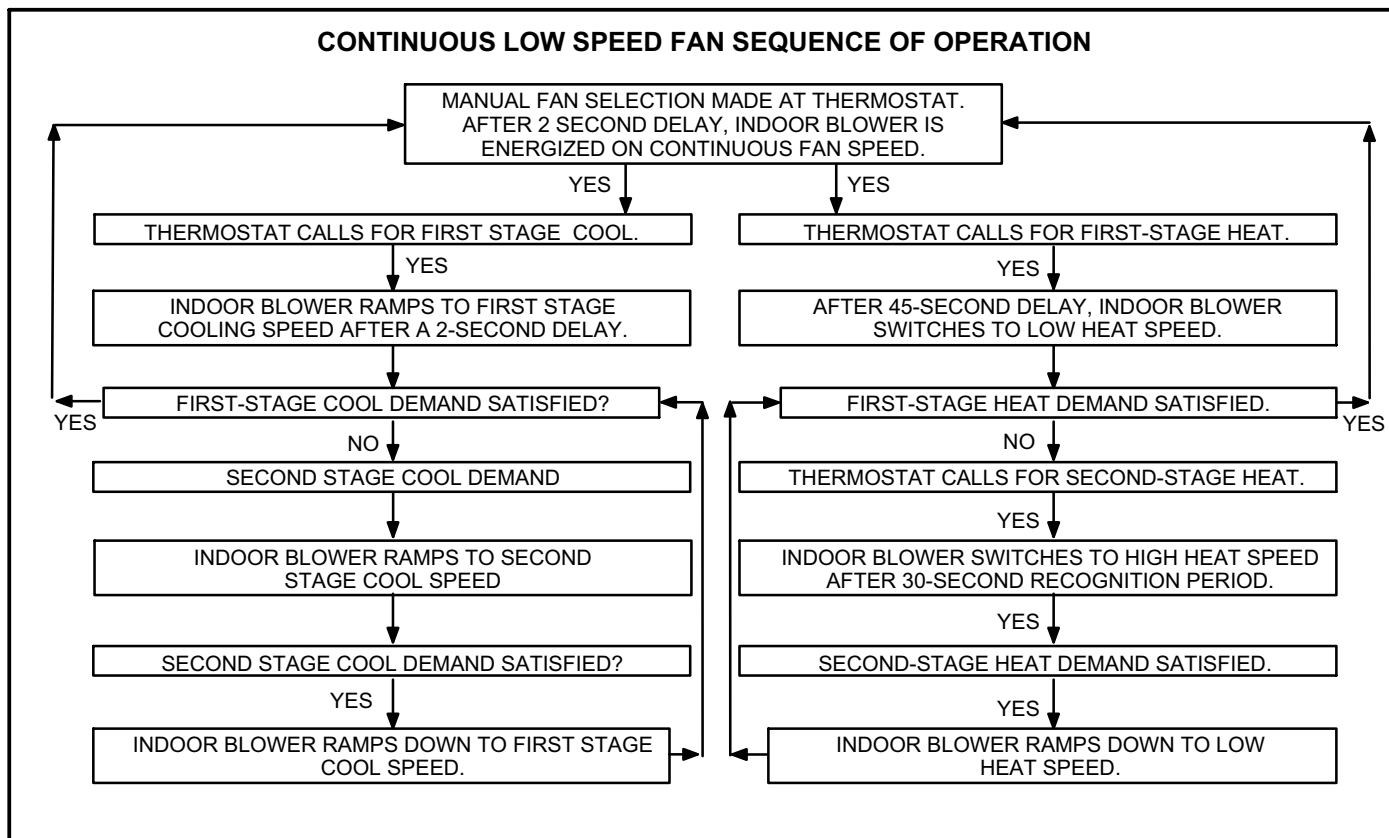


Troubleshooting: Cooling Sequence of Operation

COOLING SEQUENCE OF OPERATION



Troubleshooting: Continuous Fan Sequence of Operation



Repair Parts List

The following repair parts are available through Lennox dealers. When ordering parts, include the complete furnace model number listed on the CSA International nameplate -- Example: G60DF(X)-36A-070-4. **All service must be performed by a licensed professional installer (or equivalent), service agency, or gas supplier.**

Cabinet Parts

- Upper access panel
- Blower panel
- Top cap

Control Panel Parts

- Transformer
- Two-stage integrated control
- Door interlock switch
- Circuit breaker

Blower Parts

- Blower wheel
- Blower housing
- Motor
- Capacitor
- Motor mounting frame
- Blower housing cutoff plate

Heating Parts

- Flame Sensor
- Heat exchanger assembly
- Gas manifold
- Two-speed combustion air inducer
- Two-stage gas valve
- Main burner cluster
- Main burner orifices
- Pressure switch
- Ignitor
- Primary limit control
- Flame rollout switch
- Secondary limit

G60DF(X) Start-Up & Performance Check List

Job Name _____ Job No. _____ Date _____

Job Location _____ City _____ State _____

Installer _____ City _____ State _____

Unit Model No. _____ Technician _____

Serial No. _____

Heating Section

Electrical Connections Tight?

Line Voltage _____

Blower Motor H.P. _____

Blower Motor Amps _____

Gas Piping Connections
Tight & Leak-Tested?

Fuel Type: Natural Gas?

LP/Propane Gas?

Furnace Btu Input (High fire) _____ - Line Pressure _____

Low Fire Manifold Pressure _____ w.c. - Nat.: _____ w.c. - LP/Propane

High Fire Manifold Pressure _____ w.c. - Nat.: _____ w.c. - LP/Propane

Flue Connections Tight?

Proper Draft?

Combustion Gas Tested (high fire and low fire)? CO₂ CO

Blower ON delay confirmed?
(45 Seconds Fixed On)

External Static Pressure? _____
(0.5 maximum)

Blower OFF Delay Setting (60, 90, 120 or 180)? _____ Temperature Rise _____

Filter Clean & Secure?

Thermostat

Heat Anticipator Setting? _____

Thermostat Level?