

User's Information Manual

Residential Gas Furnaces

FOR YOUR SAFETY

WARNING:

FIRE OR EXPLOSION HAZARD

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

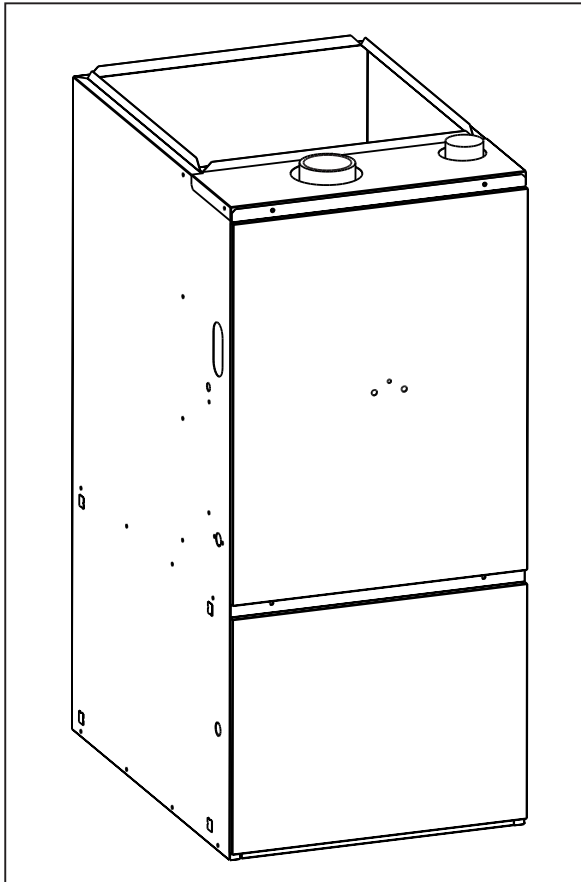
- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- **WHAT TO DO IF YOU SMELL GAS:**
 - Do not try to light any appliance.
 - Do not touch any electrical switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.
 - Extinguish any open flame.
- Installation and service must be performed by a qualified installer, service agency, or the gas supplier.

AVERTISSEMENT:

RISQUE D'INCENDIE OU D'EXPLOSION

Le non-respect des consignes de sécurité pourrait entraîner des blessures graves, la mort ou des dommages matériels.

- Ne pas entreposer ni utiliser de l'essence ni d'autres vapeurs ou liquides inflammables dans le voisinage de cet appareil, ni de tout autre appareil.
- **QUE FAIRE S'IL Y A UNE ODEUR DE GAZ**
 - Ne pas tenter d'allumer aucun appareil.
 - Ne toucher à aucun interrupteur électrique; n'utiliser aucun téléphone dans le bâtiment.
 - Appeler immédiatement le fournisseur de gaz en employant le téléphone d'un voisin. Respecter à la lettre les instructions du fournisseur de gaz.
 - Si personne ne répond, appeler le service des incendies.
- L'installation et l'entretien doivent être effectués par un installateur qualifié, un organisme de service ou le fournisseur de gaz.

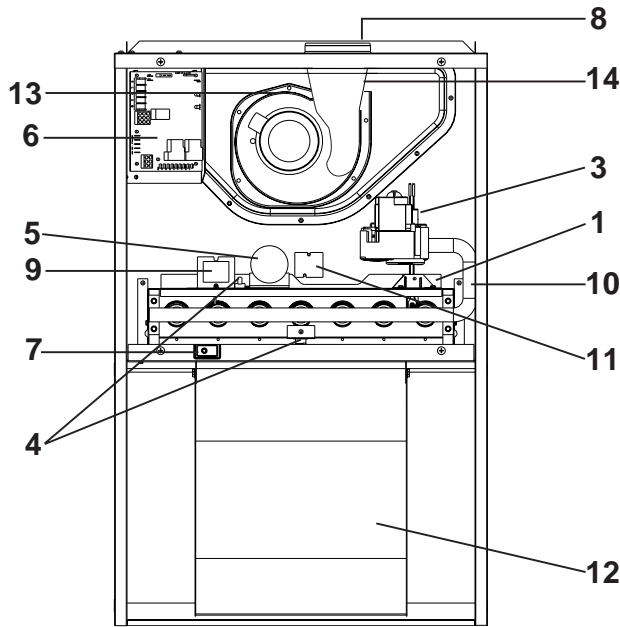


IMPORTANT

Read this owner information thoroughly before attempting to operate or maintain this furnace to become familiar with the capabilities and use of your heating appliance. Keep this with literature on other appliances where you have easy access to it in the future. If a problem occurs, check the instructions and follow the recommendations given. If the suggestions do not eliminate your problem, call your NORDYNE Servicing Contractor (Service PRO).

Any additions, changes, or conversions required in order for the appliance to satisfactorily meet the application needs must be made by a qualified installer, service agency, or the gas supplier using factory specified and approved parts.

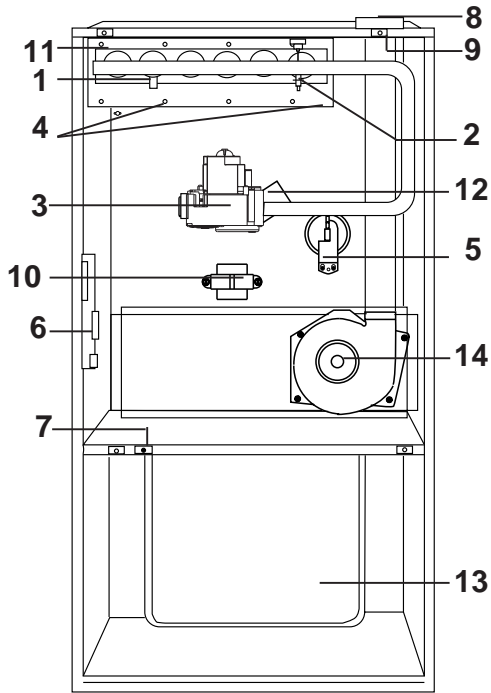
80+ AFUE



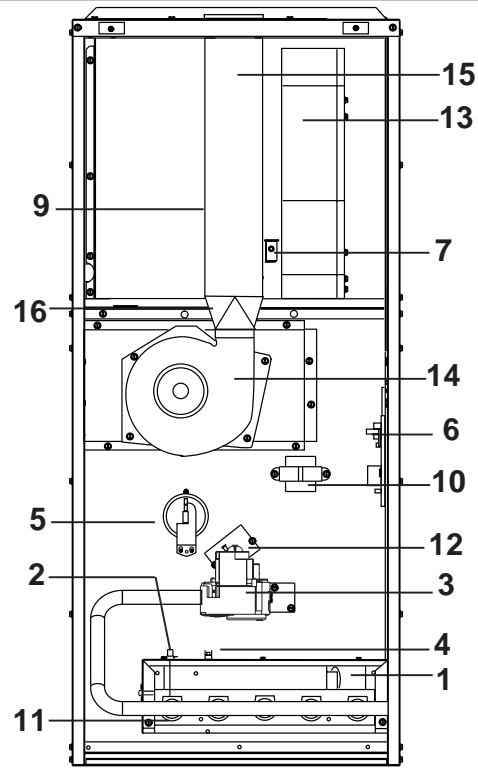
- 1 Ignitor
- 2 Flame Sensor (Not Shown)
- 3 Gas Valve
- 4 Flame Roll-out Switch(s)
- 5 Pressure Switch
- 6 Control Board
- 7 Blower Door Switch(s)
- 8 Exhaust Adapter
- 9 Low Voltage Transformer
- 10 Burner Assembly
- 11 Supply Air Limit Switch
- 12 Blower Assembly
- 13 Induced Draft Blower
- 14 Vent Transition

Upflow/Horizontal Furnace

80+ AFUE



Upflow/Horizontal Furnace

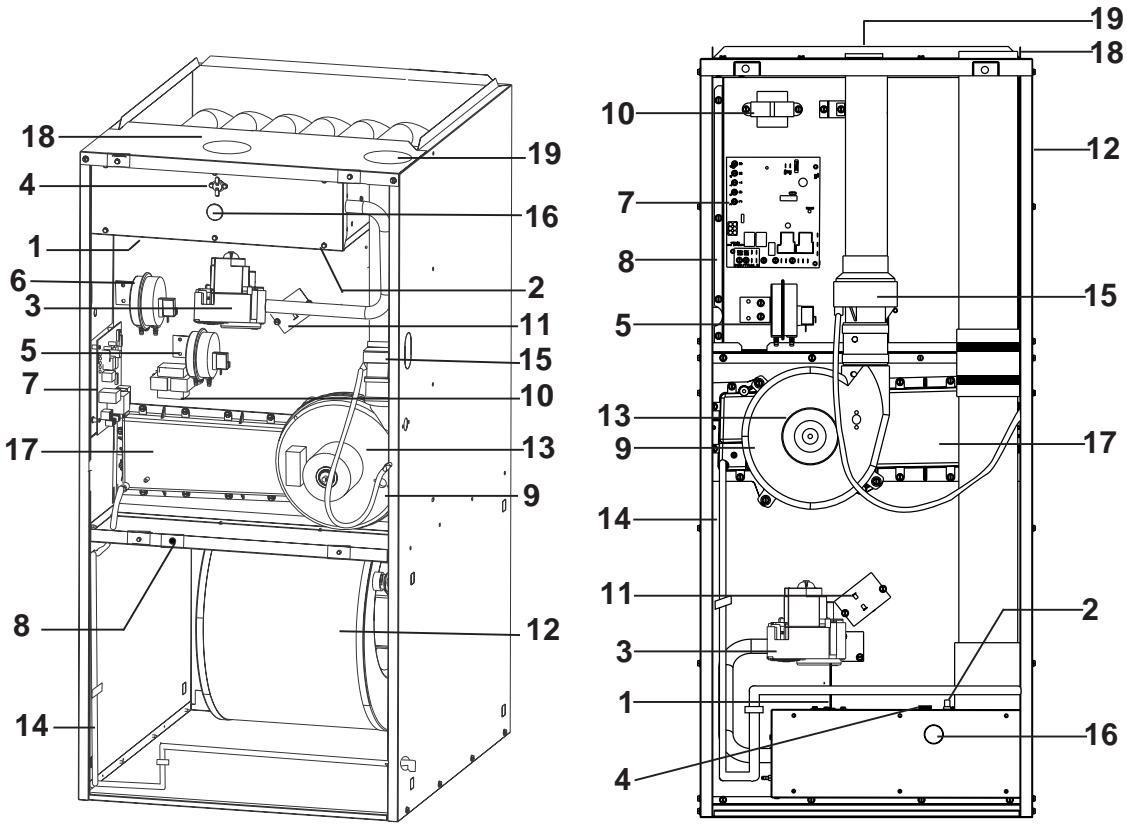


Downflow Furnace

- | | | |
|----------------------------|-------------------------------|---|
| 1 Ignitor | 8 Vent Assembly (Upflow Only) | 14 Induced Draft Blower |
| 2 Flame Sensor | 9 Vent Switch | 15 Combustion Tube w/insulation (Downflow Only) |
| 3 Gas Valve | 10 Low Voltage Transformer | 16 Vent Transition Assembly (Downflow Only) |
| 4 Flame Roll-out Switch(s) | 11 Burner Assembly | |
| 5 Pressure Switch | 12 Supply Air Limit Switch | |
| 6 Control Board | 13 Blower Assembly | |
| 7 Blower Door Switch | | |

Figure 1. Furnace Parts Identified

90+ AFUE



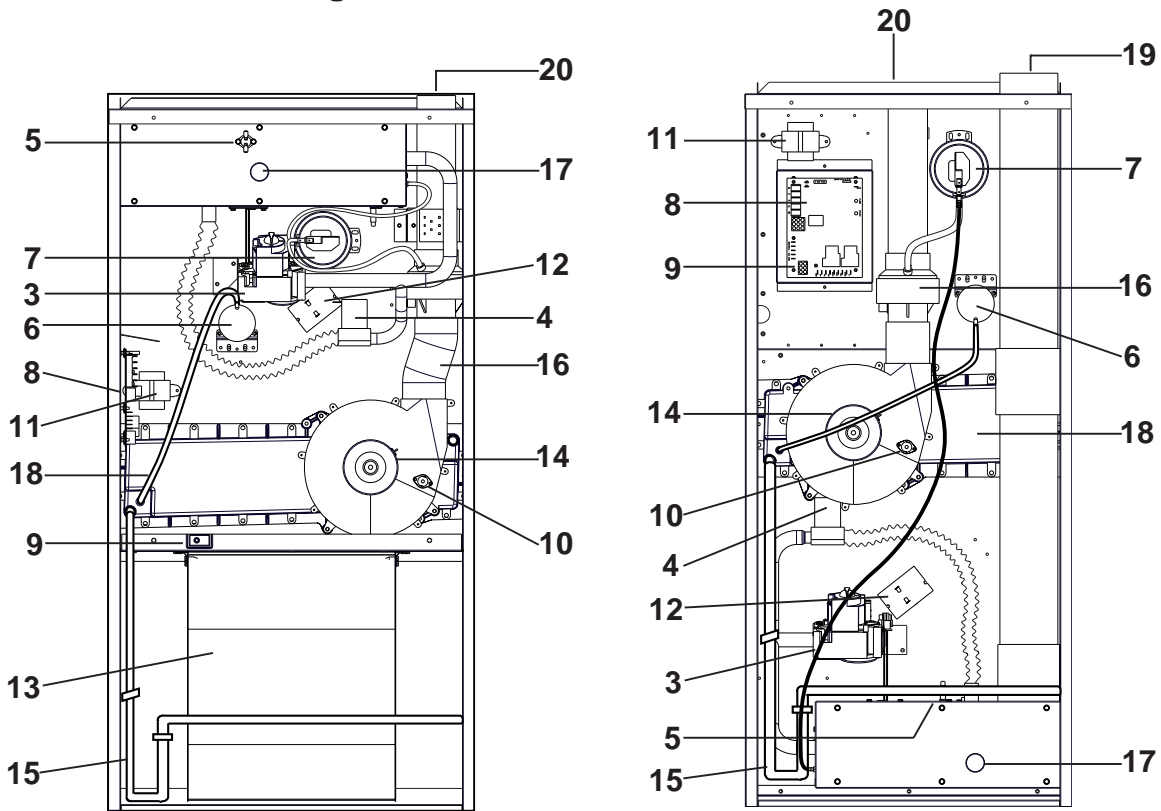
Upflow/Horizontal Condensing Furnaces

Downflow Condensing Furnace

1 Ignitor (Not Shown)	8 Blower Door Switch	14 Condensate Drain Tube
2 Flame Sensor (Not Shown)	9 Vent Safety Switch	15 In-Line Drain Assembly
3 Gas Valve	10 Low Voltage Transformer	16 Burner View Port
4 Flame Roll-out Switch(s)	11 Supply Air Limit Switch	17 Front Header Box
5 Pressure Switch	12 Circulating Air Blower Assembly	18 Combustion Air Intake
6 Vent Pressure Switch (93+ Only)	13 Induced Draft Blower	19 Exhaust Vent
7 Control Board		

Figure 2. Furnace Parts Identified

90+ AFUE Two - Stage Models



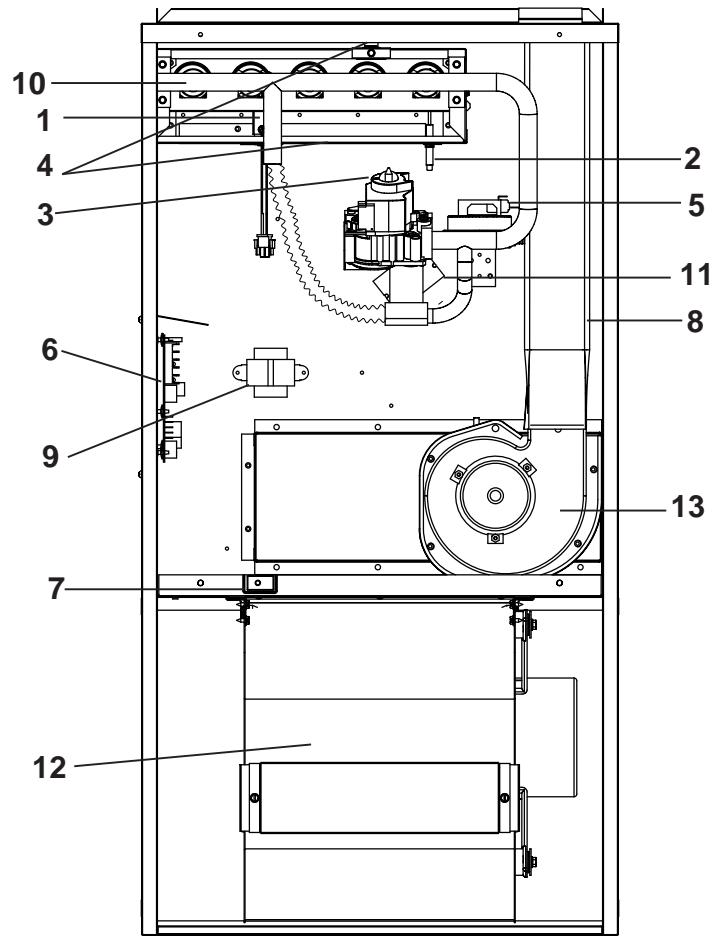
Upflow/Horizontal Furnace Models

Downflow Furnace Models

1 Ignitor (Not Shown)	10 Vent Safety Switch	16 In-Line Drain Assembly
2 Flame Sensor (Not Shown)	11 Low Voltage Transformer	17 Burner View Port
3 Primary Gas Valve	12 Supply Air Limit Switch	18 Front Header Box
4 Secondary Gas Valve	13 Circulating Air Blower Assembly (Not Shown on Downflow Model)	19 Combustion Air Intake (Not Shown on Upflow Model)
5 Flame Roll-out Switch(s)	14 Induced Draft Blower	20 Exhaust Vent (Not Shown on Downflow Model)
6 Pressure Switch	15 Condensate Drain Tube	
7 Vent Pressure Switch		
8 Control Board		
9 Blower Door Switch		

Figure 3. Furnace Parts Identified

80+ AFUE Two - Stage Models



Upflow/Horizontal Furnace

1 Ignitor	7 Blower Door Switch	11 Supply Air Limit Switch
2 Flame Sensor	8 Vent Assembly	12 Blower Assembly
3 Gas Valve	9 Low Voltage Transformer	13 Induced Draft Blower
4 Flame Roll-out Switch(s)	10 Burner Assembly	
5 Pressure Switch		
6 Control Board		

Figure 4. Furnace Parts Identified

GENERAL INFORMATION

This furnace has been designed and built to provide many years of safe and dependable home comfort, providing it is properly installed and maintained. With regular maintenance, this furnace will operate satisfactorily year after year. Abuse, improper use, and/or improper maintenance can shorten the life of the furnace and create hazards for you. Please read this manual carefully to familiarize yourself with operation, maintenance, and safety procedures for this furnace.

A regular service and maintenance schedule should be established to insure efficient and safe operation of the furnace. See Section 5 for maintenance procedures and schedules.

Devices attached to the flue or vent for the purpose of reducing heat loss up the chimney have not been tested and have not been included in the design certification of this furnace. We, the manufacturer, can not and will not be responsible for injury

1. Safety Information

The furnace area and the vicinity of any other gas appliance must be kept clear and free of combustible materials, gasoline, and other flammable vapors and liquids. Do not store or use flammable items such as paint, varnish, or strippers in the vicinity of the furnace.

Do not use the furnace closet or area next to the furnace as a storage area. This area must be kept clear, clean, and free of lint. The furnace must also be kept clear of loose or exposed insulation materials. Examine the furnace area when the furnace is installed or when insulation is added. Some insulation materials may be combustible.

For proper and safe operation, the furnace needs air for combustion and ventilation. Do not block or obstruct air openings on the furnace, or any air openings where the furnace may be installed, including any surrounding spaces.

Should the gas supply fail to shut off or if overheating occurs, shut off gas valve to the furnace before shutting off electrical supply.

Do not use this furnace if any part has been

under water. A flood-damaged furnace is extremely dangerous. Attempts to use the furnace can result in fire or explosion. A qualified service agency should be contacted to inspect the furnace and to replace all gas controls, control system parts, electrical parts that have been wet or the furnace if deemed necessary.

Familiarize yourself with the controls that shut off the gas and electrical power to the furnace. If the furnace is to be shut down for an extended period of time, turn off both the gas and electrical power. For your safety always turn off both the gas and electrical power before performing service or maintenance on the furnace.

2. Combustion Air Supply

A furnace needs an adequate supply of combustion and ventilation air for proper and safe operation. Follow the installation instructions included with the furnace to properly vent air to the combustion air inlet and exhaust the products of combustion to the outside from the exhaust vent.

For 90+ and 93+ Models: If the furnace is operated with a restricted combustion air supply, the pressure switch will open, turning off the gas supply to the burners. (See Figures 2 and 3). **DO NOT** install a jumper wire across this switch to defeat its function. If this switch must be replaced, use only the replacement part specified in the Replacement Parts List.

For 80+ Models: If the furnace is operated with inadequate combustion air supply, the flame roll-out control switch located above the burners may open, turning off the gas supply to the burners. The flame roll-out control is a manually resettable device (See Figure 1 and 4). **DO NOT** install a jumper wire across this switch to defeat its function. **DO NOT** reset the control without identifying and correcting the fault condition which caused the control to trip. If this switch must be replaced, use only the replacement part specified in the Replacement Parts List.

Air openings in warm air registers, and return air grilles must not be restricted.

 **CAUTION:**

Combustion air must not be drawn from a corrosive atmosphere.

To maximize heat exchanger life, the combustion air must be free of chemicals which form corrosive acidic compounds in the combustion gases. Some examples of these chemicals are chlorine, fluorine, and sulphur. Some common sources of these chemicals are detergents, bleaches, aerosol sprays, cleaning solvents, and a wide variety of commercial and household products.

3. Return Air Supply

In applications where the supply ducts carry heated air to areas outside the space in which the furnace is installed, the return air must be delivered to the furnace by duct(s) sealed to the furnace casing. These duct(s) must be full size and without interruption in the spaces outside of where the furnace is installed.

The return air duct connection(s) must be physically sound and sealed to the furnace casing to prevent products of combustion from entering the living space.

The floor or platform on which the furnace is mounted must provide sound physical support of the furnace with no gaps, cracks, or sagging between the furnace and floor or platform. The return air and circulating air ductwork must not

be connected to any other heat producing device such as a fireplace insert, stove, etc. Doing so may result in fire, explosion, personal injury, carbon monoxide poisoning, or property damage.

Use a type high velocity air filter in the return air duct to maintain a clean heat exchanger.

WARNING:

Failure to prevent products of combustion from being circulated into the living space can create potentially hazardous conditions including carbon monoxide poisoning that could result in personal injury or death.

4. Vent System

The furnace must always be connected to an approved vent pipe to carry the furnace combustion products outdoors. At the beginning and end of each heating season, inspect the outdoor vent terminal closely with a flashlight to determine if any of the conditions listed under the following warning exist.

MAINTENANCE ITEM	FREQUENCY OF MAINTENANCE		
	BEGINNING OF EACH HEATING SEASON	END OF EACH HEATING SEASON	MONTHLY
VERIFY FURNACE AREA IS FREE OF COMBUSTIBLE MATERIALS	X	X	X
VERIFY COMBUSTION AND VENTILATION AIR IS NOT RESTRICTED	X	X	X
VERIFY NO SIGNS OF PHYSICAL DETERIORATION OF THE FURNACE	X	X	X
VERIFY NO OBSTRUCTIONS OR RESTRICTIONS IN VENT OR CHIMNEY	X	X	
VERIFY NO HOLES OR CRACKS IN VENT PIPE	X	X	
VERIFY NO CORROSION IN VENT PIPE	X	X	
VERIFY THAT HORIZONTAL VENT PIPES SLOPE UPWARDS AWAY FROM FURNACE	X	X	
VERIFY BURNER FLAME	X		
CLEAN OR REPLACE FILTER(S)			X
CLEAN BLOWER COMPARTMENT			X
CLEAN BURNER ASSEMBLY	X		

Table 1. Maintenance Table

5. Maintenance

Proper maintenance is most important to achieve the best performance from this furnace and should be performed by a qualified service technician. Follow the maintenance schedule (see Table 1) and the following instructions for years of safe, trouble free operation.

- **Do not place combustible materials on or against the furnace cabinet.**
- **Do not store gasoline or any other flammable vapors and liquids in the vicinity of the furnace.**
- **Annually inspect the furnace, ductwork, and vent system for signs of physical deterioration.**
- **Change or replace the air filters monthly during any period when the circulating blower is operating regularly.**
- **Always replace the doors on the furnace after servicing or cleaning/changing the filters. Do not operate the furnace without all doors and covers in place, except to check burner operation.**
- **Avoid operating the furnace when windows and doors are open.**
- **Be sure that the thermostat is properly installed and is not being affected by drafts or heat from lamps or other appliances.**

Air Filter(s) — Air filter(s) are not supplied with the furnace as shipped from the factory. The installer must provide a high velocity filter and rack in the return air duct adjacent to the furnace, or in a return air grille to the furnace. The filter(s) must be removed and cleaned monthly during the heating season to ensure proper furnace operation. New or newly renovated homes may require more frequent changing until the construction dust has been removed.

WARNING:

Never operate the furnace without a filter in place. Dust and lint in the return air can build up on the internal components, resulting in a loss of efficiency, equipment damage, and possible fire.

Always replace the door(s) on the furnace after servicing or cleaning/changing the filters. Do not operate the furnace without the door(s) in place.

Lubrication — The bearings in the circulating

air blower motors used in these furnaces are pre-lubricated and sealed at the factory. No further oiling of the bearings is required for the life of the motor.

Blower Compartment — The blower compartment should be cleaned monthly during the heating and cooling seasons to remove any dirt and lint that may have accumulated in the compartment or on the blower and motor. Build-up of dirt and lint on the blower and motor can create excessive loads on the motor resulting in higher than normal operating temperatures and possible shortened service life.

Burner Maintenance — Check the burner flames at the start of every heating season. Set the thermostat to a temperature setting above the room temperature. Remove the top door from the furnace and visually inspect the burner through the view hole to make sure that the flame is drawn into the center of the heat exchanger tube (See Figure 5). In a properly adjusted burner assembly, the flame bends down and to the right at the end of the heat exchanger tube, and the end of the flame will be out of sight around the bend. The flame color should be blue, however some light yellow streaks may occur on the outer portions of the flame.

CAUTION:

Some components in the burner vestibule are at high temperatures while the burners are operating. Use caution to avoid personal injury.

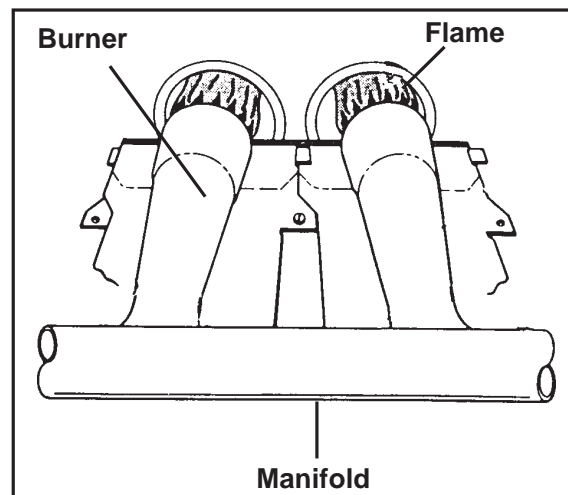


Figure 5. Burner Inspection

 **WARNING:**

Do not operate your furnace if you find any of the following conditions. Such conditions may allow toxic fumes to escape into your home:

- Obstructions or restrictions in the vent pipe and/or chimney.
- Holes or cracks in the vent pipe.
- Visible corrosion in the vent pipe.
- Horizontal vent pipes that do not slope upward.

If any of the above conditions are found in the vent pipe, call a qualified service technician to install new vent pipe.

For 80+ upflow and downflow models only: **Burner Maintenance (NOx)**, If the second or eighth character of the model number is an “N” the furnace has factory installed NOx reduction inserts. The inserts reduce the NOx emissions of the furnace. The NOx reduction inserts are located in the first pass of the top portion of the heat exchanger. When the burners are operating, the flame should extend through the center of the NOx reduction inserts. The flame color should be blue, however some light yellow streaks may occur on the outer portions of the flame.

Inspect the burners, mounting brackets, and all other parts in the vestibule for signs of deterioration. The burner vestibule should be vacuumed clean and inspected annually.

 **CAUTION:**

Do not strike any of the internal electrical components while vacuuming.

6. Operating Instructions

READ THE SAFETY INFORMATION ON THE FOLLOWING PAGE BEFORE OPERATING.

 **WARNING:**

Should overheating occur, or the gas supply fail to shut off, shut off the manual gas valve to the furnace before shutting off the electrical supply.

 **ADVERTISSEMENT:**

En cas de température excessive, ou s'il est impossible de couper l'alimentation en gaz, fermer le robinet manuel d'alimentation en gaz du générateur d'air chaud avant de couper l'alimentation électrique.

These furnaces are equipped with roll-out limit switch(s), a vent safety switch, and a pressure switch (See Figures 1, 2, 3 and 4). The pressure switch verifies that the flame is receiving combustion air. If the flame is not drawn into the heat exchanger tube, the roll out limit switch or flame sensor, will shut the furnace down.

The vent safety switch shuts the furnace down if the vent becomes blocked or restricted.

Furnace Fails To Operate — If the furnace does not operate, check the following:

- 1) Is the thermostat operating properly?
- 2) Are the blower door(s) in place?
- 3) Is the furnace disconnect closed?
- 4) Has the circuit breaker tripped (or fuse blown)?
- 5) Is the gas turned on?
- 6) Is the filter dirty or plugged?

If the combustion and circulating air blowers are operating, and items 1 through 6 have been checked without identifying the cause of the problem, press the red reset buttons on the vent safety and the roll out limit switches. (See Figures 1, 2, 3 and 4).

IMPORTANT: If the furnace operates after depressing the reset button on the vent limit or roll out limit, it is an indication of a potentially serious problem in the installation. Contact a qualified serviceman to identify and repair the problem.

MANUFACTURER WARRANTY, OWNER RESPONSIBILITIES

It is the sole responsibility of the homeowner to make certain the gas furnace has been correctly set up and adjusted to operate properly.

The Manufacturer warrants the furnace to be free from defects in material or workmanship for the warranty period. However, the Manufacturer will not be responsible for any costs found necessary to correct problems due to improper set-up, improper installation, furnace adjustments, improper operating procedure on the part of the user, etc.

Some specific examples of service calls which cannot be included in warranty payments are:

1. Repairing duct work in the home found to be faulty.
2. Correcting wiring problems in the electrical circuit supplying the furnace.
3. Re-setting circuit breakers or other switches.
4. Correction of problems due to improper gas supply pressure to the furnace.
5. Providing instructional training on how to light and operate the furnace.
6. Furnace problems caused by installation of an air conditioner, heat pump, or other air comfort devices.
7. Revising installation of the vent assembly.
8. Adjusting or calibrating of the thermostat.

Carefully review these responsibilities with your dealer, service company, or gas supplier so there will be no misunderstanding at a later time.

Read Your Warranty

Please read your limited warranty completely. It contains valuable information about your furnace. If you have any questions about the warranty information, contact your distributor.



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