

HIGH-EFFICIENCY FURNACE USER'S INFORMATION MANUAL

Dear Homeowner:

You have made an excellent choice in your new furnace. We have been building furnaces for over 50 years, and have spent years working on the design and development of your furnace. Then we used the best materials we could find in its construction, and gas-fired and computer tested it before it left our factory.

As with any product that is fired by gas and generates significant heat, there are certain precautions you should follow. For the peace of mind and safety of you and your family, we hope you will take the time to read this manual. Make yourself aware of the furnace's operating instructions and have your furnace inspected annually by a qualified service technician.

Do these things, and your furnace will give you many years of reliable, economical comfort.

Sincerely,
Your Furnace Manufacturer

ATTENTION USER: This furnace, as with all gas appliances, can be hazardous if not operated or maintained properly. Read and follow all safety information and operating instructions in the manual. In particular, you should learn how to turn off the gas and electricity to your furnace in an emergency. Retain this manual for future reference.

ATTENTION INSTALLER: Review this manual with the user. Leave this manual with the furnace for future reference.



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WARNING: If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

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


For Your Safety

Read and follow all safety information and operating instructions in this manual.

Your furnace installer should give you an envelope containing your User's Information Manual, Installer's Information Manual, Parts List, and Warranty. Keep these documents for as long as you own the furnace. Pass these documents on to the next owner or user. If any of the documents are missing or damaged, contact the installer or furnace manufacturer for replacement. You will need your furnace model and serial number from your furnace rating plate.

To alert you to potential hazards, we use the signal words "WARNING" and "CAUTION" throughout this manual. "WARNING" alerts you to situations that could cause or result in serious injury or death. "CAUTION" alerts you to situations that could cause or result in minor or moderate injury or property damage. For safe and reliable furnace operation, be sure to read and follow all warnings and cautions.

Danger of Fire or Explosion

 **WARNING:** This furnace operates by burning gas inside your home. This creates the possibility of fire or explosion that could result in serious injury or death. You must read and observe the following safety precautions to help ensure safe operation of your furnace and to prevent a life-threatening fire or explosion from ever occurring.

Natural and propane (LP) gases have characteristic odors. Any unfamiliar smell can alert you to the presence of unburned gas. If you suspect that you smell unburned gas, follow the instructions labeled "WHAT TO DO IF YOU SMELL GAS" on the cover of this manual. If you do not, a fire or explosion could occur.


Do not use this furnace if any part has been under water. Corrosion can start if electrical and furnace gas control systems become wet. Corrosion can cause gas to leak, which could cause a fire or explosion. Immediately call a qualified installer, service technician or gas supplier to inspect the furnace. Instruct them to replace any part that has been under water.

Never store or use flammable liquids or vapors near or on your furnace. These include gasoline, kerosene, lighter fluid, cleaning fluids, solvents, paint thinners and painting compounds. Flammable vapors can travel great distances before igniting. Flammables can cause a fire or explosion and result in damage, injury or death.

Never store combustible materials such as brooms, dustmops, vacuum cleaners, other cleaning tools, plastics, paper bags or other paper products near or on your furnace. A fire could occur resulting in damage, injury or death.

Insulating materials may be combustible and must be kept free and clear of the furnace. If your furnace is in an attic or other insulated space you must examine the area when the furnace is installed and when insulation is added. Failure to keep insulating materials away from the furnace can result in a fire causing damage, injury or death.

Danger of Asphyxiation

 **WARNING:** This furnace operates by burning gas inside your home. Improper or incomplete burning of this gas can result in the formation of carbon monoxide. This can cause dizziness, nausea, or death by asphyxiation. You must read and observe the following safety information to prevent oxygen depletion or unburned gas or combustion products from escaping into the living space of your residence.

Proper burning of natural or propane gas with air produces combustion products that contain carbon dioxide and water vapor. Under these conditions you should not smell any unfamiliar odors.

Under abnormal conditions, combustion products can contain aldehydes and carbon monoxide:

- Aldehydes have a strong, pungent acrid smell and can cause nausea.
- Carbon monoxide is tasteless, colorless and odorless. It can cause headaches, flu-like symptoms and nausea. It can also cause brain damage or death by asphyxiation.


Any condition that will allow combustion products to enter the living area may cause nausea or death.

Proper and safe operation of your furnace requires air for combustion and ventilation. Do not block or obstruct air openings communicating with the area in which the furnace is installed. Do not block or obstruct air openings on the furnace or around the furnace. Reducing the furnace's air supply can result in improper combustion and may result in damage, nausea or asphyxiation.

Vapors from products containing chlorine, fluorine, bromine, or iodine in the furnace's combustion air supply can cause premature heat exchanger failure. Examples of such products are aerosols, permanent wave solutions, chlorinated bleaches and cleaners, cat litter, chlorine-based swimming pool chemicals, cleaning solvents, paint removers and varnishes, adhesives and antistatic fabric softeners. Heat exchanger failure can result in nausea or death by asphyxiation.

Do not alter the furnace to allow operation with the blower door removed. Doing so could allow combustion products to circulate throughout the living space and may result in nausea, asphyxiation or death.

The furnace's front doors must be in place during operation.

 **WARNING:** Do not alter any gas or electrical controls (gas control, pilot, or safety controls) in any manner. Altered controls can cause unsafe furnace operation and may result in damage, injury or death.

Turning Off Your Furnace

1. Set your thermostat to its lowest setting.
2. Shut off external manual gas valve. See Figure 1.
3. Turn off all electric power to the furnace.

4. Remove the front door.
5. Remove three screws that hold the burner-access panel in place. Remove burner-access panel.
6. Turn the switch on the furnace gas control to "OFF". See Figure 2.
7. Replace burner-access panel with screws removed in step 5.
8. Replace the front door.

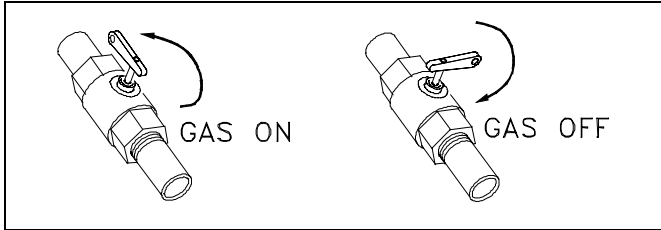


Figure 1. Typical Furnace External Manual Gas Valve.

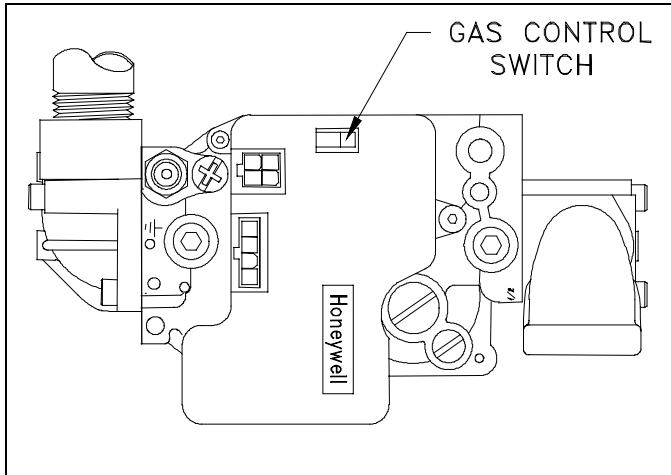


Figure 2. Furnace Gas Control.

WARNING: Should overheating occur, or the gas supply fail to shut off, shut off the furnace external manual gas valve before shutting off the electrical supply. Failure to do so can cause a fire.

In an emergency, you may not be able to reach the furnace's gas shut-off valves. If this happens, you can shut off the gas at the gas meter or propane tank. See Figures 3 and 4.

You may have different gas shut-off devices than those shown. Take time now to learn location and operation of your gas shut-off devices.

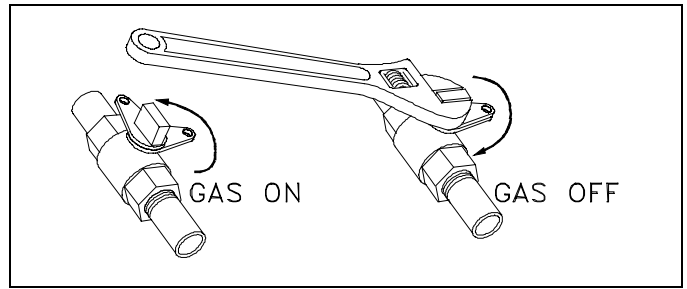


Figure 3. Typical Gas Meter Manual Gas Valve.

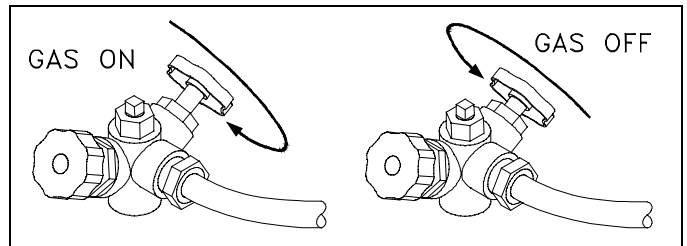


Figure 4. Typical Propane Tank Manual Gas Valve.

In an emergency, you may not be able to reach the furnace's external electrical disconnect. If this happens, you can turn off the electrical power at your main electrical circuit panel. Take time now to learn location and operation of your electrical turn-off devices.

Turning On Your Furnace



WARNING: If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

This furnace is equipped with an ignition device that automatically lights the pilot. Do not try to light the pilot by hand.

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

What To Do If You Smell Gas

- Do not 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.

Do not use this furnace if any part has been under water. Immediately call a qualified service technician to inspect the furnace and replace any part of the control system and any gas control that has been under water.

Operating Instructions

1. STOP! Read the above safety information: "What To Do If You Smell Gas."
2. Set your thermostat to its lowest setting.
3. Turn off all electrical power to the furnace.
4. This furnace has an ignition device that automatically lights the pilot. Do not try to light the pilot by hand.
5. Remove the front door.
6. Remove three screws that hold the burner access panel in place. Remove burner-access panel.
7. Turn the switch on the furnace gas control to "OFF". See Figure 2.
8. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow above instructions: "What To Do If You Smell Gas." If you do not smell gas, go to the next step.
9. Turn the switch on the furnace gas control to "ON".
10. Replace burner-access panel with screws removed in step 6. Replace the front door.
11. Turn on all electric power to the furnace.
12. Set your thermostat to the desired setting.
13. If the furnace will not operate, follow the instructions "Turning Off Your Furnace." Call a qualified service technician or gas supplier.

Sequence Of Operation

When your indoor temperature drops below the temperature set on your thermostat, the thermostat turns your furnace on as follows:

1. Furnace operation begins with a blower that induces the flow of combustion air through your furnace's heat exchanger.
2. When the flow of combustion air is sufficient for proper combustion, a pressure switch turns on the ignition system. The ignition system ignites a pilot light that in turn lights the main burners. The flames from the main burners are pulled through the inside of the heat exchanger, heating the heat exchanger.
3. Thirty seconds after the main burners light, a computerized control turns on your circulating blower. The circulating blower pulls air through your cold-air return and your air filter and then pushes it across the outside of the heat exchanger.
4. As the air passes over the heat exchanger, the heat transfers from the heat exchanger to the air being blown across it. The heated air is then returned to your house through your registers.
5. During operation, your furnace is monitored constantly by a series of safety controls and temperature limit switches that act to turn off the furnace if any unsafe condition occurs.
6. The furnace's burners operate until your room temperature reaches the setting on the thermostat. After

the burners turn off, the circulating blower continues to operate for one to three minutes in order to remove the remaining heat from the heat exchanger and duct system.

Maintaining Your Furnace

Your furnace was designed to deliver many years of safe, dependable and economical performance. As a user, your personal responsibilities are to:

- Keep air filters clean and in their proper place.
- Keep registers and return air grilles open and unobstructed by rug, carpet or furniture.
- Perform monthly user inspections, as outlined on page 5.
- Have your furnace inspected annually by a qualified service technician.

Air Filters

Air filters are not factory supplied with this furnace. Your installer provides them during installation. Ask your installer to make sure your filters are properly in place. Become familiar with their location and procedures for removing, cleaning and replacing them.

Look for air filters in return ductwork immediately before the furnace or in a return air grille. Access to return grille filters is through the face of the return grille.

Inspect air filters monthly for dirt using these steps:

1. Turn off all electrical power to the furnace.
2. Disposable air filters (if dirty) must be replaced with filters of the same type and size.
3. Cleanable air filters can be washed by first rapping them to remove excess dirt. Then wash them under a garden hose, in a sink, or in a bathtub.
4. Replace any air-filter access covers that were removed.
5. Turn on electrical power to the furnace.

CAUTION: Air filters help keep the blower, heat exchanger and air-conditioning system components clean. Do not operate your furnace without an air filter.

CAUTION: Dirty air filters may reduce system efficiency, cause erratic operation and reduce the life of your furnace.

Minimum Recommended Filter Sizes.

GAS INPUT* (Btu/hr)	MOTOR* HORSE-POWER	DISPOSABLE AIR FILTERS (2 required)	HIGH-VELOCITY WASHABLE AIR FILTER
54,000	1/3	16" X 25"	16" X 25"
72,000	1/2	16" X 25"	16" X 25"
90,000	1/2	16" X 25"	16" X 25"
72,000	3/4	20" X 25"	20" X 25"
90,000	3/4	20" X 25"	20" X 25"
108,000	3/4	20" X 25"	20" X 25"
126,000	3/4	20" X 25"	20" X 25"

* GAS INPUT and MOTOR HP can be found on furnace rating plate.

Furnace Inspection



WARNING: To ensure continual, proper and safe operation of your furnace, the following monthly and annual furnace inspections must be performed. Any problems must be corrected before operating the furnace. Failure to correct problems could result in fire, explosion, or death by asphyxiation.

Monthly user inspections should include checks for the following:

- Obvious openings in the plastic vent system
- Blockage of outdoor vent termination
- Blocked registers or return grilles
- Water leakage from furnace drain lines
- Blocked combustion air openings. Combustion air may be ducted from outdoors.
- Combustible materials or flammable liquid near the furnace
- Corrosive materials in the furnace area.
- Unfamiliar odors
- Insulation material in close proximity to the furnace
- Signs of high water levels

Annual inspection by a qualified service technician should include each of the items listed below:

- Plastic vent pipe should be in place, slope upward at least 1/4 inch per foot, and should be physically sound, without holes or loose connections.
- All venting components including plastic vent pipe and vent termination should be clear and free of obstructions.
- Combustion and ventilation air openings to the furnace area should be clear and free.
- Furnace combustion-air opening, whether on the furnace or outdoors, should be clear and free.
- Condensate drain lines should be clear and free and without leaks. Condensate drain system should be cleaned periodically by a qualified service agency.
- The return-air duct should be physically sound, sealed to the furnace casing and ending outside the space containing the furnace.
- Air ducts should be clear and free, and without air leaks.
- The furnace should be well supported without sagging, cracks, gaps, etc., around the base.
- There should be no obvious signs of deterioration of the furnace. Inspection should include burners, pilot, heat exchanger, inducer pan, draft inducer and electrical wiring--including ground.
- Gas pipes should be checked for leaks using a commercial soap solution made to detect leaks.
- Main burners and pilot burner should be properly adjusted as shown in Figures 5 and 6, respectively. Main burner

flame should be clear blue and centered within the heat exchanger openings.

- Flame holders, located inside the main burners, should be free of lint or dirt.
- An operational check of the entire system.

NOTE: Blower motor and draft inducer motor are permanently lubricated and do not require oiling.

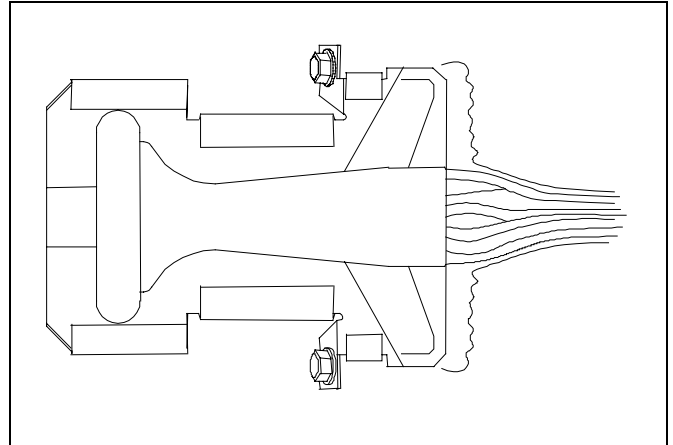


Figure 5. Main Burners.

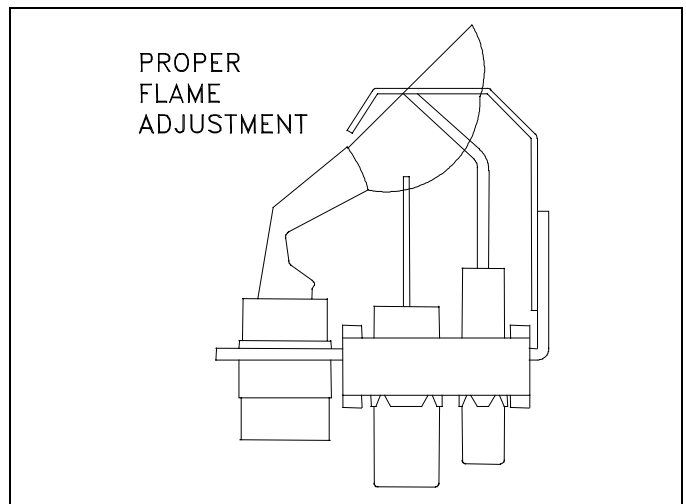


Figure 6. Pilot Burner.

Before Requesting A Service Call

If your furnace is operating but not heating your house:

1. Check your air filter(s) by following the instructions in the air filter section of this manual.
2. Check registers and return-air grilles. They should be open, clean, and unobstructed.
3. Make sure your thermostat is in the HEAT position.
4. Make sure your thermostat is set above the room temperature.
5. Make sure your thermostat is not near a heat source such as a lamp, television, computer, direct sunlight or a fireplace.
6. Make sure your gas is ON.
7. If your furnace still fails to provide sufficient heat, call a qualified service technician. Have your furnace model and serial numbers ready.

If your furnace does not operate at all:

1. Make sure your thermostat is in the HEAT position.
2. Make sure your thermostat is set above the room temperature.

3. Make sure electrical disconnect switch for furnace is ON.
4. Check for blown fuses or tripped circuit breakers.
5. Make sure your gas is ON.
6. If your furnace still fails to operate, call a qualified service technician. Have your furnace model and serial numbers ready.

Record the following information for future reference. Manufacturer, model and serial numbers can be found on the furnace's rating plate, inside the front door.

Manufacturer: _____

Model Number: _____

Serial Number: _____

Date Installed: _____

Installer: _____

Installer Address: _____

City, State, Zip: _____

Installer's Telephone Number: _____