

Operating Your Furnace

The furnace operates in the following sequence:

1. The thermostat turns on the main burner.
2. Heat builds up in the furnace and starts the fan (if equipped). The heated air comes out the panel louvers.
3. When the thermostat setting is reached, it shuts off the main burner.
4. The fan runs until the heat is removed from the furnace, then it turns off.

Your furnace is equipped with a built-in pressure regulator. L.P. gas models also have a regulator at the supply tank. If you have a question regarding the amount of fuel consumed, call your local gas utility or gas supplier.

WARNING: DO NOT TAMPER WITH THE REGULATOR OR BURNER ORIFICES, AS PROBLEMS RESULTING FROM THERE MAY CAUSE PRODUCT FAILURE NOT COVERED BY WARRANTY.

Input and output ratings shown on the rating plate, located in burner compartment, must not be exceeded.

IMPORTANT: KEEP BURNER AND CONTROL COMPARTMENT CLEAN.

WARNING: Do not store or use gasoline or other flammable liquids or vapors near the furnace.

WARNING: Danger of bodily injury or death. Do not operate the furnace with a broken or missing pilot observation door.

Lighting the Pilot

FOR YOUR SAFETY, READ BEFORE LIGHTING

This furnace is equipped with a manually operated piezo spark ignition device to ignite the pilot gas. Follow the steps below and use the manual spark igniter to light the pilot in place of a match. Press spark igniter button repeatedly and vigorously. If the spark igniter fails to provide spark to light the pilot, loosen the wing nut holding the pilot cover. This opens to the combustion chamber. The pilot may be ignited with a match.

1. Follow the instructions below and use a match to light the pilot as instructed.
2. After lighting the pilot, carefully replace the pilot observation door and tighten wing nut down.

On new installations, the gas lines will be filled with air and it may take several tries to establish the pilot flame. Check the manual shutoff valve in the gas line. It must be in the open position (handle parallel to the gas line) before you can light your furnace. Your furnace is equipped with a 100% safety pilot, which will shut off the gas valve in case the pilot is not burning or functioning properly. Make sure the pilot is adjusted properly and that the generator connection at the control valve is tight. If furnace will not stay lit, call your local gas utility company.

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

C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, do not try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

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

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electric switch. Do not use any telephone or cell phone in your building.
- Immediately call your gas supplier from a neighbour's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier call the fire department.


IMPORTANT: KEEP BURNER AND CONTROL COMPARTMENT CLEAN.

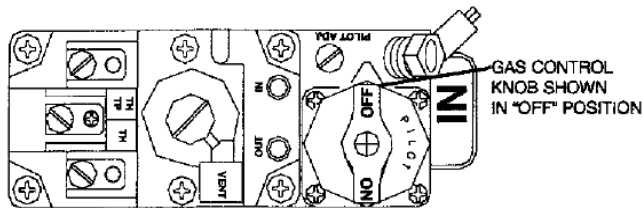
A. This appliance has a pilot which must be lit by hand. When lighting the pilot, follow these instructions exactly.

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


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Operating Instructions


1. **STOP!** Read the safety information above.
2. Set the thermostat to lowest setting.
3. If applicable, turn off all electric power to the appliance.
4. Open the control access panel.
5. Push in the gas control knob slightly and turn it clockwise  to "OFF".



NOTE: The knob cannot be turned from "PILOT" to "OFF" unless the knob is pushed in slightly. Do not use force.

6. Wait five (5) minutes to clear out any gas, then smell for gas, including near the floor. If you then smell gas, **STOP!** Follow "B" in the safety information on previous page. If you do not smell gas, go to the next step.
7. Loosen wing nut and open the pilot observation door.
8. To find the pilot, follow the metal tube from gas control valve. The pilot is mounted on the side of the burner.
9. Turn the knob on gas control valve counter clockwise  to "PILOT".

To Turn Off Gas To Appliance

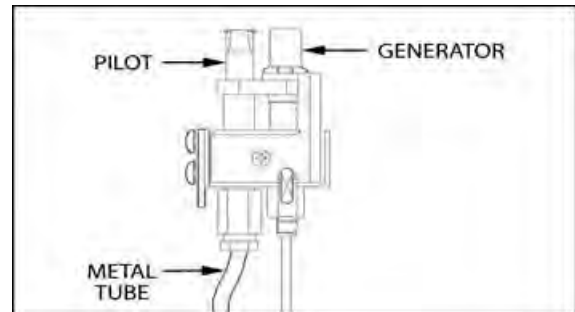
1. Set the thermostat to its lowest setting.
2. If servicing is to be performed, turn off all electric power to the appliance.
3. Open the control access panel.
4. Push in the gas control knob slightly and turn it clockwise  to the "OFF" position. Do not use force.
5. Close the control access panel.

Start-Up Procedure

Start the furnace using the procedures in the section "Operating Your Furnace".


WARNING: Danger of bodily injury or death. Liquid petroleum gas (L.P.G.) is heavier than air and it will settle in any low area, including open depressions, and it will remain there unless the area is ventilated. Never attempt to start-up the unit before thoroughly ventilating the area.

Check the furnace operation as outlined in the following instructions. If any sparking, odor or unusual noises are encountered, shut off electrical power immediately. Recheck for wiring errors or obstructions in or near the optional blower motor.



10. Push in the control knob all the way and hold it in. Immediately light the pilot. Continue to hold the control knob in for about one (1) minute after the pilot is lit. Release the knob and it will pop back up. The pilot should remain lit. If it goes out, repeat Steps 5 through 10. If the knob does not pop up when released, stop and immediately call your service technician or gas supplier.

If the pilot will not stay lit after several tries, turn the gas control knob to "OFF" and call your service technician or gas supplier.

11. Close the pilot observation door, tighten the wing nut (if equipped).
12. Turn the gas control knob counter clockwise  to "ON".
13. Close the control access panel.
14. Turn on all electric power to the appliance (if applicable).
15. Set thermostat to the desired setting.

WARNING: Due to high surface temperatures, keep children, clothing, furniture or any combustible material away from the furnace.

WARNING: Danger of ignition flash and eye injury or blindness. Protect your eyes. Never attempt to light the pilot with the gas control valve knob in the "ON" position. Flashback could occur.

Notice: During the initial firing of this unit, some smoke and odor may occur. We recommend ventilating the area during this initial "break-in period".

Check Gas Input and Pressures

For furnaces located at altitudes between sea level and 2,000 feet, the measured input must not be greater than the input shown on the rating plate of the furnace. For elevations above 2,000 feet, the measured input must not exceed the input on the rating plate reduced by 4% for each 1,000 feet that the furnace is above sea level.

The gas supply pressure and the manifold pressure with the burners operating must also be as specified on the rating plate.

Operating Your Furnace

Type of Gas	Manifold Pressure, In W.C.
Natural	4
L.P.	10

The rated input will be obtained on 2,500 Btu of propane at 10 inches manifold pressure with factory-sized orifices. If L.P. Gas having a different value is supplied, orifices must be changed by a qualified installer before the furnace is operated.

Check the Manifold Gas Pressure

A tapped opening is provided in the gas valve to facilitate measuring the manifold gas pressure. A "U tube" manometer having a scale range from 0 to 12-inches water column should be used for this measurement. The manifold pressure must be measured with the burner and pilot operating. Any major changes in the flow must be made by changing the size of the burner orifice. Check with your local gas company for the proper orifice size.

Check the Gas Input (Natural Gas Only)

Under firing could cause inadequate heat, excessive condensation or ignition problems. Over firing could cause shooting flame impingement or overheating of the combustion chamber. Before starting the natural gas input check, obtain the heating valve of the gas (BTU per cubic foot) at standard conditions from your local supplier. This factor is used in the "Check the Gas Input" section and procedure.

To measure the input using the gas meter, proceed as follows:

1. Turn off the gas supply to all other appliances except the furnace.
2. With the furnace operating, time the smallest dial on the meter for one complete revolution. If this is a 2 cubic foot dial, divide the seconds by 2; if it is a 1 cubic foot dial, use the time in seconds as is. (3,600 = Sec. Per Hr.) This gives the seconds per cubic foot of gas being delivered to the furnace.
3. Assuming natural gas with a heating valve of 1,000 Btu per cubic foot and 34 seconds per cubic foot as determined by step 2 above, then:
 Input: $1,000 \times 3,600 \div 34 = 106,000$ Btu/hr.
 This measured input must not be greater than the input indicated on the rating plate of the furnace.
4. Relight all other appliances turned off in step 1 above. Be sure all pilot burners are operating.

WARNING: Natural gas heating valve (Btu per cubic foot) can vary significantly; therefore, it is the installer's responsibility to see that Btu input to the furnace is adjusted properly. Failure to do so could cause combustion chamber failure, asphyxiation, fire or explosion, resulting in damage, bodily injury or death. Refer to the Natural Fuel Gas Code (NFPA-54) to be sure the furnace is burning fuel at the proper rate.

Check Pilot Burner

The pilot flame should surround the generator tip 3/8-inch to 1/2-inch. Pilot gas may need adjustment depending on the inlet

pressure. Increase or decrease the pilot flame to obtain proper setting.

FIGURE 15

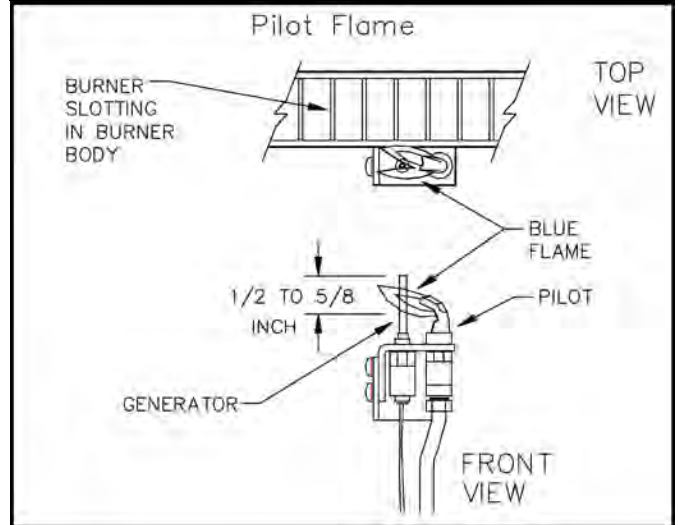
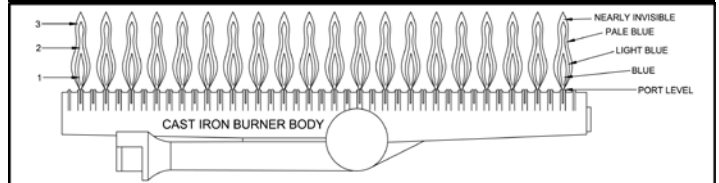


FIGURE 16



Burner Flame Characteristics

Start the furnace and let it operate at least 10 minutes. Open the access door to view the burner flame. Limit your movements near the furnace a few more minutes before making your final observation. The flame may look yellow due to dust particles in the room air. The flame should change to a nice blue color with firm inner and secondary cones. An occasional flash of orange might be seen as dust particles burn in the flame. This is normal. No burner adjustment is provided, or is necessary. (Figure 16).

Normal Appearance

Natural Gas:

1. Inner cone - blue color - 1/2 to 3/4-inch above ports.
2. Secondary inner cone - light blue - 1 to 2-inches above ports.
3. Total flame - from blue to nearly invisible - approximately 6-inches above ports.

L.P Gas:

1. Inner cone - blue color - 1/2 to 3/4-inch above ports.
2. Secondary inner cone - light blue - 1 to 2-inches above ports.
3. Total flame - from blue to nearly invisible - approximately 6-inches above ports.

How to Care for Your Furnace

Abnormal Appearance

Lazy Flame:

Long soft yellow cones moving around in the combustion chamber lifting from ports (insufficient air).

Extremely Fast Flame:

Will not hold to ports - entire cone sections blow off from noisy ports (too much pressure).

WARNING: If flame appears abnormal, contact the gas company or a qualified service technician immediately.

Annual Upkeep Needed

It is recommended that a qualified service technician perform these checks at the beginning of each heating season:

Burner Cleaning

Keep clean at all times. Clean all foreign materials from the top of burner. For access to the burner:

1. Shut off the gas supply to furnace.
2. Remove the cabinet.
3. Disconnect the gas line inside cabinet at the ground joint union fitting.
4. Remove the six (6) #10-24 screws securing the control door assembly to the combustion chamber.
5. Carefully remove the control door and burner assembly from the combustion chamber. Be careful not to damage the control door gasket.
6. Clean all foreign materials from the top of the burner.
7. After cleaning, replace the control door and the burner assembly by reversing the above procedure. The control door gasket should be replaced if its condition is in doubt.

Cleaning Burner Compartment

Because cold air is attracted to the flame during furnace operation, a build up of lint from carpeting, bedding, dust, etc. in the burner area will occur. It is necessary to clean this area regularly. Use a vacuum cleaner with a narrow attachment to reach small areas. Be careful in and around the pilot. A change in its adjustment could be made if moved during cleaning. A properly adjusted burner with nearly all gasses will produce a flame which has a clear blue cone having a bluish-red or bluish-violet outer mantle.

Cleaning Blower (If Equipped)

Turn off electric power supply at the disconnect switch, fuse box or service panel before servicing. For maximum motor life of the optional blower, inspect the motor yearly and clean any lint or dust from fan blades, fan motor and ventilating holes. Oil yearly with two drops of SAE 20 high temperature oil.

Vent System

Check the vent cap and tubes to be sure there are no blocked inlet air or flue openings. The flow of combustion and ventilation air must not be obstructed. Clean or replace before using the furnace. On new installations, the gas lines will be filled with air and may take several minutes to establish a pilot flame.

Furnace Area

For better circulation and more effective heating, do not place obstructive furniture closer than four feet to the front of the cabinet or two feet to either side of the cabinet.

The furnace area must be kept clear and free from combustible material, gasoline and other flammable vapor and liquids.

Cabinet Finish

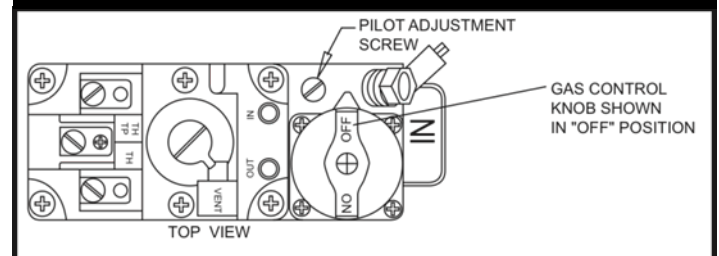
Clean the cabinet with a damp cloth. Never use abrasive cleaners. Cabinets are finished in heat-resistant powder paint. DO NOT refinish.

Pilot Burner

Light the pilot using instructions in "Lighting the Pilot". Leave the thermostat at its lowest setting. The pilot flame should surround the generator tip 1/4" to 5/8". If flame needs adjusting, do so as follows:

1. Insert a small screwdriver into the pilot adjusting screw. Adjust flame as needed. Turn the screw counterclockwise to increase the flame, clockwise to decrease the flame.
2. Turn the thermostat to the highest setting. The main burner should light quickly and smoothly. Turn the thermostat to its lowest setting. The main burner should go out. The pilot should remain lit.

FIGURE 17



WARNING: Danger of bodily injury or death. If equipped with accessory blower, turn off the electric power supply at the disconnect switch, fuse box or service panel before removing any access doors or service panels from unit.