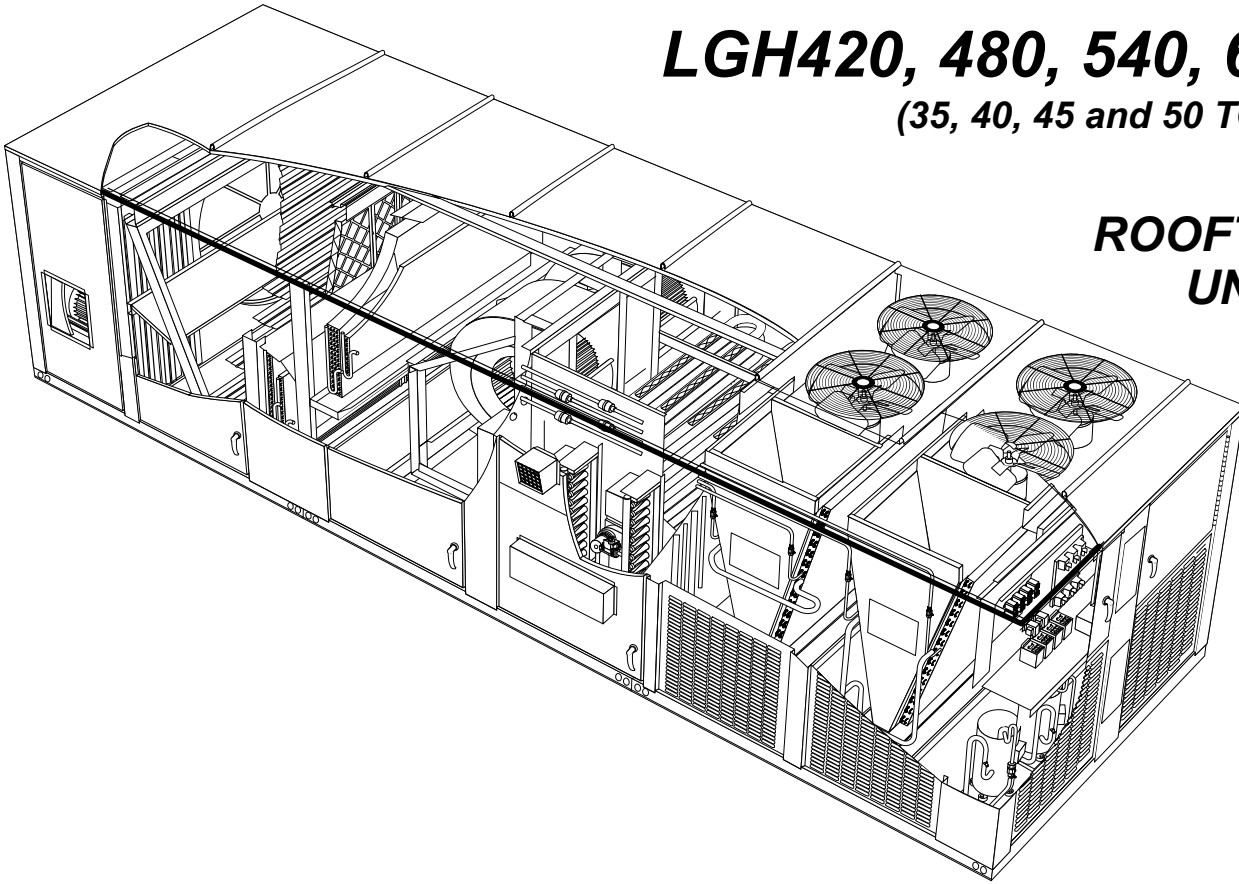


See unit nameplate for manufacturer  
and address.  
506345-02  
9/2015  
Supersedes 506345-01

# USER'S INFORMATION MANUAL

## LGH420, 480, 540, 600 (35, 40, 45 and 50 TONS)

### ROOFTOP UNITS



**READ ALL INSTRUCTIONS IN THIS MANUAL  
AND RETAIN FOR FUTURE REFERENCE**

TP Technical  
Publications  
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|   |  |
|---|--|
|  | <b>⚠ WARNING</b>   |
|  | <b>FIRE OR EXPLOSION HAZARD</b>  |
|   | 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:

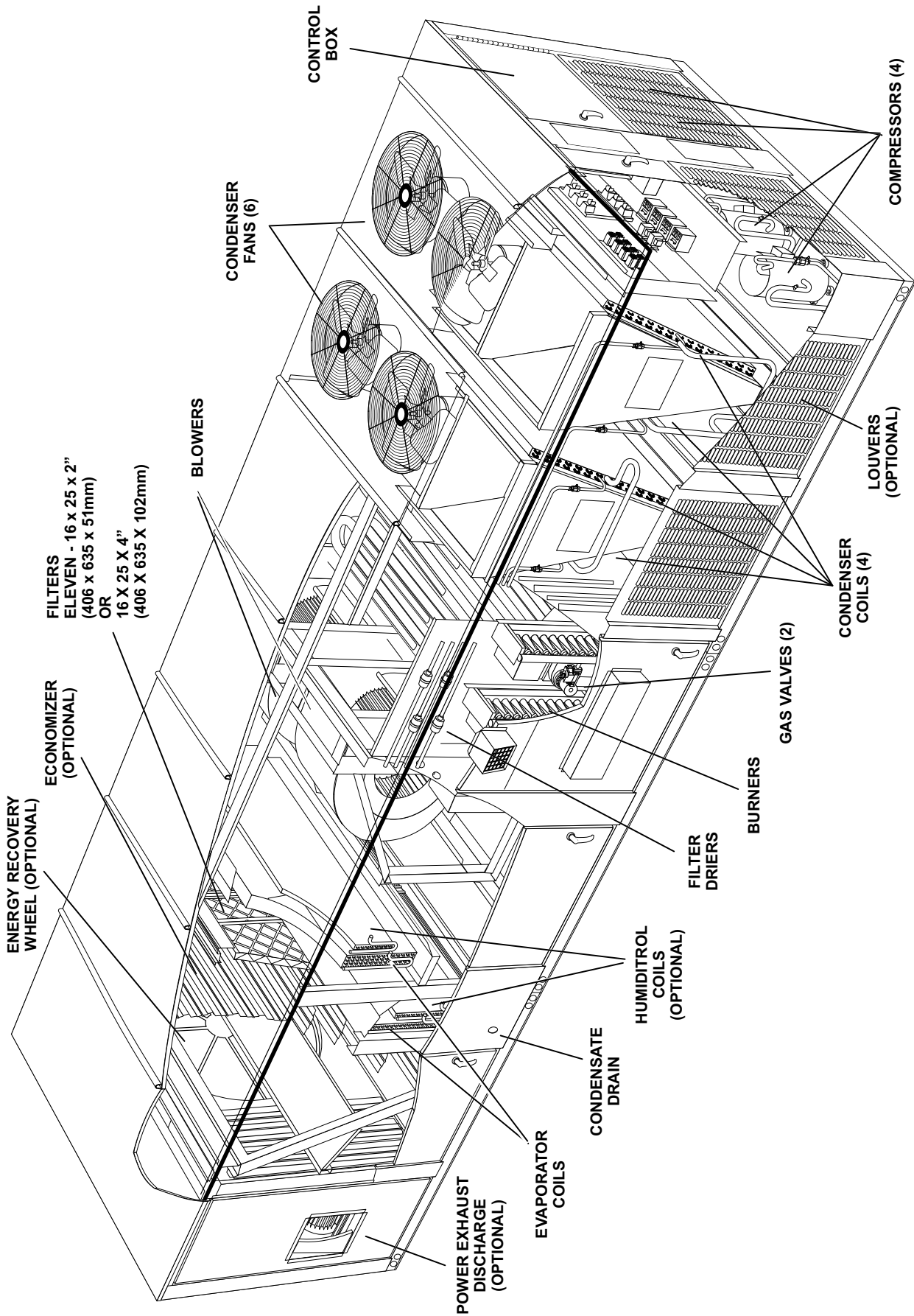
- Do not try to light any appliance.
- Extinguish any open flames.
- Do not touch any electrical switch; do not use any phone in your building.
- Leave the building immediately.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.



0915

506345-02

# LGH420, 480, 540, 600 PARTS ARRANGEMENT



## Safety

- 1- Keep unit area clear and free of combustible materials, gasoline and other flammable vapors and liquids.
- 2- Do not obstruct air flow to unit. Unit must receive an unobstructed flow of combustion and ventilating air.

### ⚠️ WARNING



Danger of explosion and fire. Failure to follow safety warnings exactly could result in dangerous operation, serious injury, death or property damage.

### ⚠️ 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 HVAC installer or equivalent, service agency, or the gas supplier

### ⚠️ WARNING



Electric shock hazard. Can cause injury or death. Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch(es). Unit may have multiple power supplies.

### ⚠️ WARNING

The State of California has determined that this product may contain or produce a chemical or chemicals, in very low doses, which may cause serious illness or death. It may also cause cancer, birth defects, or reproductive harm.

### ⚠️ CAUTION

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

### ⚠️ WARNING



Danger of electrical shock, explosion and fire. Improper servicing could result in dangerous operation, serious injury, death or property damage.

### ⚠️ WARNING

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.

### ⚠️ 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.

## Unit Operation

### FOR YOUR SAFETY READ BEFORE LIGHTING

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

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.

The unit is equipped with an automatic spark ignition system. There is no pilot. In case of a safety shutdown, move thermostat switch to **OFF** and return the thermostat switch to **HEAT**. For logic units and units with electronic temperature controls, shut off the main disconnect and then turn it on to reset the ignition control.

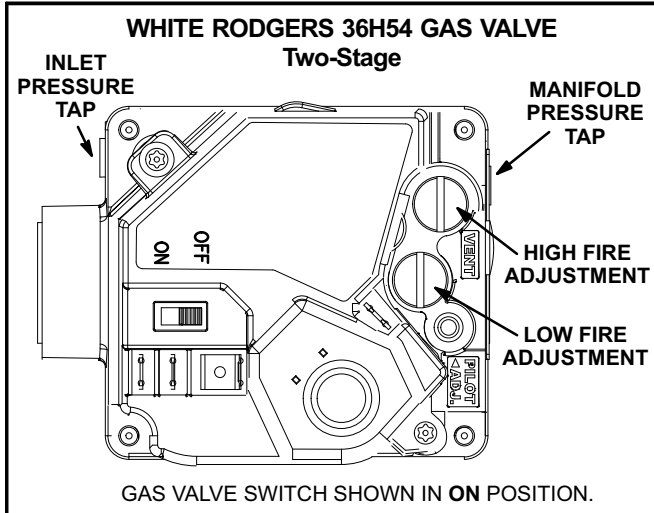
## Placing Unit Into Operation

### **⚠ WARNING**

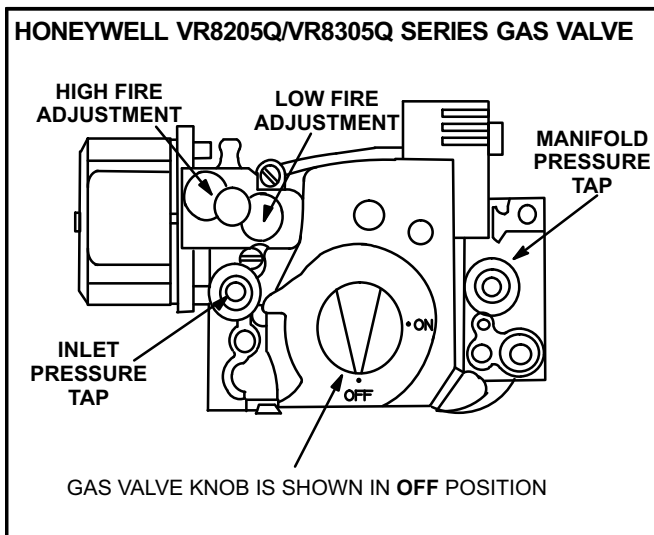


**Danger of explosion and fire. Can cause injury or product or property damage. You must follow these instructions exactly.**



### Gas Valve Operation for White Rodgers 36H54 and Honeywell VR8205Q/VR8305Q (figure 1 and 2)




**FIGURE 1**



**FIGURE 2**

- 1- Set thermostat to lowest setting.
- 2- Turn off all electrical power to appliance.
- 3- This appliance is equipped with an ignition device which automatically lights the burner. Do **not** try to light the burner by hand.
- 4- Open or remove the heat section access panel.
- 5- Turn gas valve switch to **OFF**. See figure 1. On Honeywell VR8305Q gas valves, turn knob on gas valve clockwise  to **OFF**. Do not force. See figure 2.
- 6- Wait five (5) 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 the next step.
- 7- Turn gas valve switch to **ON**. See figure 1. On Honeywell VR8305Q gas valves, turn the knob on the gas valve counterclockwise  to "**ON**". Do not force. See figure 2.
- 8- Close or replace the heat section access panel.
- 9- Turn on all electrical power to appliance.
- 10- Set thermostat to desired setting.
- 11- The ignition sequence will start.
- 12- If the appliance does not light the first time (gas line not fully purged), it will attempt up to two more ignitions before locking out.
- 13- If lockout occurs, repeat steps 1 through 10.
- 14- If the appliance will not operate, follow the instructions "Turning Off Gas to Appliance" and call your service technician or gas supplier.

### Turning Off Gas to Unit

- 1- If using an electromechanical thermostat, set to the lowest setting.
- 2- Before performing any service, turn off all electrical power to the appliance.
- 3- Open or remove the heat section access panel.
- 4- Turn the knob on the gas valve clockwise  to "**OFF**". Do not force.
- 5- Close or replace the heat section access panel.

### **⚠ WARNING**



**Danger of explosion. Can cause injury or death. Do not attempt to light manually. Unit has a direct spark ignition system.**

## Burner Flame

### ⚠ WARNING



**Danger of explosion and fire. Can cause injury or product or property damage. Periodically inspect burner flame to ensure proper unit operation.**

The primary air is permanently set for normal operation. The flame will be basically blue with some clear yellow streaking in the end of the flame. Inspect the burner flame periodically during the heating season using the inspection port provided on the burner access panel.

## Flue Passage and Vent Inspection

Annually, before heating season, inspect the combustion air louvers, vent cap, heat exchanger, burners and combustion air inducer for corrosion, deterioration or deposits of debris. Remove any obstructions or blockage. See figure 3.

## Service

To maintain efficiency and longevity, your equipment must be serviced yearly by a qualified service technician. Failure to provide proof of service can void warranty.

### ⚠ CAUTION

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

## Servicing Filter

Units are equipped with eleven 16 X 25 X 2" (406 X 635 X 51mm) or 16 X 25 X 4" (406 X 635 X 102mm) filters. Filters should be checked monthly and replaced when necessary with filters of like kind and size. Take note of air flow direction marking on filter frame when reinstalling filters. See figure 4.

*NOTE - Filters must be ULC approved or equivalent for use in Canada.*

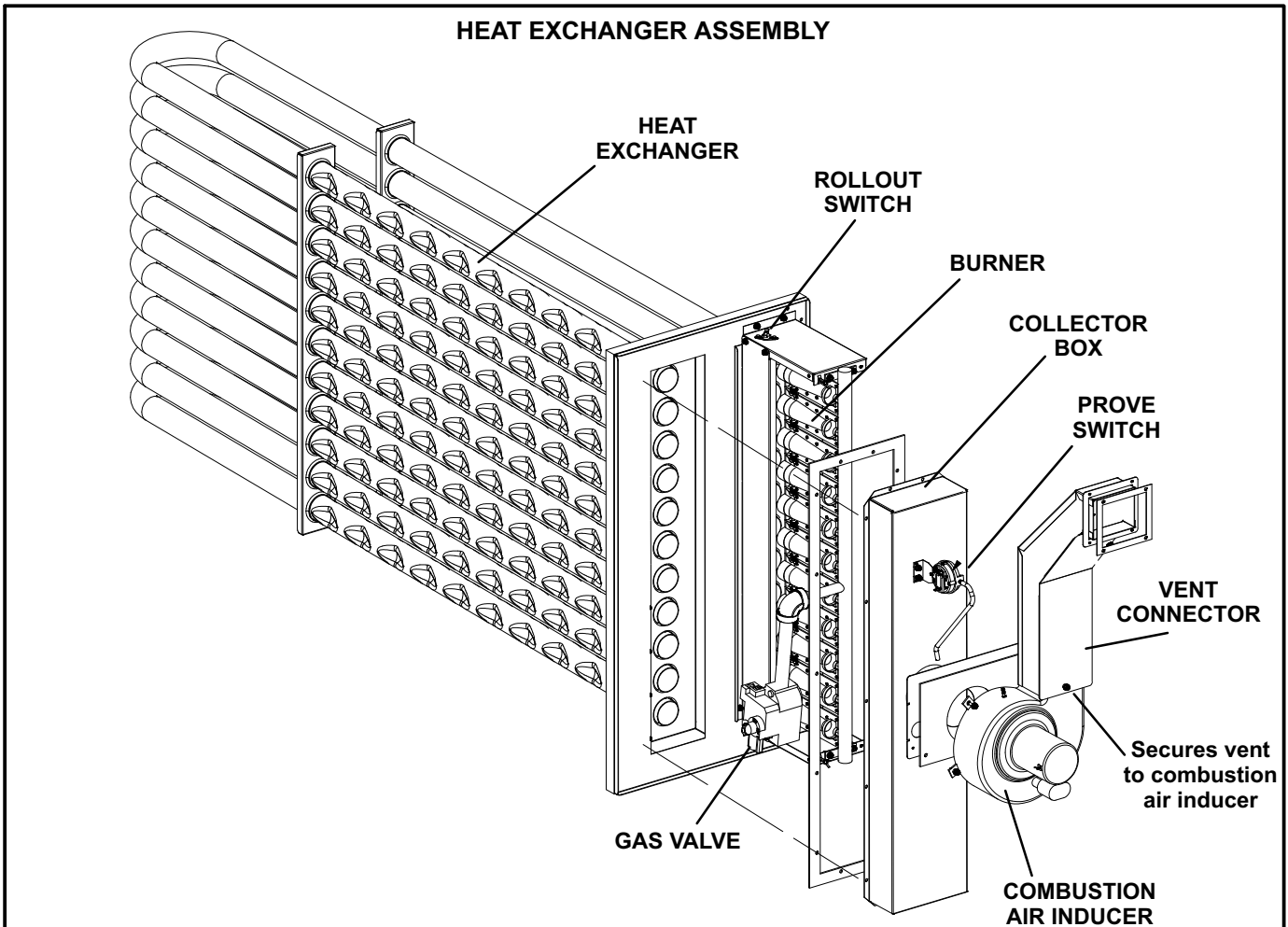


FIGURE 3

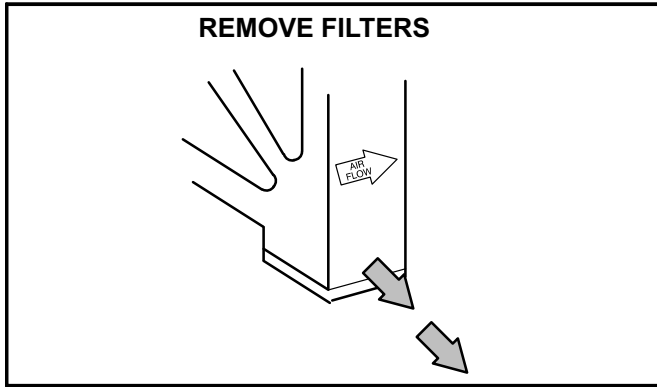


FIGURE 4

### Lubrication

All motors are lubricated at the factory. No further lubrication is required.

Blower shaft bearings are prelubricated. For extended bearing life, relubricate at least once every two years with a lithium base grease, such as Alvania 3 (Shell Oil), Chevron BRB2 (Standard Oil) or Regal AFB2 (Texas Oil). Use a hand grease gun for relubrication. Add only enough grease to purge through the bearings so that a bead of grease appears at the seal lip contacts.

### Manifold Pressures

Manifold pressures are shown in table 1. Refer to figures 1 and 2 to locate pressure ports.

**TABLE 1**  
**MANIFOLD PRESSURES** in.wg. (kPa)

| Unit    | Natural Gas              |                          | Propane (LP) Gas         |                          |
|---------|--------------------------|--------------------------|--------------------------|--------------------------|
|         | 1st Stage<br>± 0.2(±.05) | 2nd Stage<br>± 0.3(±.08) | 1st Stage<br>± 0.2(±.05) | 2nd Stage<br>± 0.3(±.08) |
| 420-600 | 1.6 (0.40)               | 3.7 (0.92)               | 5.5 (1.37)               | 10.5(2.61)               |

See Optional Modulating Gas Valve (MGV) section on units equipped with MGVs.

### Burners

- 1- Periodically examine burner flames for proper appearance during the heating season.
- 2- Inspect the position of the flame sensor. Sensor should be centered in the path of the flame.
- 3- Before each heating season examine the burners for any deposits or blockage which may have occurred. Clean burners as follows.
- 4- Turn off the electrical power and gas supply to the unit and open heat section access panel.
- 5- Remove and retain two screws securing burners to the burner support. See figure 5. Clean as necessary. Replace burners and secure with retained screws.

## ⚠ WARNING



Danger of explosion. Can cause injury or death. Do not overtighten main burner mounting screws. Snug tighten only.

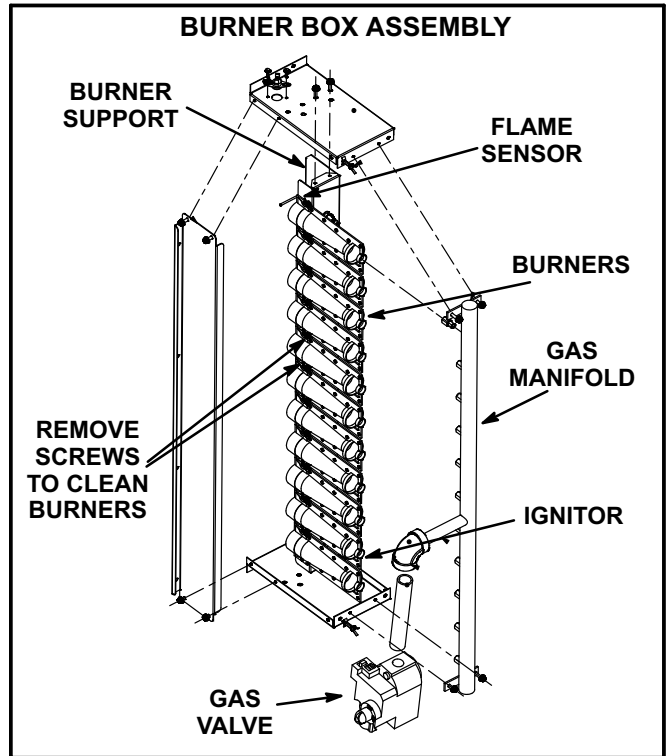


FIGURE 5

- 6- Remove and retain the two screws securing the ignitor to the burner support. Remove the burner and check the spark gap with appropriately sized twist drills or feeler gauges. See figure 6.
- 7- Replace the ignitor and secure in place with retained screws.

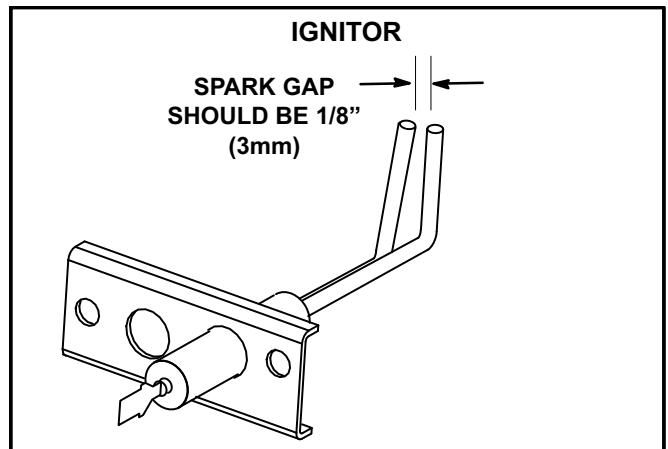


FIGURE 6

- 8- Restore electrical power and gas supply. Follow lighting instructions attached to unit and use inspection port in access panel to check flame.

## Combustion Air Inducer

A combustion air inducer proving switch checks combustion air inducer operation before allowing power to the gas controller. The gas controller will not operate if the inducer is obstructed.

Under normal operating conditions, the combustion air inducer wheel should be checked and cleaned prior to the heating season. However, it should be examined periodically during the heating season to establish an ideal cleaning schedule.

Clean the combustion air inducer as follows:

- 1- Turn off the electrical power and the gas supply to the unit.
- 2- Disconnect the pressure switch air tubing from the combustion air inducer port.
- 3- Remove and retain the screws securing the combustion air inducer to the flue box. Remove and retain the screw securing the combustion air inducer to the vent connector. See figure 3.
- 4- Clean the inducer wheel blades with a small brush and wipe off any dust from the housing. Clean accumulated dust from the front of the collector box cover.
- 5- Return the combustion air inducer motor to the original location and secure with retained screws. It

is recommended that the combustion air inducer gasket be replaced during reassembly.

- 6- Use a small brush to clean the combustion air inlet louvers on the heat access panel.

## Flue Passageway and Flue Box

- 1- Remove the combustion air inducer assembly as described in the Combustion Air Inducer subsection.
- 2- Remove the flue box cover. Clean the flue box with a wire brush as required.
- 3- Clean the tubes with a wire brush.
- 4- Reassemble the unit. The flue box cover gasket and combustion air inducer gasket should also be replaced during reassembly.

## Service Reminder

Call a qualified service technician if the unit is inoperative. Before calling, always check the following to be sure service is required:

- 1- Be sure electrical disconnect switches are **ON**.
- 2- Check room thermostat for proper setting.
- 3- Replace any blown fuses or reset circuit breakers.
- 4- Gas valve should be **ON**.
- 5- Air filters should not be plugged, limiting air flow.
- 6- Make sure all access panels are in place.

## Repair Parts Listing

When ordering repair parts, include the complete model number and serial number listed on the ETL rating plate - e.g. LGH480H4BH1Y.

### Gas Heat Section Parts

Heat Exchanger  
Combustion Air Assembly  
Combustion Air Proving Switch  
Burner Assembly  
Burner Manifold Assembly  
Main Burner Orifices  
Flame Roll-out Switches  
Auxiliary Limit Controls  
Ignition Electrode Assembly  
Ignition Lead  
Ignition Sensor Assembly  
Sensor Lead  
Combination Gas Valve  
Limit Controls

### Cooling Parts

Compressors  
Condenser Fan Motors  
Condenser Fan Blades  
Condenser Fan Run Capacitors  
Freezestats  
Condenser Fan Mounting Bracket  
Fan Grille  
Indoor Blower Motors  
Blower Wheel  
Expansion Valve  
Distributor  
Exhaust Fans (Opt.)

### Electrical Control Parts

Unit Controller  
Compressor Contactors  
Circuit Breakers (Opt.)  
Transformer (Control)  
Transformer (Contactor)  
Blower Contactor  
Limit, Blower Relay  
Heat Relays  
Condenser Fan Relays  
Capacitor CAB  
Relay CAB  
Crankcase Heaters  
Disconnect Switch (Opt.)

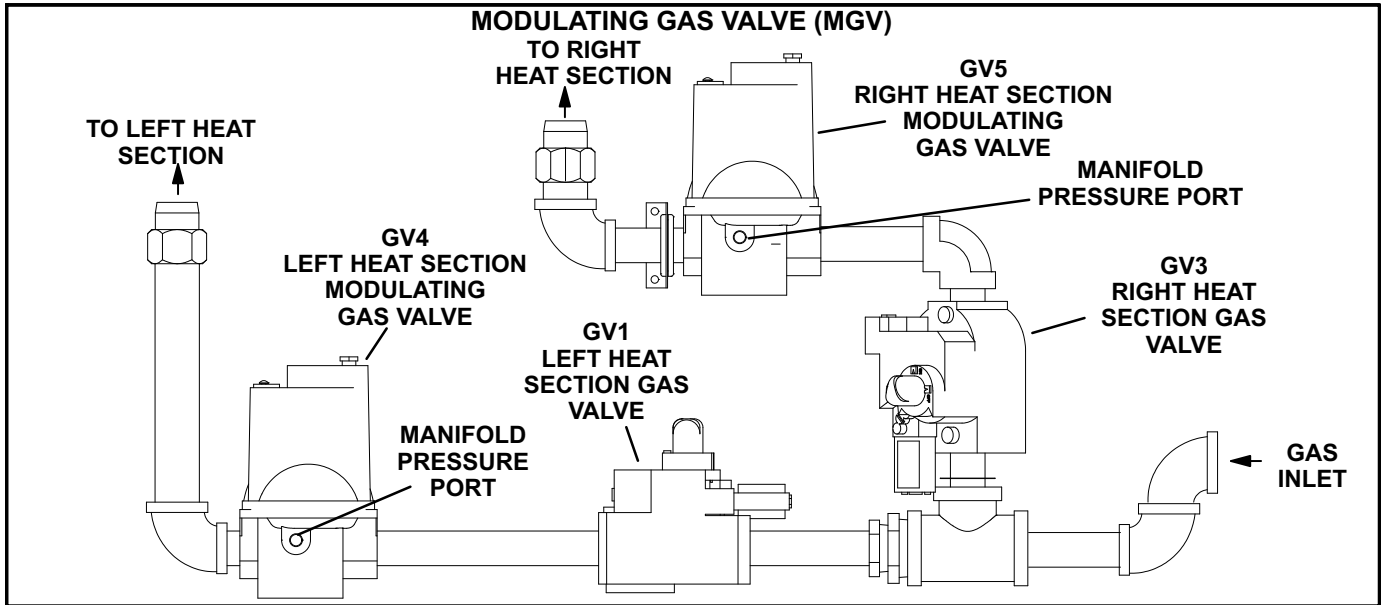


FIGURE 7

**Optional Modulating Gas Valve (MGV)**

Units equipped with optional modulating gas valves (MGV) contain two modulating gas valves in addition to two standard gas valves. See figure 7.

**Operation**

The Unit Controller will control modulating gas valves to maintain 110°F (default) discharge air during the heating cycle. The left heat section will operate when 25-50% of nameplate heat is needed. Both heat sections will operate when 50-100% of the nameplate heat is needed. The normally open MGV will allow full heating capacity should the MGV fail.

**Start-Up**

- 1- Operate the unit in heating mode according to the Heating Start-Up section in this manual.
- 2- After the unit has operated for 5 minutes, turn the OPT1 and OPT2 switches ON. See figure 8. The unit will operate at maximum heating input.
- 3- Measure the manifold pressure at the gas valves. Manifold pressures should be:
  - GV1 & GV3:  
Natural - 4.0" w.c. LP - 10.8" w.c.
  - GV4 & GV5:  
Natural - 3.7" w.c. LP - 10.5" w.c.
- 4- Turn the OPT2 switch OFF. The unit will operate at minimum heating input.
- 5- Measure the manifold pressure at the gas valves. Manifold pressures should be:
  - GV1 & GV3:  
Natural - 4.0" w.c. LP - 10.8" w.c.
  - GV4 & GV5:  
Natural - 0.9" w.c. LP - 2.6" w.c.

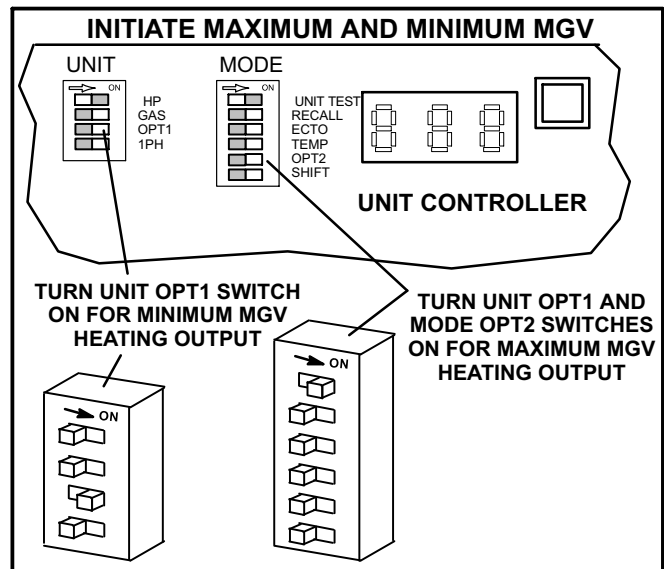


FIGURE 8

- 6- Turn OPT1 switch OFF.

**NOTE - BOTH OPT1 AND OPT2 SWITCHES MUST BE OFF FOR NORMAL UNIT OPERATION.**

**Unit Controller Output**

The Unit Controller 0-10VDC output to the MGVs increases to modulate valves further closed during a reduced heating demand. The Unit Controller 0-10VDC output to the MGVs decreases to modulate valves further open during a higher heating demand.

