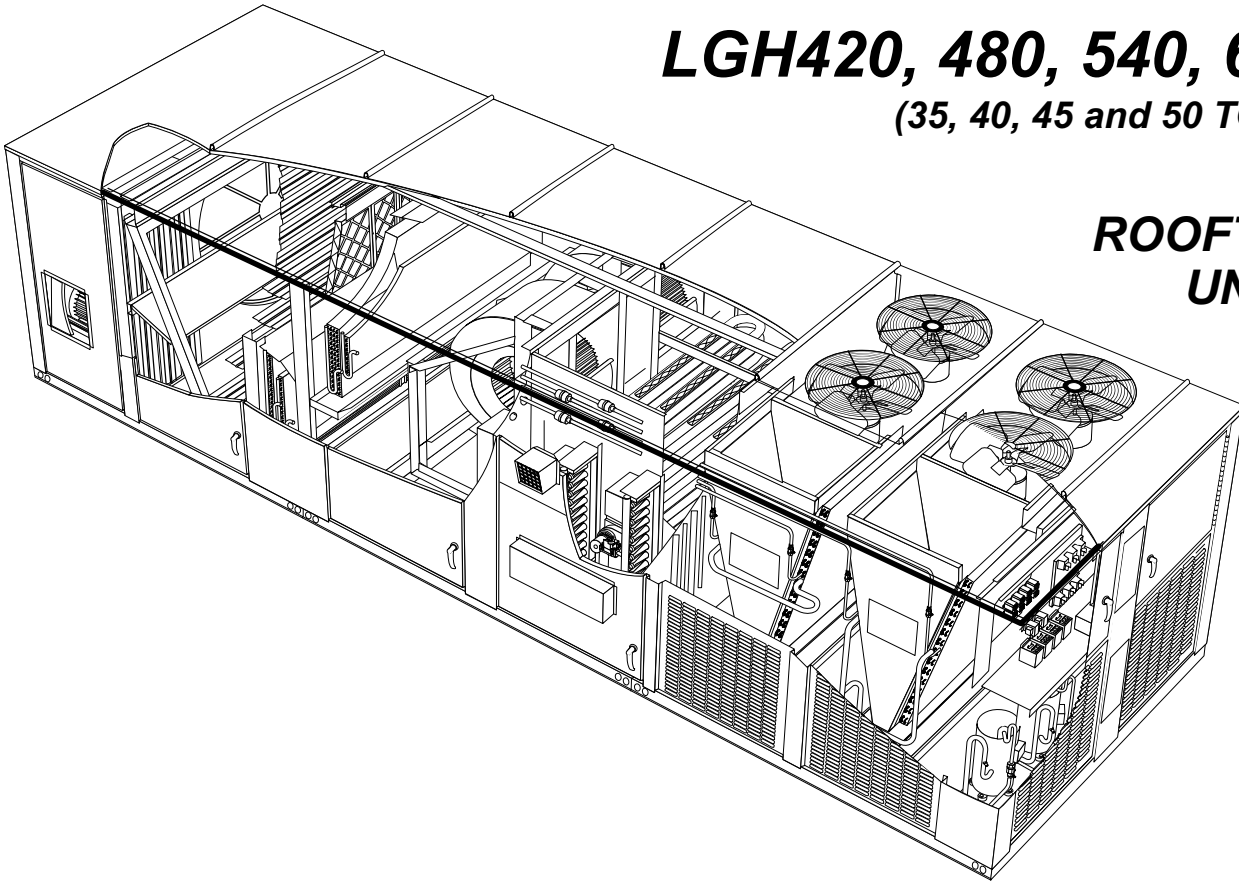


See unit nameplate for manufacturer
and address.
506345-01
8/2009

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
Litho U.S.A.
©2009



⚠ 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.

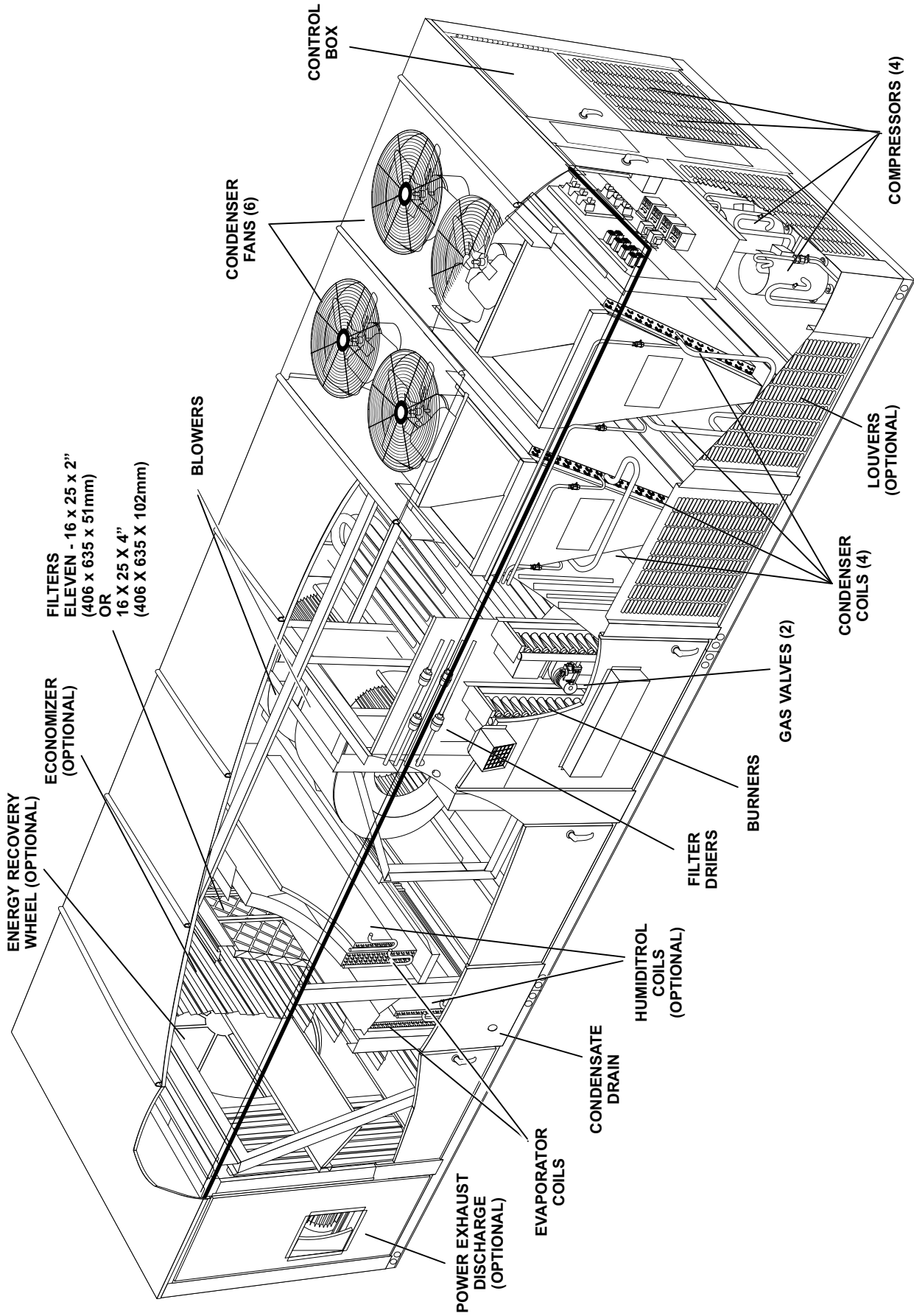
Installation and service must be performed by a qualified installer, service agency or the gas supplier.

WHAT TO DO IF YOU SMELL GAS:

- Do not try to light any appliance.
- 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.



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 qualified installer, 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

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.

P.O. Box 79990

Dallas, TX 75379-9900 USA

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**. Electromechanical thermostat is shown in figure 1. For logic units and units with electronic temperature controls, shut off the main disconnect and then turn it on to reset the ignition control.

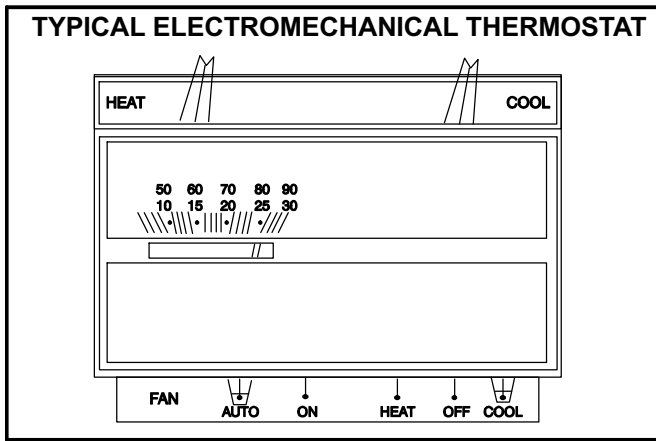


FIGURE 1

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 Honeywell VR8205Q/VR8305Q (figure 2)

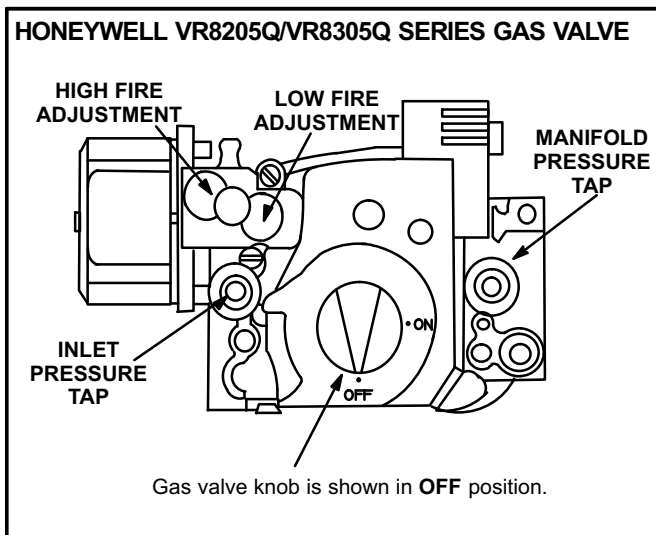


FIGURE 2

- 1- Set thermostat to lowest setting.
- 2- Turn off all electrical power to furnace.
- 3- This furnace 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 the knob on the gas valve clockwise to "OFF". Do not force.
- 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 the knob on the gas valve counterclockwise to "ON". Do not force.
- 8- Close or replace the heat section access panel.
- 9- Turn on all electrical power to furnace.
- 10- Set thermostat to desired setting.
- 11- The ignition sequence will start.
- 12- If the furnace 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 furnace will not operate, follow the instructions "Turning Off Gas to Furnace" and call your service technician or gas supplier.

Turning Off Gas to Furnace

- 1- If using an electromechanical thermostat, set to the lowest setting.
- 2- Before performing any service, turn off all electrical power to the furnace.
- 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.

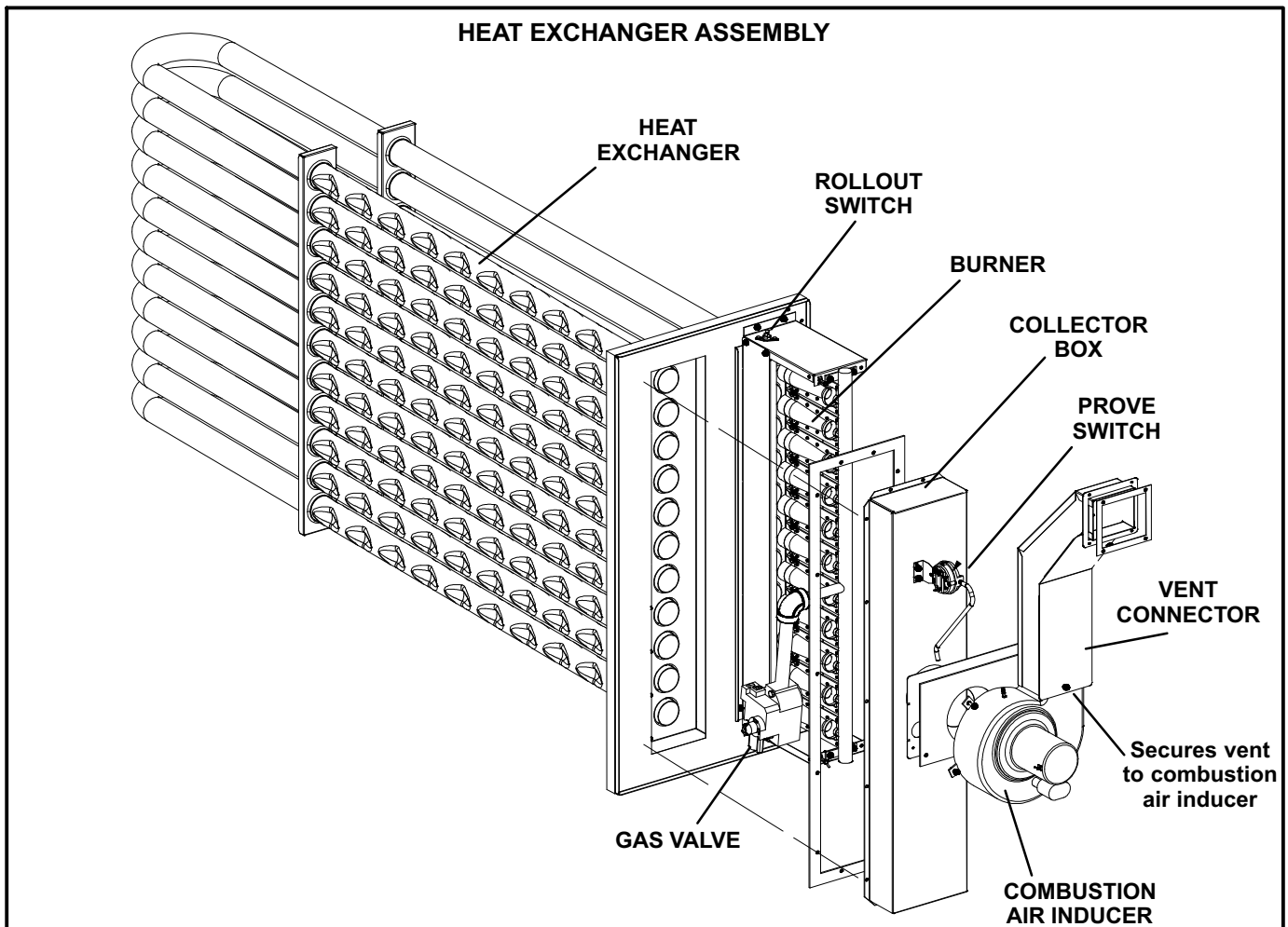


FIGURE 3

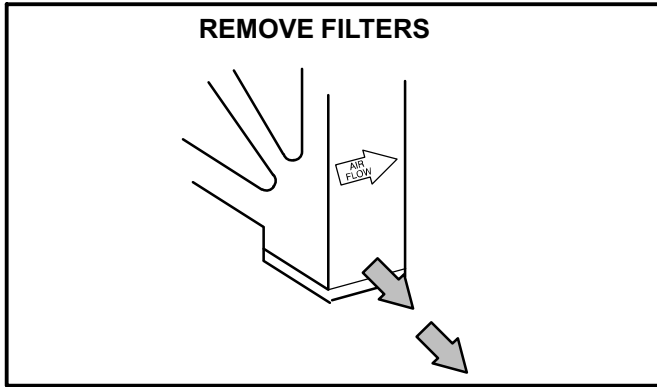


FIGURE 4

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 figure 2 to locate pressure ports.

TABLE 1
MANIFOLD PRESSURES in.wg. (kPa)

Unit	Natural Gas		Propane (LP) Gas	
	1st Stage ± 0.2(±.05)	2nd Stage ± 0.3(±.08)	1st Stage ± 0.2(±.05)	2nd Stage ± 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.

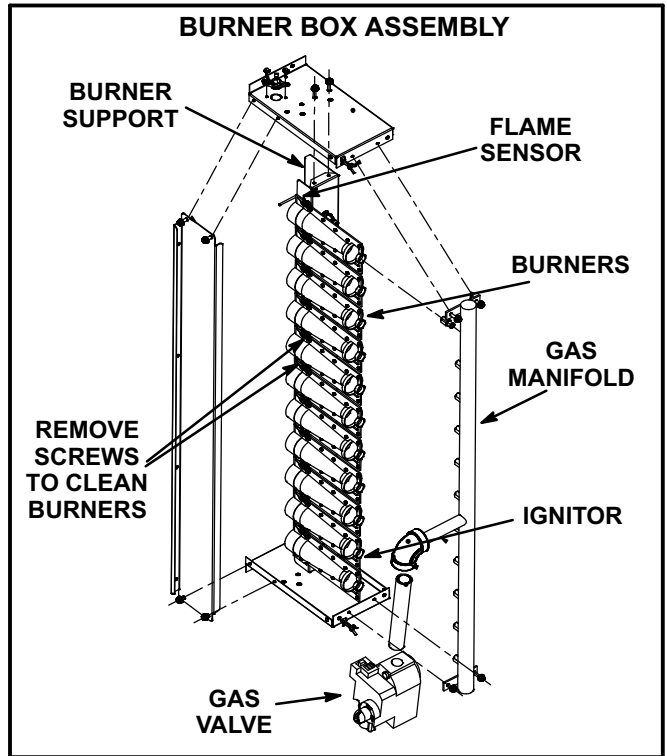


FIGURE 5

- 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.

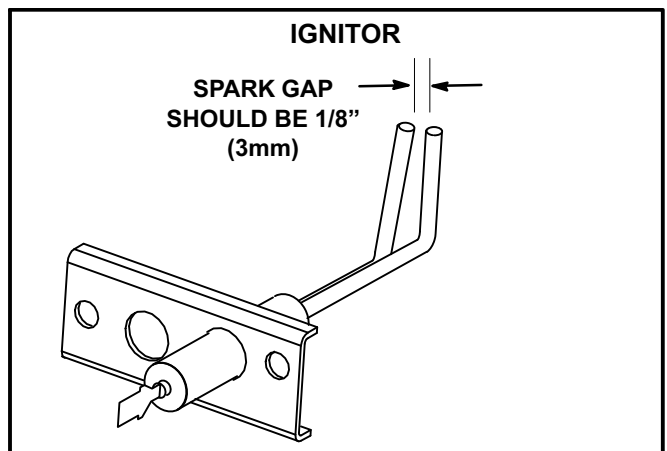


FIGURE 6

- 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.)

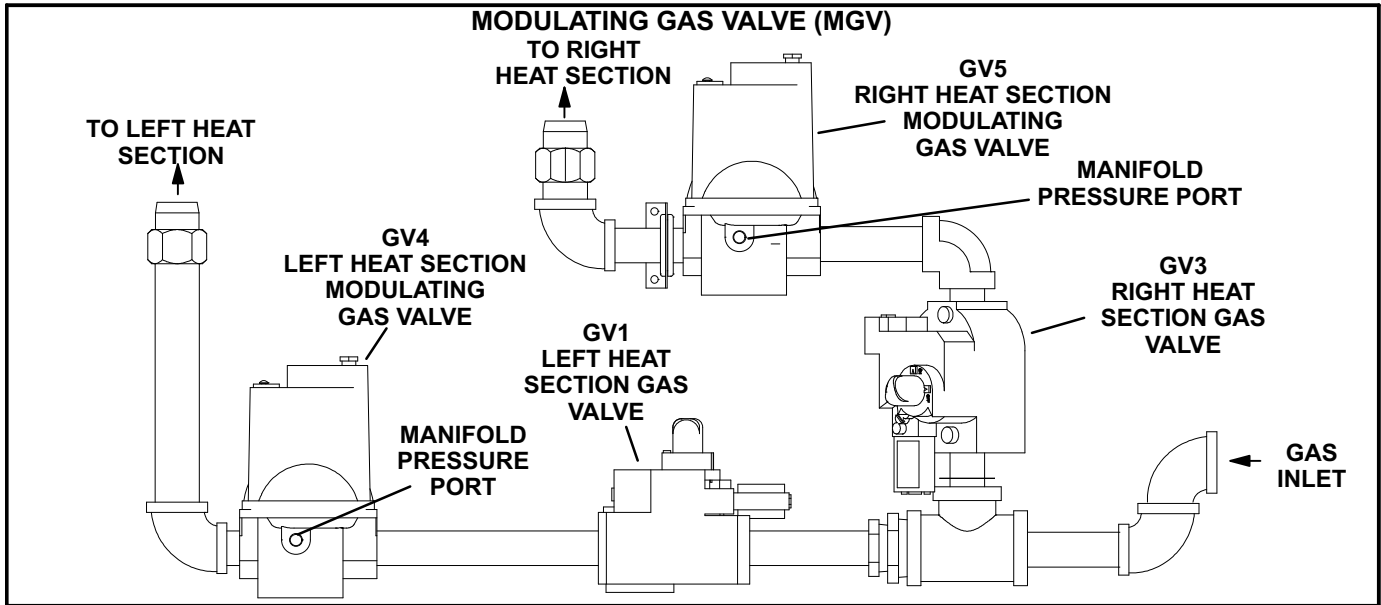


FIGURE 7

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.

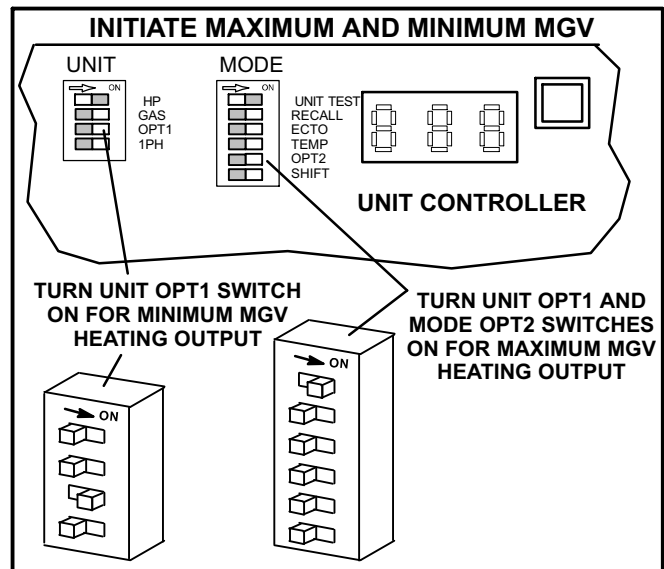


FIGURE 8

- 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.

