

Call by Continental Refrig - 2021 JAS

310-838-6666

\$70 to give estimate

14" x 24" x 1"

FILTER - 13 7/8 x 23 7/8 x 7/8

GCS16H-261=501P s/n 5491307533

Installed 3/91 by Polar Refrigeration

Condenser fan replace in 1993

Heater valve serviced 1/98

Mike

Centinella Refrigeration & Heating
5900 Smiley Drive
Culver City, CA

310/838-6666

Installation operation and service instructions

JASMIN#6

GCS16-261 Through -650 Series Units

ROOFTOP UNITS
502.492M
11/90
Supersedes 7/90

RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE

FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

*con fan motor out 8/02
con flow motor out 8/03*

WARNING

Improper installation, adjustment, alteration, service, or maintenance can cause injury or property damage. Refer to this manual. For assistance or additional information, consult a qualified installer, service agency, or the gas supplier.

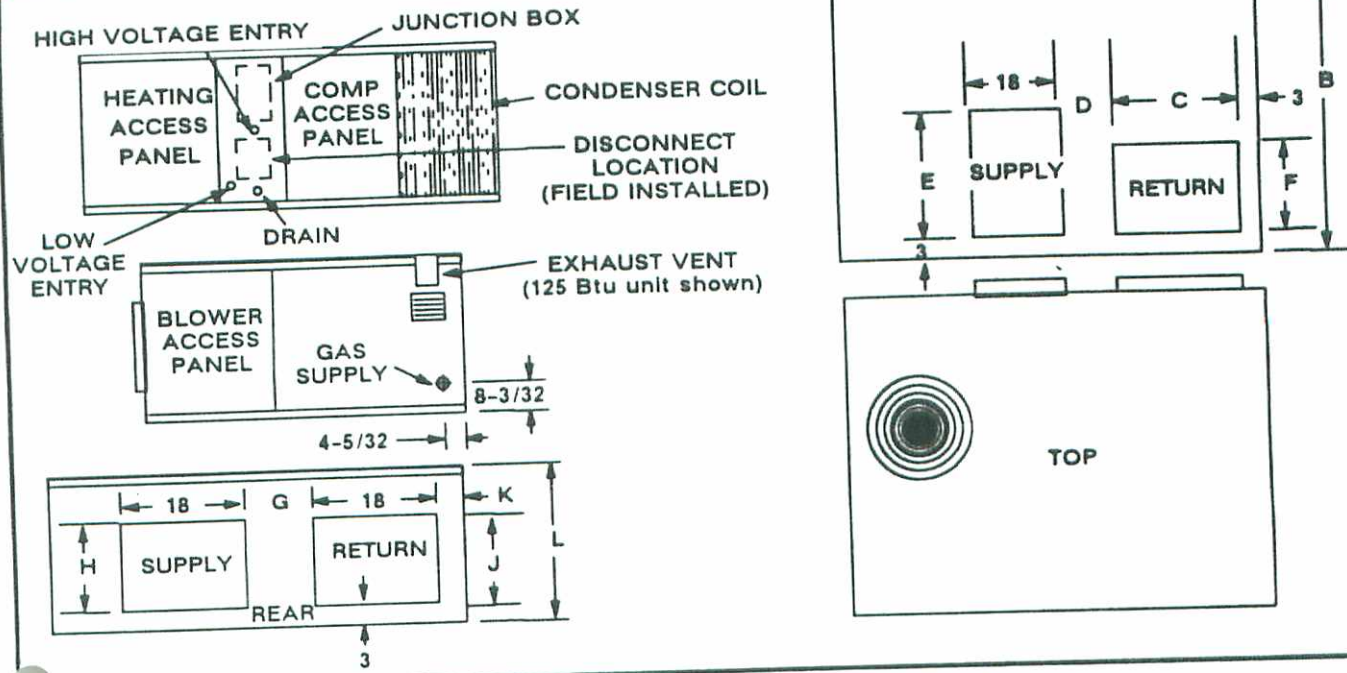
FOR YOUR SAFETY

WHAT TO DO IF YOU SMELL GAS:

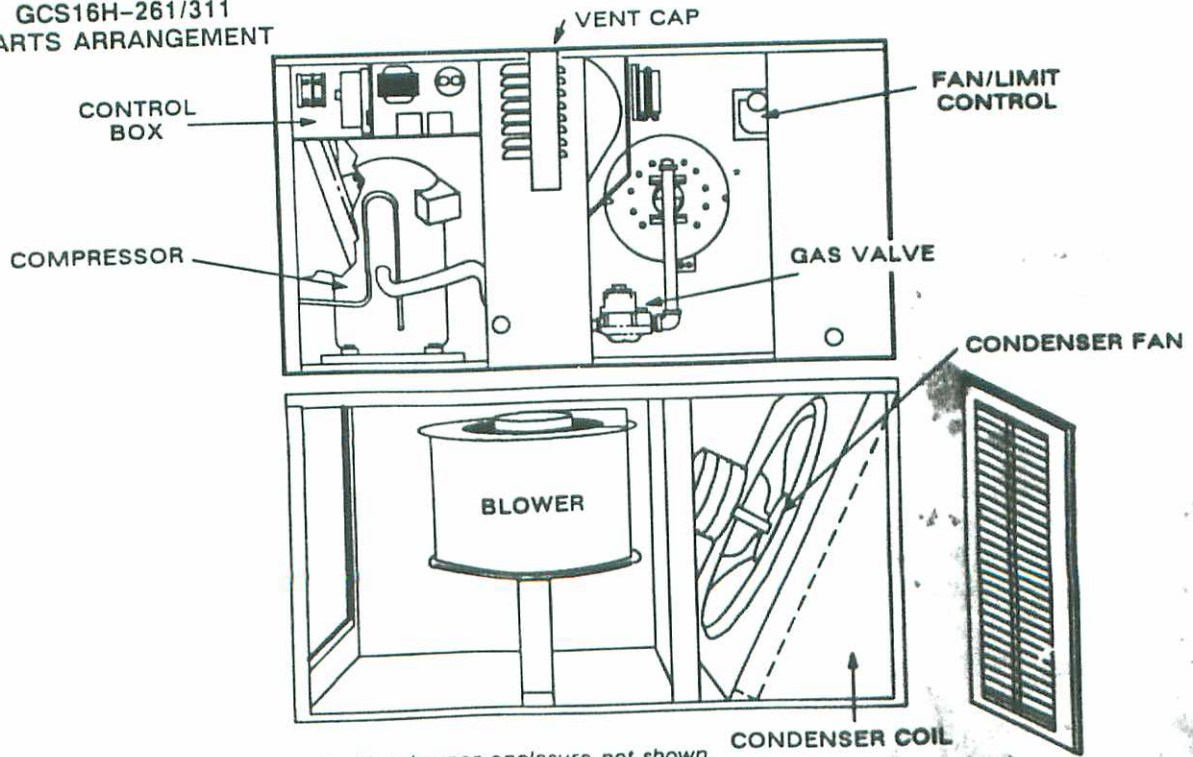
- Do not try to light any appliance
- Open Windows
- Do not touch any electrical switch; Do not use the phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

GCS16-510 THROUGH 650 UNIT DIMENSIONS

MODEL	A	B	C	D	E	F	G	H	J	K	L
GCS16-510/650	72-9/16	52-1/16	22	7-1/2	22	18	5	22	22	3	29



GCS16H-261/311 PARTS ARRANGEMENT



*NOTE- Some units are equipped with a burner enclosure not shown.

A-Placing Unit In Operation (Heating Cycle)

FOR YOUR SAFETY READ BEFORE LIGHTING

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

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

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.

Refer to gas valve operation sticker located on the front of the unit and figure 5 for gas valve identification.

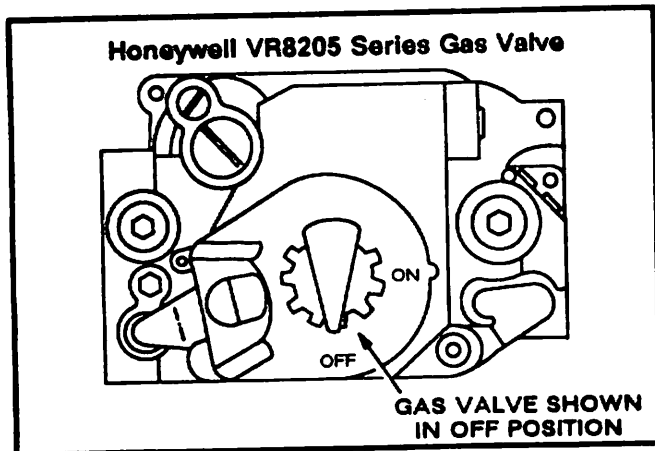




FIGURE 5


Gas Valve Operation for Honeywell VR8205 Series Gas Valve (Figure 5)

- 1- **STOP!** Read the safety information at the beginning of this section.
- 2- Set thermostat to lowest setting.
- 3- Turn off all electric power to appliance.
- 4- This unit is equipped with an ignition device which automatically lights the burner. Do not attempt to light the burner by hand.
- 5- Remove control access panel.
- 6- Turn manual knob on gas valve clockwise  to **OFF**. Do not force.
- 7- 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 next step.

- 8- Turn manual knob on gas valve counterclockwise  to **ON**.

- 9- Replace control access panel.
- 10- Turn on all electric power to the appliance.
- 11- Set thermostat to desired setting.
- 12- If the appliance will not operate, follow the instructions "To Turn Off Gas To Unit" and call your service technician or gas supplier.

B-To Turn Off Gas To Unit

- 1- Set thermostat to lowest setting.
- 2- Turn off all electric power to unit if service is to be performed.
- 3- Remove control access panel.
- 4- Turn knob on gas valve clockwise  to **OFF**. Do not force.
- 5- Replace control access panel.

IV-FLUE PASSAGE AND VENT INSPECTION

The combustion air pressure switch checks the combustion air blower operation before allowing power to the ignition controller. Ignition controller will not operate if blower is obstructed.

Under normal operating conditions, the combustion air blower wheel should be inspected prior to heating season. With power supply disconnected, the condition of the blower wheel can be determined by removing the vent cap assembly and looking through the exhaust vent. Remove any deposits of debris from vent cap assembly before reinstalling it on unit. If cleaning combustion air blower is necessary, contact a qualified service technician.

V-Periodic Unit Inspection

Contact your dealer for a periodic unit inspection by a qualified service technician.

VI-BURNER FLAME

CAUTION-Before each heating season and periodically thereafter inspect burner flame to ensure proper operation.

- 1- Burner is factory set and does not require adjustment. The flame should be blue with clear yellow streaking. Refer to figure 7.
- 2- The spark gap on the ignition electrode must be $1/8" \pm 1/64"$. The electrode assembly can be removed from unit by removing two screws securing the electrode assembly and sliding it out of unit. The gap can be checked using properly sized twist drills or feeler gauges.

XV-ELECTRICAL CONNECTIONS

Wiring must conform to any local codes and the current National Electric Code (NEC) and Canadian Electric Code (CEC). Refer closely to unit wiring diagram in figures 12, 13 and 14 for proper wiring connections.

Refer to unit nameplate for minimum circuit ampacity and maximum fuse size. Compressor model number and electrical data are found on rating plate and compressor nameplate. Evaporator and condenser fan motor sizes and electrical data are listed on unit rating plate and motor nameplates. For thermostat wire runs up to 60 feet, use 18 gauge wire. For 60 to 90 foot runs, use 16 gauge wire.

- 1- Complete wiring according to field wiring diagram or unit diagram on inside of unit.
- 2- Make sure the thermostat is located where it will not be affected by sunlight, drafts or vibration. A position approximately 5 feet (1.5 m) from the floor, near the center of the structure is desirable. Connect low voltage wiring to thermostat and to unit. Refer to figure 10 for GCS16H and GCS16R series units. All other units refer to figure 11 for thermostat wiring.
- 3- Connect line voltage power supply to the unit from the disconnect switch.
- 4- Unit is equipped with a ground screw. Ground unit with a suitable ground connection either through unit supply wiring or an earth ground.

NOTE-Unit low and high voltage wire openings must be sealed weathertight after wiring is completed.

XVI-CLEAN-UP

After unit is operating properly proceed with the following:

- 1- Replace any access panels.
- 2- Caulk any open joints, holes or seams to make unit completely waterproof.
- 3- Set room thermostat to desired settings.
- 4- Leave this instruction with owner or in an envelope to be kept near the unit.

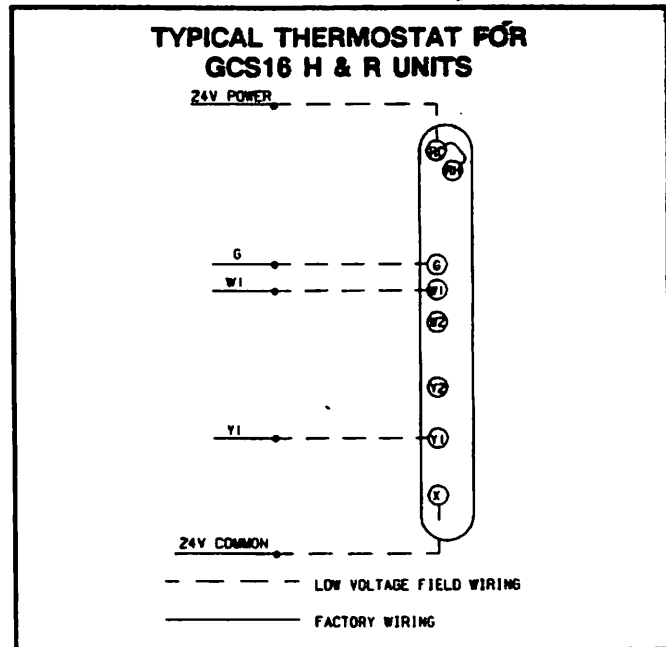


FIGURE 10

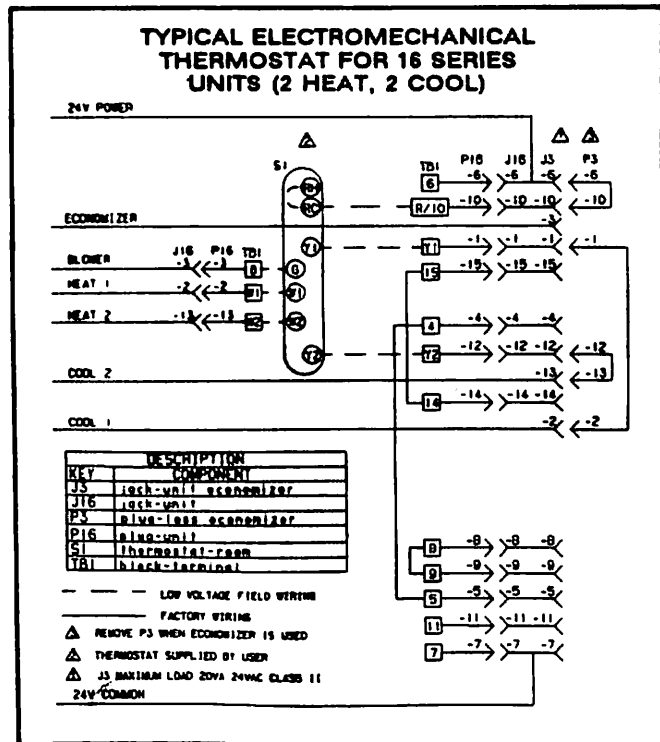


FIGURE 11

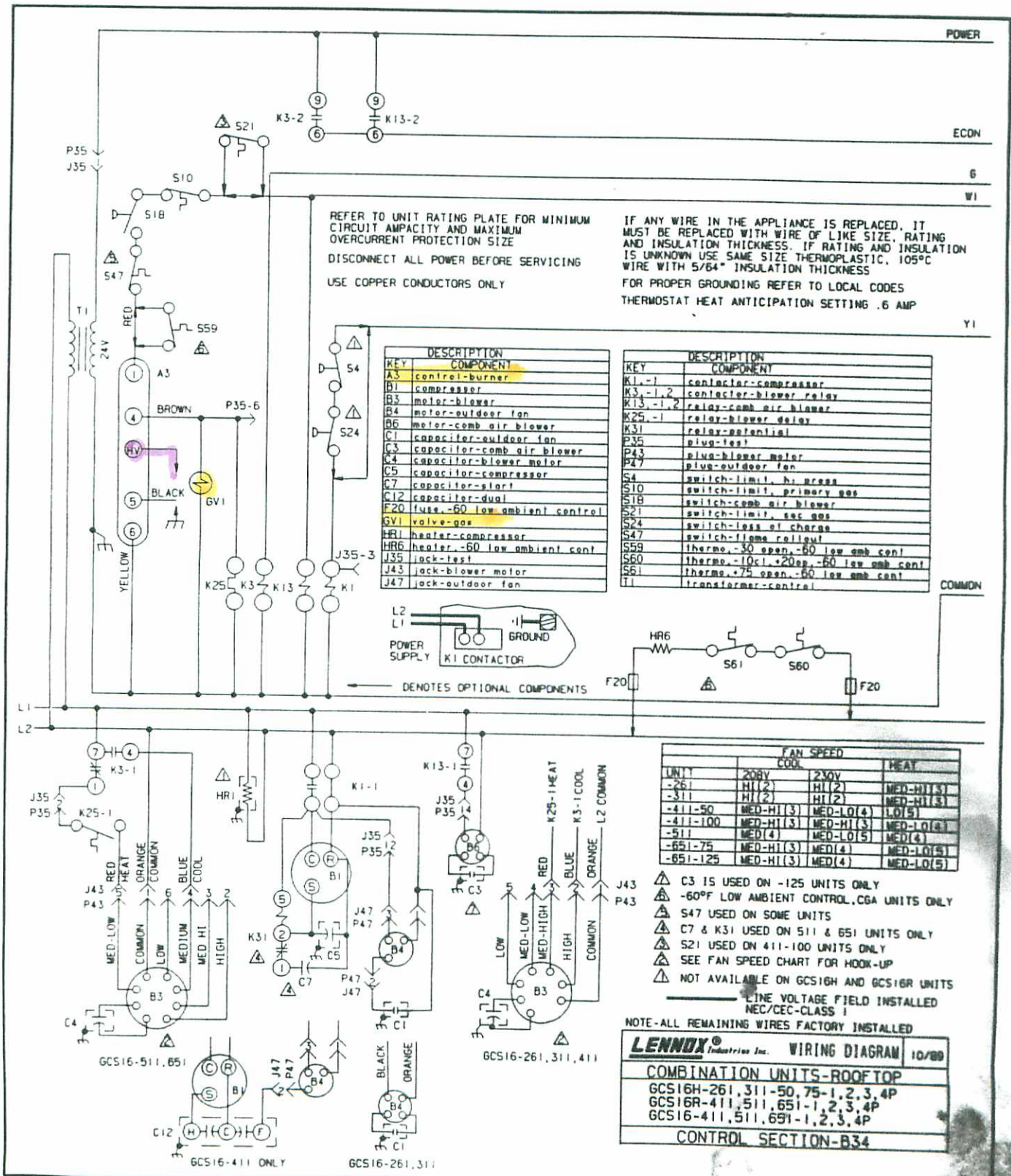


FIGURE 12

START-UP — OPERATION — ADJUSTMENTS — SERVICE

I-COOLING START-UP AND ADJUSTMENT

A-Preliminary Check

- 1- Make sure refrigerant lines do not rub against cabinet or against each other.
- 2- Inspect all electrical wiring, both factory and field installed, for loose connections.
- 3- Check voltage at the disconnect switch. Voltage must be within range listed on unit nameplate. If not, consult power company and have voltage condition corrected before starting unit.
- 4- Recheck voltage with unit running. If power is not within range listed on unit nameplate, stop unit and consult power company. Check amperage of unit. Refer to unit nameplate for correct running amps.

B-Gauge Manifold Attachment

Attach gauge manifold high pressure line to gauge port on compressor liquid line. Attach gauge manifold low pressure line to suction line service port.

C-Cooling Start-Up

- 1- Set thermostat system switch in "Cool" position, fan switch in "On" or "Auto" position and adjust room thermostat to a setting below room temperature.
- 2- Close unit disconnect switch.
- 3- Compressor will start and cycle on thermostat demand.

D-Charging

It is not recommended that the system be charged below 60°F (15°C). If charging below 60°F (15°C) is required or if system is completely void of refrigerant, the recommended and most accurate method of charging is to weigh the refrigerant into the unit according to the amount shown on the unit rating plate. If weighing facilities are not available or if unit is just low on charge, use one of the following procedures:

Operate unit and allow system pressures to stabilize before and after each adjustment.

GCS16H-261/311 GCS16-410 (Subcooling Method)

If ambient temperature is above 60°F (15°C), measure liquid line temperature. Read liquid line pressure from gauge and convert to condensing temperature using standard R-22 temperature/pressure conversion chart (or conversion scale on gauge). The difference between the condensing temperature and the liquid line temperature is subcooling (subcooling = condensing tempera-

ture minus liquid temperature) The subcooling should approximate the values given in table 1. Add refrigerant to increase subcooling and remove refrigerant to reduce subcooling.

TABLE 1

MODEL NO.	Subcooling at Various Ambients					
	65°F	75°F	85°F	95°F	105°F	115°F
GCS16H-261	14	14	14	14	12	8
GCS16H-311	17	17	18	15	12	9
GCS16-411	18	18	18	14	12	8

GCS16-510/650 (Approach Method)

Make sure thermometer well is filled with oil before checking liquid temperature.

If ambient temperature is above 60°F (15°C), place thermometer in well and read temperature. Approach temperature is the difference between liquid line temperature and ambient temperature.

CAUTION-Use the same thermometer for both temperature readings.

Approach temperature should be 4°F (2°C) for GCS16-510 units and 9°F (5°C) for GCS16-650 units. Refrigerant must be added to lower approach temperature. Remove refrigerant from system to increase approach temperature.

II-HEATING START-UP

FOR YOUR SAFETY READ BEFORE LIGHTING

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

WARNING: If overheating occurs or if gas supply fails to shut off, shut off the manual gas valve to the appliance before shutting off electrical supply.

CAUTION: Before attempting to perform any service or maintenance the electrical power to unit OFF at disconnect switch.

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

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

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.

Gas Valve Operation for Honeywell VR8205 Series Gas Valve (Figure 15)

This unit is equipped with an automatic spark ignition system. There is no pilot. In case of a safety shutdown, move thermostat switch to "OFF," then return the thermostat switch to "HEAT" position.

Refer to gas valve operation sticker located on the front of the unit and figure 15 for gas valve identification.

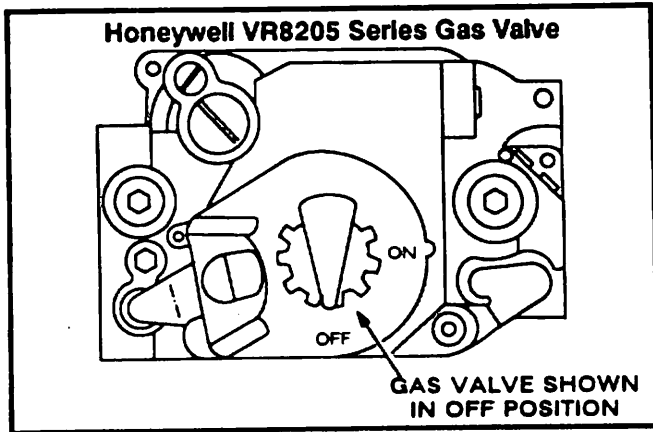





FIGURE 15

- Value* → *VR8205K 1157*
- 1- STOP! Read the safety information at the beginning section.
 - 2- Set thermostat to lowest setting
 - 3- Turn off all electric power to appliance.
 - 4- This unit is equipped with an Ignition device which automatically lights the burner. Do not attempt to light the burner by hand.
 - 5- Remove control access panel.
 - 6- Turn manual knob on gas valve clockwise  to OFF. Do not force.
 - 7- 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 next step.
 - 8- Turn manual knob on gas valve counterclockwise  to ON.
 - 9- Replace control access panel.
 - 10- Turn on all electric power to the appliance.
 - 11- Set thermostat to desired setting.
 - 12- If the appliance will not operate, follow the instructions "To Turn Off Gas To Unit" and call your service technician or gas supplier.

B-To Turn Off Gas To Unit

- 1- Set thermostat to lowest setting.
- 2- Turn off all electric power to unit if service is to be performed.
- 3- Remove control access panel.
- 4- Turn knob on gas valve clockwise  to OFF. Do not force.
- 5- Replace burner access panel.

III-GAS HEATING OPERATION AND ADJUSTMENT

A-Heating Sequence of Operation

- 1- When the thermostat calls for heat, the combustion air blower starts immediately.
- 2- Combustion air pressure switch proves blower operation before allowing power to the ignition controller. This switch is factory set and no adjustment is necessary.
- 3- After pre-purge of 30-40 seconds, the spark ignition is energized and the solenoid valves open in the gas valve.
- 4- The spark then ignites the gas, the ignition sensor proves the flame and the combustion process continues.
- 5- In the event that the flame is not detected after the first trial for ignition, the ignition controller will repeat steps 3 and 4 two more times before locking out.

B-Heat Input

GCS16H and GCS16 natural gas input and heat output ratings are listed in table 2.

GCS16H and GCS16 propane/LP gas input and heat output ratings are listed in table 3.

Unit may be fired at full input up to 2000 feet above sea level. If unit is installed at an altitude higher than 2000 feet, unit must be derated 4% for each 1000 feet above sea level.

TABLE 2
UNIT OUTPUT NATURAL GAS

UNIT	INPUT (Btuh)	OUTPUT (Btuh)
GCS16(H)-50	50,000	40,000
GCS16(H)-75	75,000	60,000
GCS16-100	100,000	80,000
GCS16-125	125,000	100,000

TABLE 3
UNIT OUTPUT PROPANE/LP GAS

UNIT	INPUT (Btuh)	OUTPUT (Btuh)
GCS16(H)-50	50,000	40,000
GCS16(H)-75	87,500	54,000
GCS16-100	90,000	72,000
GCS16-125	112,500	90,000

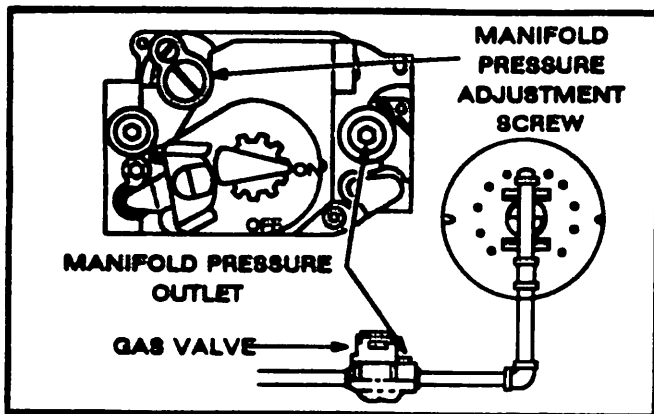


FIGURE 16

C-Gas Pressure

- 1- Check gas line pressure with unit firing at maximum rate. A minimum pressure of 4.5" (114 mm) w.c. for natural and a minimum pressure of 11" (279 mm) w.c. for propane/LP gas should be maintained. On multiple unit installations, each unit should be checked separately with all units firing.
- 2- After line pressure has been checked and adjusted, check manifold pressure. Refer to figure 16 for proper location to measure manifold pressure and location of adjustment screw. Correct manifold pressures are shown in table 4.

TABLE 4
UNIT MANIFOLD PRESSURES

UNIT	NATURAL GAS MANIFOLD PRESSURE	PROPANE (LP) GAS MANIFOLD PRESSURE
GCS16(H)-50	3.5"	10.5"
GCS16(H)-75	3.5"	10.5"
GCS16-100	3.5"	9.5"
GCS16-125	2.7"	10.0"

D-Proper Gas Flow

To check for proper gas flow to combustion chamber, determine Btuh input from the unit rating plate. Divide this input rating by the Btuh per cubic foot of available gas. Result is the number of cubic feet per hour required. Determine the flow of gas through gas meter for two minutes and multiply by 30 to get the hourly flow of gas to burner.

E-Combustion Air

The combustion air is factory set for normal operation. No adjustment is necessary.

F-Burner Adjustment

- 1- Burner is factory set and does not require adjustment. Always operate the unit with access panel in place. The flame should be blue with clear yellow streaking.

- 2- The spark gap on the Ignition electrode must be $1/8" \pm 1/32"$. The electrode assembly can be removed from unit by removing two screws securing the electrode assembly and sliding it out of unit. The gap can be checked using properly sized twist drills or feeler gauges. Refer to figure 17.

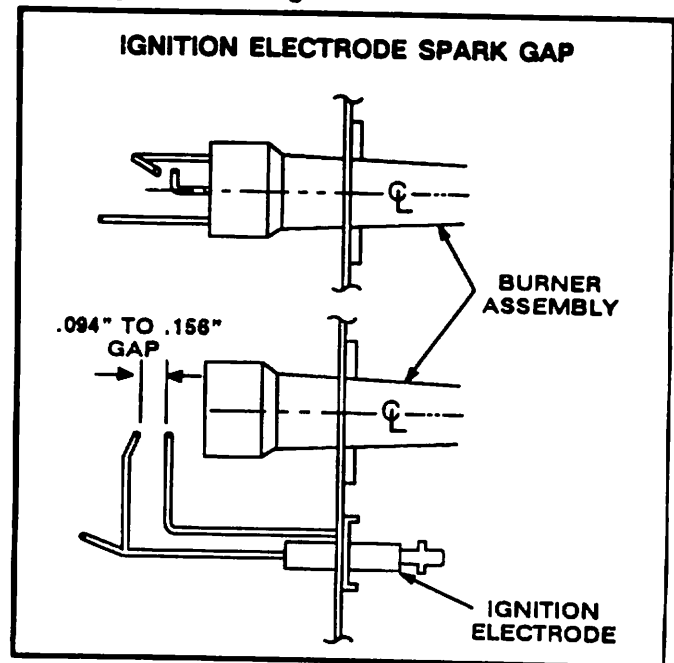


FIGURE 17

G-Combustion Air Pressure Switch

This pressure switch checks for proper combustion air blower operation before allowing an ignition trial. The switch is factory set and no field adjustments are necessary.

H-Fan and Limit Control Settings

Fan Control

Fan control is factory set at 90° F. This control can be field adjusted. In some cases, an unusual duct design can cause the indoor blower to cycle on after the heat demand is satisfied. If this situation occurs, the Fan Off setting on the fan/limit control should be set below 90° F. See figure 18.

Limit Control

Limit control is factory set and does not require field adjustment.

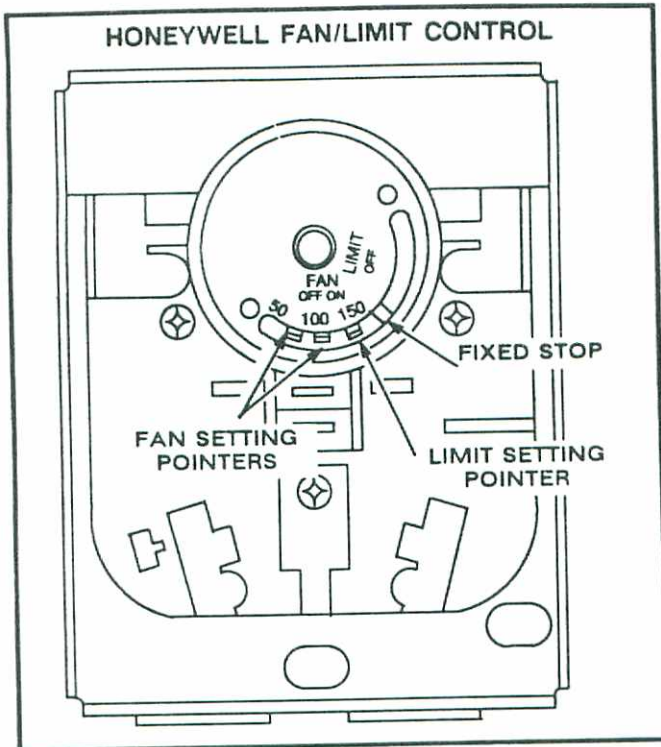


FIGURE 18

J-Ignition Control

When the thermostat calls for heat, the ignition control module initiates a 30 second purge of the burner and heat exchanger. The electric spark ignites for five to ten seconds while the gas valve opens. If ignition is not achieved, the control closes the gas valve. This process is repeated two times and on the third ignition trial the ignition control locks out the gas valve. To re-establish trail for ignition after lock, move the thermostat switch to "Off" and return the thermostat switch to "Heat" position.

K-Temperature Rise

Adjust the blower speed for proper air temperature rise (listed on unit rating plate). To measure this temperature rise, place thermometers in the supply and return air plenums. Turn up thermostat as high as possible to start the unit. After plenum thermometers have reached their highest and most steady readings, subtract reading of thermometers. The difference should be in the range listed on unit rating plate. If this temperature is high, wire the blower to a higher speed; if resulting temperature is too low, wire the blower to a slower speed. Repeat this procedure until desired temperature rise is obtained.

L-Heating Shutdown

- 1- Place thermostat system switch in "Off" position.

- 2- Close manual main gas valve (if used).
- 3- Turn unit disconnect switch to "Off" position and main gas valve to "Off" position.

M-Emergency Burner Shutdown

In case of emergency shutdown, shut off main manual gas valve and disconnect main power to unit. These devices should be properly labeled by installer.

IV-BLOWER OPERATION AND ADJUSTMENTS

A-Blower Operation

- 1- Blower operation is manually set at the thermostat subbase fan switch. When fan switch is in "On" position, blower operates continuously.
- 2- When fan switch is in "Auto" position, blower will cycle with demand. Blowers and entire unit will be off when system switch is in "Off" position.

B-Blower Speed Adjustment

Blower speed selection is accomplished by changing the taps at the harness connector at the blower motor. See figure 19.

Blower performance tables on pages 17 through 21 show specific air volumes at various blower speeds.

NOTE-CFM readings are taken external to unit with a dry evaporator coil and without accessories.

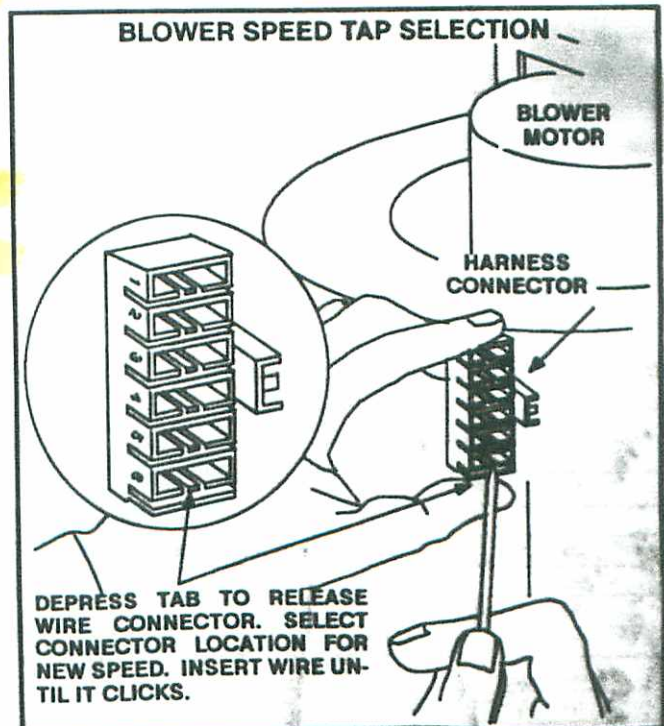


FIGURE 19

SERVICE

CAUTION—Turn off gas and electrical power to unit before performing any maintenance or servicing operations on the unit. Remember to follow lighting instructions attached to unit when putting unit back into operation after service or maintenance.

Take care when servicing unit to avoid accidental contact with any sharp metallic edges which may cause injury.

A—Lubrication

- 1- Combustion Air Blower Motor Bearings - Bearings are prelubricated and sealed; no further lubrication is necessary.
- 2- Supply Air Blower Motor Bearings and Condenser Fan Motor Bearings - Bearings are prelubricated and sealed; no further lubrication is necessary.

B—Filters

GCS16 units require filters. The filters are field provided. A filter kit is available for downflow discharge applications. Filters should be checked monthly and cleaned or replaced regularly.

NOTE—Filters must be U.L.C. certified or equivalent for use in Canada.

C—Burner

- 1- Before each heating season and periodically thereafter examine burner flame for proper appearance.
- 2- Before each heating season examine the burner for any deposits or blockage which may have occurred.
- 3- Clean burner as follows:
 - (a) Turn off both electrical power and gas supply to unit.
 - (b) Remove access panel to burner compartment.
 - (c) To remove burner on -50, 75, or -100 units, first detach the gas manifold bracket. Next, remove the four screws securing the gas/burner manifold to the burner plate. Take care not to damage ceramic cone in combustion chamber. If cone is damaged, it must be replaced by a qualified service technician.

NOTE—For units with a burner enclosure, it is necessary to carefully disassemble the enclosure assembly to gain access to the mounting screws. To remove the assembly, first remove octagon backplate, loosen nuts on top and bottom surfaces at overlap and remove four mounting bolts at burner plate.

- (d) Clean as necessary and replace burner. Replace the four screws securing the gas/burner manifold to the burner plate. (If burner enclosure was previously removed, it must be reassembled taking care not to create air leaks due to misalignment of parts which will adversely affect unit performance.)

Secure the gas manifold bracket and ensure proper burner head alignment.

- (e) Restore electrical power and gas supply. Follow lighting instructions attached to unit to restart unit. Check burner flame. It should be blue with clear yellow streaking.

D—Combustion Air Blower

The combustion air pressure switch checks the combustion air blower operation before allowing power to the gas controller. Gas controller will not operate if blower is obstructed.

Under normal operating conditions, the combustion air blower wheel should be inspected prior to heating season. With power supply disconnected, the condition of the blower wheel can be determined by removing the vent cap assembly and looking through the exhaust vent. Remove any deposits of debris from vent cap assembly before reinstalling it on unit. If cleaning combustion air blower is necessary, contact a qualified service technician.

E—Condenser Coil

- 1- Clean and inspect condenser coil. (May be flushed with a water hose.)
- 2- Visually inspect connecting lines and coils for evidence of oil leaks.

NOTE—If owner complains of insufficient cooling, the unit should be gauged and refrigerant charge checked. Refer to Gauge Manifold Attachment, Checking Charge and Charging sections in this instruction.

F—Evaporator Coil

- 1- Clean coil, if necessary.
- 2- Check connecting lines and coil for evidence of oil leaks.
- 3- Check condensate drain pan and line, if necessary.

G—Electrical

- 1- Check all wiring for loose connections.
- 2- Check for correct voltage at unit (unit operating).
- 3- Check amp-draw on both condenser fan motor and blower motor.

Fan Motor Rating Plate _____

Actual _____

Indoor Blower Motor Rating Plate _____

Actual _____