installation operation and service instructions

G14 Series Units

GAS UNITS
502,527M
12/90
Supersedes 502,151M

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.

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.

Litho U.S.A

LENNOX Industries Inc.

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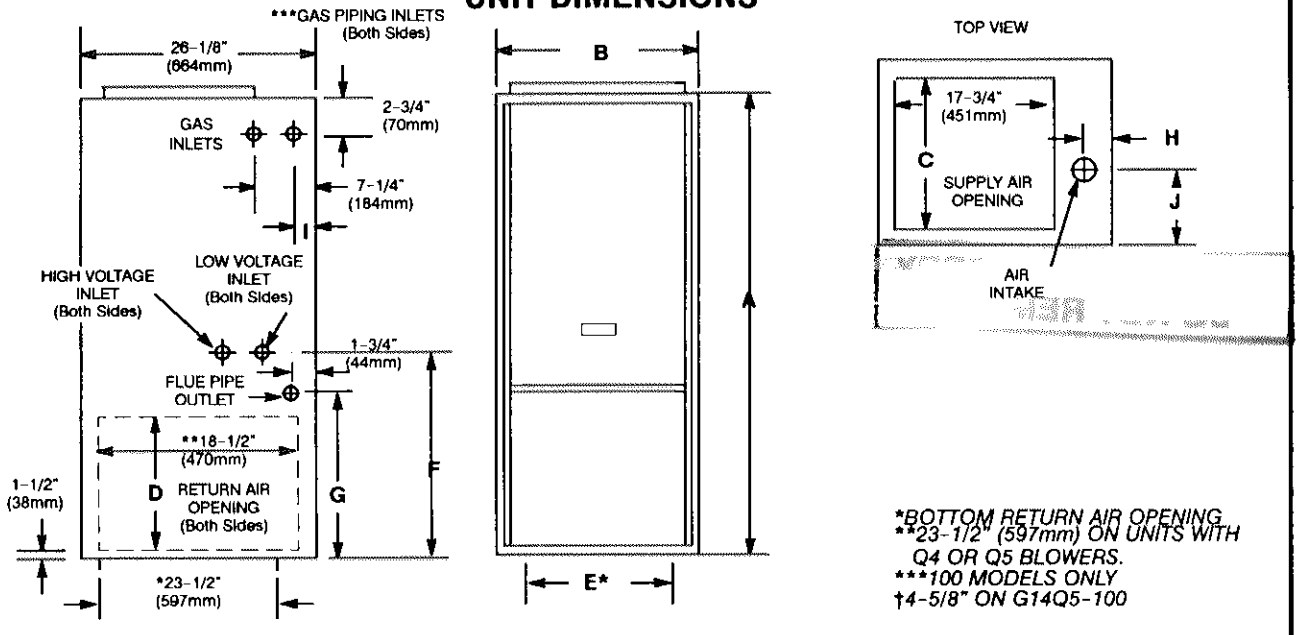
UNIT DIMENSIONS



*BOTTOM RETURN AIR OPENING
**23-1/2" (597mm) ON UNITS WITH Q4 OR Q5 BLOWERS.
***100 MODELS ONLY
†4-5/8" ON G14Q5-100

Model No.	A	B	C	D	E	F	G	H†	I	J
G14Q3 or Q4 40/60/80 Series	49" (1245mm)	21-1/4" (540mm)	19-1/8" (486mm)	14-1/2 (368mm)	14-1/2" (79mm)	23-5/8" (600mm)	20-1/4" (514mm)	4-1/8" (105mm)	5-1/4" (133mm)	8-1/2" (216mm)
G14Q5-80 and G14Q3 or Q5-100	53" (1346mm)	26-1/4" (667mm)	24-1/8" (613mm)	18-1/2" (470mm)	18-1/2" (470mm)	27-5/8" (702mm)	24-1/4" (616mm)	1-15/16" (49mm)	4-1/2" (114mm)	11" (279mm)

START-UP AND PERFORMANCE CHECK LIST

Job Name _____ Job No. _____ Date _____
Job Location _____ City _____ State _____
Installer _____ City _____ State _____
Unit Model No. _____ Serial No. _____ Serviceman _____

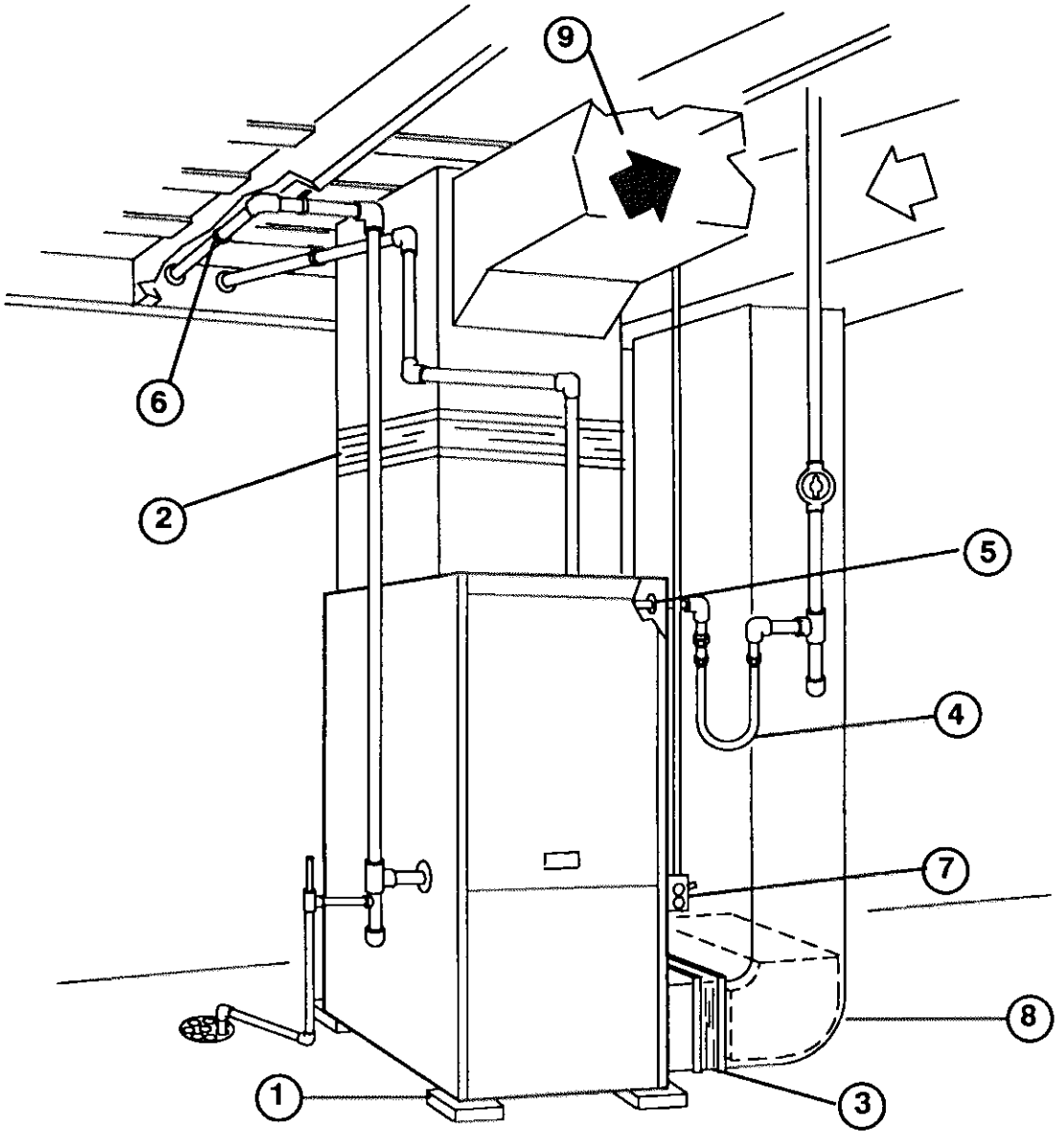
HEAT SECTION

Electrical Connections Tight? ☐
Supply Voltage _____
Condensate Drain In Unconditioned Space (If applicable)
Heat Tape Applied? ☐ Heat Tape Electrical Supply On? ☐
Gas Piping Connections Tight & Leak Tested? ☐
Fuel Type: Natural Gas ☐ LP Gas ☐
Furnace Btu Input _____

Line Pressure (7" Natural Gas; 11" LP Gas
Regulator Pressure (Refer to unit nameplate) _____
Exhaust Connections Tight? ☐
Intake Connections Tight? ☐
Fan Control Off Setting (90°) _____
Temperature Rise _____ External Static Pressure _____
Filters Clean & Secure? ☐

THERMOSTAT

Calibrated? ☐ Heat Anticipator Properly Set? ☐ Level? ☐



MAJOR INSTALLATION REQUIREMENTS

1- ISOLATION MOUNTING PADS
2- FLEXIBLE BOOT-SUPPLY AIR PLENUM
3- FLEXIBLE BOOT - RETURN AIR PLENUM
4- GAS CONNECTOR
5- GAS SUPPLY PIPING CENTERED IN INLET HOLE
6- ISOLATION HANGERS
7- ELECTRICAL CONDUIT ISOLATED FROM UNIT AND DUCT WORK
8- RETURN AIR PLENUM AND DUCT INSULATED PAST FIRST ELBOW
9- SUPPLY AIR PLENUM AND DUCT INSULATED PAST FIRST ELBOW

THE ABOVE REQUIREMENTS ARE ESSENTIAL TO THE INSTALLATION IN ORDER TO ISOLATE THE UNIT.

I-REQUIREMENTS

Installation of Lennox gas central furnaces must conform with local building codes or, in the absence of local codes, with the National Fuel Gas Code (ANSI-Z223.1-1984). The National Fuel Gas Code is available from:

American National Standards Institute, Inc.
1430 Broadway
New York, NY 10018

The furnace is certified for installation clearances to combustible material as listed on the appliance rating plate and table 1.

TABLE 1

Clearances	Location	Inches (mm)
Service access	Front	36 in. (914mm)
	Exhaust side	6 in. (152mm) (from side of unit)
To combustible materials	Top, side rear and front	1 in. (25mm)
	Exhaust	0

NOTE-Service access clearance must be maintained.

Appliance shall not be installed directly on carpeting, tile or other combustible material other than wood flooring.

Accessibility and service clearances must take precedence over fire protection clearances.

For installation in a residential garage, unit must be located or protected to avoid physical damage by vehicles. Unit must be adjusted to obtain a temperature rise and external static pressure within the range specified on appliance rating plate. When this furnace is used in conjunction with cooling units, it shall be installed in parallel with or on the upstream side of the cooling units to avoid condensation in the heating element. With a parallel flow arrangement, damper (or other means to control flow of air) shall be adequate to prevent chilled air from entering furnace and, if manually operated, must be equipped with means to prevent operation of either unit unless damper is in full "heat" or "cool" position.

When installed, furnace must be electrically grounded in accordance with National Electric Code, ANSI/NFPA No. 70-1987, if an external electrical source is utilized. The National Electric Code is available from:

National Fire Protection Association
470 Atlantic Avenue
Boston, MA 02210

Wiring to be done in the field, between the furnace and devices not attached to the furnace or between separate devices which are field-installed and located, shall conform with the temperature limitation for type T wire [63° F (17° C) rise] when installed in accordance with these instructions.

When a furnace, other than for manufactured (mobile) home installation, is installed so that supply ducts carry air circulated by the furnace to areas outside the space containing the furnace, the return air shall also be handled by a duct(s) sealed to the furnace casing and terminating outside the space containing the furnace.

II-GENERAL

A-Shipping Damage

Check unit carefully for shipping damage. Receiving party should contact last carrier immediately if any shipping damage is found.

NOTE-Special care should be taken to check the alignment of the gas piping at the point it penetrates the vestibule panel. Inspect the rubber grommet for damage; there must be no direct contact between the gas pipe and the vestibule panel.

B-Shipping Bolt Removal

Remove four (4) heat section shipping bolts from bottom side of blower deck before starting unit. Access bolts through blower compartment.

III-INSTALLATION

A-Setting and Leveling Unit

1- Holes are provided in the corners of unit base for leveling unit. Install leveling bolts (if desired as shown, or shim under unit. See figure 1.

CAUTION – If leveling bolts are used, be sure to install the plastic nuts as shown and tighten snugly before setting unit.

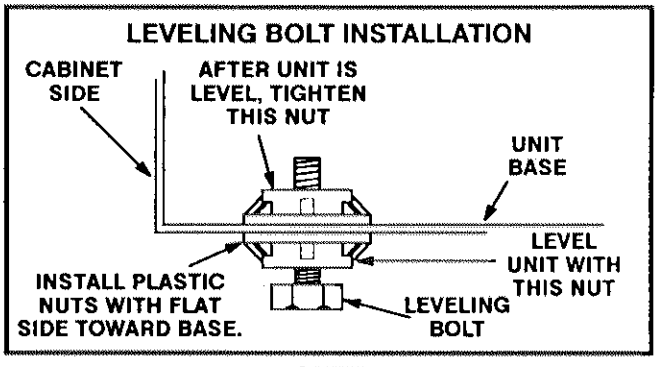


FIGURE 1

2- Set unit in desired location keeping in mind clearances listed on unit rating plate. Also keep in mind gas supply connection, electrical supply, vent connections and clearances for installing and servicing unit.

B-Return Air Opening (Figure 2)

Return air can be brought in either side or bottom of unit. Scribe lines show the outline of each return air opening.

NOTE-Units with Q4 and Q5blowers use larger opening.

1- Cut opening in floor or platform.

2- Flange return air plenum and lower into opening.

3- Place fiber glass insulation strips around opening. Position isolation mounting pads at comers of insulation. Insulation should not overlap the mounting pads. Trim away any excess insulation from strips.

4- Set unit. Make sure unit is sitting on isolation pads.

NOTE – Be careful not to damage fiber glass. Check for tight seal.

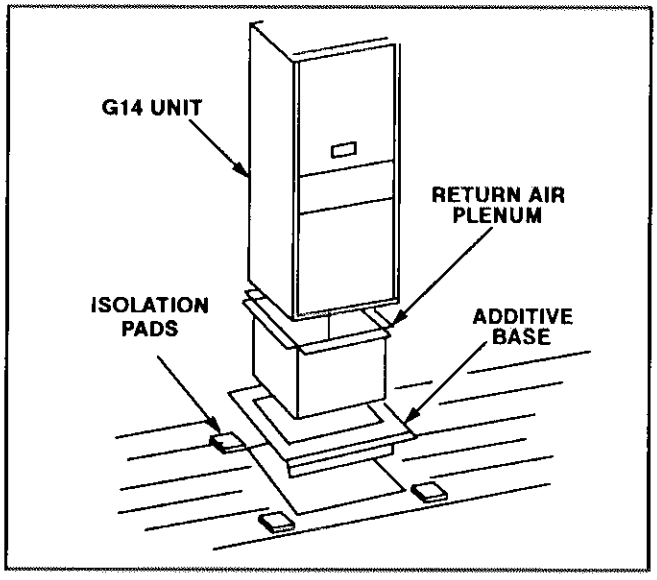


FIGURE 2

C-Filters

G14 series units are equipped with a reusable foam filter. Filter must be in place any time unit is in operation. Install filter mounting clips provided and secure with sheet metal screws.

D-Duct System

1- Install flexible canvas boots or equivalent on both supply and return air plenums. Boots should be placed as close as possible to unit.

2- Insulate supply air plenum and duct system at least through the first elbow. Use 1-1/2 to 3 lb. density, matt face, 1" thick insulation. Provisions must be made to keep insulation in place and to protect edges from airflow deterioration.

3- Size and install supply and return system using industry-approved standards that result in a quiet and low-static system with uniform distribution.

IV-EXHAUST, CONDENSATE AND INTAKE PIPING

A-Exhaust and Intake Piping Requirements

All schedule 40 PVC pipe, fittings, primer and solvent cement must conform with American National Standard Institute and the American Society for Testing and Materials (ANSI/ASTM) standards. The solvent shall be free flowing and contain no lumps, undissolved particles or any foreign matter that adversely affects the joint strength or chemical resistance of the cement. The cement shall show no gelation, stratification, or separation that cannot be removed by stirring.

CAUTION-Solvent cements for plastic pipe are flammable liquids and should be kept away from all sources of ignition. Do not use excessive amounts of solvent cement when making joints. Good ventilation should be maintained to reduce fire hazard and to minimize breathing of solvent vapors. Avoid contact of cement with skin and eyes.

Materials

Schedule 40 PVC (type 1120 or 1220) pipe sized per table 2 and PVC1 or PVC12 fittings for intake and exhaust piping (not provided) per ASTM D1785, D2466 and D2665.

1- PVC primer (not provided) per ASTM D2564.

2- PVC solvent cement (not provided) per ASTM D2564.

NOTE-Low temperature solvent cement is recommended.

3- Exhaust termination isolation material (provided in installation kit LB-49107C).

4- Material for isolation hangers -- Armaflex insulation and sheet metal strapping (not provided).

TABLE 2

MINIMUM DIAMETER FOR G14 VENTING					
Pipe Length (Max. Feet)	Number of 90° Elbows				
	0	2	4	6	8
5	2	2	2	2	2
10	2	2	2	2	2
20	2	2	2	2	2-1/2
30	2	2	2	2-1/2	2-1/2
40	2	2	2-1/2	2-1/2	2-1/2
50	2	2-1/2	2-1/2	2-1/2	2-1/2
60	2-1/2	2-1/2	2-1/2	2-1/2	3
70	2-1/2	2-1/2	2-1/2	3	3
80	2-1/2	2-1/2	3	3	3
90	2-1/2	3	3	3	3

Schedule 40 PVC pipe used for exhaust and intake lines should be sized per table 2. Each 90° elbow is equivalent to 5 ft. of vent pipe. Two 45° elbows are equivalent to one 90° elbow. One 45° elbow is equal to 2.5 ft. of vent pipe.

If intake and exhaust piping runs are not equal in length and combination, the larger diameter pipe (as sized per table 2) must be used for both runs. Regardless of the diameter of pipe used, the standard roof and wall terminations described in section D-Intake and Exhaust Piping Terminations should be used. Exhaust piping must terminate with 1-1/2" pipe.

Muffler lengths should be excluded when measuring vent pipe runs for sizing. Vent pipe must be sized at 2 in. between unit and mufflers. PVC drain, waste and vent (DWV) type fittings may be used for intake runs. Exhaust fittings, however, must be schedule 40 PVC.

Procedure for Cementing Joints Per ASTM D2855

WARNING—DANGER OF EXPLOSION! FUMES FROM PVC GLUE MAY IGNITE DURING SYSTEM CHECK. REMOVE SPARK PLUG WIRE FROM IGNITION CONTROL BEFORE 115V POWER IS APPLIED. RECONNECT WIRE AFTER TWO MINUTES.

1- Measure and cut PVC pipe to desired length.

2- Debur and chamfer end of pipe, removing any ridges or rough edges. If end is not chamfered, edge of pipe may remove cement from fitting socket and result in a leaking joint.

3- Clean and dry surfaces to be joined.

4- Test fit joint and mark depth of fitting on outside of pipe.

5- Uniformly apply liberal coat of primer to inside socket surface of fitting and male end of pipe to depth of fitting socket.

6- Promptly apply solvent cement to end of pipe and inside socket surface of fitting. Cement should be applied lightly but uniformly to inside of socket. Take care to keep excess cement out of socket. Apply second coat to end of pipe.

IMPORTANT-Time is critical at this stage. Do not allow primer to dry before applying cement.

7- Immediately after applying last coat of cement to pipe, and while both inside socket surface and end of pipe are wet with cement, forcefully insert end of pipe into socket until it bottoms out. Turn pipe 1/4 turn during assembly (but not after pipe is fully inserted) to distribute cement evenly.

NOTE-Assembly should be completed within 20 seconds after last application of cement. Hammer blows should not be used when inserting pipe.

8- After assembly, wipe excess cement from pipe at end of fitting socket. A properly made joint will show a bead around its entire perimeter. Any gaps may indicate a defective assembly due to insufficient solvent.

9- Handle joints carefully until completely set.

B-Exhaust and Condensate Line Piping

If a G14 furnace replaces a furnace which was commonly vented with another gas appliance, the size of the existing vent pipe for that gas appliance must be checked. Without the heat of the original furnace flue products, the existing vent pipe is probably oversized for the single water heater or other appliance. The vent should be checked for proper draw with the remaining appliance.

Removal of Unit from Common Venting System

In the event that an existing furnace is removed from a venting system commonly run with separate gas appliances, the venting system is likely to be too large to properly vent the remaining attached appliances. The following test should be conducted while each appliance in operation and the other appliances not in operation remain connected to the common venting system. If the venting system has been installed improperly, the system must be corrected as outlined in the previous section.

1- Seal any unused openings in the common venting system.

2- Visually inspect the venting system fro proper size and horizontal pitch and determine there is no blockage or restriction, leakage, corrosion and other deficiencies which could cause an unsafe condition.

3- Insofar as is practical, close all building doors and windows and all doors between the space in which the appliances remaining connected to the common venting system are located and other spaces of the building. Turn on clothes dryers and any appliances not connected too the common venting system. Turn on any exhaust fans, such as range hoods and bathroom exhausts, so they will operate at maximum speed. Do not operate a summer exhaust fan. Close fireplace dampers.

4- Follow the lighting instruction. Place the appliance being inspected in operation. Adjust thermostat so appliance will operate continuously.

5- Test for spillage at the draft hood relief opening after 5 minutes of main burner operation. Use the flame of a match or candle, or smoke from a cigarette, cigar or pipe.

6- After it has been determined that each appliance remaining connected to the common venting system properly vents when tested as outlined above, return doors, windows, exhaust fans, firepiace dampers and any other gas-burning appliance to their previous condition of use.

7- If improper venting is observed during any of the above tests, the common venting system must be corrected. The common venting system should be resized to approach the minimum size as determined by using the appropriate tables in appendix G in the current standards of the National Fuel Gas Code.

C-Intake and Exhaust Piping Terminations

Intake and exhaust pipes may be routed either horizontally through an outside wall or vertically through the roof. In attic or closet installations, vertical termination through the roof is preferred. Figures 4 through 10 show typical terminations.

1- Use schedule 40 PVC pipe for both intake and exhaust piping

2- Secure all joints, including drain leg, gas tight using approved PVC solvent.

3- Piping diameters should be determined according to length of pipe run. See table 2. Locate intake piping upwind (prevailing wind) from exhaust piping. To avoid recirculation of exhaust gas on roof terminations, end of exhaust pipe must be higher than intake pipe.

Exhaust and intake exits must be in same pressure zone. Do not exit one through the roof and one on the side. Also, do not exit the intake on one side and the exhaust on another side of the house or structure.

4- Intake and exhaust pipes should be placed as close together as possible at termination end (refer to illustrations). Maximum separation is 3 in. on roof terminations and 6 in. on side wall terminations.

5- Exhaust piping must terminate straight out or up as shown. On roof terminations, the intake piping should terminate straight down using two 90° elbows (See figure 4). In rooftop applications, a 2" X 1-1/2" reducer must be used on the exhaust piping at the point where it exits the structure to improve the velocity of exhaust away from the intake piping.

NOTE-If winter design temperature is below 32° F, exhaust piping must be insulated with 1/2" Armaflex or equivalent when run through unheated space. Do not leave any surface area of exhaust pipe open to outside air; exterior exhaust pipe must be insulated with 1/2" Armaflex or equivalent. In extreme cold climate areas, 3/4" Armaflex or equivalent is recommended. Insulation on outside runs of exhaust pipe must be painted or wrapped to protect insulation from deterioration.

IMPORTANT-Care must be taken to avoid recirculation of exhaust back into intake pipe.

6- On side wall exits, exhaust piping should extend a maximum of 12 inches beyond the outside wall. Intake piping should be as short as possible. See figure 5.

7- Minimum separation distance between the end of the exhaust pipe and the end of the intake pipe is 8 inches.

8- If intake and exhaust piping must be run up a side wall to position above snow accumulation or other obstructions, refer to figures 9 and 10 for proper piping method. Piping must be supported every 3 ft. as shown. When exhaust and intake piping must be run up an outside wall, the exhaust piping is reduced to 1-1/2 in. after the final elbow.

9- Position termination ends so they are free from any obstructions and above the level of snow accumulation (where applicable). Termination ends must be a minimum of 12 in. above grade level. Do not point into window wells, stairwells, alcoves, courtyard areas or other recessed areas. Do not position termination ends directly below roof eaves.

10- Suspend piping at a minimum of every 5 feet using isolation hangers. A suitable hanger can be fabricated by putting a sleeve of Armaflex refrigeration piping insulation around the pipe and suspending it using metal strapping as shown in figure 3. Place a small sheet metal strip between the Armaflex and the metal strapping to prevent crimping. Do not secure piping directly to joist or flooring.

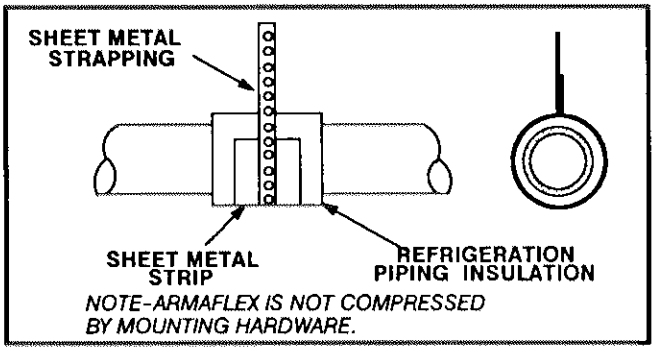


FIGURE 3

11- In areas where piping penetrates joists or interior walls, hole must be large enough to allow clearance on all sides of pipe through center of hole using an isolation hanger.

12- Isolate piping at the point where it exits the outside wall or roof. Use termination kit LB-49107C.

13- Unit should not be installed in areas normally subject to freezing temperatures.

14- When furnace is installed in a residence where unit is shut down for an extended period of time, such as a vacation home, make provisions for draining drip leg on exhaust line.

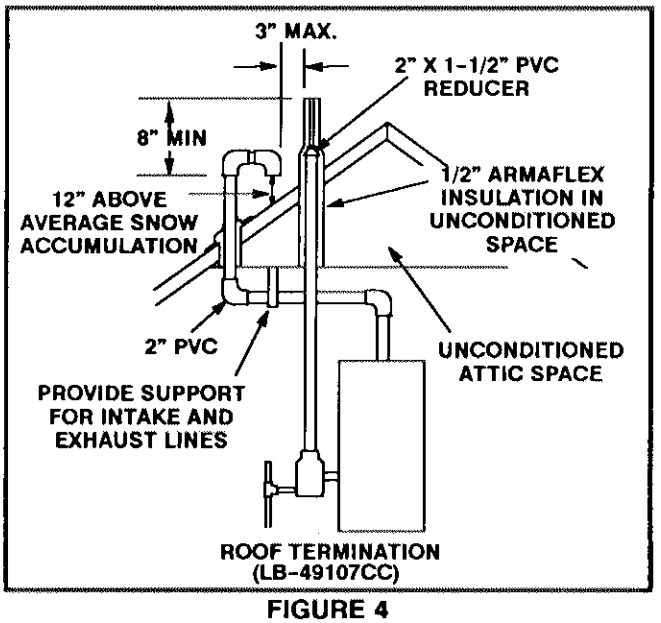


FIGURE 4

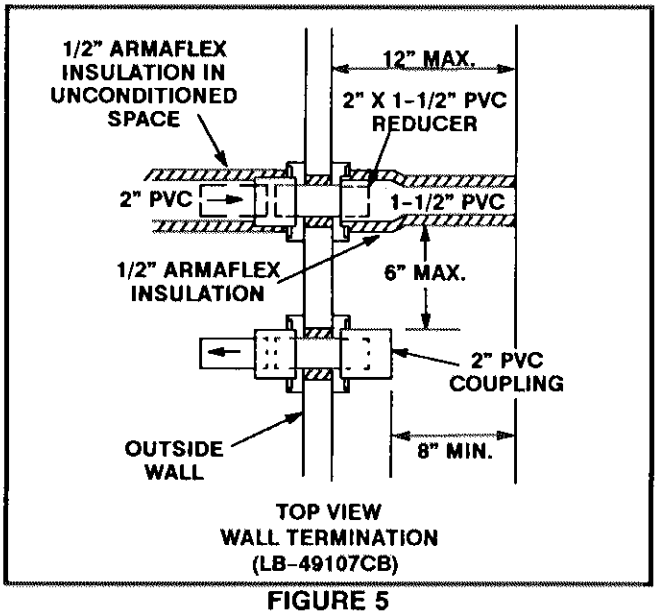


FIGURE 5

D-Intake Piping

1- Cement intake piping in slip connector located at top of unit.

2- Route piping to outside of structure. Continue with installation following instructions given in exhaust and intake piping termination section.

IMPORTANT-Combustion air intake inlet should not be located within 6 feet of dryer vent, condensing unit, or combustion air inlet or outlet of another appliance. Piping should not exit less than 3 feet from opening into another building.

3- Intake muffler is required for use with G14-100 units. Muffler use is optional on G14-40, -60 and -80 units. Install intake muffler as outlined in installation instructions packaged with muffler.

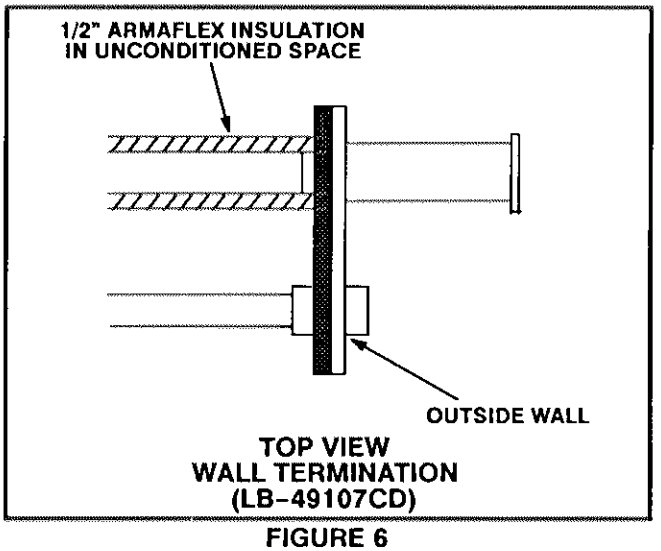


FIGURE 6

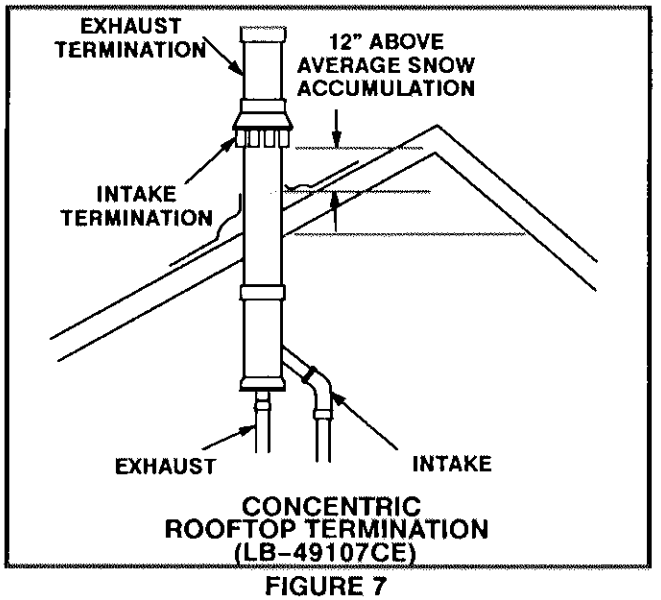


FIGURE 7

E-Exhaust and Condensate Piping

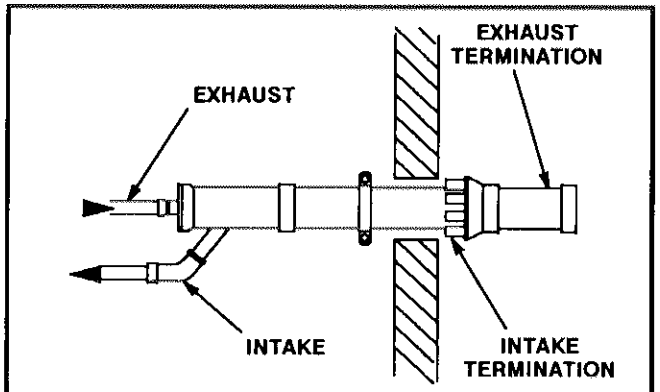
This unit is designed for either right or left side exit of exhaust piping.

NOTE – If unit is equipped with a Q4 or Q5 blower and side return air is used, the exhaust piping must be routed out the side opposite the return air duct.

1- Cut PVC pipe (provided) to the desired length for exit from the unit.

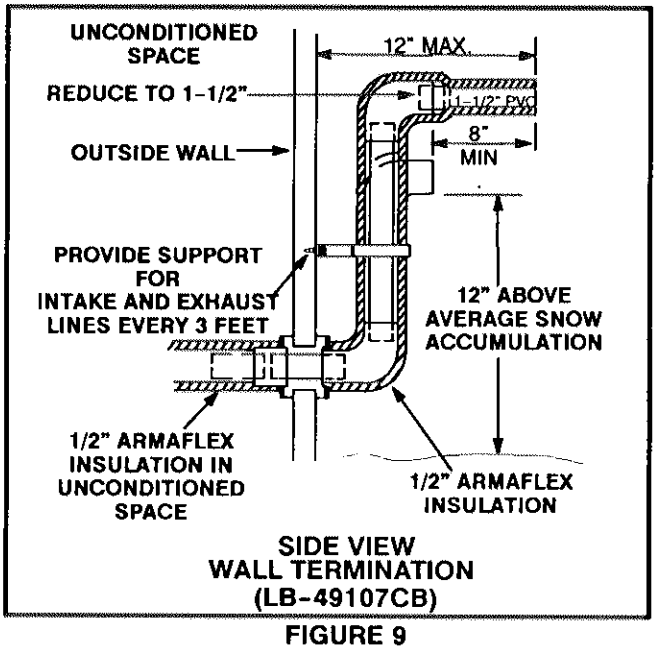
2- Slide PVC pipe through rubber grommet in cabinet. Care must be taken to center pipe hole.

3- Compression elbow is mounted for left side exhaust pipe exit on G14-40/60/80 units and right side exit on G14-100 units. If piping must exit on other side, disconnect exhaust pressure tubing, rotate and tighten compression elbow and reconnect tubing.



CONCENTRIC WALL TERMINATION (LB-49107CE)

FIGURE 8



SIDE VIEW WALL TERMINATION (LB-49107CB)

FIGURE 9

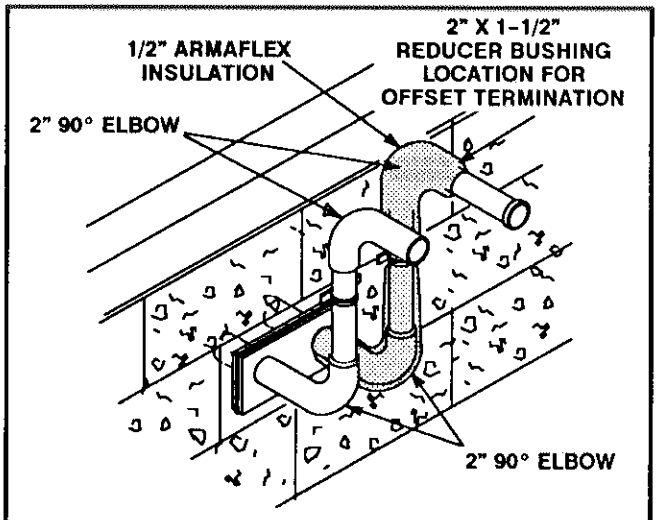
NOTE – Differential pressure switch will not operate properly if tubing is kinked.

4- Cement drain leg assembly to PVC pipe as shown in figure 11.

IMPORTANT – Bottom portion of drain leg assembly with condensate connection is not cemented to tee. Rotate until condensate connection is in suitable position. Cement into bottom of drain leg assembly tee.

IMPORTANT – Stand pipe must remain open at the top to vent drain. Open end of pipe must not be used to connect drain hoses or other condensate hoses.

5- Cement exhaust pipe into top of drain leg assembly and route to outside of structure using intake and piping requirements. All horizontal runs of exhaust pipe must slope back toward unit. A minimum of 1/4" drop for each 12" of horizontal run is mandatory for drainage. Horizontal runs of exhaust piping must be supported every 5 ft. using isolation hangers.



TOP VIEW WALL TERMINATION (LB-49107CD)

FIGURE 10

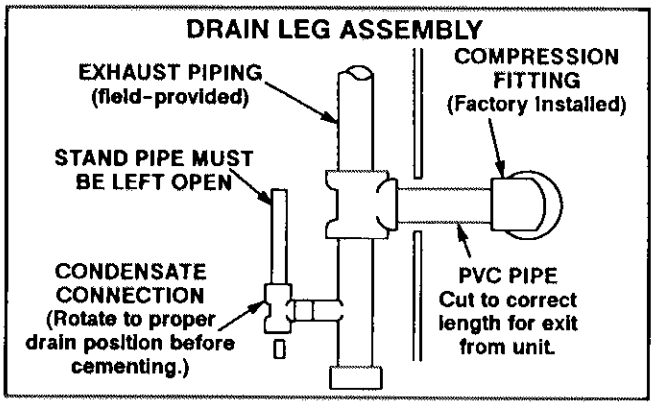


FIGURE 11

NOTE – Exhaust piping must be insulated with 1/2" Armaflex or equivalent when run through unheated space. Do not leave any area of exhaust pipe open to outside air; exterior exhaust must be insulated with 1/2" Armaflex or equivalent.

CAUTION – Do not discharge exhaust into an existing stack or stack that also serves another gas appliance. If vertical discharge through an existing unused stack is required, insert PVC pipe inside the stack until the end is even with the top or outlet end of the metal stack.

6- One exhaust muffler is required for use with G14-100. Use of a second exhaust muffler on G14-100 is optional. Use of one exhaust muffler is optional on G14-40/60/80 units. Install exhaust line muffler(s) as outlined in installation instructions packaged with muffler.

7- Cement PVC pipe to compression elbow which is already in place.

IMPORTANT – Care must be taken to assure a secure, tight seal between compression elbow assembly and manifold outlet.

8- Connect condensate drain line (1/2" SDR 11 plastic pipe or tubing) to condensate connection on drip leg assembly and route to open drain. Condensate drain must be sloped downward away from drip leg to drain. If drain level is above drip leg, condensate pump must be used to condensate line. Condensate drain line should be routed only within the conditioned space to avoid freezing of condensate and blockage of drain line.

CAUTION – Do not use copper tubing or existing copper condensate lines for drain line.

9- Seal unused exhaust line piping hole with snap-plug provided.

CAUTION – The exhaust vent pipe operates under positive pressure and must be completely sealed to prevent leakage of combustion products into the living space.

V-GAS PIPING

A-Gas Supply

The unit is shipped standard (downflow position) for right-side installation of gas piping. A piping hole is also fabricated in the left side for an alternate piping arrangement.

1- When connecting the gas supply, the length of run from the meter must be considered in determining the pipe size to avoid excessive pressure drop. For correct sizing of gas delivering piping, consult the utility having jurisdiction. A drip leg should be installed in the pipe run to the unit. In some localities, codes may require a manual main shut-off valve and union (furnished by installer) installed external to unit. Union must be of ground joint type.

A 1/8" N.P.T. plugged tapping, accessible for test gauge connection, must be installed immediately upstream of the gas supply connection to the furnace (See figure 12).

NOTE-Compounds used on threaded joints of gas piping must be resistant to the actions of liquefied petroleum gases.

2- The use of one of the following gas connectors is recommended:

* ANS Z21.24 Appliance Connectors of Corrugated Metal Tubing and Fittings.
* ANS Z21.45 Assembled Flexible Appliance Connectors of Other than All-Metal Construction.

The above connectors may be used if acceptable by the authority having jurisdiction. A gas connector is provided and, if used, should be installed between the manual main shut-off valve and ground joint union. See figure 12 for downflow applications and horizontal applications.

CAUTION-Flexible gas connector must not be used to exit the unit. Flex connector must be installed in U-shaped fashion in order to achieve its purpose (See figure 12). Do not secure to unit ducting or structure.

3- Center gas line through piping hole. Gas line should not touch side of unit. See figure 12 for downflow and horizontal applications.

4- Connect gas supply line.

NOTE – Installer must provide a 1/8" N.P.T. plugged tap in field piping upstream of gas supply connections to unit. Tap must be accessible to test gauge connection.

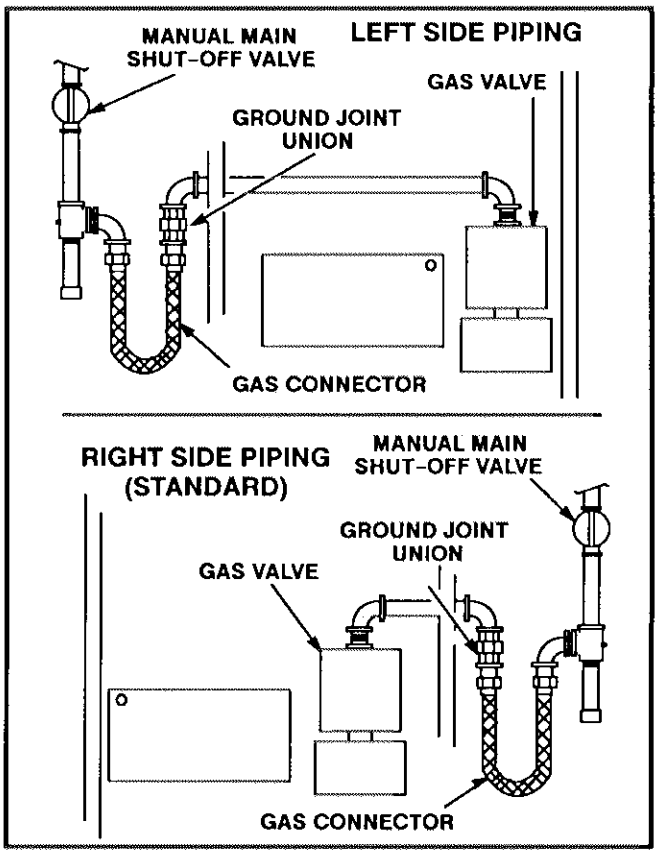


FIGURE 12

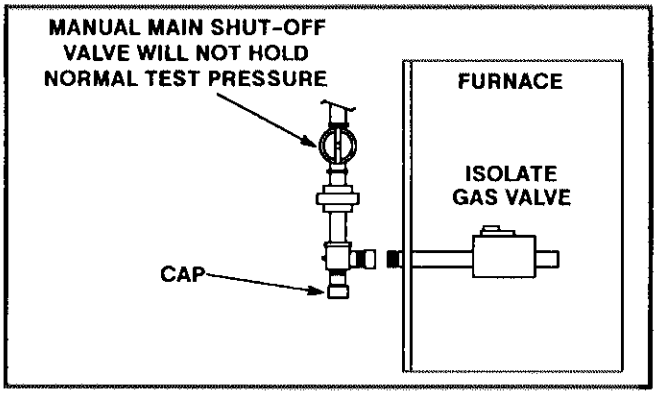


FIGURE 13

B-Leak Check

After gas piping has been completed, carefully check all piping connections (factory and field) for gas leaks. Use a leak detecting solution or other preferred means.

CAUTION

Many soaps used for leak testing are corrosive to certain metals. Piping must be rinsed thoroughly with clean water after leak check has been completed. DO NOT USE MATCHES, CANDLES, FLAME OR OTHER SOURCE OF IGNITION TO CHECK FOR GAS LEAKS.

IMPORTANT-The furnace must be isolated from the gas supply piping system by closing its individual manual shut-off valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psig. See figure 13.

The furnace and its individual shut-off valve must be disconnected from the gas supply piping system during any pressure testing of the system at test pressures greater than 1/2 psig.

VI-ELECTRICAL

1- Select fuse and wire size according to blower motor amps.

2- Access openings are provided on both sides of cabinet to facilitate wiring.

3- Install room thermostat according to instructions provided with thermostat. See figure 14 for new Lennox thermostat nomenclature versus old style nomenclature.

4- Install a separate fused disconnect switch near the unit so that power can be turned off for servicing.

5- Complete wiring connections to equipment using provided wiring diagrams.

6- Electrically ground unit in accordance with local codes or, in the absence of local codes, in accordance with the National Electric Code.

7- Install an auxiliary receptacle near unit.

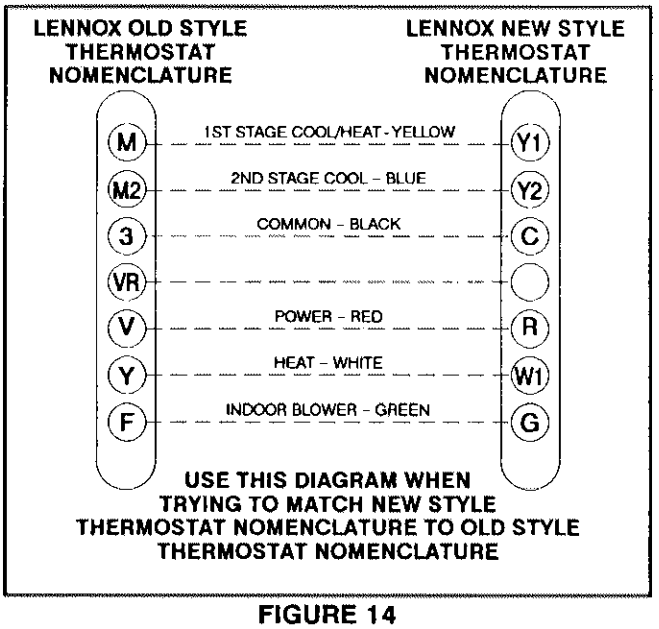


FIGURE 14

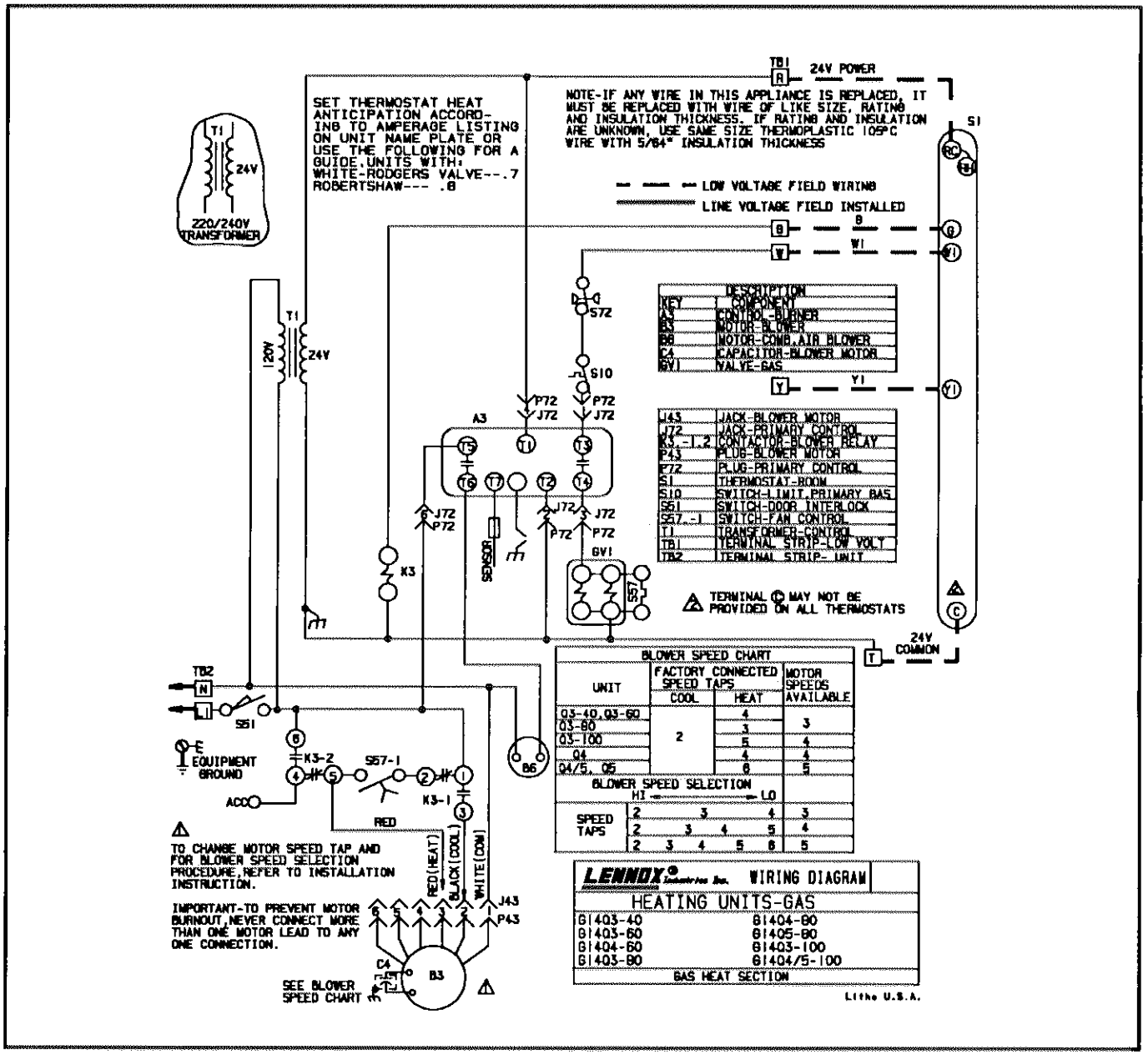


FIGURE 15

VII-START-UP/ADJUSTMENTS

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.

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.

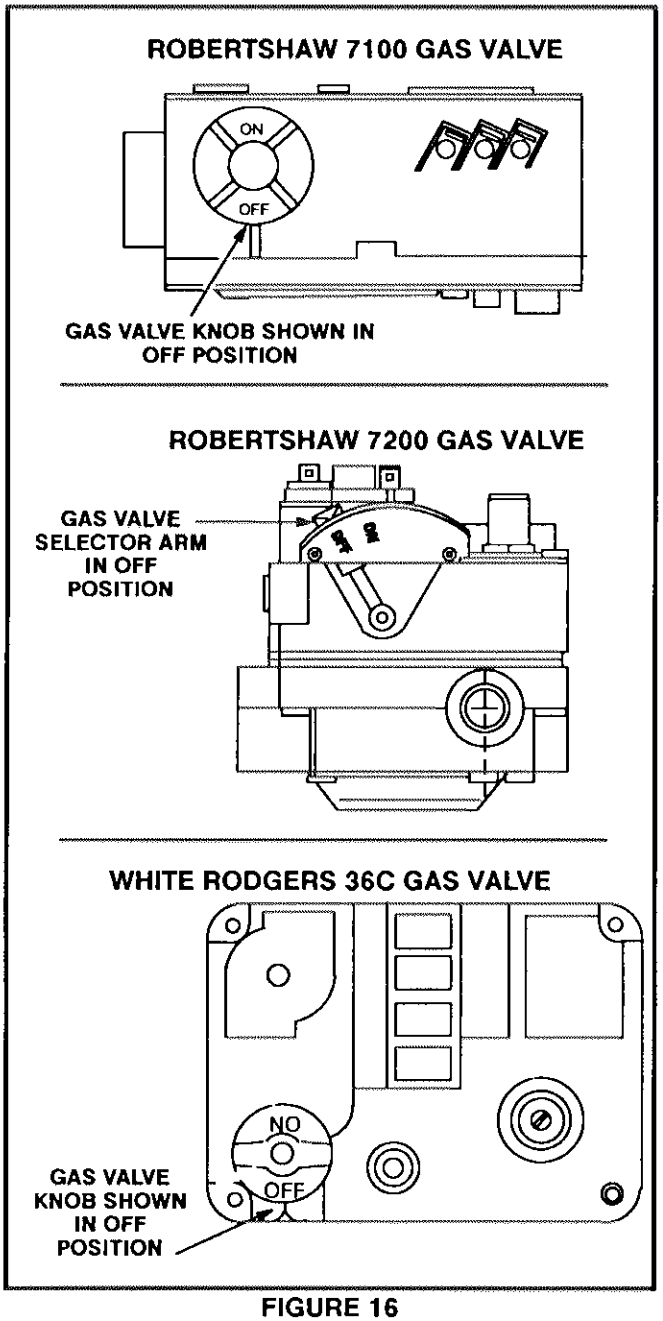


FIGURE 16

This unit is equipped with an automatic spark ignition system with flame rectification. Once combustion has started, the purge blower and spark ignitor are turned off. Do **not** try to light by hand.

A-Gas Valve Operation

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

Gas Valve Operation for Robertshaw and White Rodgers Valves (Figure 16)

1- Set thermostat to lowest setting.

2- Turn off all electrical power to furnace.

3- This appliance Is equipped with an ignition device which automatically lights the burner. Do **not** try to light the burner by hand.

4- Remove unit access panel.

5- Turn knob on gas valve clockwise to **OFF**. On Robertshaw 7200 gas valve, depress lever on gas control and move to **OFF** and release. 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 next step.

7- Turn knob on gas valve counterclockwise to **ON**. On Robertshaw 7200 gas valve, depress lever on gas control and move to **ON** and release.

8- Replace unit access panel.

9- Turn on all electrical power to unit.

10- Set thermostat to desired setting.

11- If the furnace will not operate, follow the instructions "To Turn Off Gas To Unit" and call your service technician or gas supplier.

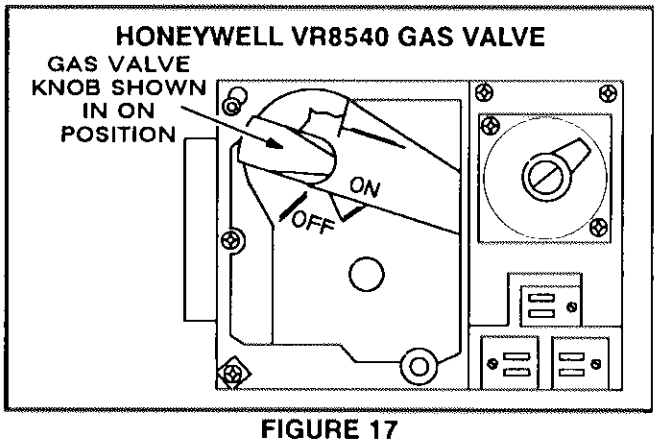


FIGURE 17

Gas Valve Operation for Honeywell VR8450 Series Valve (Figure 17)

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- Remove unit access panel.

5- Turn knob on gas valve clockwise to **STOP** and release. Knob will pop up. Turn clockwise to **OFF**.

*NOTE-Knob cannot be turned from **ON** to **OFF** unless knob is depressed.*

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 next step.

7- Turn knob on gas valve counterclockwise to **STOP**. Depress knob and turn counterclockwise to **ON**. Knob will remain depressed.

8- Replace unit access panel.

9- Turn on all electrical power to unit.

10- Set thermostat to desired setting.

11- 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 electrical power to unit if service is to be performed.

3- Remove heat section access panel.

4- Turn knob on gas valve clockwise to **OFF**. Do not force.

*NOTE-Honeywell VR8450 series valves - Turn knob on gas valve clockwise to **STOP** and release. Knob will pop up. Turn knob clockwise to **OFF**. On Robertshaw 7200 gas valve, depress lever on gas control and move to **OFF** and release.*

5- Replace unit access panel.

C-Gas Flow

To check proper gas flow to combustion chamber, determine Btu input from the appliance rating plate. Divide this input rating by the Btu 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 2 minutes and multiply by 30 to get the hourly flow of gas to burner.

D-Gas Pressure

1- Check gas line pressure with unit firing at maximum rate. Normal natural gas inlet line pressure should be 7.0 in. w.c. Normal line pressure for LP gas is 11.0 in. w.c.

IMPORTANT-Minimum gas supply pressure is listed on unit rating plate for normal input. Operation below minimum pressure may cause nuisance lockouts.

2- After line pressure is checked and adjusted, check regulator pressure. Correct manifold pressure (unit running) is specified on nameplate. To measure, connect gauge to pressure tap in elbow below expansion tank.

E-Heat Anticipation Settings

Units with White Rodgers gas valves -- 0.7
Units with Robertshaw gas valves -- 0.8

F-Fan/Limit Control

Limit Control -- Factory set: No adjustment necessary.
Fan Control -- Factory set: ON -- No adjustment necessary; OFF -- 90°.

G-Temperature Rise and External Static Pressure

Check temperature rise and external static pressure. If necessary, adjust blower speed to maintain temperature rise and external static pressure within range shown on unit rating plate.

H-Electrical

1- Check all wiring for loose connections.

2- Check for correct voltage at unit (unit operating).

3- Check amp-draw on blower motor.
Motor Nameplate _____Actual_____.

NOTE-Do not secure electrical conduit directly to ducting or structure.

I-Blower Speeds

Blower speed selection is accomplished by changing the taps at the harness connector at the blower motor. See figure 18.

Refer to speed selection chart on unit wiring diagram.

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

VIII-SERVICE

A-Annual Service

At the beginning of each heating season, system should be checked as follows:

Blower

1- Check and clean blower wheel.

2- Motors are prelubricated for extended life; no further lubrication is required.

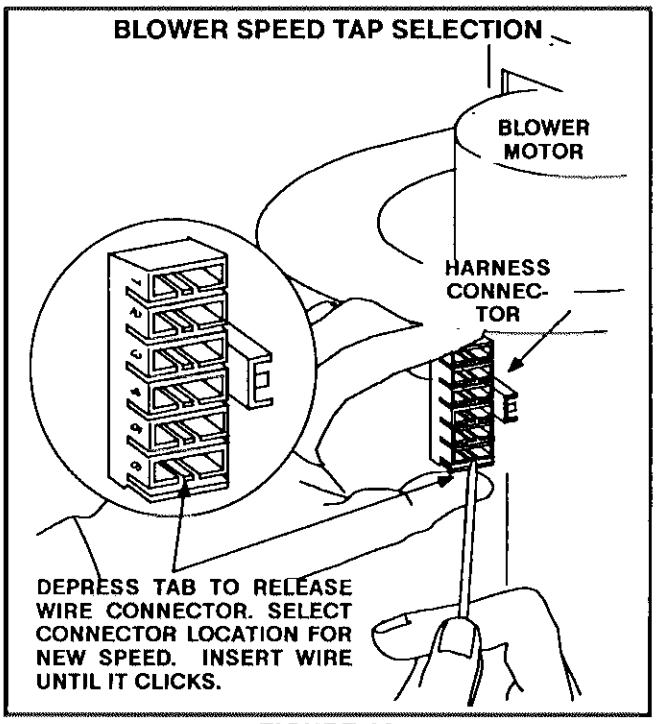


FIGURE 18

Electrical

1- Check all wiring for loose connections.

2- Check for correct voltage at unit (unit operating).

3- Check amp-draw on blower motor.
Motor Nameplate_____Actual_____

4- Check to see that heat (if applicable) is operating.

Filters

1- Filters must be cleaned or replaced when dirty to assure proper furnace operation.

2- Reusable foam filters supplied with G14 can be washed with water and mild detergent. When dry, they should be sprayed with filter handicoater prior to reinstallation. Filter handicoater is RP Products coating no. 481 and is available as Lennox part no. P-8-5069.

3- If replacement is necessary, order Lennox part no. P-9-7831 for 20 X 25 inch filter.

Intake and Exhaust Lines

Check intake and exhaust PVC lines and all connections for tightness and make sure there is no blockage. Also check condensate line for free flow during operation.

Insulation

Outdoor piping insulation should be inspected yearly for deterioration. If necessary, replace with same materials.

B-Cleaning Heat Exchanger/Burner Assembly

NOTE-Use papers or protective covering in front of furnace while removing heat exchanger assembly.

CAUTION-Before removing spark plug and sensor wires after unit has been operating, unit should be allowed to cool down at least 15 minutes before placing hands into heat chamber access opening. Residual heat in combustion chamber also transfers back to air intake valve causing it to become very hot when unit is first shut down. To cool completely to room temperature, blower should be run continuously for approximately 40 minutes.

1- Turn off both electrical and gas power supplies to furnace.

2- Remove upper and lower furnace access panels.

3- Remove cover or air decoupler box in vestibule panel.

4- Remove insulation pieces from lower section of air decoupler box.

5- Unscrew air valve housing, using either a strap or basin wrench.

6- Disconnect wiring to purge blower.

7- Remover nut from PVC air inlet fitting.

8- Remove nuts from air decoupler box mounting bolts and gas decoupler bracket.

9- Remove air decoupler box from unit.

10- Remove rubber pad(s) from air pipe.

11- Detach PVC exhaust pipe from coil manifold outlet (located in lower corner of vestibule panel).

12- Disconnect gas to unit.

13- Disconnect wiring to gas valve.

14- Break union in gas line just below gas decoiupler. Remove gas valve / gas decoupler / piping assembly.

15- Remove remaining gas piping from fitting at vestibule panel.

IMPORTANT-Hex head fitting contains gas diaphragm valve so care must be taken when handling this portion of piping assembly.

16- Disconnect blower motor wires form control box.

17-Disconnect spark plug and sensor wires form plugs in combustion chamber. (Access plate is located to the left of the air decoupler box.)

18- Remove vest panel.

19- From underside of blower deck, remove four nuts holding rubber heat train mounts.

20- Lift heat train from unit.

21- Backflush heat train with a soapy water solution or steam clean.

IMPORTANT-If unit is backflushed with water, make sure all water is drained from heat train before replacing.

22- Reverse above steps to replace heat exchanger assembly. Be sure rubber seal pad is in place on air pipe and that ground wire on gas valve is put back on the upper-right air decoupler box mounting stud.

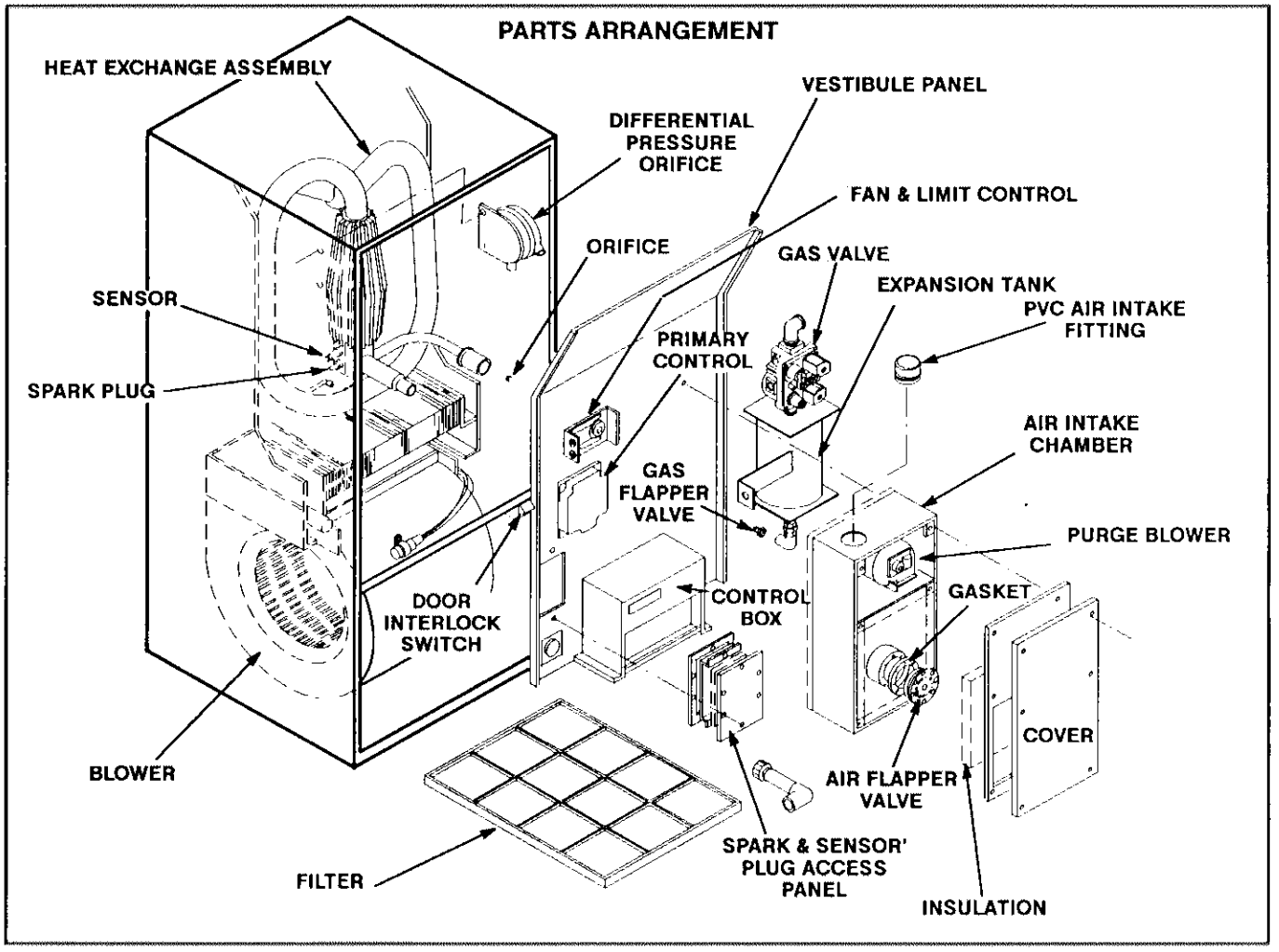


FIGURE 14

IX-REPAIR PARTS LIST

The following repair parts are available through independent Lennox dealers. When ordering parts, include the complete furnace model number listed on the unit rating plate. Example: G14Q3-60-1.

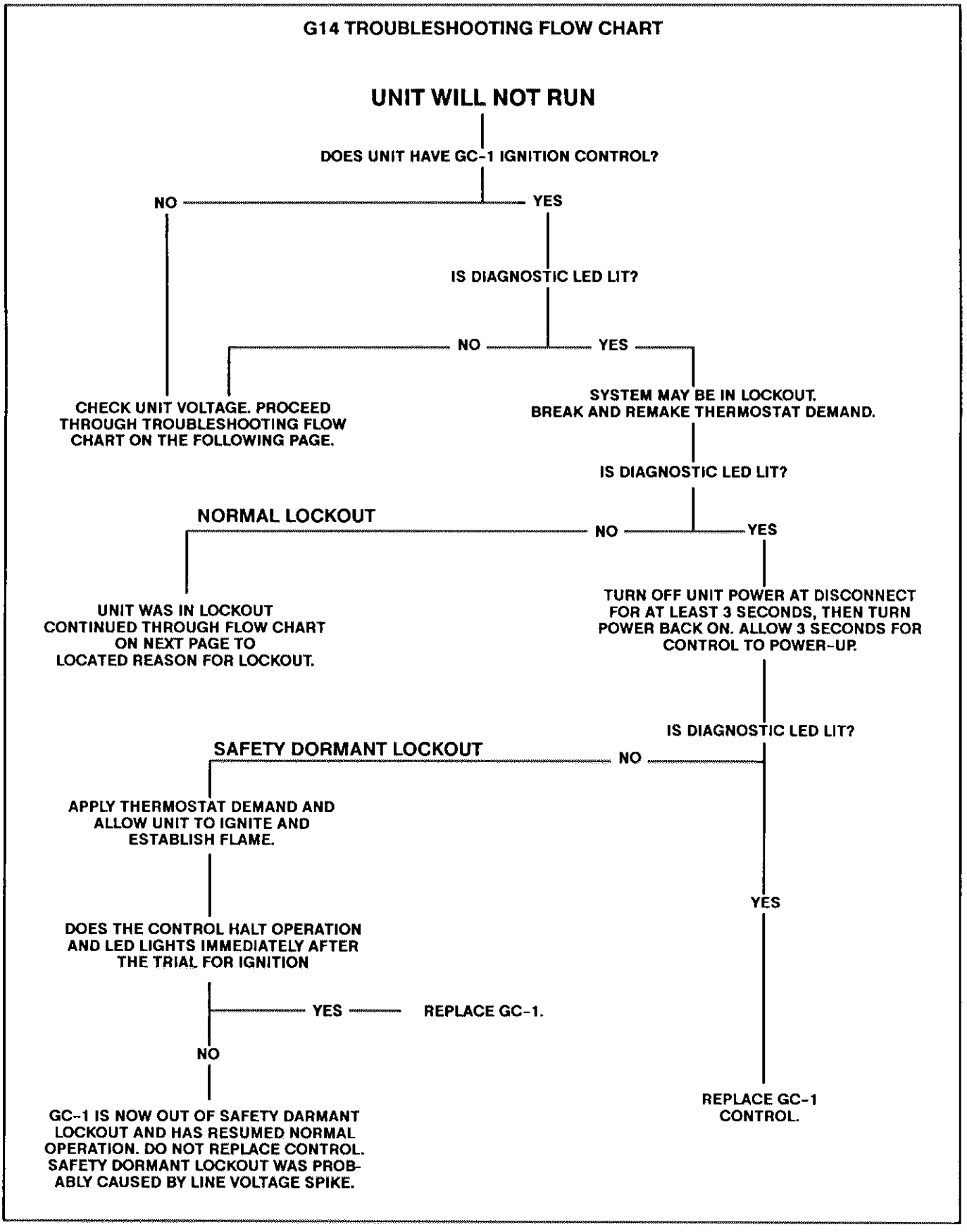
CABINET PARTS
Top access panel
Blower panel
Vestibule panel
Control box cover

CONTROL PANEL PARTS
Transformer
Indoor blower relay

BLOWER PARTS
Blower wheel
Motor
Motor mounting frame
Motor capacitor
Blower housing cut-off plate
Blower housing

HEATING PARTS
Heat exchanger assembly
Gas orifice
Gas valve
Gas decoupler
Gas flapper valve
Purge blower
Air intake flapper valve
Primary control board
Ignition lead
Spark plug ignitor
Flame sensor lead
Flame sensor

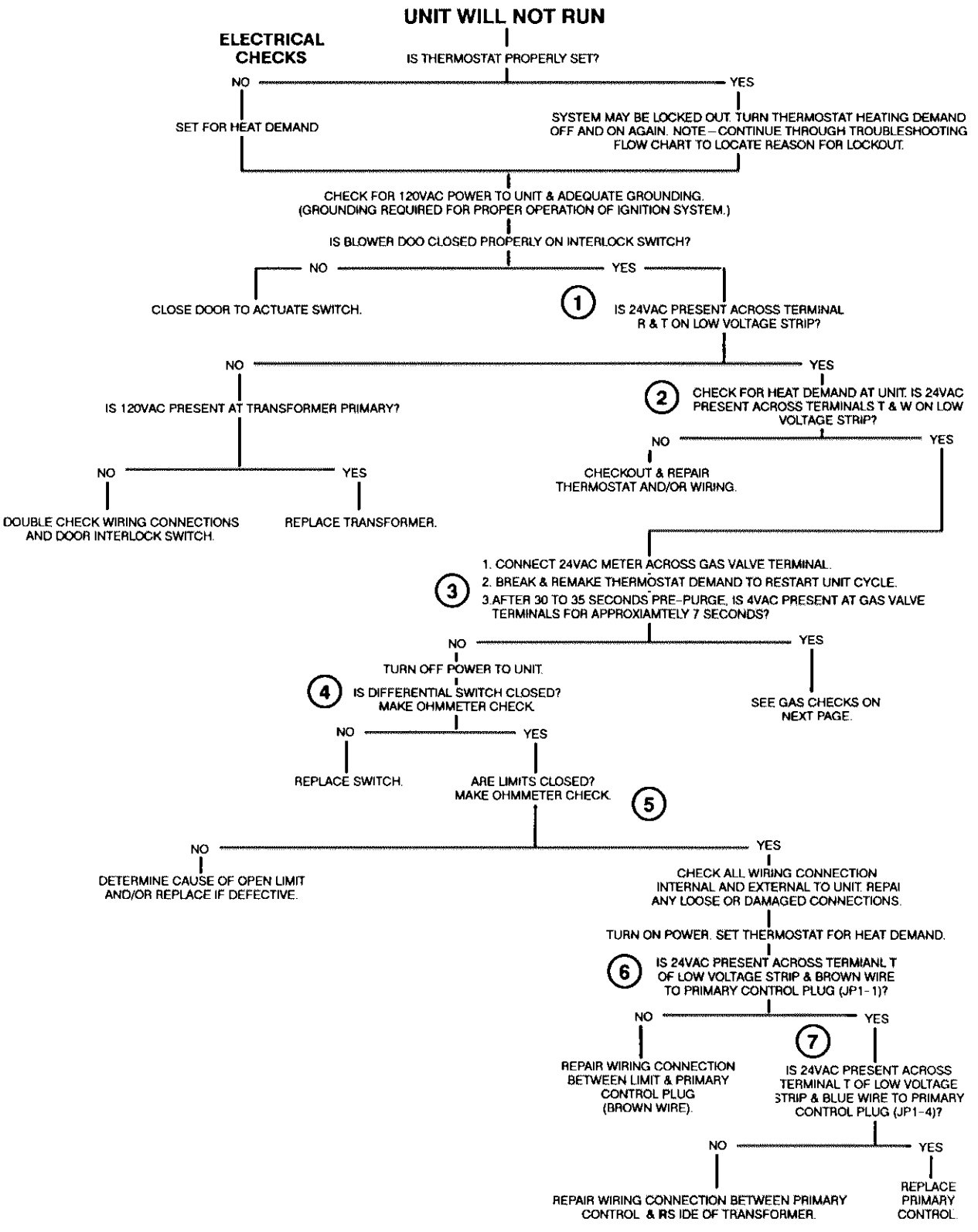
G14 TROUBLESHOOTING FLOW CHART



G14 TROUBLSHOOTING FLOW CHART

(continued form flow chart on previous page)

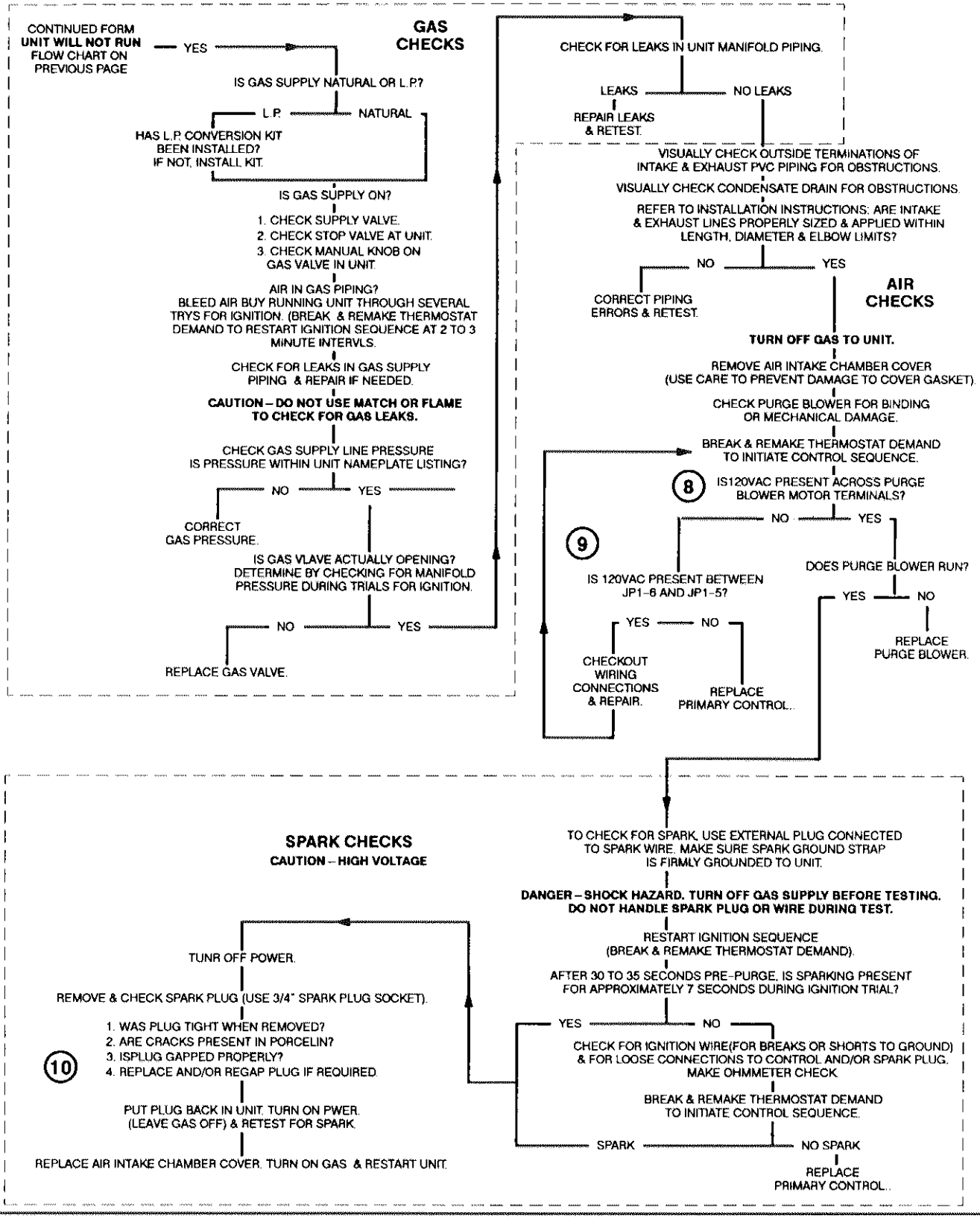
NOTE – Numbered steps refer to illustrations on last page.



G14 TROUBLSHOOTING FLOW CHART

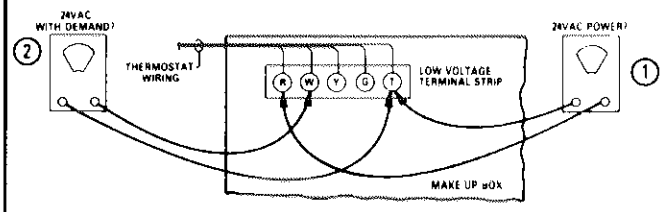
(continued form flow chart on previous page)

NOTE—Numbered steps refer to illustrations on last page.

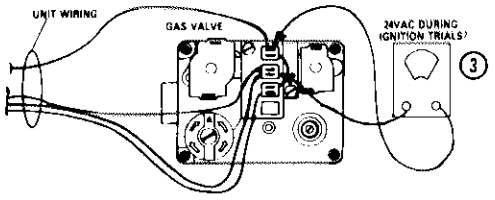


G14 TROUBLESHOOTING FLOW CHART – UNIT WILL NOT RUN

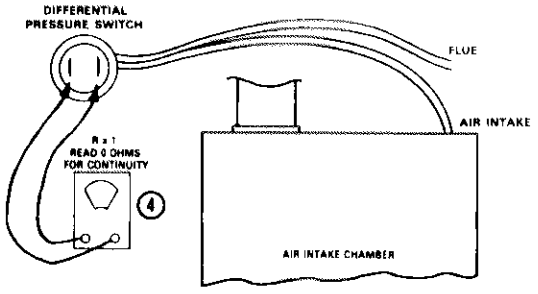
CHECK VOLTAGE AT TERMINAL AND CHECKING THERMOSTAT DEMAND



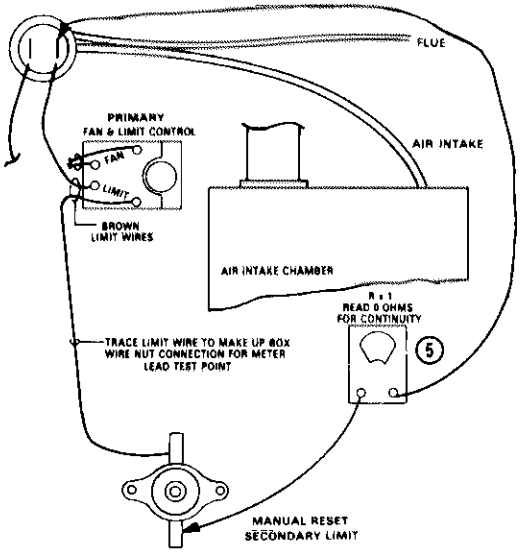
CHECKING VOLTAGE AT GAS VALVE



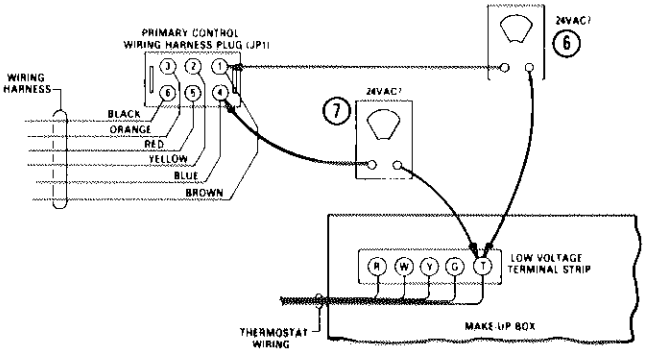
CHECKING FOR OPEN SWITCH



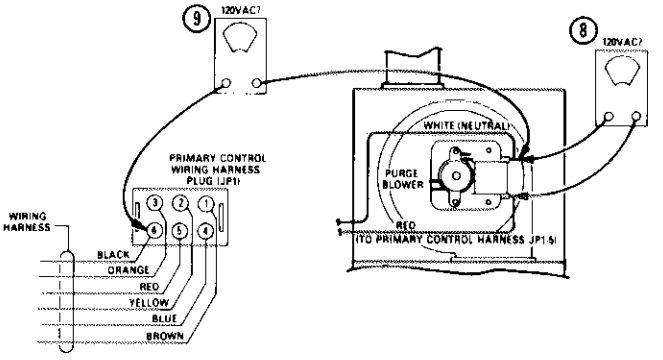
CHECKING FOR OPEN SWITCH IN LIMIT CONTROL



CHECKING VOLTAGE AT PRIMARY CONTROL

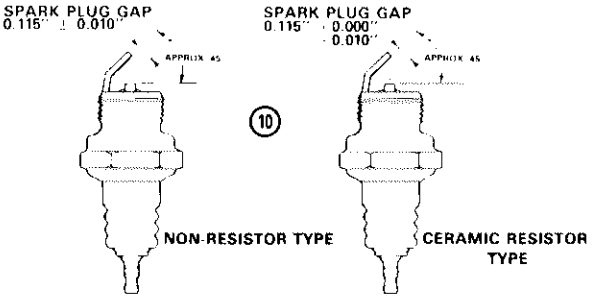


CHECKING VOLTAGE AT PURGE BLOWER



SPARK PLUG

IT IS NORMAL FOR THE ELECTRODE TO PROTRUDE AT AN UNUSUAL ANGLE



CHAMPION CJ8 (NOT FOR GC-1)

CHAMPION CH-21500

NOTE-CARBON RESISTOR TYPE PLUGS SHOULD NOT BE USED