



**G34E/G34EV
EXTERNAL SERIES GAS FURNACE**

G34E/G34EV

NOVEMBER 2003



USER'S INFORMATION MANUAL

****INSTALLER – AFFIX THIS INSTRUCTION
PACKET ADJACENT TO THE FURNACE.**

****HOMEOWNER – RETAIN THESE
INSTRUCTIONS FOR FUTURE REFERENCE.**

LENNOX HEATING & AIR CONDITIONING - DIVISION OF HEATCRAFT AUSTRALIA PTY LTD

Note: Due to an ongoing commitment to quality and design improvements, specifications, ratings and dimensions are subject to change without notice and without liability - Heatcraft Australia Pty Ltd, 2003

Owner Record

Furnace Model # _____

Serial # _____

Installation Date _____

INSTALLED BY:

Dealer _____

Address _____

Telephone # _____ Licence # _____

Contact Person _____

Other Equipment Installed:

Equipment Type _____ Installation Date _____

Model # _____ Serial # _____

Equipment Type _____ Installation Date _____

Model # _____ Serial # _____

Equipment Type _____ Installation Date _____

Model # _____ Serial # _____

USER'S INFORMATION MANUAL

Gas-Fired Furnace

READ ALL INSTRUCTIONS IN THIS MANUAL AND RETAIN THIS AND ALL ADDITIONAL INSTRUCTIONS FOR FUTURE REFERENCE.

Congratulations...

...you have one of the most modern gas furnaces made. Your unit has been carefully selected to keep you warm and comfortable during the winter months. It will deliver superb performance with only minimal help from you.

To keep your operating costs low and to eliminate unnecessary service calls, we have provided a few guidelines. These guidelines will help you understand how your gas furnace operates and how to maintain it so you can get years of safe and dependable service.

⚠ 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.**
- **What to do if you smell gas:**
 - **Do not try to light any appliance.**
 - **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.**
- **Installation and service must be performed by a qualified installer, service agency or the gas supplier.**

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For your safety - Read before operating

Here are a few “Do’s and Don’ts”

- **Do** become familiar with the instructions.
- **Do** check to see that your home has adequate insulation, weatherstripping, caulking, and storm windows. Elimination of infiltration of outside air and drafts can save up to 40% of your fuel bill.
- **Do** consider adding a humidifier to your heating system. Higher indoor humidity slows evaporation of perspiration, making the home seem warmer.
- **Don’t** waste fuel by setting your thermostat too high. Energy conservation experts recommend a daytime thermostat setting of 20°C, with a lower setting at night.
- **Do** lower the thermostat setting a few degrees if you expect to be away for more than a day. Your normal temperature setting can then be restored more economically.
- **Don’t** turn off the furnace when you expect to be away for more than a day. Instead, lower the thermostat setting a few degrees. You can then restore normal comfort level quickly and save fuel too.
- **Don’t** block registers with furniture.
- **Don’t** put a lamp, TV, or radio too near your thermostat. This will cause it to give a false reading.

⚠ WARNING

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

These furnaces are equipped with an ignition device which automatically lights the burners. **Do not try to light the burners by hand.**

If the switch will not move by hand, don’t try to repair it, call a qualified service technician. **Force or attempted repair may result in a fire or explosion.**

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

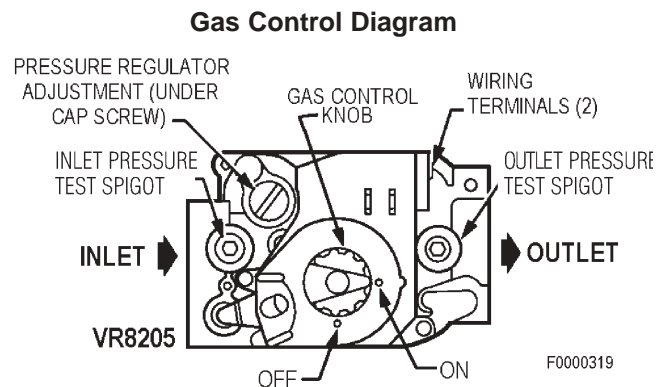
The furnace area must be kept clear and free of combustible materials, gasoline, and other flammable vapors and liquids. Failure to do so could cause actions that may result in property damage, personal injury, or loss of life.

Operating Your Furnace

Lighting Instructions

1. **STOP!** Read the previous safety information.
2. Set the thermostat to the lowest setting.
3. Turn off all electric power to the furnace.
4. Remove the burner compartment access panel.
5. This appliance is equipped with an automatic ignition device. **Do not try to light the burners by hand.**
6. Move the gas control switch to “OFF” (see Figure 1).

Figure 1



7. Wait 5 minutes to clear out any gas. Then smell for gas (including at the bottom of the unit near the ground). If you smell gas, **stop** and follow the directions in “**What to do if you smell gas**” on page 1. If you don’t smell gas, continue to next step.
8. Move the gas control switch to “ON”.
9. Replace the burner compartment access panel.
10. Turn on all electric power to the furnace.

- Set the thermostat to the desired setting.
- If the furnace will not operate, follow the instructions in "To Turn Off Gas to Furnace" and call your service technician or gas supplier.

To Turn Off Gas to Furnace

- Set the thermostat to the lowest setting.
- Turn off all electric power to the furnace if service is to be performed.
- Remove the burner compartment access panel.
- Move the gas control switch to "OFF" (see Figure 1). Do not force.
- Replace the burner compartment access panel.

Temperature Control

There are many types and styles of thermostats. Yours may look different from the one pictured in Figure 2, depending on the type of thermostat and whether cooling was installed with the system. However, almost all thermostats perform the same basic functions described in the following section.

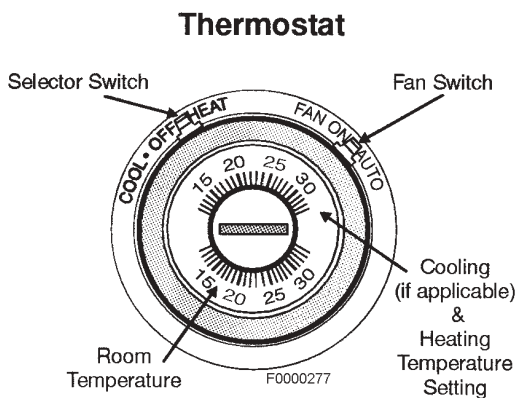


Figure 2

Thermostat Operation

There are two (2) switches located on the thermostat (see Figure 2). One switch controls the heating and cooling (if applicable) functions. The other switch is for "FAN" operation, either continuous or automatic. On the thermostat is the temperature range for the heating temperature and the cooling temperature desired.

To put the system into operation, push the switch to either "HEAT" or "COOL" position. After you have chosen the type of operation you desire, move the thermostat dial or lever to select the temperature you would like the system to maintain.

Fan Operation

You may wish to increase your comfort by setting your system for continuous air circulation of the indoor air. The fan switch on the thermostat permits you to do this.

With the switch in the "ON" position the fan will operate continuously. "AUTO" position gives fan operation only when the unit is in either heating or cooling.

What to do if your unit is not heating properly

If your furnace is operating but fails to provide complete comfort, check the following before calling for service:

- Be sure the thermostat setting is correct.
- Check to see if the filter is clean.
- Check with the contractor for return air grille locations.
- Be sure air can circulate freely throughout your home. Do not block supply registers or return air grilles with furniture or rugs.

And if you also have cooling...

- Keep surface of the outdoor coil free from dirt, lint, paper, or leaves.
- Check and clean indoor coil, if necessary. (This check should be made at the start of each cooling season by your service technician).

What to do if your unit fails to operate

- Be sure the main switch that supplies power to the furnace is in the "ON" position.
- Replace any burned-out fuses or reset circuit breakers.
- Be sure the thermostat is properly set.
- If the furnace still does not start, call your service technician.

⚠ WARNING

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.

Maintenance Of Your Furnace

⚠ WARNING

Always shut off all power to the unit before attempting any of the following maintenance procedures. Failure to do so may result in personal injury.

There are routine maintenance steps you should take to keep your furnace operating efficiently. This maintenance will assure longer life, lower operating costs, and fewer service calls. In addition to the maintenance procedures listed in this manual, there are also other service and maintenance procedures that require the skills of a service person who has specialized tools and training. (See "Servicing the Furnace" section of the Installation and Servicing part of this booklet.) **Personal injury can result if you are not qualified to do this work.** Please call your dealer when service is needed.

Cleaning

The cabinet of the furnace can be cleaned with soap and water. Grease spots can be removed with a household cleaning agent. The cabinet can be kept attractive by polishing with automotive wax at least twice a year.

Installations Around Insulation

Insulating materials may be combustible. Therefore, a furnace installed in an attic or other insulated space must be kept free and clear of insulating materials. Make sure to examine the furnace area when the furnace is installed or additional insulation has been added.

Periodic Inspections

Your gas furnace is designed to give many years of efficient, satisfactory service. However, the varied air pollutants commonly found in most areas can affect longevity and safety. Chemicals contained in everyday household items such as laundry detergents, cleaning sprays, hair sprays, deodorizers, and other products which produce airborne residuals may have an adverse affect upon the metals used to construct your appliance.

It is important that you conduct periodic physical inspections of your appliance, paying special attention to the gas burner and the flue outlet from the furnace. These components are located at the front of the unit. A flashlight will be useful for these inspections. Make one inspection prior to the beginning of the heating season and another during the middle.

Should you observe unusual amounts of any of the following conditions, it is important that you call your authorized dealer at once to obtain a qualified service inspection:

- Rust, flakes, or other deposits
- Coatings
- Corrosion

Even if no unusual rust or other conditions are observed, **it is recommended that the furnace be inspected and serviced at least once per year by a qualified service technician.** Regular inspection and planned maintenance will assure many years of economical performance from your gas furnace.

Combustion Air

⚠ WARNING

Adequate combustion and ventilation air must reach your gas furnace to provide for proper and safe operation. Do not block or obstruct air openings on the furnace, air openings communicating with the area in which the furnace is installed and the spacing around the furnace. Any obstruction of this airflow can cause an unsafe condition which may result in death or permanent injury.

Furnaces located in a closet, alcove, or utility room must have provision for adequate air supply by means of upper and lower grilles in the door, or by the introduction of outside air, or both. AGA codes must be adhered to.

Flueing and Furnace Support

Flueing of this furnace must comply with our published instructions. Be sure the installer has followed these requirements. If not, you should request the installer to comply as soon as possible.

For your safety, please note the following:

1. Non-condensing furnaces may be common vented with another appliance in certain circumstances. Refer to the installation instructions. Refer to the installation instructions and AGA 601 code for proper installation guidelines.

The vent from your furnace may rise vertically and terminate above the roof. When horizontal flueing a non-condensing furnace, an approved flue cowl must be used. Refer to the installation instructions for further information on horizontal flueing.

Make sure all flue product carrying areas and materials external to the furnace (i.e. vent terminals, etc..) are clear and free of any obstruction, slope upward, and have no holes or leaks.

Check to see that the furnace cabinet is sound and firmly supported, without sagging. There should be no cracks or gaps between the furnace and the base or floor, which would permit entry of unfiltered air.

It is important that the outside area where the vent terminates is kept clear of any obstructions which might block or impede the venting of the furnace. Should venting become blocked at anytime, your furnace is equipped with a special safety control to prevent operation of the furnace until the condition has been corrected. Contact your dealer if you desire more information about this safety feature.

Should any unusual conditions be observed during your inspections, call an authorized service dealer immediately.

For proper venting terminations, see the Installation Instructions furnished with the furnace.

Return Air

Ascertain that all return air duct connections are tight and sealed to the furnace cabinet and that all return air grilles or registers are located outside the space containing the furnace.

Cleaning/Replacing the Filter

It is very important to clean or replace the air filter regularly. Dirty filters are the most common cause of inadequate heating or cooling performance and can sharply increase the operational costs of your unit. In some cases, they can double the cost. The air filter should be inspected at least every 6 weeks and cleaned or replaced as required.

Your furnace may use either a disposable filter or a permanent filter. The type of filter may be indicated on a label attached to the filter. If a disposable filter is used, replace with the same type and size. If a permanent filter is used, clean filter and place back in furnace. To clean a permanent filter, shake filter to remove excess dirt and/or use a vacuum cleaner. Wash filter in soap or detergent water and replace after filter is dry. Permanent filters do not need to be oiled after washing.

Permanent filters may be replaced with disposable filters.

Refer to Table 1 when selecting the proper size and quantity of disposable filter.

If your air distribution system has a central return air filtergrille, you do not need a filter in your furnace. Clean the filter-grille the same way permanent filters are cleaned.

Table 1

EXTERNAL FILTER RACK SIZE

SIDE RETURN	BOTTOM/END RETURN
394 X 635	305 X 635
394 X 635	394 X 635
394 X 635	483 X 635

Note: Filters not supplied

Safety Interlock Switch

The blower compartment door on your furnace is equipped with a safety interlock switch that will automatically shut off your complete system (including blower) once the door is removed. This is for your personal safety. Be sure to check your furnace for proper operation once the door or panel has been replaced.

If the system does not operate once the panel has been replaced, try removing and replacing it once again. If the furnace still does not operate, call your dealer for service.

Rollout Switch

This unit is equipped with a manual reset high temperature sensor or rollout switch. In the unlikely event of a sustained main burner flame rollout, the rollout switch will shut off the flow of gas by closing the main gas valve. The switch is located inside the gas burner area. Flame rollout can be caused by blockage of the power vent system, a blocked heat exchanger, or improper gas pressure or adjustment. If this event occurs, the unit will not operate properly. The gas supply to the unit should be shut off and no attempt should be made to place it in operation. The system should be inspected by a qualified service technician.

Lubrication

Lubrication of the bearings in the circulating air blower motor and the combustion blower motor is not recommended.

Burner Flame

While the furnace is in operation, observe the main burner flames. Compare these observations to Figure 3 to determine if proper flame adjustment is present. If your observations indicate improper flame adjustment, call your authorized service dealer for service.

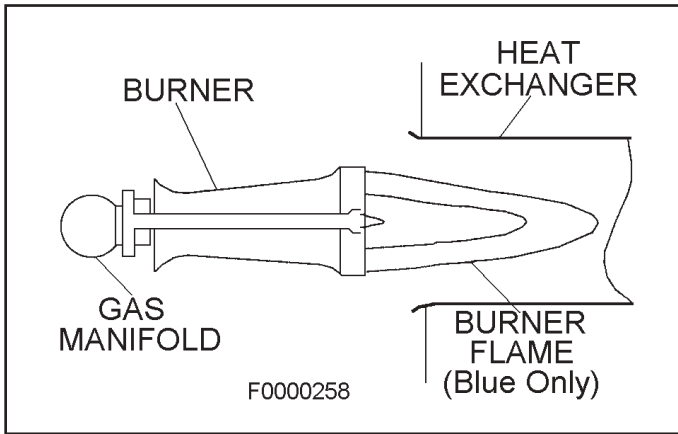


Figure 3

Do not attempt to adjust flame! Your service representative will perform this adjustment correctly.

Warranty Procedure

When warranty parts are required:

1. Be prepared to furnish the following information:
 - a. Purchaser's name
 - b. Complete model number, serial number, and date of installation.
 - c. An accurate description of the problem or defective parts.
2. Contact your dealer or distributor.

Keep this User's Information Manual (including Warranty) and proof of purchase for your records. Your warranty is determined from your date of installation. If proof of your date of installation is not supplied, the warranty will be based on the manufacture date code.

Failure to follow the correct warranty procedure could result in disallowance of warranty claim.

PARTS REPLACEMENT INFORMATION GUIDE

CASING GROUP

Top Panel
Bottom Panel
Cabinet Wrapper Partition
Front Door
Blower Door

GAS CONTROL

Manifold
Burner
Orifice
Gas Control
Sensor
Ignitor
Shield Top & Bottom

GROUP BLOWER GROUP

Blower Assembly
Blower Housing
Blower Motor
Blower Wheel
Capacitor
Blower Cutoff
Blower Support

ELECTRICAL GROUP

Control Box
Limit Switch
Fan Timer Control Board
Rollout Switch
Transformer

HEAT EXCHANGER

Primary Heat Exchanger
Flue Box Inducer
Burner Opening Panel
Burner Inlet Plate
Flue Opening Pane

GROUP INDUCER GROUP

Pressure Switch
Blower & Motor
Inducer Adapter Plate

TO OBTAIN INFORMATION ON PARTS: Consult your installing dealer or classified section of your local telephone directory under the "Heating Equipment" or "Air Conditioning Contractors & Systems" headings for dealer listing or see the first page of the installation instruction section of this manual for the name and address to contact.

Have available the Model No. and Serial No. located on the unit rating label located on the furnace to insure correct replacement part.

WARNING: Improper installation, adjustment, alteration, service or maintenance can cause personal injury or property damage. Consult a qualified installer, service agency, or your local gas supplier for information or assistance.



G34E/G34EV EXTERNAL SERIES GAS FURNACES




AFFIX LABEL HERE

INSTALLATION AND SERVICING INSTRUCTIONS


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RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE



⚠ WARNING
If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.




⚠ DANGER
Electric Shock Hazard
Turn Off All Power Before Servicing.

Do not store or use petrol 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 to AGA 601 installation codes. Installation by an unqualified person may lead to equipment damage and/or a hazardous condition which may cause bodily injury and harm and, as such, at the sole discretion of the manufacturer, the entire warranty may be voided and be of no further force and effect.

WHAT TO DO IF YOU SMELL GAS:

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

SAFETY

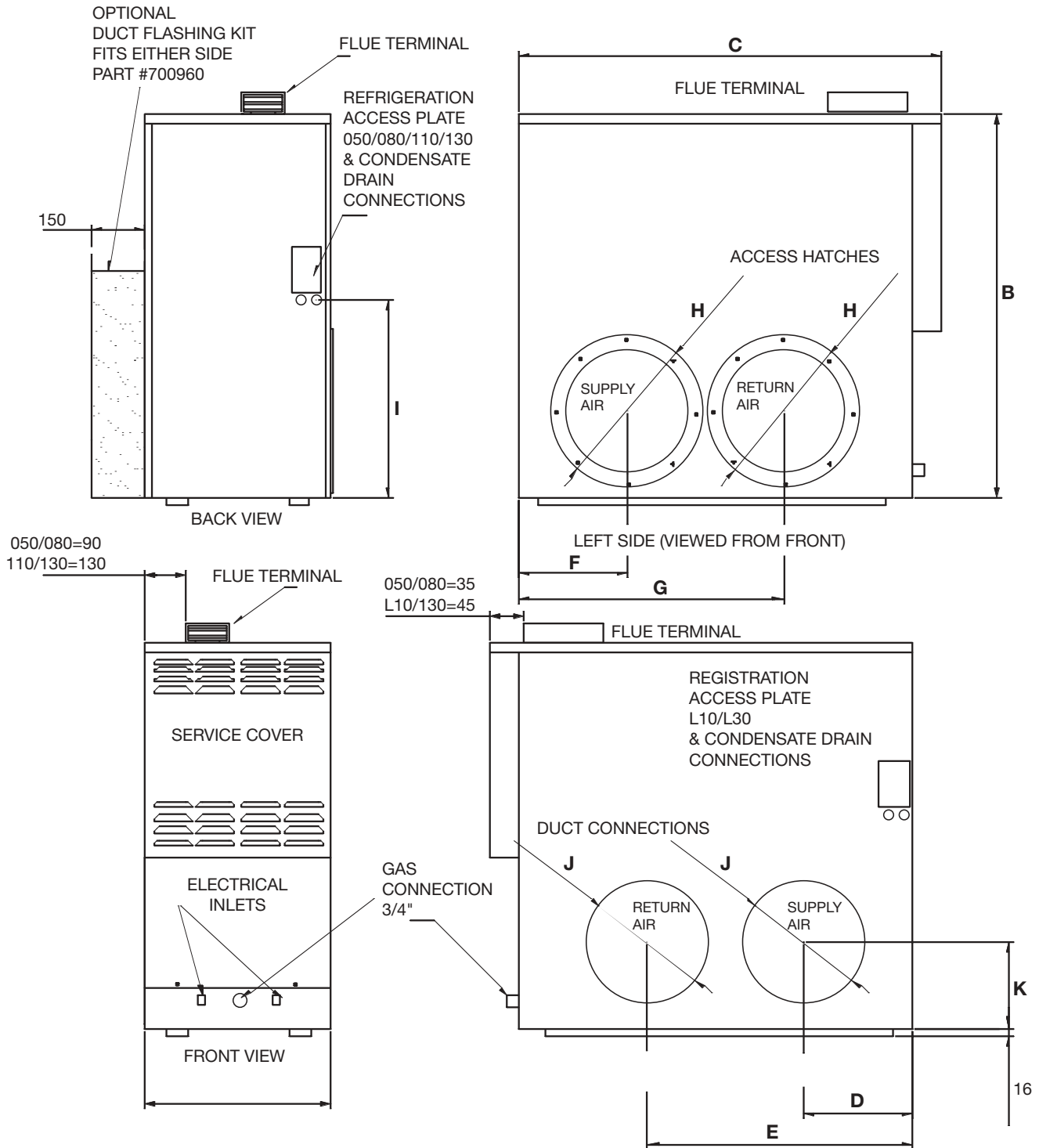
The following is a list of safety precautions and their locations in this manual.

These safety rules and precautions must be followed when installing this furnace.

1. Use only with type of gas approved for this furnace. Refer to the furnace rating plate.
2. Install this furnace only in a location and position as specified in *The Location/Placement Section* on page 4 of these instructions.
3. Never test for gas leaks with an open flame. Use a commercially available soap solution made specifically for the detection of leaks to check all connections, as specified in the *Gas Piping section* on page 7 of these instructions.
4. Always install furnace to operate within the furnace's intended temperature-rise range with a duct system which has an external static pressure within the allowable range, as specified in *Furnace Specifications* on page 3 of these instructions. See furnace rating plate.
5. The furnace is not to be used for temporary heating of buildings or structures under construction.

G34E/EV FURNACE SPECIFICATIONS

MODEL	DIMENSIONS mm										
	A	B	C	D	E	F	G	H	I	J	K
G34E/EVQ3-80	443	1023	1345	259	803	259	803	426	-	305	231
G34E/EVQ4-80	443	1023	1345	259	803	259	803	426	-	305	231
G34E/EVQ4-110	529	1060	1485	425	898	308	898	426	444	356	231
G34E/EVQ5-110	529	1060	1485	425	898	308	898	426	444	356	231
G34E/EVQ5-130	529	1060	1502	425	955	357	946	427	451	356	231



NOTE:
DUCT CONNECTIONS AND ACCESS HATCHES
ARE INTERCHANGEABLE FROM SIDE TO SIDE

FURNACE BLOWER SPECIFICATIONS AND AIR FLOW DATA

BLOWER SYSTEM	BLOWER SPEED	EXTERNAL STATIC (IN. W.C.) / pa									
		0.1 / 25	0.2 / 50	0.3 / 75	0.4 / 100	0.5 / 125	0.6 / 150	0.7 / 175	0.8 / 200	0.9 / 225	1.0 / 250
G34E/EVQ3-50 (254 X 152 WHEEL) (1/3HP MOTOR)	LOW	390	366	343	320	295	270	241	214	185	157
	MED	552	529	503	476	448	418	386	353	318	281
	HIGH	698	674	648	619	589	558	525	490	454	416
G34E/EVQ3-80 (254 X 152 WHEEL) (1/3HP MOTOR)	LOW	390	366	343	320	295	270	241	214	185	157
	MED	552	529	503	476	448	418	386	353	318	281
	HIGH	698	674	648	619	589	558	525	490	454	416
G34E/EVQ4-80 (305 X 228 WHEEL) (1HP MOTOR)	LOW	612	603	593	582	570	556	541	526	509	491
	MED	772	764	755	744	733	720	706	691	675	658
	HIGH	951	931	908	884	857	828	797	764	728	690
G34E/EVQ4-110 (305 X 228 WHEEL) (1HP MOTOR)	LOW	612	603	593	582	570	556	541	526	509	491
	MED	772	764	755	744	733	720	706	691	675	658
	HIGH	951	931	908	884	857	828	797	764	728	690
G34E/EVQ5-110 (305 X 305 WHEEL) (1HP MOTOR)	LOW	794	761	725	687	646	604	558	510	459	406
	MED	982	945	908	875	846	818	794	773	754	738
	HIGH	1204	1178	1152	1126	1100	1075	1050	1025	1000	976
G34E/EVQ5-130 (305 X 305 WHEEL) (1HP MOTOR)	LOW	794	761	725	687	646	604	558	510	459	406
	MED	982	945	908	875	846	818	794	773	754	738
	HIGH	1204	1178	1152	1126	1100	1075	1050	1025	1000	976

NOTES:

1. Air flow values in (L/s).
2. Data taken without filters in place or A/C evaporator in place.

⚠ WARNING

When operating the furnace in the heating mode, the static pressure and the temperature rise (supply air temperature minus return air temperature) must be within those limits specified on the rating label. Failure to follow this warning could lead to severe furnace damage.

⚠ WARNING

Turn OFF all gas and electrical power to furnace before performing any maintenance or service on unit. (Unless specific test requires gas and electrical supplies.) Failure to take this precaution may result in personal injury due to electrical shock or uncontrolled gas leakage.

SHIPPING AND PACKING LIST

Package 1 of 1 contains:

1 - Assembled unit 1 - Flue adapter/cowl field-installed 2 – Starting collars

The following additional items may be ordered separately, if required:

1 - Cooling coil 1 - Thermostat 1 - LP Changeover kit

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

GENERAL

These instructions are intended as a general guide and do not supersede local codes in any way. Consult AGA. AG-601 INSTALLATION CODE or authorities having jurisdiction before installation.

The G34E-EV furnace is approved for installation outside the building only with clearances as listed in figure 1. Installation of Lennox outdoor central furnaces must be in accordance with these instructions, local gas fitting regulations, municipal building codes, electrical wiring regulations and the current edition of the Australian Gas Installation Code (AG 601)

The following general recommendations should be considered when installing the Lennox G34E-EV furnace.

LOCATION / PLACEMENT

The Lennox G34E/EV can be installed in either right or left hand mode.

NOTE – On some models - 1/3 and 1/2 hp blower motors are equipped with either four flexible mounting legs or three flexible legs and one rigid leg. The rigid leg is equipped with a shipping bolt and a flat white plastic washer (rather than the rubber mounting grommet used with a flexible mounting leg). This shipping bolt and flat washer must be removed before the furnace is put into operation. Once the shipping bolt and washer are removed, the rigid leg will not touch the fan housing.

Select a unit location that will allow for required clearances per local AG 601 codes and in figure 1. Also consider gas supply connections, electrical supply, vent termination and installation and service clearances (600mm. front).

Accessibility and service clearances must not take precedence over fire protection clearances.

The Lennox G34E-EV furnace should be set on a field-provided platform to keep the unit base out of water. The unit is equipped with base rails, which lift the bottom of the unit off of the platform. Unit must be leveled using shims or leveling bolts. Knockouts are provided in unit base to install field-provided leveling bolts.

DUCT SYSTEM

The unit is provided with knockouts for either right or left-side connection of the supply and return air plenums. Refer to the dimensioned drawing on page 2 to locate and size the plenum entry into the side of the building. Cover plates are provided to seal the unused knockouts and these become convenient access ports for regular service and maintenance.

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

The furnace access panel must always be in place when the unit is in operation and it must not allow leaks into the duct system.

Construct a protective covering made of suitable materials to shield the plenum connections from rain. Rain shield should be attached to the side of the unit cabinet above the plenum connections and span the distance to the building wall above the plenum entry into the structure. Rain shield connections must be caulked so that they are weather-tight.

INSTALLING OPTIONAL COOLING COIL

If optional cooling coil is to be used, install coil according to the steps indicated below:

1 - Remove G34E-EV unit rear panel (side panel on G34E-EV130).

NOTE - Installation of larger evaporator coils may require removal of unit top panel as well.

2 - Place cooling coil on unit coil deck in cooling compartment.

3 - Using template provided with the coil, cut holes for refrigeration and drain piping. Align coil with piping holes in panel. Seal holes around piping.

4 - Reinstall G34E-EV panel.

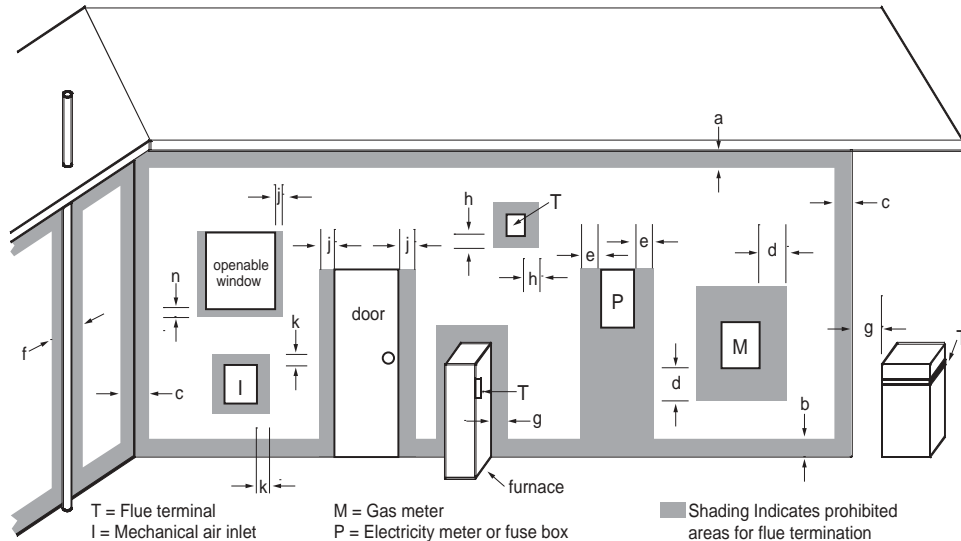
5 - Make refrigerant piping connections to condensing unit per local codes and sound plumbing practices.

VENTING

The G34E unit is shipped standard for top flue discharge. A flue adapter is supplied with the furnace. It must be installed on the outside of the furnace.

Figure 1

FLUE TERMINATION CLEARANCES



Ref.	Item	Minimum clearances mm	
		Natural draft	Fan assisted
A	Below eaves, balconies and other projections: • Appliances up to 50 Mj/h input • Appliances over 50 Mj/h input	300 500	200 300
B	From the ground, above a balcony or other surface •	300	300
C	From a return wall or external corner •	500	300
D	From a gas meter (M) (see 4.7.11 for vent terminal location of regulator)	1000	1000
E	From an electricity meter or fuse box (P)	500	500
F	From a drain pipe or soil pipe	150	75
G	Horizontally from any building structure • or obstruction facing a terminal	500	500
H	From any other flue terminal, cowl, or combustion air intake •	500	300
J	Horizontally from an openable window, door, non-mechanical air inlet, or any other opening into a building with the exception of sub-floor ventilation: • Appliances up to 150 Mj/h input • Appliances over 150 Mj/h input up to 200 Mj/h input • Appliances over 200 Mj/h input • All fan-assisted flue appliances, in the direction of discharge	500 1500 1500	300 500 1500 1500
K	From a mechanical air inlet, including a spa blower	1500	1000
N	Vertically below an openable window, non-mechanical air inlet, or any other opening into a building with the exception of sub-floor ventilation: • Space heaters up to 50 Mj/h input • Other appliances up to 50 Mj/h input • Appliances over 50 Mj/h input and up to 150 Mj/h input • Appliances over 150Mj/h input	150 500 1000 1500	150 500 1000 1500

• Unless appliance is approved for closer installation

NOTES:

- All distances are measured to the nearest part of the terminal.
- Prohibited area below electricity meter or fuse box extends to ground level.
- See Clause 5.13.6.6 for restrictions on a flue terminal under a covered area.
- See Appendix J, Figures J2(a) and J3(a), for clearances required from a flue terminal to an LP Gas cylinder. A flue terminal is considered to be a source of ignition.
- For appliances not addressed above, approval shall be obtained from the Authority.

GENERAL G34E & EV SERIES 2-STAGE-SET-UP

THERMOSTAT INSTALLATION

Install a room thermostat according to the instructions furnished with it. Select a location on an inside wall and not subject to drafts, direct sunshine or other heat sources. The initial heat anticipator setting should be equal to the total current draw of the control circuit.

Low voltage thermostat connections are to be made as indicated on the furnace 2 STAGE wiring diagram.

FURNACE CHECK-OUT

Before leaving, the installer should make the following checks to ensure that the controls are functioning properly.

CHECKING AND ADJUSTING GAS INPUT

The minimum permissible gas supply pressure for the purpose of input adjustment is 5 in. W.C. (1.25 kPa) for natural gas, 11 in. W.C. (2.74 kPa) for propane gas.

GAS PRESSURE REGULATOR

Gas input must never exceed the value shown on the furnace rating plate. The furnace is equipped for rated input at manifold pressures of 1.2 in. W.C. (0.30 kPa)—1st stage—and 3.5 in. W.C. (0.87 kPa)—2nd stage—for natural gas; 3.6 in. W.C. (0.90 kPa)—1st stage—and 10.0 in. W.C. (2.49 kPa)—2nd stage—for propane gas.

The manifold pressure can be measured by connecting a water manometer or gauge to the pressure tap in the downstream side of the gas valve.

Only small variations in gas input may be made by adjusting the regulator. In no case should the final manifold pressure vary more than 0.3 in. W.C. (0.07 kPa) from the above specified pressures.

Turn the gas valve ON. To adjust the regulator, turn the adjusting screw on the regulator clockwise to increase pressure and input;

Counter-clockwise to decrease pressure and input. There are separate adjusting screws for 1st stage (marked "LO", on top of solenoid coil) and 2nd stage (marked "HI", on outlet end of valve). NOTE: The pressure regulator adjustment is sensitive; one turn of the adjusting screw will result in a relatively large change in manifold pressure.

If adjustments are being made for propane gas, follow this procedure:

1. Adjust high fire setting by turning hex adjustment screw full clockwise.
2. Set low fire setting by turning the low fire adjustment screw clockwise (located on top of 2nd stage coil) to desired rate.
3. Set high fire setting by turning the high fire adjustment screw counter-clockwise to 10.0 in. W.C. (2.49 kPa) manifold pressure.

Important: Make sure the final high and low fire manifold pressures are within the allowable ranges specified above for the gas being used.

Check the furnace rate by observing the gas meter, when available, making sure all other gas appliances are turned off. The test hand on the meter should be timed for at least one revolution.

TEMPERATURE RISE

Check the temperature rise and, if necessary, adjust blower speed to maintain temperature rise within the range shown on the unit rating plate.

GAS PIPING

GAS SUPPLY

This unit is to be installed by a licensed gas plumber fully in accordance with AG601 installation regulations.

- 1 - This unit is shipped standard for centre installation of gas piping. Piping can be converted for right-side connection. Simply connect gas supply to piping assembly.
- 2 - When connecting gas supply, factors such as length of run, number of fittings and furnace rating must be considered to avoid excessive pressure drop. Unit connection at gas manifold is 1/2 in. (12mm). Size piping according to gas regulations.
- 3 - Gas piping must not run in or through air ducts, clothes chutes, chimneys or gas vents, dumb waiters or elevator shafts.
- 4 - Piping should be sloped 6mm per 380mm upward toward the meter from the furnace. The piping must be supported at proper intervals (2M) using suitable hangers or straps
- 5 - In some localities, codes may require installation of a manual main shut-off valve and union (furnished by installer) external to the unit. Union must be of the ground joint type.

! IMPORTANT

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

NOTE-Installer must provide a 1/8 in. (3 mm) N.P.T. plugged tap in the field piping upstream of the gas supply connection to the unit. Tap must be accessible for test gauge connection. This requirement is negated if the gas valve in the unit is fitted with an integral pressure tapping point.

NOTE-If emergency shutoff is required, shut off main manual gas valve and disconnect main power to unit. These devices should be properly labelled by the installer.

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

Some soaps used for leak detection are corrosive to certain metals. Carefully rinse piping thoroughly after leak test has been completed. Do not use matches, candles, flame or other sources of ignition to check for gas leaks.

The furnace must be isolated from the gas supply system by closing its individual manual shut-off valve during any pressure testing of the gas supply system at pressures equal to or less than 1/2 psig (3.48 kPa).

! IMPORTANT

When testing pressure of gas lines, gas valve must be disconnected and isolated. See figure 4. Gas valves can be damaged if subjected to more than 1/2 psig (3.48 kPa).

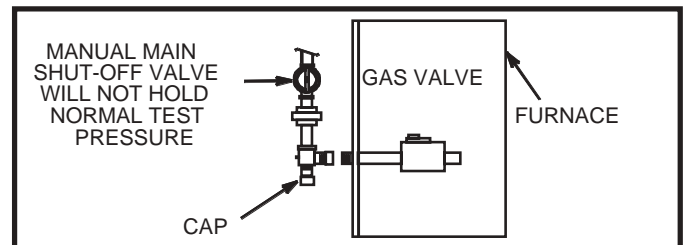


Figure 4

ELECTRICAL

ELECTROSTATIC DISCHARGE (ESD)

Precautions and Procedures

⚠ CAUTION

Electrostatic discharge can affect electronic components. Take precautions during furnace installation and service to protect the furnace's electronic controls. Precautions will help to avoid control exposure to electrostatic discharge by putting the furnace, the control and the technician at the same electrostatic potential. Neutralize electrostatic charge by touching hand and all tools on an unpainted unit surface, such as the gas valve or blower deck, before performing any service procedure.

These units operate on 240 volt, single phase, 50 Hz electrical power. Refer to figure 5 for field wiring and figure 7 for schematic wiring diagram and troubleshooting.

- 1 - Select circuit protection and wire size according to requirements listed on unit rating plate.
- 2 - Snap-hole plugs are provided on both sides of cabinet to facilitate wiring.
- 3 - Install room thermostat according to instructions provided with thermostat.
- 4 - Install a separate disconnect switch (protected by either fuse or circuit breaker) near the unit so power can be turned off for servicing.
- 5 - Before connecting thermostat or power wiring, check to make sure wires will be long enough to facilitate servicing at a later date. Remove blower access panel and swing panel to check wire length for access.
- 6 - Complete wiring connections to equipment using wiring diagrams provided with unit and in field wiring diagrams shown in figures 5. Use 18 gauge wire or larger for thermostat connections.
- 7 - Electrically ground unit in accordance with local codes.
- 8 - Three 240 volt accessory terminals are provided on the control board. Two are energized with the indoor blower and one is energized with the combustion air blower. Any accessory rated up to one amp can be connected to the accessory terminals with the neutral leg of the circuit connected to the 240 volt neutral wires.
- 9 - This unit is equipped with an integrated control board that controls blower operation, fan off timings (EGC Board Only) and ignition. The board includes a terminal strip for thermostat connections and two diagnostic LEDs. See figure 6 for control board configuration. Diagnostic codes are given in a chart at the back of this manual.

The red diagnostic button can be used to view the last failure code. (EGC Ignition Board Only)
- 10 - Refer to blower speed chart on wiring diagrams for factory set cooling, heating and continuous fan speeds. Systems using a cooling thermostat sub-base may operate the blower continuously (factory set at low speed) through the thermostat "FAN ON" switch. Systems, which do not include a cooling sub-base require a toggle switch which must be wired between terminals "R" and "G" on the thermostat connection terminal strip. The blower motor will operate at the designated speed during cooling or heating demand; however, when demand is satisfied, blower speed will revert to selected continuous speed.

Figure 5

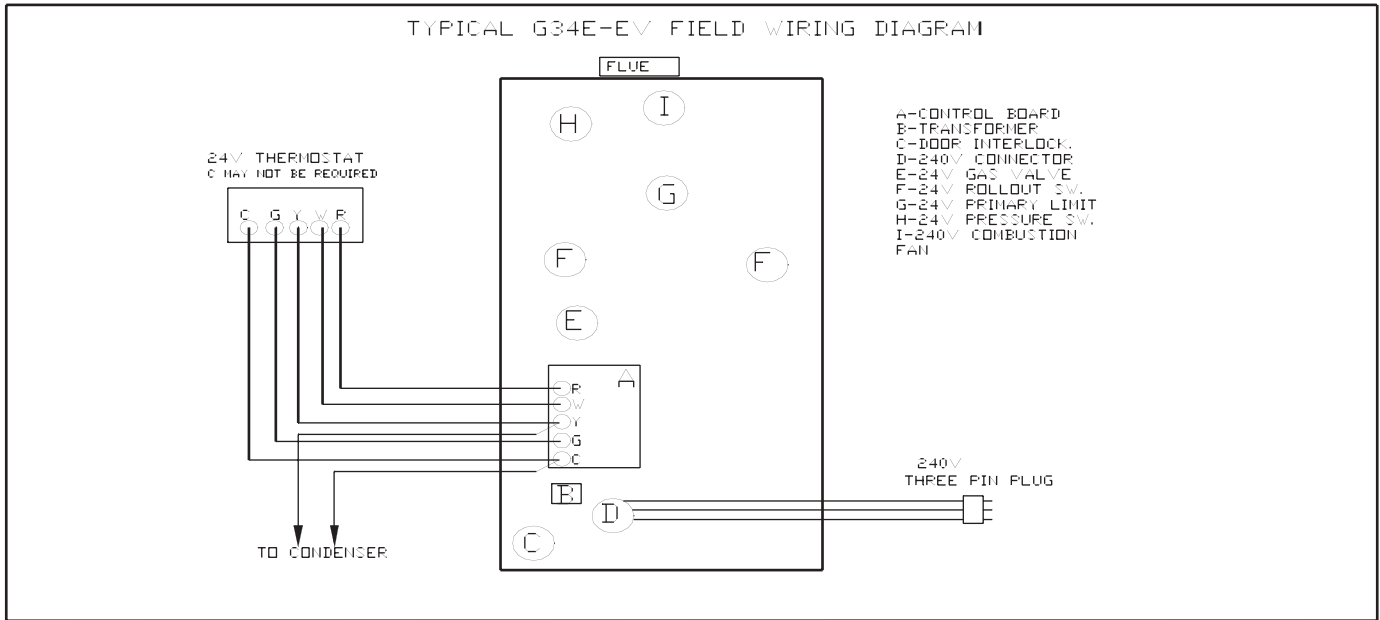


Figure 6

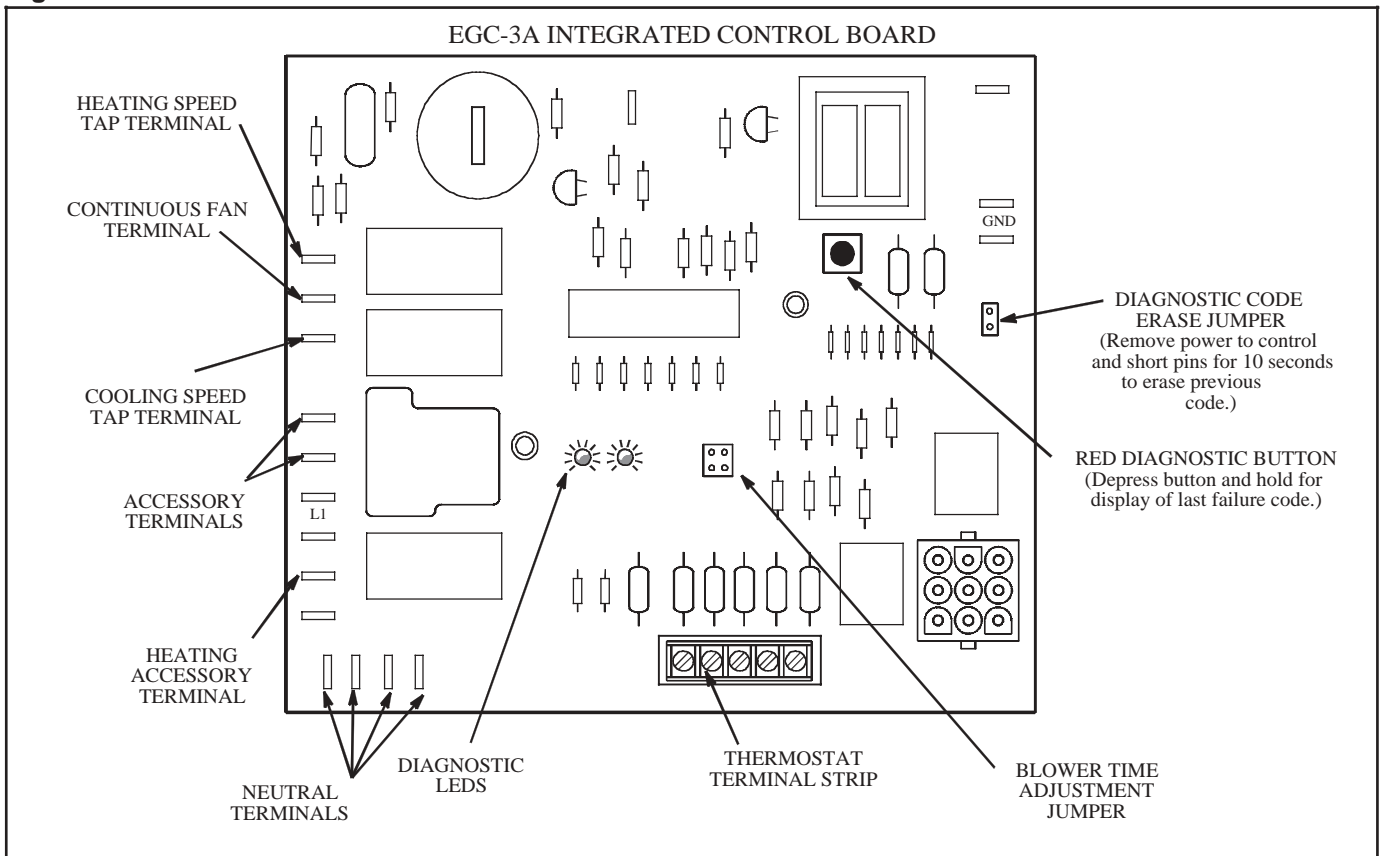


Figure 7 (EGC-3 Ignition Module)

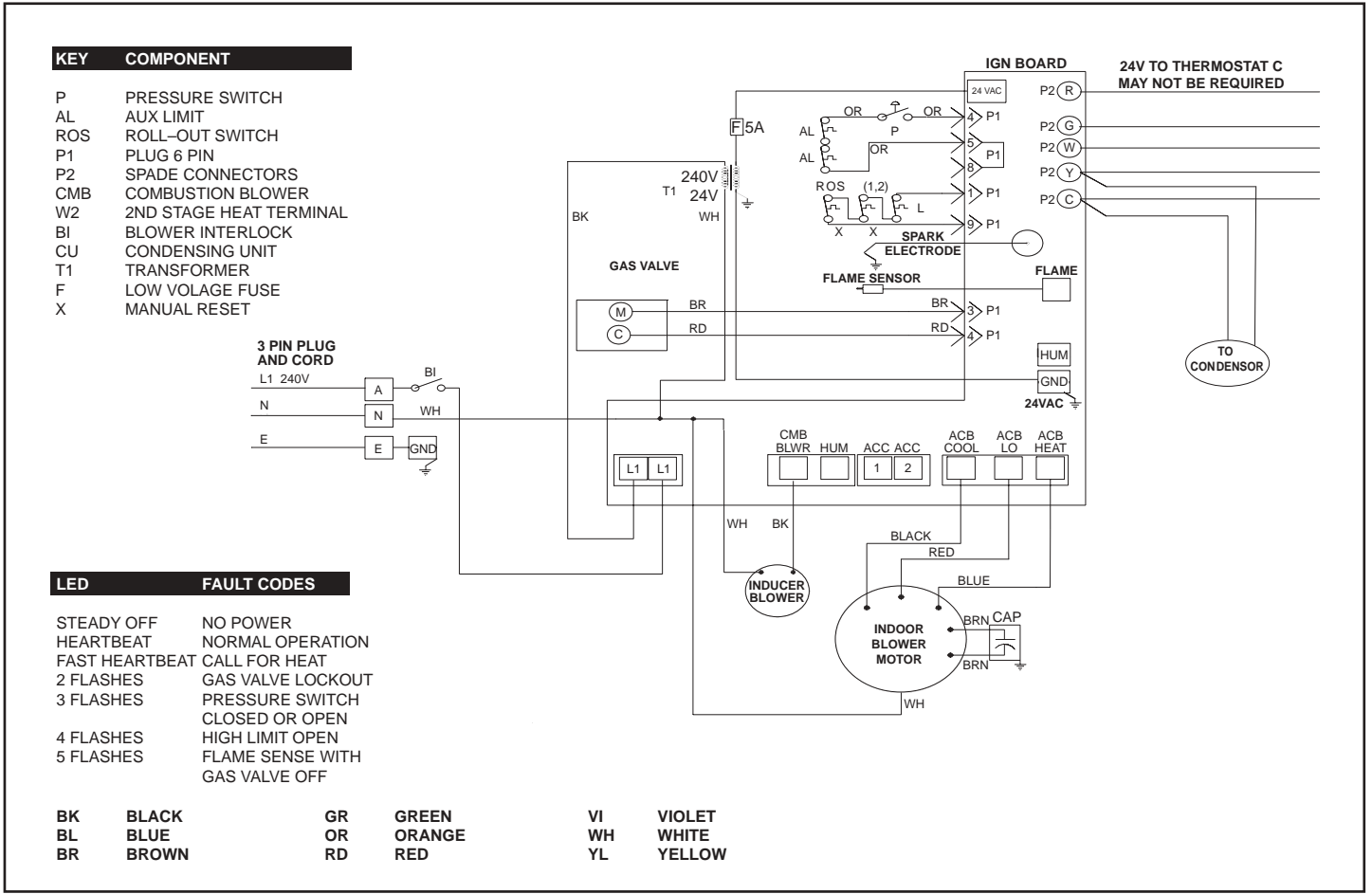


Figure 8 (U.T. Ignition Module)

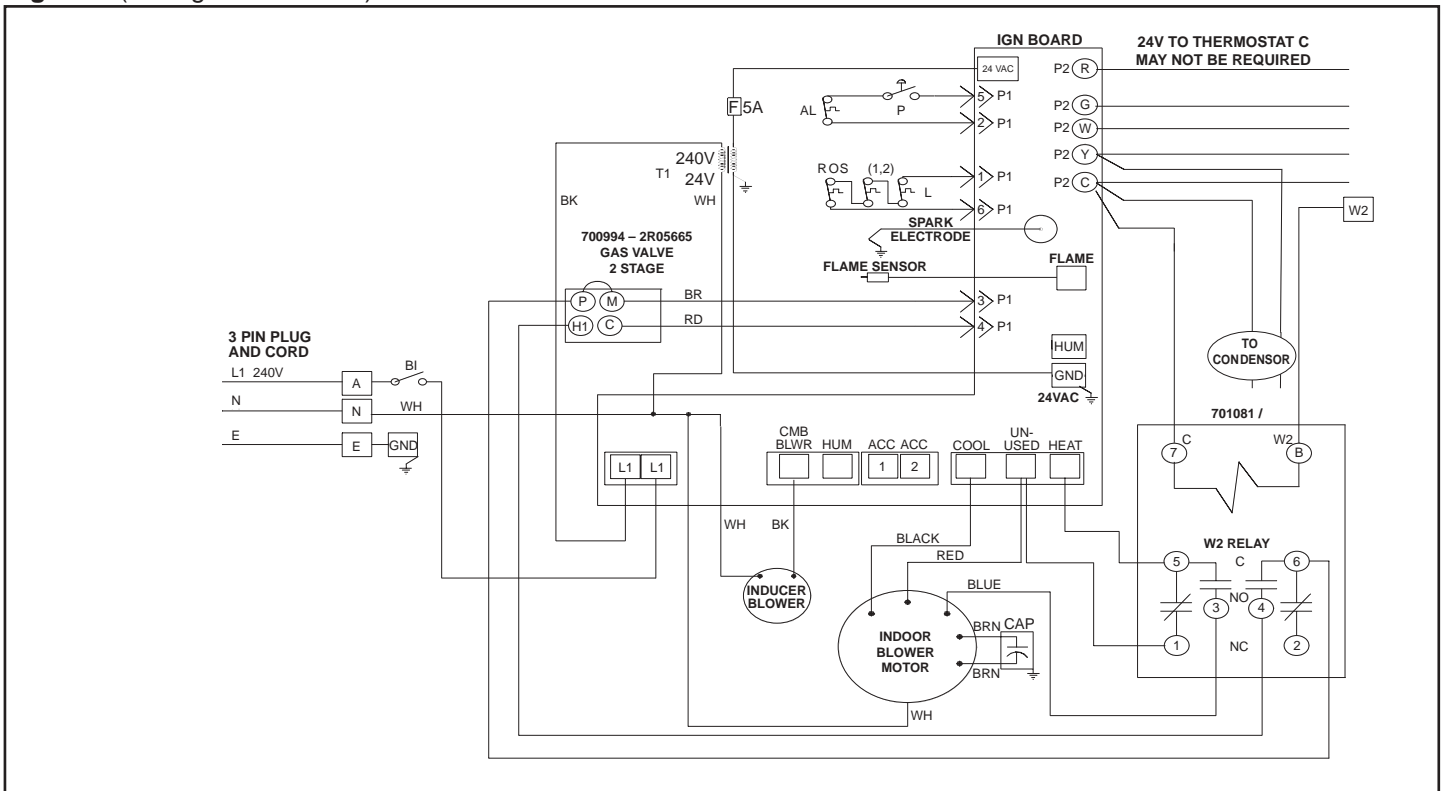
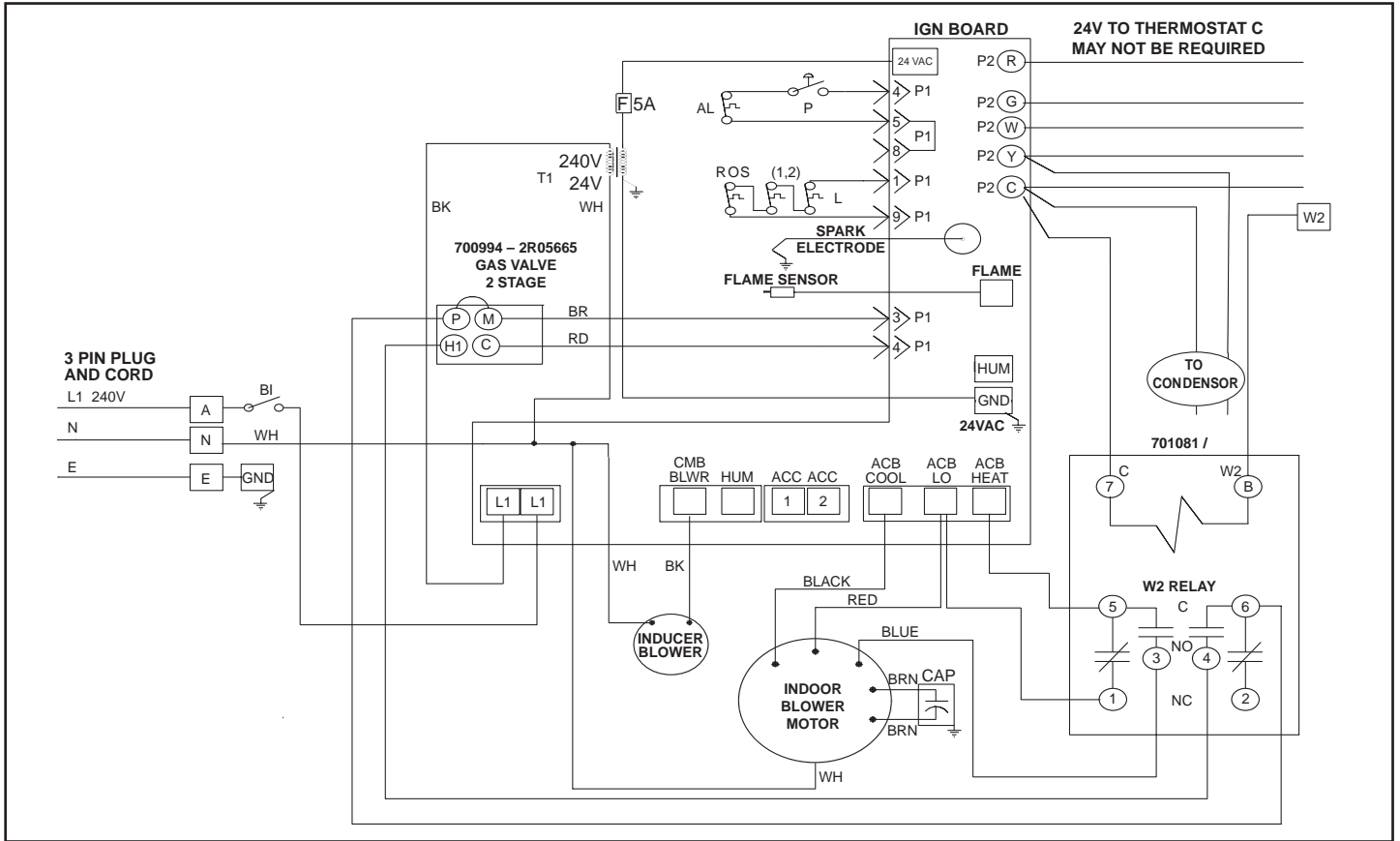


Figure 9 (U.T. Ignition Module)



UNIT START-UP

FOR YOUR SAFETY READ BEFORE LIGHTING

⚠ WARNING

Do not use this furnace if any part has been underwater. 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, turn 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 turn the gas control knob. Never use tools. If the knob will not 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.

UNIT START-UP (CONT.)

PLACING UNIT INTO OPERATION

G34E/EV units are equipped with a direct spark ignition system. Do not attempt to manually light burners on these furnaces. Each time thermostat calls for heat, the burners will automatically light.

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 (Figures 8 and 9)

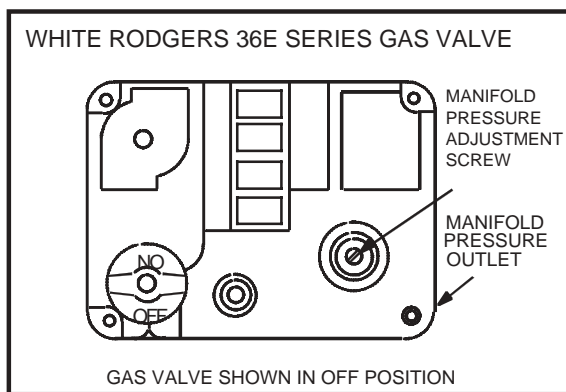


Figure 10

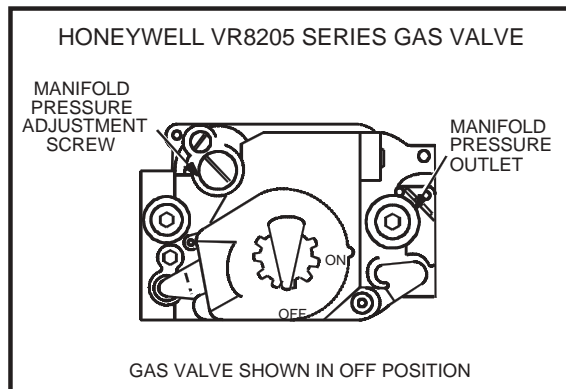





Figure 11

- 1 - STOP! Read the safety information at the beginning of this section.
- 2 - Set the thermostat to lowest setting.
- 3 - Turn off all electrical power to the unit.
- 4 - This furnace is equipped with an ignition device, which automatically lights the burners. Do not try to light the burners by hand.
- 5 - Remove the access panel.
- 6 - *White Rodgers 36E Gas Valve* - Turn knob on gas valve 180° either way to **OFF**. See figure 8.
Honeywell VR8205 Gas Valve - Turn knob on gas valve clockwise  to **OFF**. Do not force. See figure 9.
- 7 - Wait five (5) minutes to clear out any gas. If you then smell gas, **STOP!** Immediately call your gas supplier from a neighbour's phone. Follow the gas supplier's instructions. If you do not smell gas go to next step.
- 8 - *White Rodgers 36E Gas Valve* - Turn knob on gas valve 180° either way to **ON**.
Honeywell VR8205 Gas Valve - Turn knob on gas valve counterclockwise  to **ON**. Do not force.
- 9 - Replace the access panel.
- 10 - Turn on all electrical power to unit.
- 11 - Set the thermostat to desired setting.
NOTE-When unit is initially started, steps 1 through 11 may need to be repeated to purge air from gas line.
- 12 - If the appliance will not operate, follow the instructions "Turning Off Gas To Unit" and call your service technician or gas supplier.

TURNING OFF GAS TO UNIT

- 1 - Set the thermostat to the lowest setting.
- 2 - Turn off all electrical power to the unit if service is to be performed.
- 3 - Remove the access panel.
- 4 - Turn knob on White Rodgers gas valve 180° either way to **OFF**; turn knob on Honeywell valve clockwise  to **OFF**. Do not force.
- 5 - Replace the access panel.

HEATING SEQUENCE OF OPERATION

- 1 - When thermostat calls for heat, combustion air blower starts after a 5 second delay.
- 2 - Combustion air pressure switch proves blower operation, and then allows power to ignition control. Switch is factory set and requires no adjustment.
- 3 - After 15-second prepurge, spark igniter energizes and gas valve solenoid valves open.
- 4 - Spark ignites gas, ignition sensor proves the flame and combustion process continues.
- 5 - If flame is not detected after first ignition trial, ignition control will repeat steps 3 and 4 four more times before locking out. To re-establish ignition

UNIT ADJUSTMENTS

PRIMARY LIMIT

The primary limit is located on the heating compartment vestibule panel. This limit is factory set and does not require field adjustment.

FLAME ROLLOUT SWITCHES (TWO)

These manually reset switches are located just above the burner box. If tripped, a check for adequate combustion air should be made before resetting.

COMBUSTION AIR PRESSURE SWITCH

The combustion air pressure switch is located on the heating compartment vestibule panel. This switch checks for proper combustion air blower operation before allowing ignition trial. The switch is factory set and requires no field adjustment.

FAN TIMER CONTROL

The fan control is part of the control board located on the heating compartment vestibule panel. The preset fan on delay time of 45 seconds is not adjustable. The fan off delay time is factory adjusted at 120 seconds and can be adjusted by moving the jumper on the integrated control board. See figure 10 for settings. **EGC board only.**

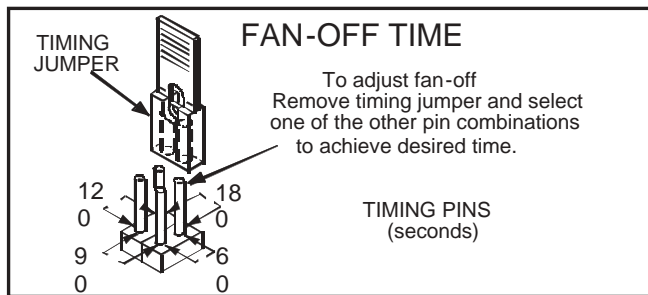


Figure 12 Note:- (EGC Ignition Board Only)

GAS FLOW

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

GAS PRESSURE

- 1 - Check gas line pressure with unit firing at maximum rate. A minimum of 1.13 kPa for natural gas or 2.75 kPa for LP/propane gas should be maintained.
- 2 - After line pressure has been checked and adjusted, check regulator pressure. Refer to the unit rating plate for manifold pressure settings. See figures 8 and 9 for manifold pressure adjustment screw location. A natural gas to LP/propane gas changeover kit is required to convert unit.

TEMPERATURE RISE

Check temperature rise and, if necessary, adjust blower speed to maintain temperature rise within range shown on unit rating plate.

THERMOSTAT HEAT ANTICIPATION

Set thermostat heat anticipation to:

- 0.50 amps White Rodgers gas valves
- 0.70 amps Honeywell gas valves

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 _____

BLOWER SPEEDS

Note – CFM/Ls readings are taken external to unit with a dry evaporator coil and without accessories.

- 1 - Turn off electrical power to furnace.
- 2 - Disconnect existing speed tap at control board speed terminal.
NOTE - TERMINATION OF ANY UNUSED MOTOR LEADS MUST BE INSULATED.
- 3 - Refer to blower speed selection chart on unit wiring diagram for desired heating or cooling speed.
- 4 - Connect selected speed tap at control board speed terminal.
- 5 - Turn on electrical power to furnace.

UNIT ADJUSTMENTS (CONT.)

FLUE

- 1 - Check flue termination and all connections for tightness and to make sure there is no blockage.
- 2 - Check unit for proper draft.
- 3 - Is pressure switch closed? Obstructed flue will cause unit to shut off at pressure switch. Check flue and outlet for blockages.
- 4 - Reset manual flame rollout switches on burner box cover.

BURNER FLAME ADJUSTMENT

The G34E/EV burner flame is not adjustable; however, the flame should be inspected at the beginning of each heating season and burners should be cleaned, if necessary. Burner flame should be blue when burning natural gas, blue/yellow when burning propane gas.

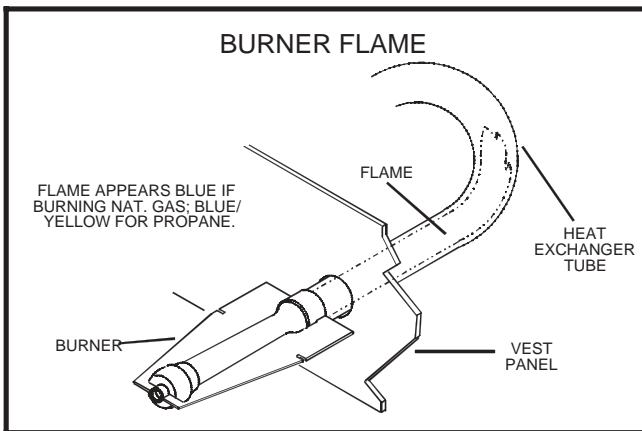


Figure 13

FAILURE TO OPERATE

If unit fails to operate check the following:

- 1 - Is thermostat calling for heat?
- 2 - Is main disconnecting switch closed?
- 3 - Is there a blown fuse or tripped circuit breaker?
- 4 - Is filter dirty or plugged? Dirty or plugged filters will cause unit to go off on limit control.
- 5 - Is gas turned on at meter?
- 6 - Is manual main shut-off valve open?
- 7 - Is internal manual shut-off valve open?
- 8 - Is unit ignition system in lock out? If unit locks out again, call serviceman to inspect unit for blockages.

SERVICE

⚠ WARNING

Disconnect power before servicing unit.

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

A - 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 _____

B - BLOWERS

Check and clean blower wheels for any debris. Blower motors are prelubricated for extended bearing life. No further lubrication is needed.

⚠ WARNING

The blower access panel must be securely in place when the blower and burners are operating. Gas fumes, which could contain carbon monoxide, can be drawn into living space resulting in personal injury or death.

SERVICE (CONT.)

C - FLUE TERMINATION

Check flue termination for tightness and to make sure there is no blockage.

D - BURNERS

Burners and burner flame should be inspected at the beginning of each heating season. Clean burners, if necessary, as indicated below:

- 1 - Turn off electrical and gas supply to unit.
- 2 - Disconnect gas supply piping and remove gas manifold.
- 3 - Disconnect igniter and flame sensor leads.
- 4 - Remove burner tray and burners.
- 5 - Clean the inside of each burner with a bottle brush as shown figure 12.

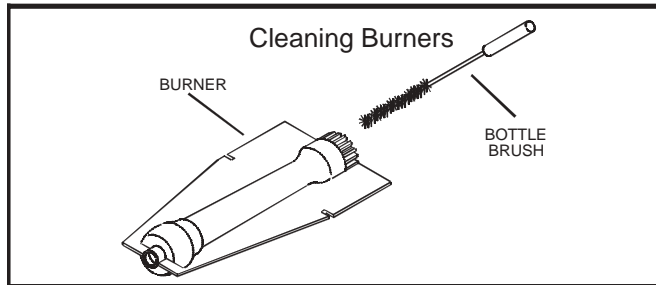


Figure 14

- 6 - Replace burners and burner tray, making sure burners are properly seated in slots on tray and orifice in manifold.
- 7 - Check electrode gap using appropriately sized twist drills or feeler gauges. Gap should be between 0.110 and 0.140 inches (2.79 to 3.56mm).
- 8 - Reinstall burner box and gas supply piping. Reconnect igniter and flame sensor leads.
- 9 - Carefully check all piping connections (factory and field) for gas leaks. Use a leak detecting solution or other preferred means.

! IMPORTANT

Some soaps used for leak detection are corrosive to certain metals. Carefully rinse piping thoroughly after leak test has been completed. Do not use matches, candles, flame or other sources of ignition to check for gas leaks.

- 10 - Restore electrical power and gas supply. Follow lighting instructions on front of unit. Check burner flame and adjust if necessary.

HEAT EXCHANGER

Periodically inspect heat exchanger passages and flue box for corrosion. If necessary, clean as outlined below:

- 1 - Turn off the electrical power and gas supply to the furnace.
- 2 - Disconnect the wiring to the combustion air fan.
- 3 - Remove the screws securing the flue box to the furnace. Clean the flue box with a wire brush (brass-bristle brush recommended).
- 4 - Disconnect the gas supply piping and the igniter and sensor wires. Remove the burner assembly from the furnace.
- 5 - Reinstall the flue box using a new gasket.
- 6 - Reconnect the combustion air fan wiring.
- 7 - Reinstall the burner box, igniter and sensor wires and the gas supply piping.
- 8 - Carefully check all piping connections (factory and field) for gas leaks. Use a leak detecting solution or other preferred means.

! IMPORTANT

Some soaps used for leak detection are corrosive to certain metals. Carefully rinse piping thoroughly after leak test has been completed. Do not use matches, candles, flame or other sources of ignition to check for gas leaks.

- 9 - Restore electrical power and gas supply. Follow lighting instructions on front of unit. Check burner flame and adjust if necessary.

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: G24E3-75.

CABINET PARTS

- Front louver door
- Blower access panel
- Cabinet rear panel
- Cabinet top
- Blower housing cut-off plate
- Motor capacitor
- Cabinet bottom

HEATING PARTS

- Heat exchanger
- Main burners
- Main burner orifices
- Gas manifold/Burner box assembly

ELECTRICAL PARTS

- Transformer
- Control board (Direct Spark Ignition)
- Door interlock switch
- Gas valve
- Flame sensor
- Ignition cable
- Direct spark igniter
- Flame rollout switch (two)
- Flue baffles
- Primary limit control
- Pressure switch
- Wire harness plug / cap

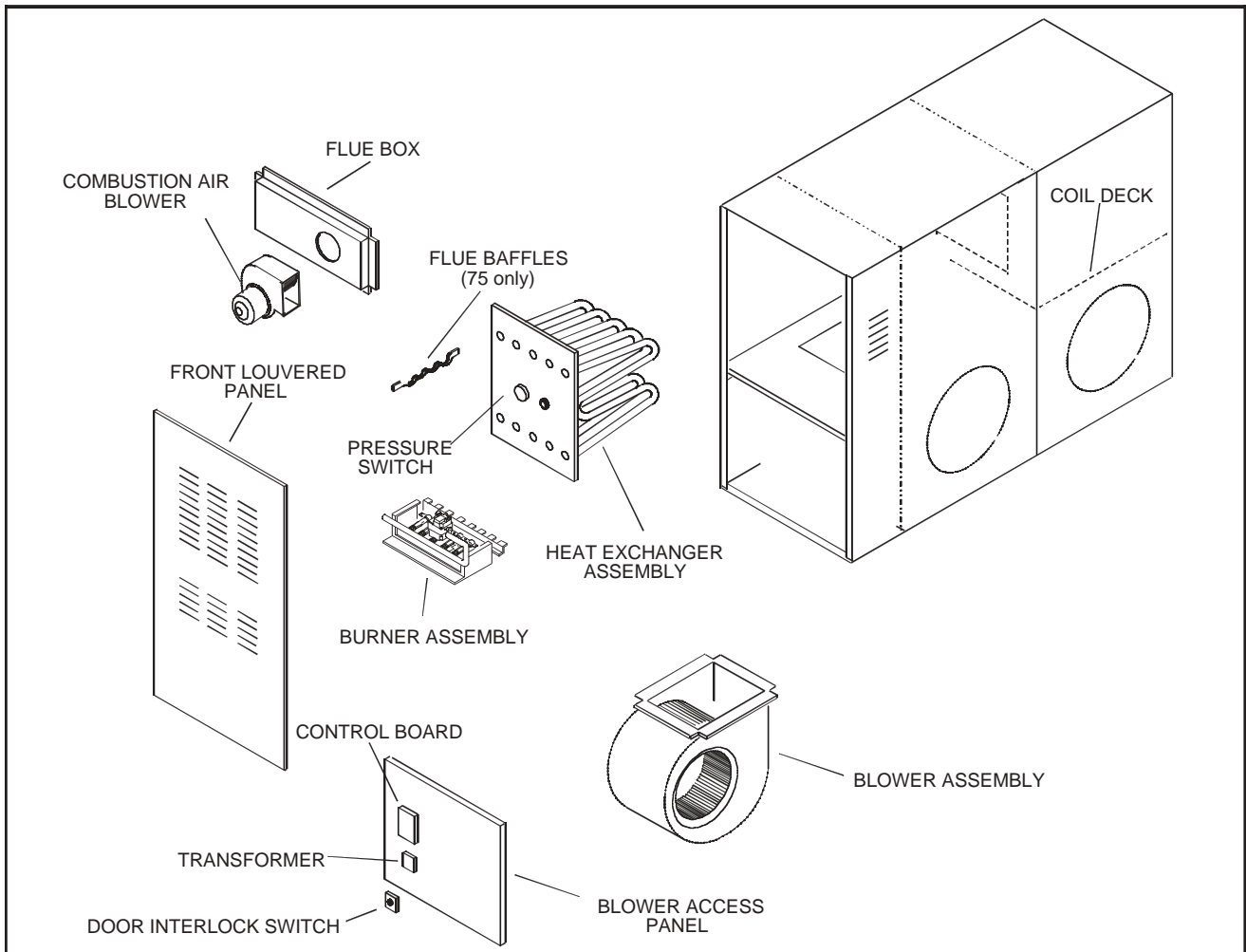
BLOWER PARTS

- Blower wheel
- Motor

FLUE PARTS

- Flue box
- Combustion air blower
- Flue adapter (rectangular to round)
- Flue mounting plate
- Flue connector
- Gaskets

EXTERNAL CABINET PARTS



IN ROOF VENTILATION KIT

G34E-EV	080	110/130
KIT MODEL #	701115	701116

KIT CONTENTS

New lid Old Model	801003SO	801103SO
New lid New Model	801003SN	801103SN

New wiring diagram

G34E	532889W	532889W
G34EV	AUS71A	AUS71A
G34	532909W	532909W

New lighting instructions

G34	42J88	42J88
G34	58K8001	58K8001
Modification Sticker	701121	701121

OPTIONAL PART

Drain tray	701118	701119
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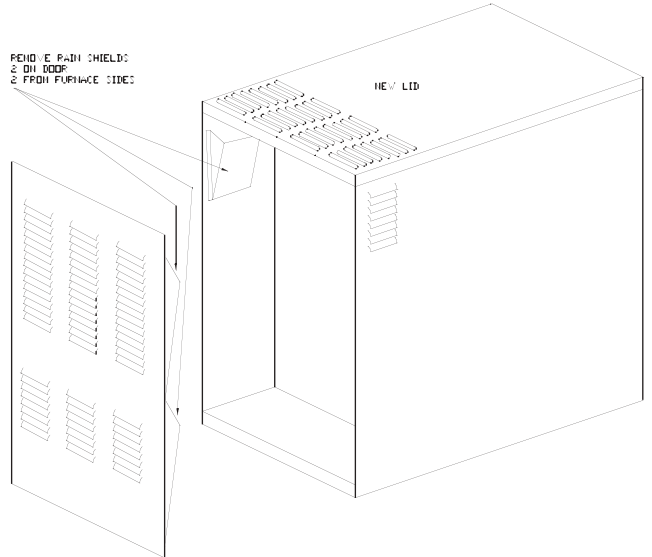
APPLICATION

This kit is for applications where a G34E/G34EV External weatherproof furnace is to be installed internally in a roofspace, plantroom or other internal location.

This kit must be installed to prevent overheating of components due to high ambient environments.

INSTALLATION PROCEDURE

1. Remove furnace access door.
2. Remove 2-rainshields from back of door. Attach appropriate new wiring diagram and lighting instructions.
3. Remove 2-rainshields from side of furnace as shown below.
4. Remove existing weatherproof lid and discard.
5. Replace lid with New vented lid supplied. Be sure to peel off plastic coating if present.
6. Replace modified door. If cooling coil is fitted a safety drain is recommended under the entire unit drained to a safe location, especially in ceiling applications. This optional part must be ordered separately.



COIL FITTING INSTRUCTIONS

CUTOUTS.

USING COVER PLATE FROM COIL AS A TEMPLATE
LINE UP INDICATED SCREW HOLES AND SCRIBE

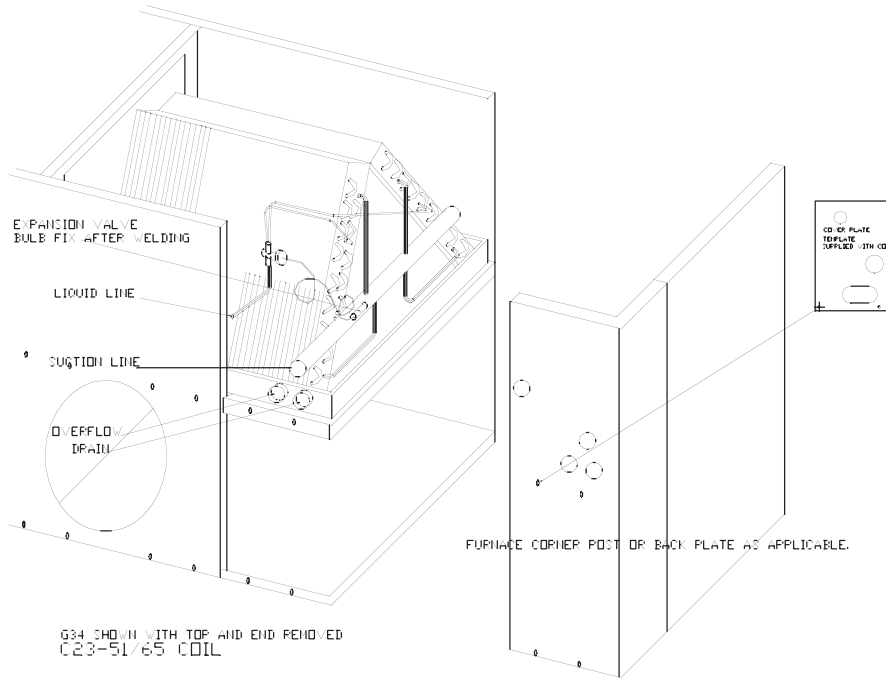
ESTABLISH CENTRES AND USING 37mm(1-7/16")HOLE SAW CUT 4 HOLES.
INSERT COIL THROUGH HOLES AND FIT COVER PLATE SEALING AROUND PIPES.

FIT INSULATION SQUARE OVER PIPES WHILE WELDING TO PROTECT PAINTWORK.

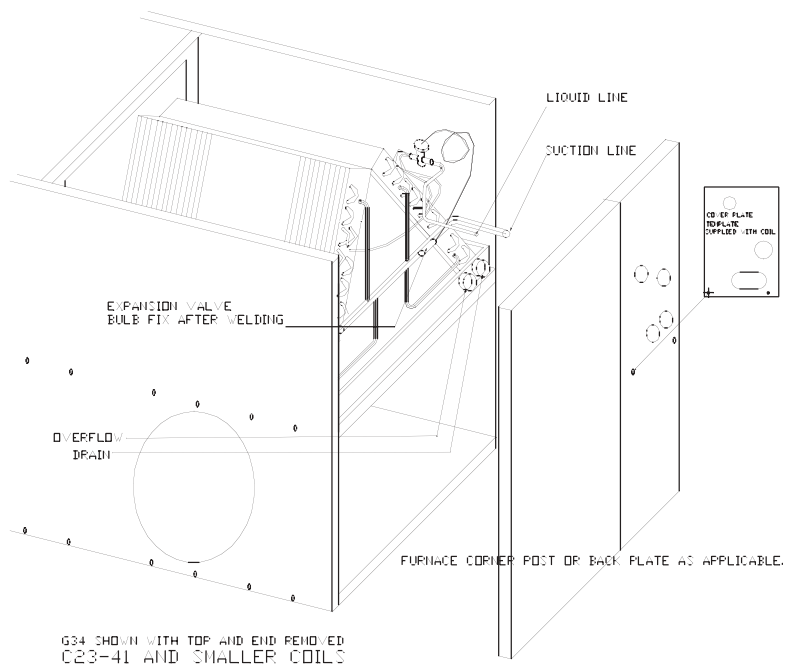
CAUTION

FIT T/X VALVE THERMAL BULB AFTER WELDING, CLAMP AND INSULATE.

FIT PIPE INSULATION AND GLUE TO CASING.
SEAL WATERTIGHT WITH SILICONE AS NECESSARY

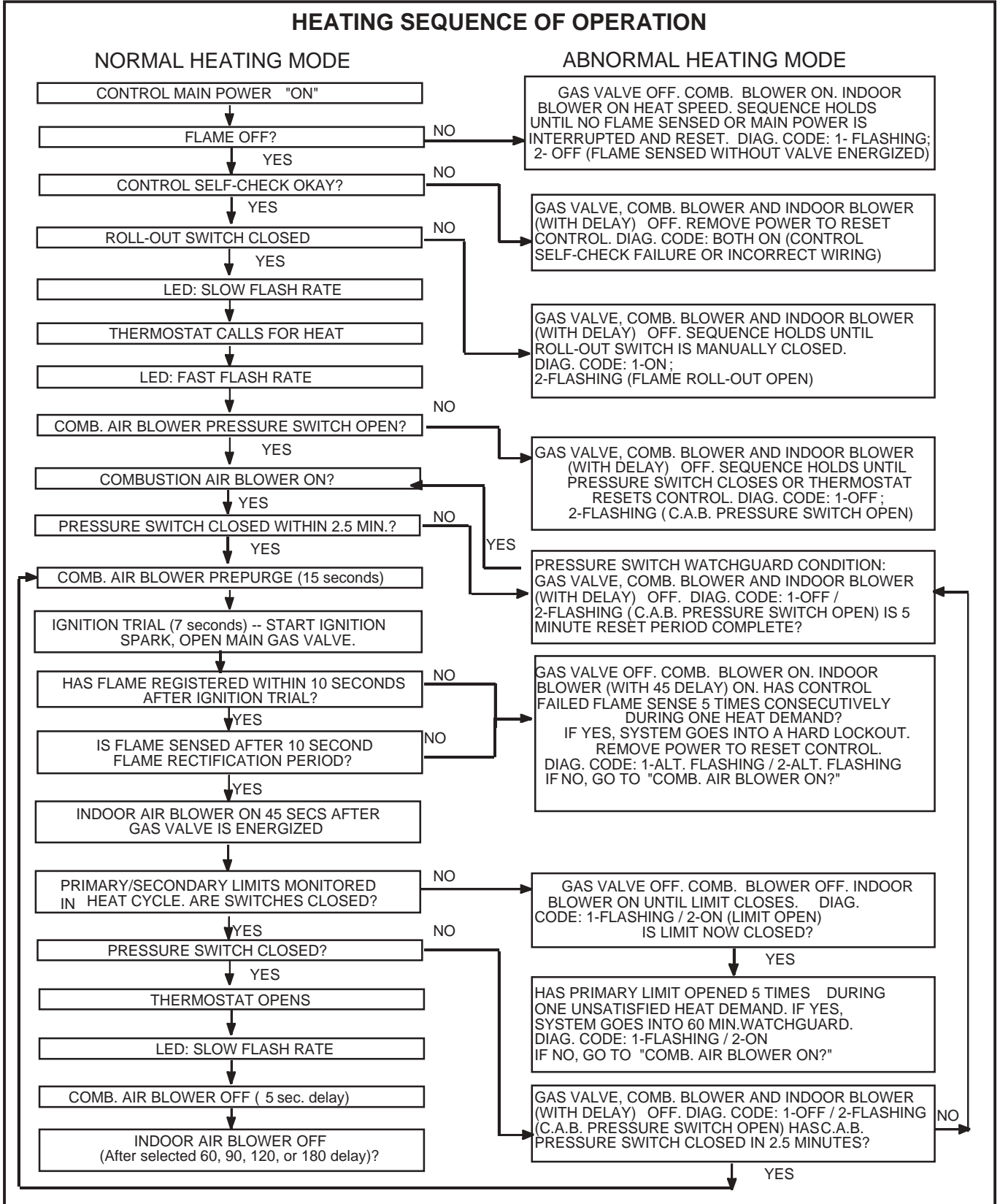


RUN 3/4 POLY DRAIN TO SAFE LOCATION.
IF UNIT IS FITTED INTERNALLY INSTALL A SAFETY TRAY UNDER THE WHOLE FURNACE AND DRAIN SEPARATELY TO SAFE LOCATION.



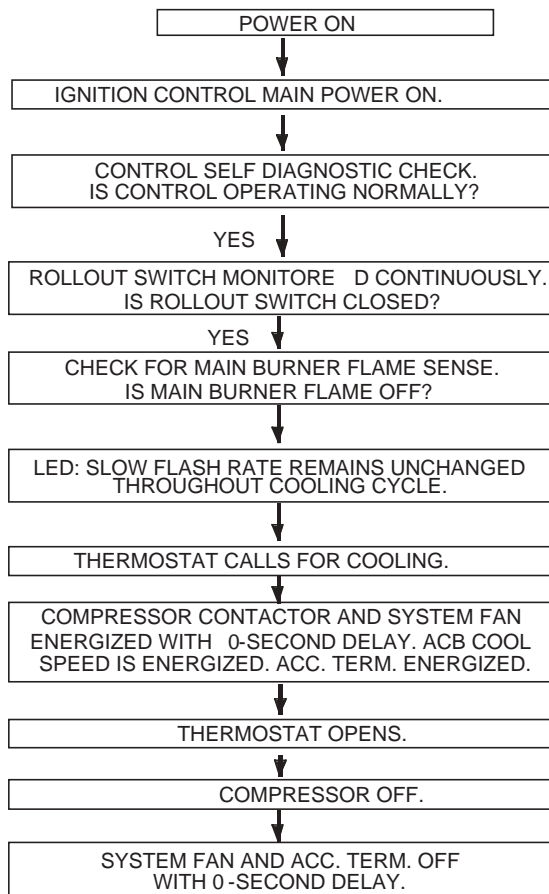
TROUBLESHOOTING

HEATING SEQUENCE OF OPERATION

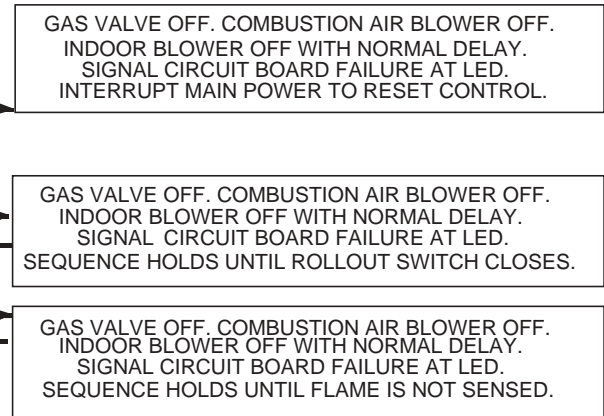


COOLING SEQUENCE OF OPERATION

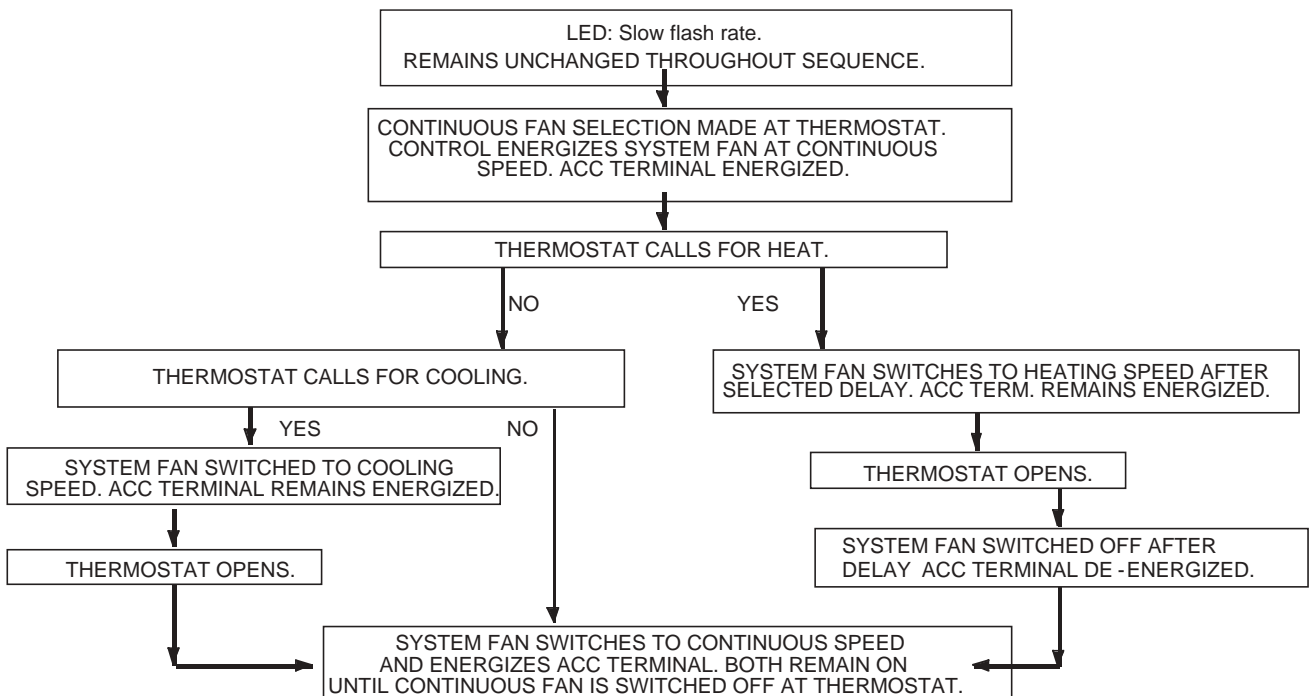
NORMAL COOLING MODE



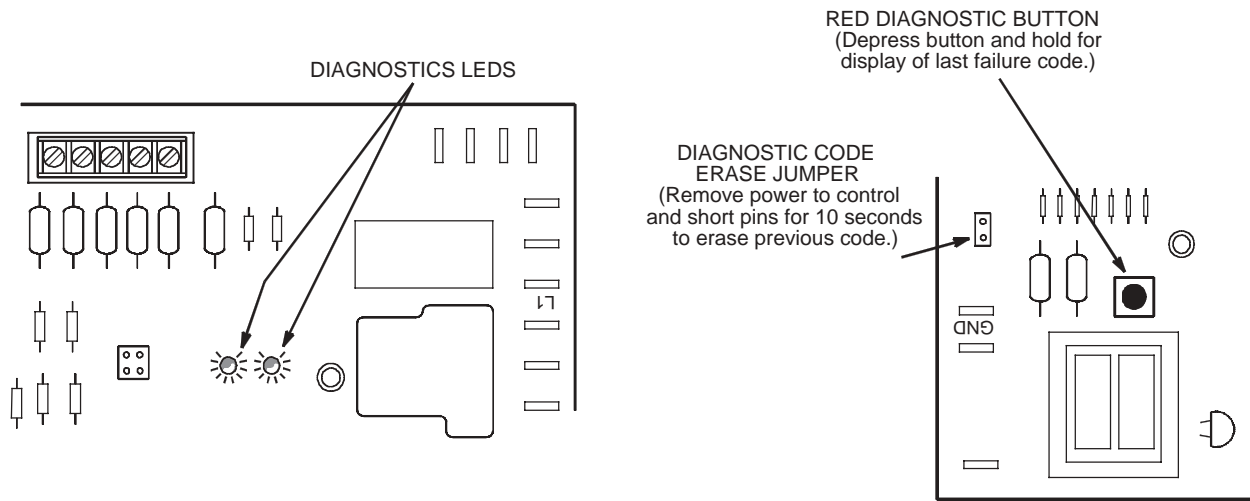
ABNORMAL COOLING MODE



CONTINUOUS LOW SPEED FAN SEQUENCE OF OPERATION

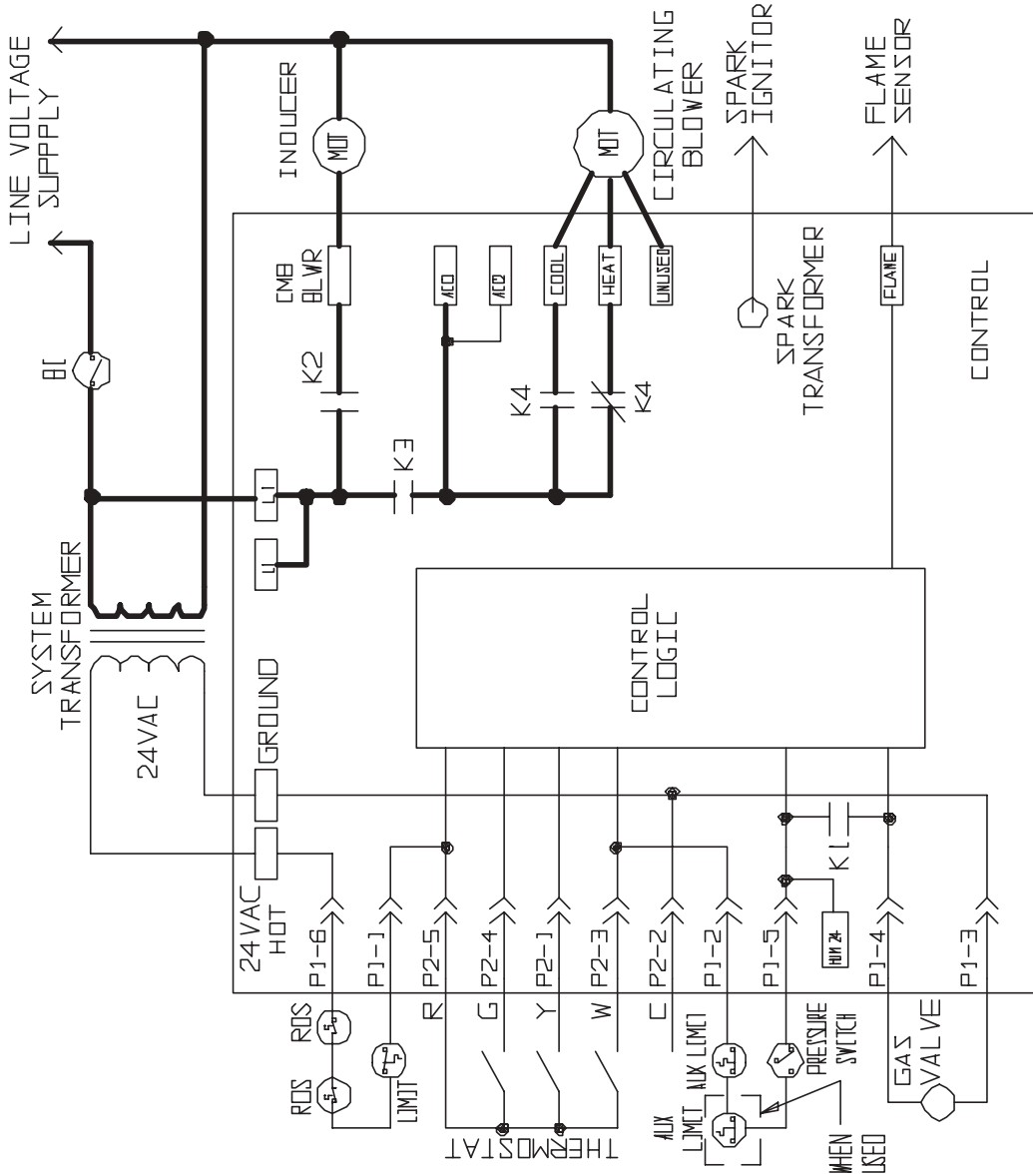


EGC-3A INTEGRATED CONTROL BOARD



DSI BOARD DIAGNOSTIC PATTERNS	MODE INDICATION	REMEDY
DIAG 1 Flashing Together DIAG 2 Flashing Together	Normal Operation	None. Slow flashing LED signifies normal operation. Fast flashing LED indicates a heating demand.
DIAG 1 Flashing DIAG 2 On	Limit Switch Open	This LED pattern indicates that either the primary or secondary limit switch has opened. Both switches are auto-reset.
DIAG 1 Off DIAG 2 Flashing	Pressure Switch Open	This LED pattern indicates that the pressure switch opened during operation due to reduced flow of combustion products or a blocked condensate drain.
DIAG 1 Flashing Alternately DIAG 2 Flashing Alternately	Failed Ignition	The system is in Hard Lockout mode. Remove power to reset control.
DIAG 1 Flashing DIAG 2 Off	Flame Failure	This LED pattern indicates that a flame was sensed without power to the gas valve.
DIAG 1 On DIAG 2 Flashing	Flame Roll-Out	This LED pattern indicates that the flame roll-out switch has opened. Check continuity of switch and for blockage in heat exchanger. Manually reset switch.
DIAG 1 Continuously on DIAG 2 Continuously on	Control Board Failure	Remove power to reset control. Run cycle. Check control wiring and replace the control board, if necessary.

UT IGNITION BOARD WIRING DIAGRAM



F1000353

<p>LEGEND</p> <p>— LINE 24V FACTORY WIRING — LINE 24V FIELD WIRING — ORANGE WIRE UNIT ○ GROUND</p> <p>— LIMIT P PRESSURE SWITCH RDS ROLL OUT SWITCH B BLUMER INTERLOCK CU CONDENSING UNIT M MANUAL RESET AL AUXILIARY LIMIT T TRANSFORMER L LOW VOLT. FUSE JL IN LINE CONNECTION JBS INDUCER BLOWER SWITCH</p>	<p>CONTROL VALVES LOW SPEED FAN OPTIONS</p> <p>OPTIONAL INTERRUPT FAN SWITCH</p> <p>LOW SPEED HEAT CONVECTION</p> <p>HEAT MOTOR LEAD</p> <p>HEAT M1</p> <p>COIL</p> <p>NEUTRALS</p> <p>OPTIONAL INTERRUPT FAN SWITCH</p> <p>MEDIUM SPEED HEAT CONVECTION</p> <p>HEAT MOTOR LEAD</p> <p>HEAT M2</p> <p>COIL</p> <p>NEUTRALS 5</p>	<p>NOTES:</p> <p>(1) MAKE FIELD POWER SUPPLY CONNECTIONS TO BLACK AND WHITE WIRES CAPPED WITH ORANGE WIRE NUTS.</p> <p>(2) WIRING—UNIT MUST BE GROUNDED. WIRING MUST CONFORM TO N.E.C. AND LOCAL CODES.</p> <p>(3) IF ANY OF THE ORIGINAL WIRE, AS SUPPLIED WITH THE FURNACE, MUST BE REPLACED, IT MUST BE REPLACED WITH WIRING MATERIAL HAVING A TEMPERATURE RATING OF AT LEAST 105°C AND BE A MINIMUM OF 16 GA. AWG COPPER STRAND WIRE.</p> <p>(4) CONNECT REQUIRED MOTOR LEAD TO HEAT TERMINAL ON CIRCUIT BOARD TO DELIVER A TEMPERATURE RISE WITHIN THE RANGE SPECIFIED ON THE RATING LABEL. CONNECT UNUSED LEADS TO THE M1 OR M2 TERMINALS.</p> <p>(5) SET THE HEAT ANTICIPATOR ON THE THERMOSTAT AT 0.25 AMPS.</p> <p>(6) LOW VOLT. FUSE: 5 AMP AUTOMOTIVE TYPE LITTLEFUSE 252005 OR BUSS M1 CS.</p>
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UT-IGNITION-TROUBLE SHOOTING WITH LED INDICATOR ASSISTANCE

LED Flash Code	Indicates	Check/Repair
OFF	Control not powered or gas valve/control failure.	<ol style="list-style-type: none"> 1. Line voltage input power at L1 and L2 connectors on (IFC) Board. 2. Low voltage (24Vac) power at 24VAC and COM on (IFC) board. 3. Fuse open on (IFC) board. 4. System wiring harness in good condition and securely connected at both ends. 6. Control not functioning, replace.
"Heartbeat"	Normal Operation (Standby).	
Fast "Heartbeat"	Call for heat.	
2 Flashes	Ignition re-try or recycle error.	<ol style="list-style-type: none"> 1. Gas supply off or supply pressure too low to operate appliance. 2. Damaged or broken spark element. 3. Appliance power supply not properly earth grounded. 4. Flame sense rod contaminated, grounded to appliance chassis, or in incorrect location. 5. Spark element or flame sense wiring not properly connected. 6. Gas valve stuck, replace. 7. Move gas control switch to ON.
3 Flashes	Pressure switch closed when should be open-system waits until pressure switch opens, then proceeds with ignition sequence. Pressure switch or aux. limit was still open 60 seconds after the inducer was energized. System is in 5-minute delay mode, with inducer on. After 5- minute delay, new ignition sequence is initiated.	<ol style="list-style-type: none"> 1. Pressure switch stuck closed. 2. Pressure switch miswired, jumpered or tubing open. 3. Pressure switch captured or out of calibration, replace. 4. Inducer and inducer wiring not connected. 5. Low line voltage power supply. 6. Obstructions or restrictions in appliance air intake or exhaust flue system that prevent proper combustion air flow. 7. Circulating air blower not operating. 8. Open auxiliary temperature limit.
4 Flashes	Limit or flame rollout switch open. Combustion air blower is energized. The heat speed circulating air fan will be energized. System waits for limit string to close, then initiates a new ignition sequence. System will remain waiting until flame rollout manual reset is activated.	<ol style="list-style-type: none"> 1. Open high temperatures limit. 2. Open manual reset flame rollout switch in the limit circuit. 3. Limit and rollout switch circuit wiring in good condition and securely connected. 4. Circulating air fan wiring and operation. 5. Dirty air filters. 6. Blower speed too low. 7. Registers closed.
5 Flashes	Flame signal sensed out of proper sequence (with flame signal still present). Combustion blower energized. The heat speed circulation air fan will be energized after the selected heat fan on delay. System waits for flame signal to disappear, then goes to Soft Lockout.	<ol style="list-style-type: none"> 1. Flame at main burner. 2. Flame sense ground to chassis
Steady	Control board fault hard lockout.	<ol style="list-style-type: none"> 1. System wiring harness in good condition and securely connected at both ends. 2. All components functioning properly (i.e. inducer, blower, ignitor....). 3. Replace IFC control board.

Soft Lockout

The control shall not initiate a call for heat or call for continuous fan while in lockout. A call for cooling operates as normal. The control will still respond to an open limit and desired flame. Lockout shall automatically reset after 1 hour. Lockout may be manually reset by removing power from the control for

more than 1 second or removing the thermostat call for heat for more than 1 and less than 20 seconds.

Hard Lockout

If the control detects a fault on the control board, the status LED will be energized steady and the control will lockout as long as the fault remains. A hard lockout will automatically reset if the hardware fault clears.

