

SUPERIOR

The Fireplace Company

Installation And Operating Instructions For Superior

*Type
Vented Decorative
Gas Appliance*

*Natural Gas Model
GF 4000N*

*LPG Model
GF 4000L*

This installation manual will help you obtain a safe, efficient, dependable installation for your gas fireplace.

Please read and understand these installation instructions before beginning your installation.

DUE TO HIGH TEMPERATURES, THE APPLIANCE SHOULD BE LOCATED OUT OF TRAFFIC AND AWAY FROM FURNITURE AND DRAPERIES.

DO NOT PLACE CLOTHING OR OTHER FLAMMABLE MATERIAL ON OR NEAR THE APPLIANCE.

WARNING: THE GF 4000 SERIES FIREPLACES ARE DECORATIVE GAS APPLIANCES. DO NOT BURN WOOD OR OTHER MATERIALS IN THESE FIREPLACES.

Do not attempt to modify or alter the construction of the fireplace insert or its components. Any modification or alteration of construction may void the warranty, certification and approvals of the unit.

FOR YOUR SAFETY

If you smell gas:

- 1. Open windows.**
- 2. Don't touch electrical switches.**
- 3. Extinguish any open flame.**
- 4. Immediately call your gas supplier.**

FOR YOUR SAFETY

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

**PLEASE RETAIN THIS
MANUAL FOR FUTURE
REFERENCE.**



GENERAL INFORMATION

This appliance complies with National Safety Standards and is certified by the American Gas Association.

Installation must conform to local codes. In the absence of local codes installation must conform with the National Fuel Gas Code, ANSI Z223.1-1984. The appliance, when installed, must be electrically grounded in accordance with local codes, with the National Electric Code, ANSI/NFPA No. 70-1984

Note: Installation and repair should be done by a qualified service person. The appliance should be inspected at least annually by a professional service person. More frequent cleaning may be required due to excessive lint from carpeting, bedding material, etc. It is imperative that control compartment, burners, and circulating air passageways of the appliance be kept clean.

Provide for adequate combustion and ventilation.

Provide adequate clearances around air openings into the combustion chamber and adequate accessibility clearance for servicing and proper operation. Never obstruct the front opening of the fireplace.

Minimum clearances to combustibles are: Sides 0", Floor 0", Back 0", Ceiling 46", Vent Surfaces 1", Sidewall 6".

Minimum inlet gas supply pressure is 5.0 inches water column natural gas and 11.0 inches water column LPG, for the purpose of input adjustment.

Maximum inlet gas supply pressure is 7.0 inches water column natural gas and 13.0 inches water column LPG.

Input is 14,000 BTU/HR, for rear burner and 14,000 BTU/HR, for log burner.

A $\frac{1}{8}$ " N.P.T. plugged tapping is provided on the gas control along side of the outlet to the main burner, for a test gauge connection.

The appliance and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of $\frac{1}{2}$ psig.

This appliance must not be connected to a chimney flue serving a separate solid-fuel burning appliance.

The appliance must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than $\frac{1}{2}$ psig.

INTRODUCTION

The GF-4000 header plate assembly must be installed during the rough framing stage of construction.

The header plate assembly provides for the connection of either a type B-4" vent or the direct rear vent cap assembly (Model DRV). In addition, it also defines the proper framing depth required for the GF-4000 series built-in gas fireplace.

The Header Plate Assembly may be installed against a flat wall, in a diagonal corner or in an outside chase enclosure (Figures 1, 2, and 3).

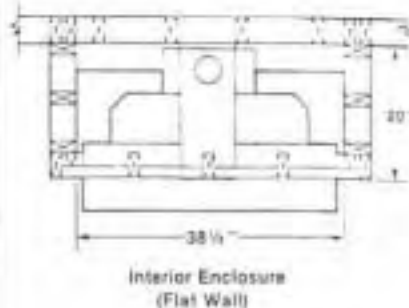


Figure 1

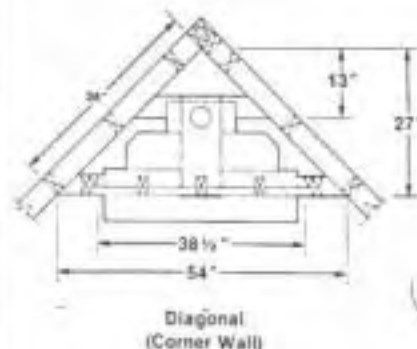


Figure 2

Installation And Operating Instructions

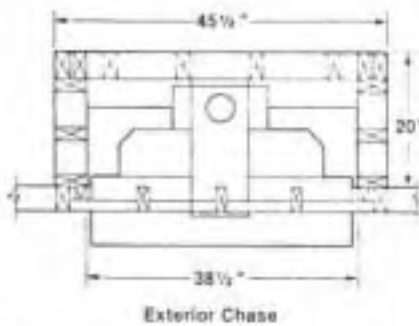


Figure 3

Any UL listed type B-4 inch gas vent may be used to properly vent the GF4000 series fireplace system. Refer to the Type B vent manufacturing instructions on installation techniques. Also, check with local codes.

INSTALLATION (Using a Type B Venting System).

INVENTORY LIST:

- 1-Header Plate Assembly
- 1-installation instructions (Header Plate Assembly)

Step 1: Frame fireplace enclosure as illustrated in Figures 2,4,5, or 6.

Note: The framed depth (20" for a flat wall, 27" for a corner) must always be measured from a finished surface. If a wall covering such as drywall is to be attached to the rear wall then the 20" must be measured from the drywall surface.

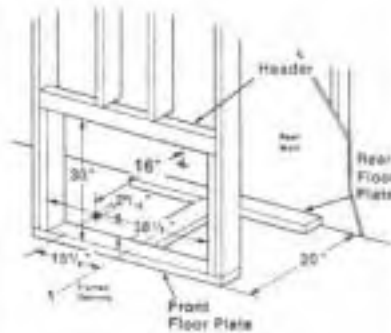


Figure 4

Step 2: Secure the Header Plate Assembly to the header and the rear floor plate with six (6) 8d nails (figure 5).

Important: The Header Plate Assembly must be centered exactly in the framed opening.

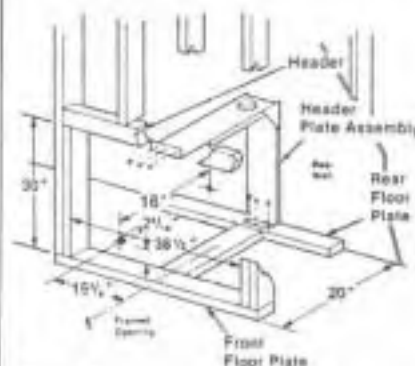


Figure 5

Note: If the appliance is to be elevated above floor level, the rear floor plate will have to be elevated the same distance as the front floor plate (refer to Figure 6).

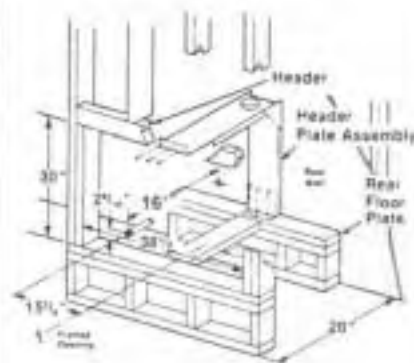


Figure 6

Step 3: Route a 1/2" NPT gas line 2 1/4" above the floor plate and 15 1/4" from the center line of the framed opening as shown in Figure 7. The end of the gas line must be 4" behind the face of the rough framing (Figure 7.)

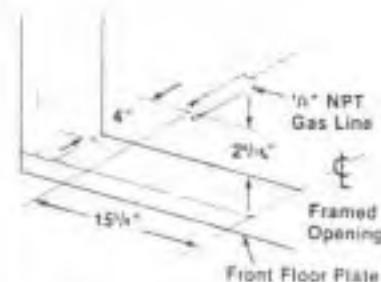


Figure 7

Step 4: Fasten a 2 $\frac{1}{2}$ " x 4" electrical junction box below the header, 8" from the right side of the opening (Refer to Figure 8)

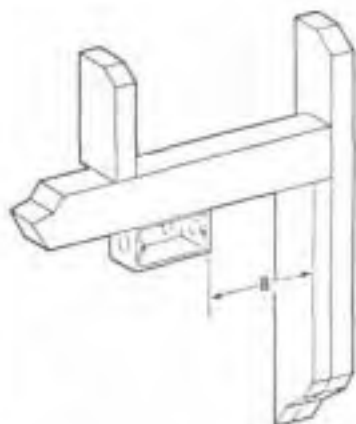


Figure 8

Step 5: Route a 3 wire 120V 60 Hz power supply line to the junction box and ground.

Step 6: Connect a 4" type B vent to the top collar, located at the rear of the header plate assembly. (Refer to Figure 9).

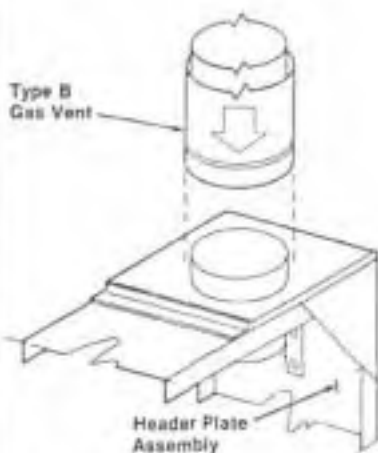


Figure 9

Step 7: Install the remainder of the type B vent. Minimum height of vent must be 9 $\frac{1}{2}$ '.

Note: Refer to vent manufacturers installation instructions for variations of venting techniques.

The pre-installation steps for the Type B vent installation have now been completed. The final installation of the GF-4000 Series appliance should be undertaken after the interior is in the finishing stages.

FINAL INSTALLATION AND CONNECTION PROCEDURE

INTRODUCTION

The framed enclosure should now be completed, the gas line stubbed in the correct position, the electrical supply line run to the junction box and the header plate assembly fastened to the framing members.

The finished wall material should also be fastened to the framing members. The edges of the finished wall material must not extend beyond the framing members so as to reduce the opening size needed for the fireplace. A full 38 $\frac{1}{2}$ " width and 30" height is required for the fireplace.

The maximum thickness for any finished wall material is 1 $\frac{1}{4}$ ". Any finished wall material that exceeds this dimension will not allow the side trim pieces to be attached to the fireplace.

INSTALLATION (Fireplace)

Before installing the fireplace in the prepared opening, check all components for damage and content with the inventory list below.

INVENTORY LIST:

- 1-fireplace (complete)
- 2-hood retainers
- 2-side trims
- 1-bottom trim
- 1-hood
- 1- $\frac{1}{2}$ " flex connector with shutoff valve
- 1-installation instructions
- 1-hardware kit

Step 1: Secure the two (2) hood retainers to the underside of the header and against the finished wall surface. Nail from underside using two 8d nails (Figure 10).

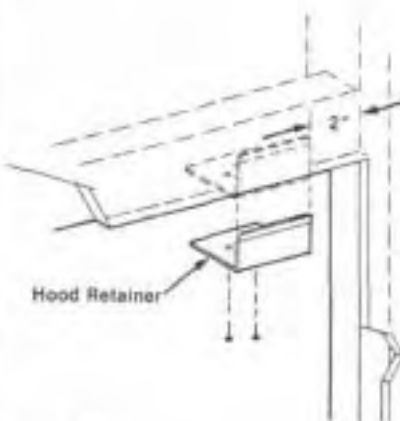


Figure 10

Installation And Operating Instructions

Step 2: Attach $\frac{1}{2}$ " flex connector with shut off valve to the $\frac{1}{2}$ " gas supply stub, using a wrench and pipe joint compound. Tighten securely (Figure 11)

NOTE: Do not damage or kink the flex connector.

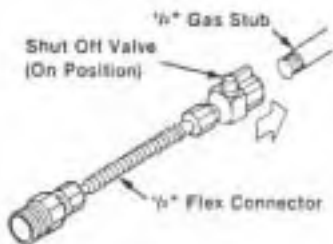


Figure 11

Step 3: Remove the flue collar clamp from the header plate assembly by removing the four (4) #559 machine screws (Figure 12). Set this clamp and the four screws aside for later attachment.

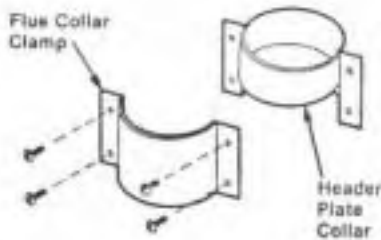


Figure 12

Step 4: Position the fireplace in front of the prepared enclosure opening. Lift the fireplace and reset the rear portion of the lower front framing plate. Insert the end of the flex connection into the rear hole of the fireplace (Figure 13).

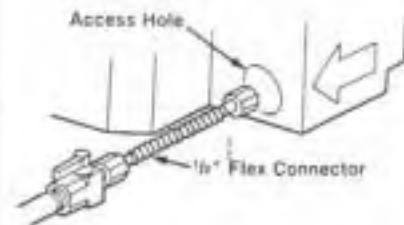


Figure 13

Step 5: Carefully slide the fireplace back into the framed cavity until the rear of the fireplace comes in contact with the rear header plate assembly.

NOTE: The fireplace must be centered in the opening so that a proper connection can be made to the header plate collar.

Step 6: Reattach the flue collar clamp, that was previously set aside, to the rear flue collar clamp with the four (4) #10 -24 x $\frac{3}{4}$ " machine screws. The flue collar on the fireplace must be centered in the clamp to effect a gas tight connection. (Figure 14).

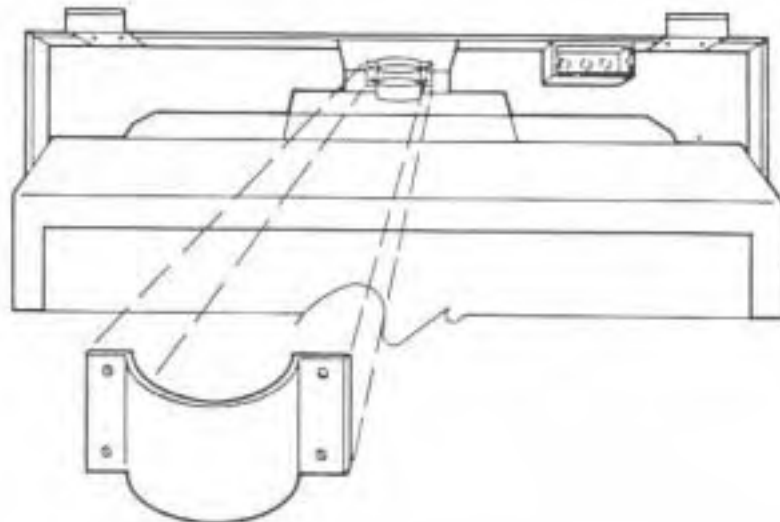


Figure 14

GAS LINE CONNECTION

Step 7: Carefully bend and shape the flex gas connector so that a connection can be made to the adapter mounted on the gas valve. Caution should be exercised so as to not kink the gas connector line (Figure 15).

Figure 16 illustrates the position of the shut off valve in the closed position.

ELECTRICAL HOOKUP

Step 8: CAUTION— before making the electrical connection, make certain that the main power supply is disconnected.

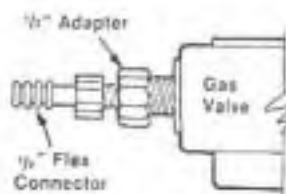


Figure 15



Figure 16

Step 9: Attach the shielded cable, containing the black, white and green wires to the pre-wired junction box. Secure the wires with the appropriate wirenuts. Attach coverplate to the junction box (Figure 17).

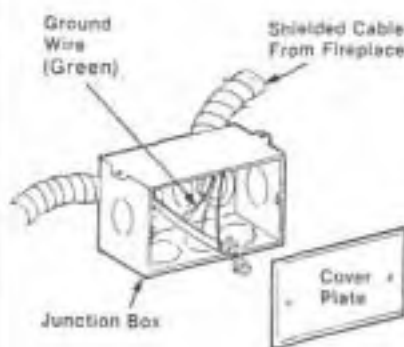


Figure 17

FINISH TRIM AND HOOD ATTACHMENT

Step 10: The two side trim pieces and the bottom trim piece must be assembled before attaching to the fireplace. (Refer to Figure 18 for the method of assembly).

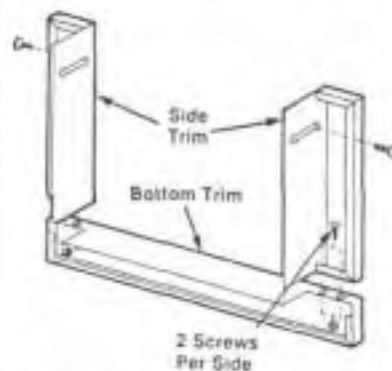


Figure 18

Step 11: Place the assembled trim pieces around the sides and bottom of the fireplace. Position the side flanges under the four side trim retainers, (2 per side). Align upper slots, located in side trims, with holes in the side of the GF-4000 and insert the two screws. Secure the two screws with the two wing nuts so as not to bind the side trim. Push the side until the trim pieces fit tight against the finished wall surface.

Step 12: Center hood over the two hood retainers, that were mounted to the wall in Step 1. Slide hood down until the hood resets on top of the fireplace (Figure 19).

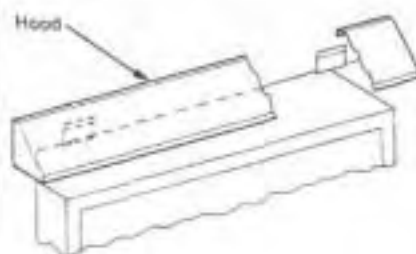


Figure 19

Step 13: Open the two brass screen panels and remove the glass from the appliance by removing the two (2) wing nuts and upper retaining bracket (Figure 20). Hold glass in place while removing retaining bracket.

Carefully lift glass up to clear lower brackets and remove glass. Save the 2 wing nuts and upper retaining bracket for later re-installation of glass.

Installation And Operating Instructions

Remove and discard the shipping material holding the logs in place. Save logs for later replacement. Handle logs with care.

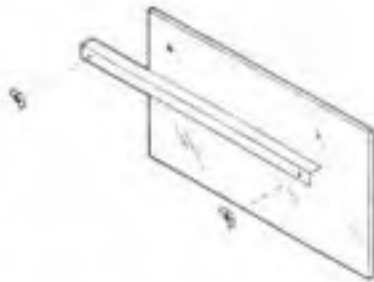


Figure 20

CAUTION: DO NOT SUBJECT EDGES OF GLASS TO IMPACT. "STRIKING THE EDGE OF THIS SAFETY GLASS, OR ROUGH HANDLING MAY CAUSE BREAKAGE".

Step 14: Place the long log in the lower front bracket and the shorter log in the upper rear bracket. Handle the logs with care. The logs are constructed of a new lightweight ceramic fiber and are subject to damage if mishandled.

Step 15: Replace the glass panel, upper retaining bracket and the two (2) wing nuts by reversing the procedure outlined in Step 13 DO NOT OVER TIGHTEN WING NUTS. Close Brass Screens.

OPERATION

To operate the appliance refer to the lighting instructions for your model. To determine which model you have, refer to the silver approval label on the right side (inside) of the appliance behind the black mesh.

Specifications

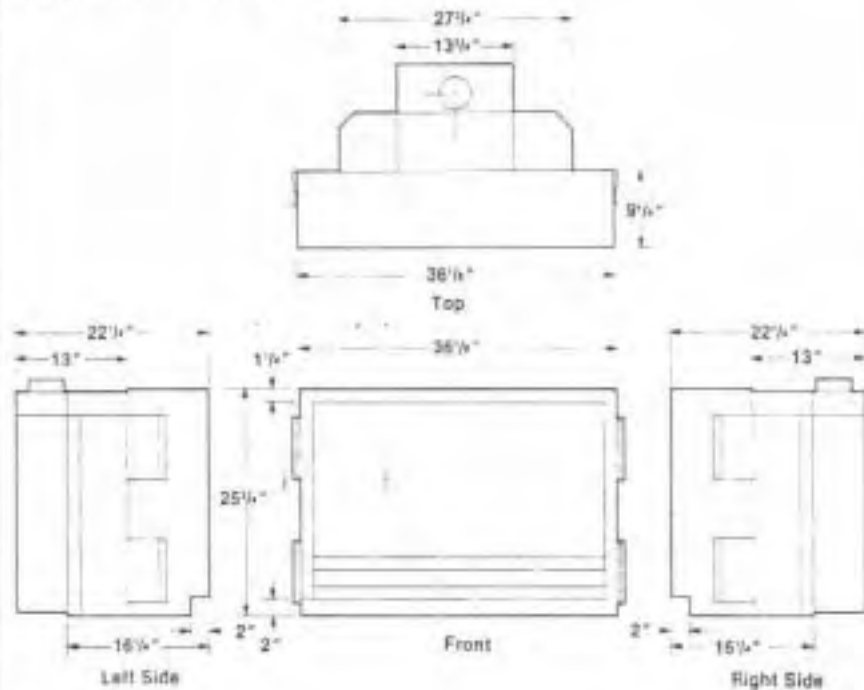


Figure 21

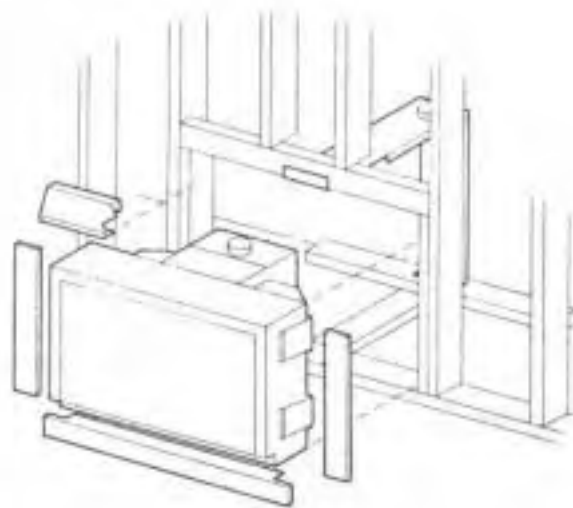


Figure 22

Specifications

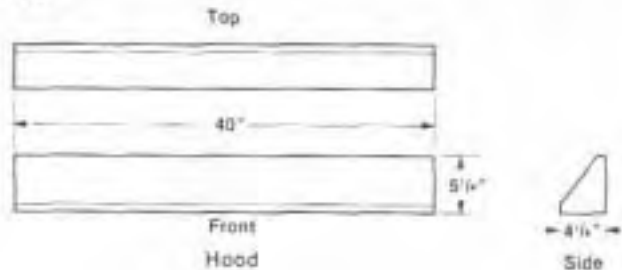


Figure 23

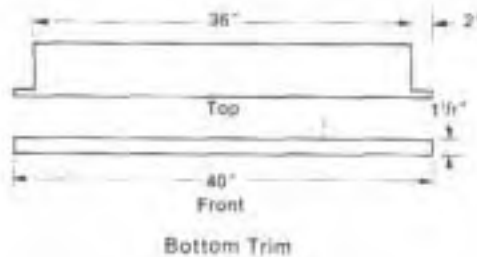


Figure 24

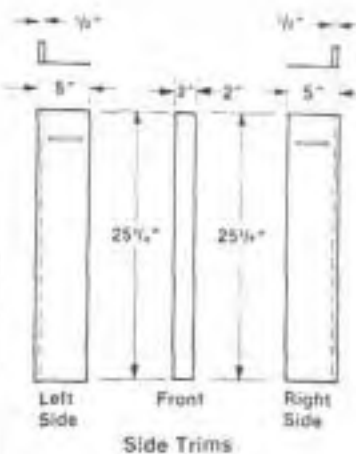


Figure 25

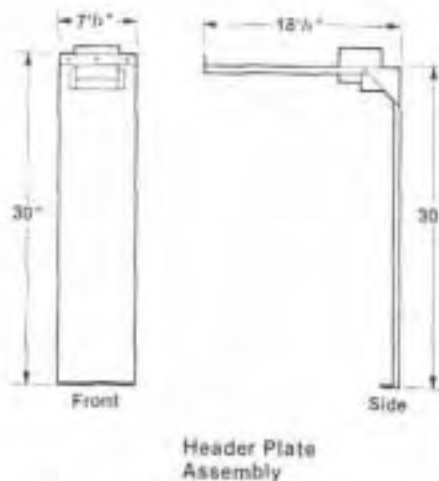


Figure 26

MODEL SUMMARY	
Electronic Ignition Models	
Natural Gas	LPG
GF 4000 N	GF 4000 L

Additionally, the gas controls provided with your appliance will be either Robertshaw brand or Honeywell brand. To determine which type of controls are included in your unit, look for the identifying marks on the controls themselves.

Alternatively, the lighting instructions for your appliance are also located on the white label located on the control tray behind access door. These instructions will indicate either Robertshaw or Honeywell controls.

Your appliance control system is a low voltage (24 volt) type. It consists of a pilot burner, a combination gas control, electronic igniter, limit switch, fan switch, and on/off switch.

To obtain proper operation, it is imperative that the pilot and main burner flame characteristics are steady, not lifting or floating, and be blue in color (see Figures 27 and 28). Approximately the top $\frac{3}{8}$ " of the pilot thermocouple should be engulfed in the pilot flame (see Figures 31 and 34).

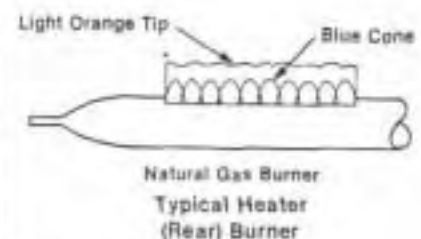
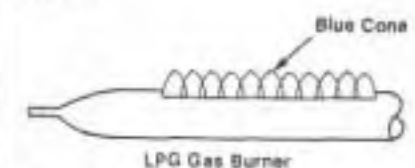


Figure 27



Proper Burner Flame Characteristics
Figure 28

Installation And Operating Instructions

OPERATING GUIDELINES AND MAINTENANCE INSTRUCTIONS

1. Upon completing your gas line connection, a small amount of air will be in the lines. When first lighting the appliance, it will take a few minutes for the lines to purge themselves of this air. Once the purging is complete, the pilot and burners will light and operate as indicated in the instruction manual. Subsequent lightings of the appliance will not require such purging.

Note: LP system may go into "lockout". System will have to be reset. See Step 8, page 10.

2. When lit for the first time, the appliance will emit a slight odor for an hour or two. This is due to the "curing" of the logs and "burn-in" of internal paints and lubricants used in the manufacturing process. To minimize this one time odor, light both burners in the appliance and leave in the "Hi" position for at least two hours. Additionally, you may wish to open a few windows to ventilate the room in which the appliance is located. Again, this is a "one time" burn-in procedure and is not uncommon among gas fired appliances.

3. The appliance is equipped with a fan assembly to force heated air into the room. The fan operates automatically via a temperature sensing fan switch. Typically, there will be a delay of a few minutes before the fan begins running after lighting the appliance. Similarly, the fan may run a few minutes after the appliance is turned off.

4. When lighting the appliance, the inside of the glass may fog up. This will burn off after a few minutes of operation.

5. The inner firebox of the appliance is manufactured of reflective stainless steel to reflect and enhance the flames of the front log set. However, the placement of the logs in relation to the front burner will greatly affect the size and burn pattern of the flames. You may find it necessary to adjust the position of the logs to enhance the flame pattern. If so, repeat Steps 13, 14, and 15 (found under the installation procedure on page 7) until satisfactory flame pattern is achieved. Caution: the logs can get very hot-handle only when cool. Additionally, adjusting the air shutter can also impact the flame size. The air shutter for the front burner is located on the right side of the control tray behind the access door.

(Do not burn the appliance without the glass front in place).

6. Clean glass (never when hot) and appliance outer casing with damp cloth. Never use abrasive cleaners. The casing and trim is finished in heat resistant baked enamel and should not be refinished with wall paint.

7. Keep control compartment, logs, burners and area surrounding the logs clean by vacuuming or brushing at least twice a year.

8. Always turn off gas to pilot before cleaning. For relighting, refer to lighting instructions.

9. The appliance and the venting system should be inspected before use or at least annually by a qualified field service person.

10. Always keep the appliance area clear and free from combustible materials, gasoline and other flammable vapors and liquids.

11. Never obstruct the flow of combustion and ventilation air. Keep the front of the appliance clear of all obstacles and materials.

CAUTION: IF APPLIANCE SCREEN OR GLASS IS REMOVED FOR SERVICING, THEY MUST BE REPLACED PRIOR TO OPERATING THE APPLIANCE. SCREEN MUST BE FIXED IN THE CLOSED POSITION WHEN OPERATING THE APPLIANCE.

WARNING: CHILDREN AND ADULTS SHOULD BE ALERTED TO THE HAZARDS OF HIGH SURFACE TEMPERATURE AND SHOULD STAY AWAY TO AVOID BURNS OR CLOTHING IGNITION. YOUNG CHILDREN SHOULD BE CAREFULLY SUPERVISED WHEN THEY ARE IN SAME ROOM AS THE APPLIANCE.

MAINTENANCE

IMPORTANT: Turn off gas and electrical power before servicing appliance. It is recommended that a competent serviceman perform these check ups at the beginning of each heating season.

In order to properly clean the burners, heating element and pilot assemblies, the appliance will have to be partially disassembled to gain access to these components.

For Access To Front Burner Proceed As Follows:

1. Open both screen panels and remove upper retaining bracket and glass pane as outlined in Step 13 on page 6 (Figure 20 and 36).
2. Remove the two logs and log holder from the inner casing assembly.
3. Remove screw securing front burner and remove.
4. Replace all components by reversing above procedure.

For Access To Pilots, Rear Burner And Bottom Section Of Heating Element:

1. Remove lower access door assembly (2 screws per side).
2. Disconnect gas supply to rear of appliance.
3. On the GF4000 Series, remove red and black wires from the Ignition control Module (item 23 Figure 36).

Remove control tray panel assembly from appliance by pulling forward carefully.

Cleaning Burners

Clean all foreign materials from top of burners and from bottom panel below burners. Check to make sure that burner orifices are clean.

Visually inspect pilot. Brush or blow away any dust or lint accumulations. If pilot orifice is plugged, disassembly may be required to remove any foreign material from orifice or tubing. When appliance is put back in service check pilot flame patterns with Figure 29.

Heating Element Cleaning

With control tray panel assembly removed, the lower portion of the heating element is now accessible for cleaning. A flashlight and small mirror will be necessary to inspect the lower inside portion of the heating element. Carefully insert a clean cloth into the bottom opening of the heating element and dislodge as much dirt, soot and other foreign material onto the bottom of the appliance and then vacuum clean.

Note: To reinstall all items removed in the foregoing maintenance outline, reverse the removal procedure to adequately secure each item or assembly to the appliance.

WARRANTY/ REGISTRATION CARD

Your Gas Fireplace is covered by a one year limited warranty. You will find a copy of the warranty in this manual. Also, an Owner's Registration Card is provided.

Please read the warranty to be familiar with its valuable coverage and file it with others you save for future reference. Also complete and mail registration card.

TROUBLE SHOOTING

With proper installation and maintenance, your new Gas Fireplace should provide years of trouble-free service. If you do experience a problem, trouble shooting guides are provided in this manual. These guides will assist you or a qualified service person in the diagnosis of problems and the corrective action to be taken.

REPLACEMENT PARTS

Contact the factory for questions concerning prices and policies covering replacement parts. Parts will be shipped at prevailing prices. Normally, all parts can be ordered through your Superior distributor or dealer.

When ordering repair parts, always give the following information:

1. The model number of the appliance.
2. The part number.
3. The description of the part.
4. The installation date of the appliance.

If you have any questions or problems, do not hesitate to contact:

SUPERIOR FIREPLACE COMPANY

Special Services Coordinator
4325 Artesia Avenue
Fullerton, CA 92633
714/521-7302

Installation And Operating Instructions

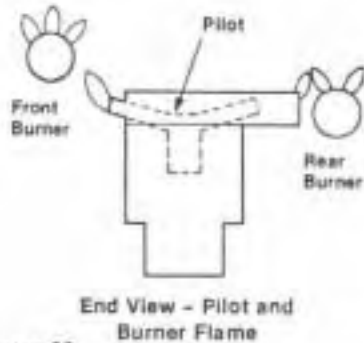


Figure 29

LIGHTING INSTRUCTIONS (HONEYWELL ELECTRONIC SYSTEM - ALTERNATE)

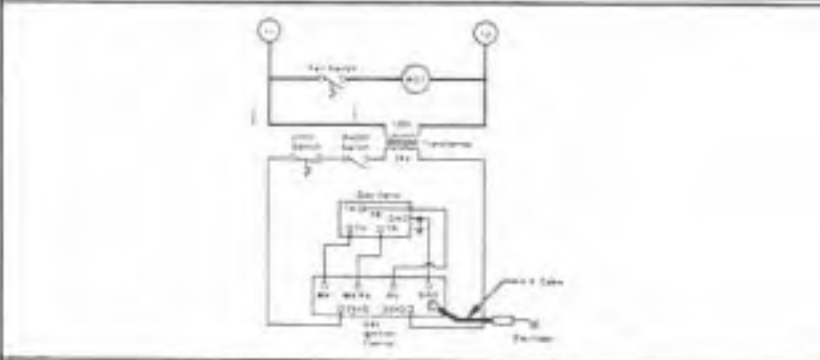
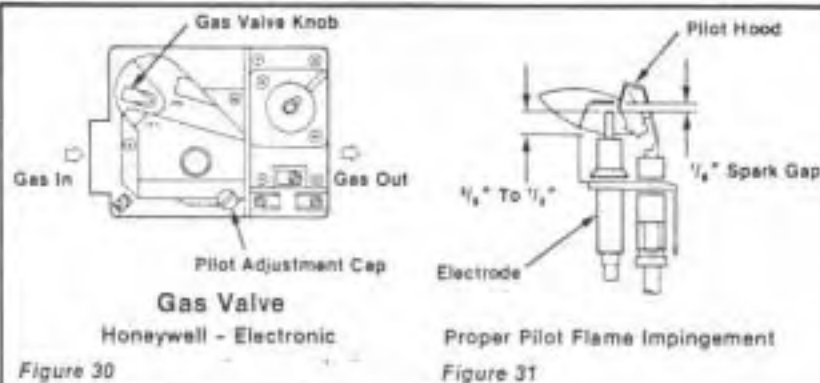
Superior GF4000 Series
Models GF4000N, And GF4000L

Lighting Instructions:

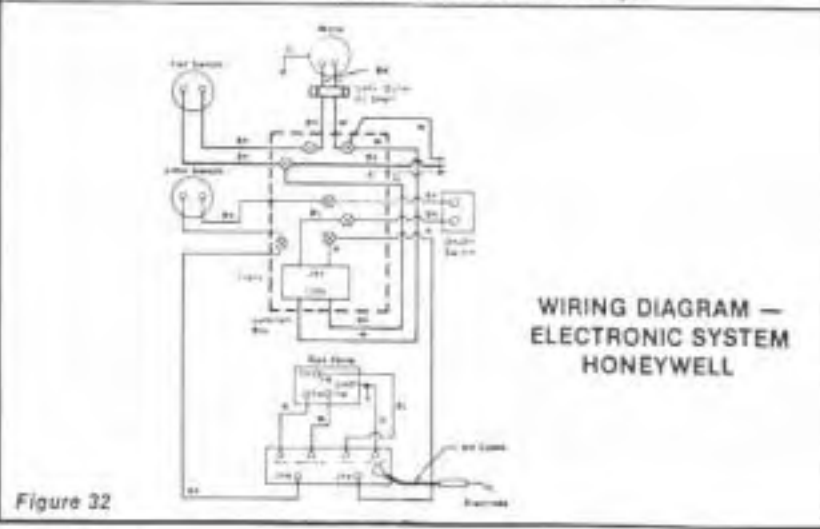
1. Turn on/off (rocker) switch to "OFF".
2. Turn rear burner knob to "OFF".
3. Turn gas valve knob to "OFF" and wait 5 minutes.
4. Turn gas valve knob "ON".
5. Turn rear burner knob to "ON".
6. Turn on/off (rocker) switch to "ON".
7. Pilot will automatically light and burner or burners will light.
8. (LPG only) if burners are not lit within approximately 1½ minutes, system will lockout and it will be necessary to repeat steps 1 thru 7.

Shutdown Instructions:

1. The burners may be turned off for temporary situations by turning the on/off (rocker) switch to "OFF".



Legend	Notes
— Line Voltage	1. If Any Of The Original Wire As Supplied With The Appliance Must Be Replaced, It Must Be Replaced With Type AWM 105°C 18 Gauge Wire Or Equivalent, Except Limit Wires Must Be 125°C. 2. Motor Is Impedance Overload Protected 3. 120V, 60Hz - Less Than 3 Amps
— Low Voltage	
⊗ Wire Nut Connector	



- For complete shutdown turn on/off (rocker) switch, rear burner and gas valve knobs to "OFF".

LIGHTING INSTRUCTIONS (ROBERTSHAW ELECTRONIC SYSTEM)

Superior GF4000 Series
Models GF4000N, And GF4000L

Lighting Instructions:

- Turn on/off (rocker) switch to "OFF".
- Turn rear burner knob to "OFF".
- Turn gas valve knob to "OFF" and wait 5 minutes.
- Turn gas valve knob "ON".
- Turn rear burner knob to "ON".
- Turn on/off (rocker) switch to "ON".
- Pilot will automatically light and burner or burners will light in approximately 1 to 30 seconds.
- (LPG only) if burners are not lit within approximately 1-1½ minutes, system will lockout and it will be necessary to turn on/off (rocker) switch to "OFF", wait 10 seconds and turn on/off (rocker) switch to "ON".

Shutdown Instructions:

- The burners may be turned off for temporary situations by turning the on/off (rocker) switch to "OFF".
- For complete shutdown turn on/off (rocker) switch, rear burner and gas valve knobs to "OFF".

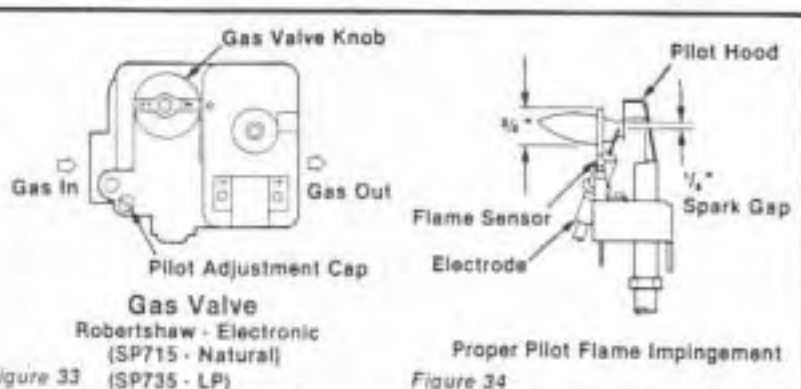
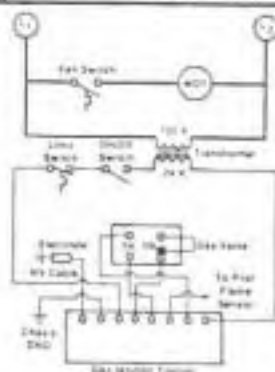


Figure 33

Figure 34



Legend

- Line Voltage
- Low Voltage
- ⊗ Wire Nut Connector

Notes:

- If Any Of The Original Wire As Supplied With The Appliance Must Be Replaced, It Must Be Replaced With Type AWG 100°C 18 Gauge Wire Or Equivalent Except Lead Wire Must Be 120°C.
- Motor Is Thermally Overload Protected.
- 120V, 60Hz, Less Than 2 Amps.

Wiring Diagram -
Robertshaw Electronic
System

Figure 35

Installation And Operating Instructions

TROUBLE SHOOTING

THE INTERMITTENT GAS PILOT ELECTRONIC SYSTEMS ROBERTSHAW SP715, AND SP735

GF4000 Series - Model GF4000N { SP715
Natural Gas Only } GF4000L { SP735
LPG Only }

Note: Before trouble shooting the intermittent pilot system be sure that the external gas shut off valve is on, the gas control valve knob is in the "ON" position, the manual gas valve is in the "ON" or "HI" position, the "OFF/ON" switch is "ON" and the power supply is on. To assure Reset (Model SP735 only) turn "OFF/ON" switch off for 10 seconds, then turn back on.

SYMPTOM	POSSIBLE CAUSES	CORRECTIVE ACTION
1. No Spark No Pilot Gas	A. Low voltage transformer (24 V-AC) or limit switch defective.	Check for 24 volts at the low voltage terminals of the transformer. If no voltage, turn off electric power to appliance. Remove one wire from limit switch and check for continuity across both terminals. No continuity - replace limit switch. With a good limit switch back in the circuit and the electric power turned on - if no voltage, replace transformer. <i>Note: Before replacing the transformer or limit switch, check wiring for loose connections or broken wires and repair as needed.</i> With voltage at transformer and still no spark or solenoid valve 'click', proceed to step "B". <i>Note: Turn off electrical power to heater before replacing limit switch or transformer.</i>
	B. "OFF/ON" switch defective	Check for 24 volts across terminals "TH" (black wire) and "TR" (red wire). If there is no voltage present then replace "OFF/ON" switch. <i>Note: Before replacing "OFF/ON" switch be sure to check wiring for loose connections or broken wires and repair as needed.</i> Recheck for voltage between "TH" and "TR". If voltage is present at "TH" and "TR" and still no spark or solenoid valve "click", proceed to step "C"
	C. Ignition control unit defective	If you read 24 volts at terminals "TR" and "TH" replace the ignition control unit.
2. Spark but no pilot gas (no solenoid valve click)	A. Ignition control unit defective	Check for 24 volts at terminals of blue wire (PV) and white wire (MV/PV) connected to ignition control unit. If no voltage is present, replace ignition control unit. If OK proceed to step "B".
	B. Gas valve defective	Check for 24 volts at blue wire and orange wire terminals connected to gas valve. If OK, replace gas valve. If no voltage, check wire for continuity, replace if necessary.
3. Have ignition spark solenoid valve "click" but no pilot gas.	A. Gas supply to pilot restricted.	Check and/or adjust pilot flame - may be too low. (See Figure 34.) Pilot line or orifice plugged - clean, or replace if necessary.

TROUBLE SHOOTING — ROBERTSHAW SP715 AND SP735 (CONT)

SYMPTOM	POSSIBLE CAUSES	CORRECTIVE ACTION
4. Pilot Gas (solenoid click) but pilot does not light.	A. Ignition control defective.	Remove wire at "TR" terminal at the ignition control, being careful not to touch any metal parts; disconnect the electrode wire ("IGN") at the Ignition Control. Connect one end of a jumper wire to the metal blade of a small driver. Position end of metal blade approx. 1/8" from "IGN" terminal. Reconnect "TR" terminal. Sparking should occur between screwdriver blade and "IGN" terminal. If no sparking occurs, the Ignition Control must be replaced. If OK, proceed to step "B".
	B. Broken or shorted electrode assembly.	Check the pilot and electrode assembly for proper electrode gap (3/32" to 1/8") or any possible shorting of electrode to surrounding metal surfaces. Make sure the spark ignitor and electrode connections to the ignition control are tight. The ignition control and pilot - burner must both be chassis ground. If there is still no spark, the pilot and electrode assembly must be replaced. (See Figure 34.)
	C. Sparking, but not at proper location.	Electrode tip needs to be realigned for correct location. 1/8" gap between electrode tip and pilot hood is desired. (See Figure 32.)
5. Pilot burning but main burners will not come on. <i>Note:</i> Wait at least 90 seconds after pilot lights before doing the check out for possible causes.	A. Low pilot flame or improper alignment of flame sensor in pilot flame.	<i>Pilot and Flame Sensor must be properly aligned so that the pilot flame impinges the top 1/4" of the flame sensor. The flame sensor must be pushed all the way into the pilot bracket. Adjust pilot flame if necessary. See Figure</i>
	B. Burner orifice(s) plugged.	Check for 24 volts at valve operator terminal "TR" and "TH". If there is voltage check main burner orifices for stoppage - clean or replace. If OK, proceed to step "C".
	C. Gas Valve defective.	Main valve operator is defective and gas valve must be replaced. If gas valve checks OK, proceed to step "D".
	D. Defective manual gas valve for heater or manual gas valve for gas logs.	Replace appropriate manual gas valve.
6. Pilot burns for a few seconds, then goes out, after a few seconds it relights and goes out again. Main burners do not light.	A. Gas valve defective.	Check for 24 volts at blue wire and orange wire terminals connected to gas valve. If present replace gas valve.
	B. Ignition control unit defective.	Check continuity of wires for a broken wire or a loose connection. If OK, replace ignition control unit.
7. Burners come "ON" but go "OFF" Intermittently.	A. Low pilot flame or flame sensor not correctly positioned.	Adjust pilot flame and/or check location of flame sensor (See Figure 34).
	B. Defective limit switch.	If burners go off in less than 5 minutes from room temperature start, replace limit switch. <i>Note: Turn off electrical power to heater before replacing limit switch.</i>

Installation And Operating Instructions

TROUBLE SHOOTING

S86A AND S86G HONEYWELL ELECTRONIC SYSTEMS

GF4000 Series - Model GF4000N { S86A Natural Gas Only GF4000L { S86G LPG Only

Note: Before trouble shooting the intermittent pilot system be sure that the external gas shut off valve is on, the gas control valve knob is in the "ON" position, both manual gas valves are in the "ON" or "HI" position, the "OFF/ON" switch is "ON" and the power cord from the appliance is plugged in.

SYMPTOM	POSSIBLE CAUSES	CORRECTIVE ACTION
1. No ignition spark at electrode and no pilot gas flow.	System in lock-out. (reset model S86G only).	When safety lock-out occurs, the system will remain in lock-out until it is reset. To reset the S86G, turn the ON/OFF switch to "OFF" position, wait 30 seconds and then turn on. If still no spark, proceed to step "A".
	A. Low voltage transformer (24V-AC) or limit switch defective.	Turn off electric power to appliance. Remove one wire from limit switch and check for continuity across both terminals. No continuity - replace limit switch. With a good limit switch back in the circuit and the electric power turned on, check for 24 volts at the low voltage terminals of the transformer. If no voltage, replace transformer. <i>Note: Before replacing the transformer or limit switch, check wiring for loose connections or broken wires and repair as needed.</i> With voltage at transformer and still no spark or pilot gas flow, proceed to step "B". <i>Note: Turn off electrical power to heater before replacing limit switch or transformer.</i>
	B. "OFF/ON" switch defective.	Turn "OFF/ON" switch on. Check voltage across terminals 25V and 25V (black wires), on S86 control module. If there is no voltage present, replace "OFF/ON" switch. <i>Note: Before replacing switch be sure to check wiring for loose connections or broken wires and repair as needed.</i> Recheck for voltage between 25V and 25V (black and red wires). If voltage is present at 25V and 25V and still no spark or gas flow at pilot, proceed to step "C".
	C. S86 control module fuse blown or defective unit.	Check for voltage between terminals TH-W and MV/PV on S86 control module; if no voltage is present check fuse for continuity - replace fuse if open. With a good fuse in place and still no voltage - replace S86 control module.
2. Have ignition spark but no pilot gas flow.	A. S86 control module defective.	Check for voltage between PV and MV/PV on S86 control module. If no voltage is present, replace S86 control module. If voltage is present, proceed to step "B".
	B. Gas valve defective.	Check for voltage at terminals TH-TR and TR of gas valve. A no-voltage indicates a broken wire - repair or replace. If voltage is present, but pilot gas does not flow, check the following: (a) Pilot adjustment on gas valve too low. (See Figure 31.) (b) Pilot line or orifice for stoppage. Clean or replace if necessary. If (a) and (b) are OK, replace defective gas valve.

TROUBLE SHOOTING - HONEYWELL S86A AND S86G (CONT)

SYMPTOM	POSSIBLE CAUSES	CORRECTIVE ACTION
3. Have pilot gas but no spark ignition.	A. Defective spark ignition circuit or defective S86 control module.	<ol style="list-style-type: none"> 1. Turn off gas valve knob to prevent flow of gas to burner during the test. 2. Disconnect ignition cable at S86 stud terminal to isolate circuit from the pilot burner igniter-sensor. Prepare short jumper lead, using heavily insulated wire such as ignition cable. 3. Touch one end of jumper firmly to S86 ground terminal (GND). (Do not disconnect existing ground lead.) Move free end slowly towards stud terminal to establish spark, then pull slowly away from stud - noting the length of gap at which arcing discontinues. <p style="text-align: center;">CAUTION</p> <p>Do not allow fingers to touch either stripped end of jumper or stud terminal. This is a very high voltage circuit and electrical shock can result.</p> <ol style="list-style-type: none"> 4. An arc length of $\frac{1}{8}$ in. (3.2 mm) or more indicates satisfactory voltage output. If no arc can be established or maximum gap is less than $\frac{1}{8}$ in. (3.2 mm), and power to S86 input terminals was proved, replace the S86. Then re-open gas valve knob and repeat performance check. (See Figure 31.)
	B. Defective ignition cable.	The ignition cable must not be in contact with metal surface. Connections to stud terminals in S86 control module and on igniter-sensor must be clean and tight. Loose connections may not conduct a flame current even though ignition spark is satisfactory. Electrical continuity of cable should be checked. Replace if defective.
	C. Check grounding defective pilot burners, igniter-sensor.	A common ground is required for pilot burner igniter-sensor mounting bracket, pilot burner head, and GND terminal of S86A. If ground is poor or erratic, safety shutdown may occur occasionally even though operation is normal at time of check-out. Therefore, if nuisance shutdowns have been reported, be sure to check the grounding precautions specified. Electrical ground connections at pilot burner, igniter-sensor and S86 must be clean and tight. If leadwire is damaged or deteriorated, use only No. 14 to 18 gauge, moisture-resistant, thermoplastic insulated wire with 105°C (221°F) minimum rating as replacement. <i>Note: If ground circuit or path is incomplete, the S86 system control will allow 1 trial for ignition before going into safety lockout.</i> Excessive temperature of ceramic flame rod insulator will permit electrical leakage to ground. Examine flame rod and mounting bracket, and correct if bent out of position. Replace pilot burner igniter-sensor if insulator is cracked. Visually inspect the pilot burner igniter-sensor spark gap - it is factory adjusted to $\frac{1}{8}$ in. If setting is changed, carefully adjust the angled tip of the ground electrode only (See Figure 31.)
4. Pilot burning but main burners will not come on.	A. Defective S86 control module.	Check for voltage across MV-MV/PV terminals of S86; if no voltage - replace S86. If voltage is present, proceed to step "B".
	B. Defective gas control.	Check electrical connections between S86 and gas control; if OK, replace defective gas control.
	C. Defective manual heater valve or manual gas log valve.	Replace appropriate manual valve.

Installation And Operating Instructions

TROUBLE SHOOTING - HONEYWELL S86A AND S86G (CONT)

SYMPTOM	POSSIBLE CAUSES	CORRECTIVE ACTION
5. Burners are on but go off intermittently.	A. Bad grounding.	Check ground wire; if poor or erratic, shut down may occur occasionally even if operation is normal at times. Replace or repair when necessary. If OK, proceed to step "B".
	B. Defective ignition cable.	Check continuity of ignition cable. Replace where necessary. If A and B check OK, proceed to step "C".
	C. Defective S86 control module.	Replace S86 control module.
6. Switch is "OFF" but main burners will not shut off.	A. Defective "OFF/ON"	Check operation of switch; if OK, proceed to step "B".
	B. Defective S86 control module.	Remove MV wire from S86 control module; if main burners go off - replace S86; if not - proceed to step "C".
	C. Defective gas control.	Replace gas control.

REPLACEMENT PARTS LIST

No.	Description	GF4000N		GF4000L	
		Part No.	QTY.	Part No.	QTY.
1	Glass-Front	090991	1	090991	1
2	Log-Top/Rear	090852	1	090852	1
3	Log-Front	090851	1	090851	1
4	Motor-fan	092293	1	092293	1
5	Blade-Fan	091261	1	091261	1
6	Switch-On/Off	091341	1	091341	1
7	Switch-Limit	091321	1	091321	1
8	Switch-Fan	091322	1	091322	1
9	Firescreen-Brass	091291	2	091291	2
10	Knob-Burner	091391	1	091391	1
11	Header Plate Ass'y	017171	1	017171	1
12	Burner-Front	090841	1	090841	1
13	Burner-Rear	090653	1	090653	1
14	Door Assy-Bottom	013261	1	013261	1
15	Trim-Brass/Upper	013631	1	013631	1
16	Trim-Brass/Lower	013641	1	013641	1
17	Log Holder	023591	1	023591	1
18	Conduit, 1/2" Flex	014162	1	014162	1
19	Transformer	091401	1	091401	1
20	Retainer, Glass	017141	1	017141	1
21	Wingnut	000680	2	000680	2

Robertshaw Controls

22	Gas Control Valve	091173	1	091174	1
23	Control Ignition	092406	1	092407	1
24	Sensor, Flame	092405	1	092405	1
25	Pilot Ass'y	091191	1	091192	1
26	Harness, Wire	092349	1	092349	1
27	Valve, Manual	091361	1	091361	1
28	Wire, Sensor	092411	1	092411	1

Honeywell Controls

22	Valve-Gas	091951	1	091952	1
23	Ignition Control	091941	—	091942	—
24	Sensor-Flame	—	—	—	—
25	Harness-Wiring	091666	1	091666	1
26	Pilot Assembly	091931	1	091931	1
27	Valve-Manual	091361	1	091361	1
28	Cable-Ignition	091667	1	091667	1

Installation And Operating Instructions

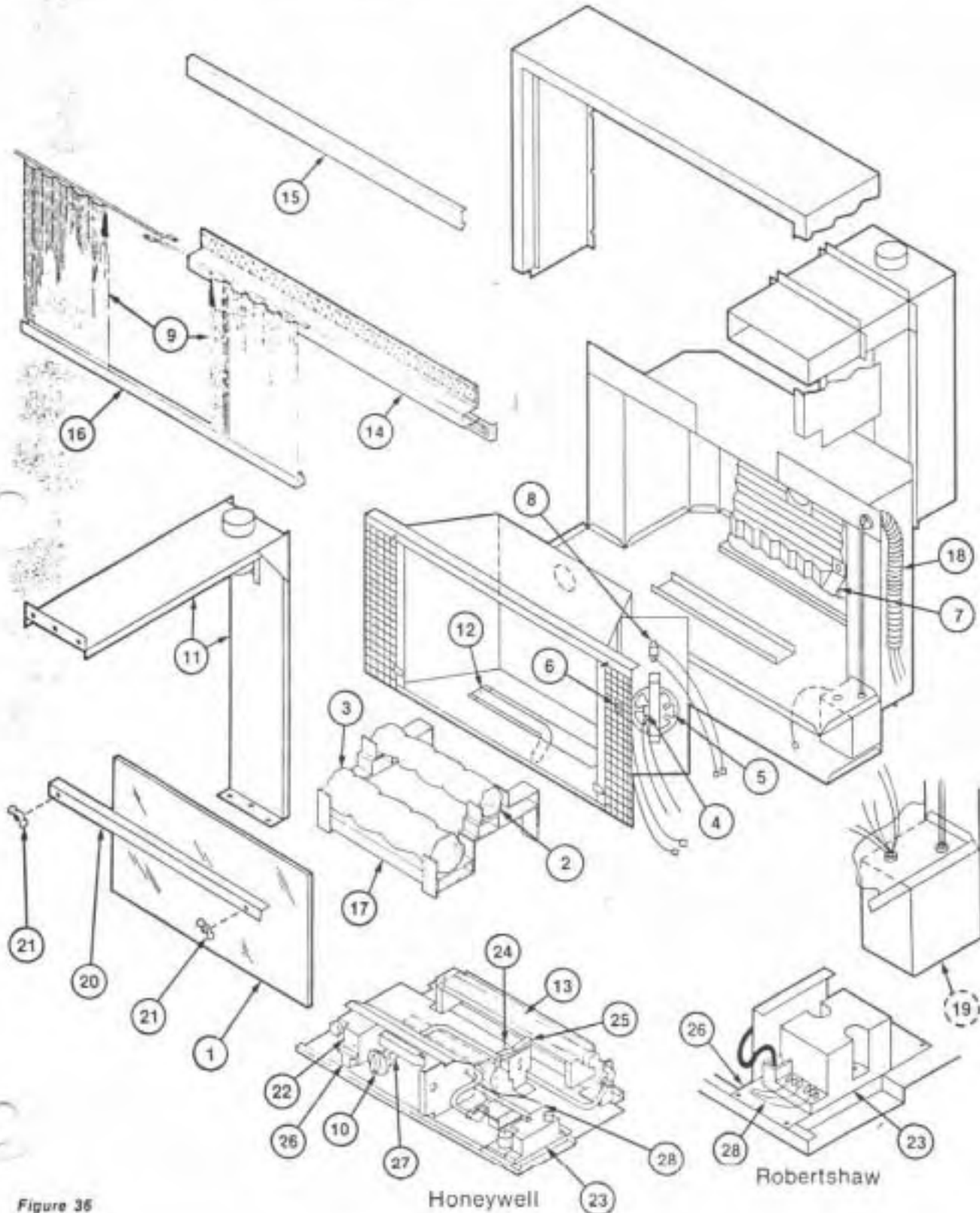


Figure 36

Honeywell

Robertshaw

NOTE: DIAGRAMS & ILLUSTRATIONS NOT TO SCALE