



**SHERWOOD**  
INDUSTRIES LTD.

FOR INSTALLERS AND SERVICE TECHNICIANS ONLY



**GAS  
FIREPLACE  
SERVICE  
MANUAL**

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August 2003

C-10100

This is a service guide designed by SHERWOOD INDUSTRIES LTD.  
 We hope this manual will assist you to identify and correct operational concerns you might experience in all ENVIROGAS appliances.  
 This service guide is designed for TRAINED SERVICE TECHNICIANS AND INSTALLERS.  
 This guide is NOT to be used by the homeowner.  
 If after reading this guide and following our recommendations and the problem still exists, please do-not hesitate to call our technical department.

Technical Division  
 SHERWOOD INDUSTRIES LTD.

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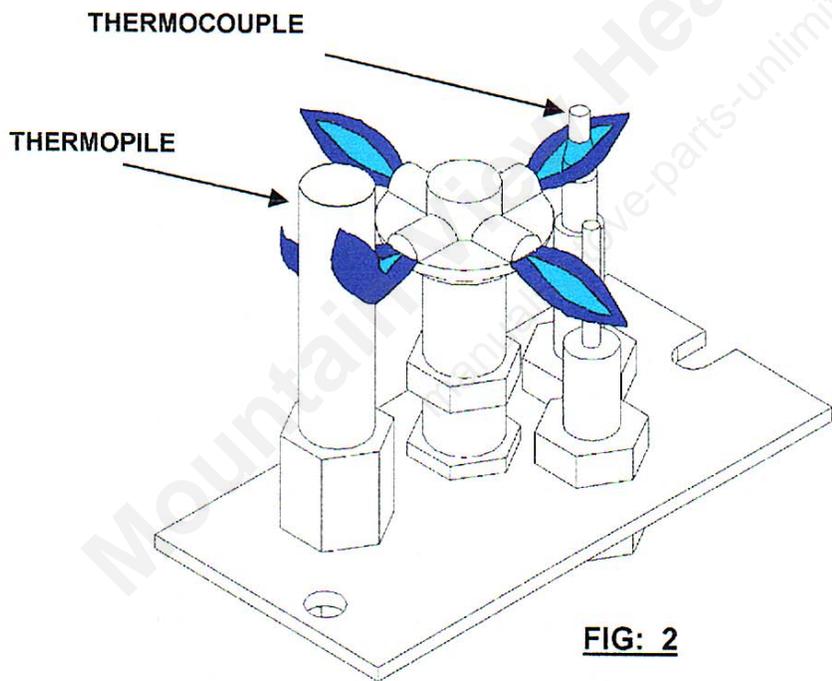
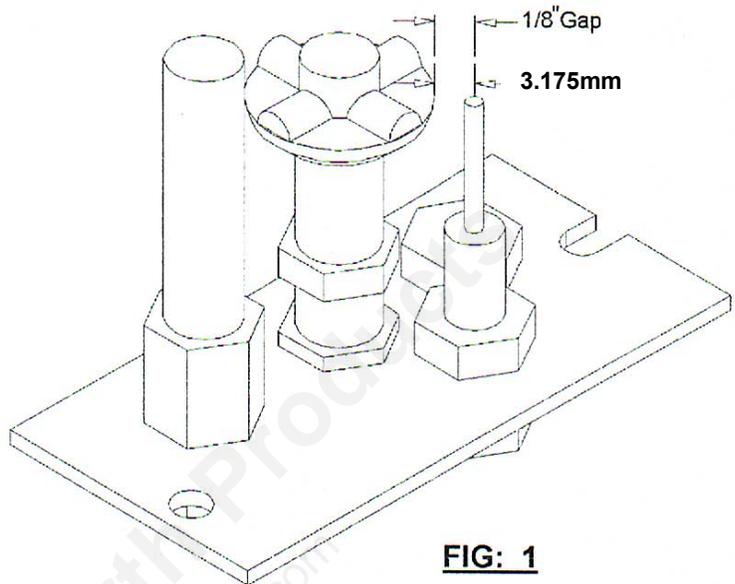
**SUGGESTED TOOLS LIST FOR SERVICING**

- GAS LEAK DETECTOR**
- MANOMETER**
- MULTIMETER**
- CORDLESS DRILL**
- WIRE STRIPPER/CRIMPER**
- WRENCHES, STANDARD AND METRIC**
- SCREWDRIVERS (TORX T20)**
- METAL SNIPS**
- JUMPER WIRES**
- NUMBERED DRILLS ((DMS))**



## PILOT ASSEMBLY S.I.T NOVA 820 SERIES

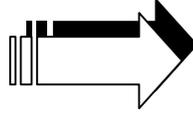
A 1/8" Gap must be maintained between the pilot hood and the electrode. If a 1/8" gap is not maintained the spark will not jump to the pilot hood.  
SOME DETAILS HAVE BEEN OMITTED FOR CLARITY



The pilot flame should be totally engulfing the Thermocouple for proper output. For best results, the pilot flame should also be totally hitting the Thermopile

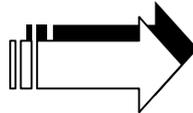
## **B) PIEZO IGNITOR OK BUT PILOT WILL STILL NOT LIGHT**

**Make sure all gas lines have been connected with no leaks.**



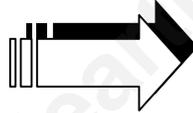
**Correct if necessary, test for gas leaks in an approved manner.**

**Make sure that the gas is "ON" (NG) Natural gas and (LP) Propane tanks are full.**



**Correct if necessary.**

**Make sure the appliance service valve is in the "ON" position.  
SEE PAGE 4 FIGURE 3.**



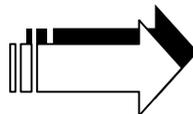
**Turn service valve to the "ON" position.**

**Test to make sure there is no air in the gas line.  
SEE PAGE 4 FIGURE 3.**



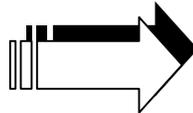
**Use a match to see if air or gas comes from the pilot assembly.**

**Make sure that the valve has not reset itself.  
(All valves have an interlock safety device.)**



**Wait 60 seconds for the safety to reset itself.**

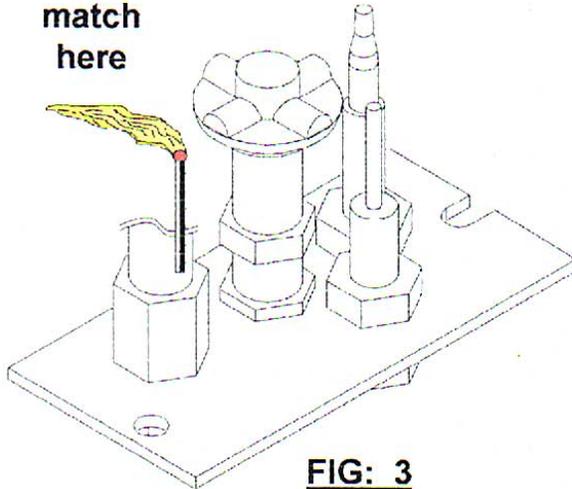
**Make sure pilot injector is not clogged.**



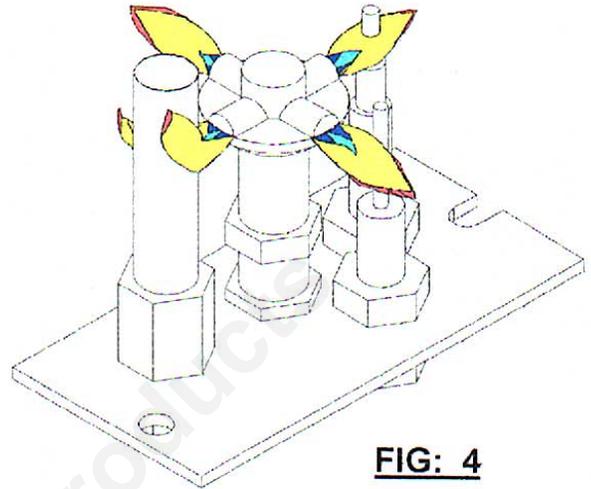
**Clean the pilot injector if necessary.**

# PILOT ASSEMBLY S.I.T NOVA 820 SERIES

Place  
match  
here



**FIG: 3**



**FIG: 4**

Place a match beside the pilot assembly (as shown) if the flame gets blown away from the pilot assembly there is no obstruction

Yellow (luminous) flame at pilot assembly. Indicates, clogged pilot orifice, incorrect gas pressure or clogged primary air opening.

## EXPLODED VIEW S.I.T PILOT ASSEMBLY

### To remove pilot injector:

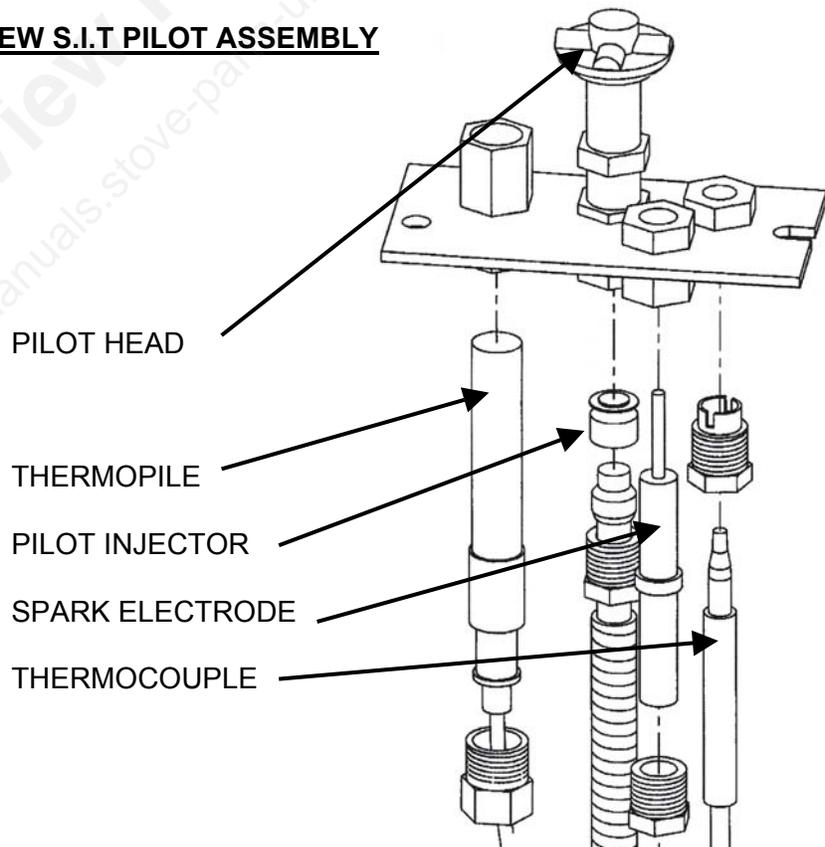
Remove the two screws that hold the pilot assembly to the burner control assembly.

Lift the assembly straight up being careful not to damage any components.

Using a 10 mm wrench undo the securing nut on pilot tubing and pull tubing down to access injector. Being careful not to damage the ceramic spark electrode.

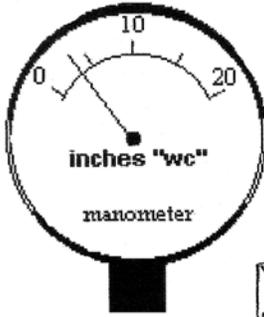
Replace the injector and reinstall the pilot tubing, always to perform a gas leak test before lighting the pilot assembly.

The number on the side of the injector will determine the size. This number is in millimeters.

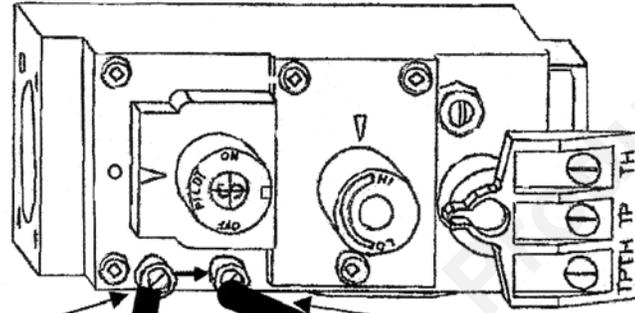


# TESTING INLET AND OUTLET GAS PRESSURES

## DIAL (GAUGE) MANOMETER



UNDO SET SCREW WITH A SMALL FLAT SCREWDRIVER, YOU DO NOT HAVE TO REMOVE THE SCREW.  
TURN THE SCREW (2) TWO TURNS  
DO NOT REMOVE THE SCREW

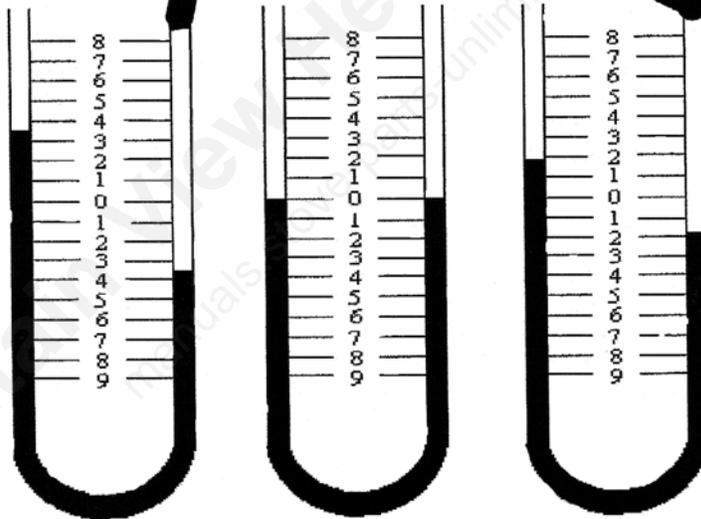


**FIG: 7**

INLET PRESSURE TAP

OUTLET PRESSURE TAP

### TUBE MANOMETER



USE  
DISTILLED  
WATER  
ONLY

3.5" wc BELOW 0  
3.5" wc ABOVE 0  
**INLET GAS PRESSURE**  
7" wc (NG) NATURAL  
GAS

NO PRESSURE

1.75" wc BELOW 0  
1.75" wc ABOVE 0  
**OUTLET GAS PRESSURE**  
3.5 " wc (NG) NATURAL  
GAS

### SUPPLY PRESSURES

**50% TURN DOWN**

MAX SUPPLY PRESSURE  
MIN SUPPLY PRESSURE

NATURAL GAS

7" wc  
5" wc  
7" wc  
4.5" wc

PROPANE GAS

12" wc  
11.5" wc  
13" wc  
10.5" wc

**33% TURN DOWN**

MAX SUPPLY PRESSURE  
MIN SUPPLY PRESSURE

### CHECKING THERMOPILE FOR PROPER VOLTAGE

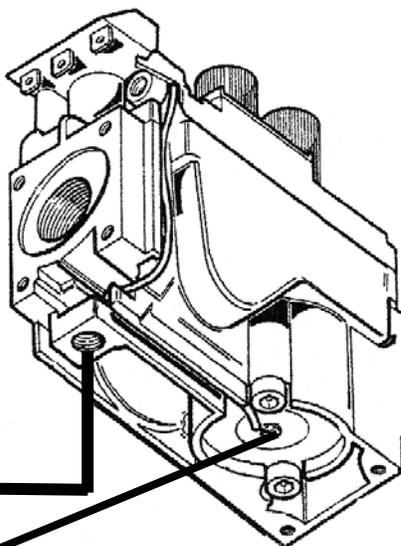
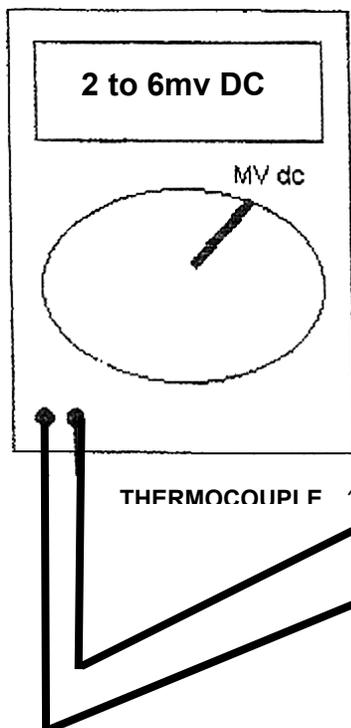
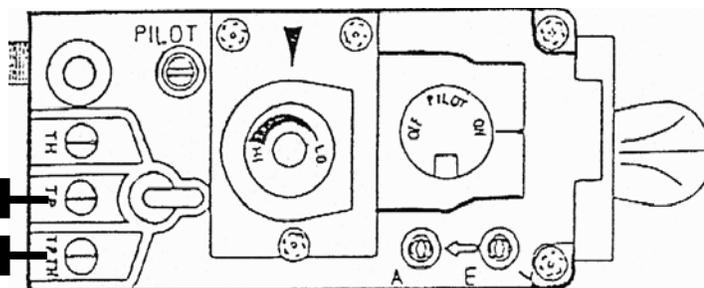
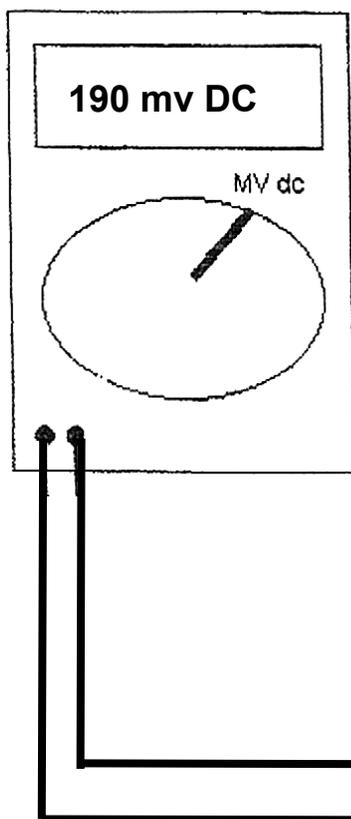
Place the leads of the multimeter on the TP/TH and TP terminals on the valve as shown.

With the switch in the "ON" position, the readings should be approximately 190mV DC (this an average reading) or greater for proper Thermopile operation.

The main burners may not come ON if the readings are less than 145mV DC.

If a thermostat has been installed. Place the ON/OFF/THERMO switch in the THERMO position; place the leads of the multimeter on the TP/TH and TH terminals on the valve or on the connections at the thermostat. MV reading should be higher than 190 mV DC for proper valve operation.

**THESE READINGS SHOULD BE CONSTANT WITH NO FLUCTUATION.**



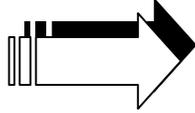
### CHECKING THERMOCOUPLE FOR PROPER VOLTAGE

Place one lead from the multimeter on the thermocouple lead, and the other lead from the multimeter on the back of the valve where the blue wire is soldered to the valve. These readings should be between 8 and 16mV DC. If these readings are 2 to 6 mV DC, the Thermocouple should be replaced

When using a S.I.T EUROSIT 630 SERIES gas valve, place one lead from the multimeter on the thermocouple lead and the other lead into the adapter located on the back of the valve, there are two blue wire a inserted into this adapter.

**2) PILOT WILL NOT STAY  
LIT**

Make sure the gas pressure is correct for type of fuel you are using.  
**SEE PAGE 5 FIGURE 7.**



Use a manometer on the inlet side of the valve to measure gas pressure. Adjust inlet pressure or contact your gas supplier.

Make sure pilot flame is engulfing the top 3/8" of the thermocouple.  
**SEE PAGE 2 FIGURE 2.**

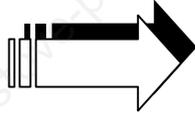


Thermocouple should be the same height as the pilot hood.

Adjust pilot as required.

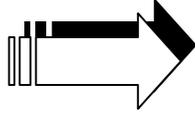
Check for clogged pilot injector.

Make sure thermocouple connections on valve are tight.  
**DO NOT OVER TIGHTEN!!!**



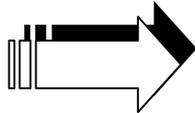
Thermocouple connections should be hand tight plu 1/4 turn.

Make sure the thermocouple line has no kinks and is clean on both ends. Also check the thermocouple for damage.



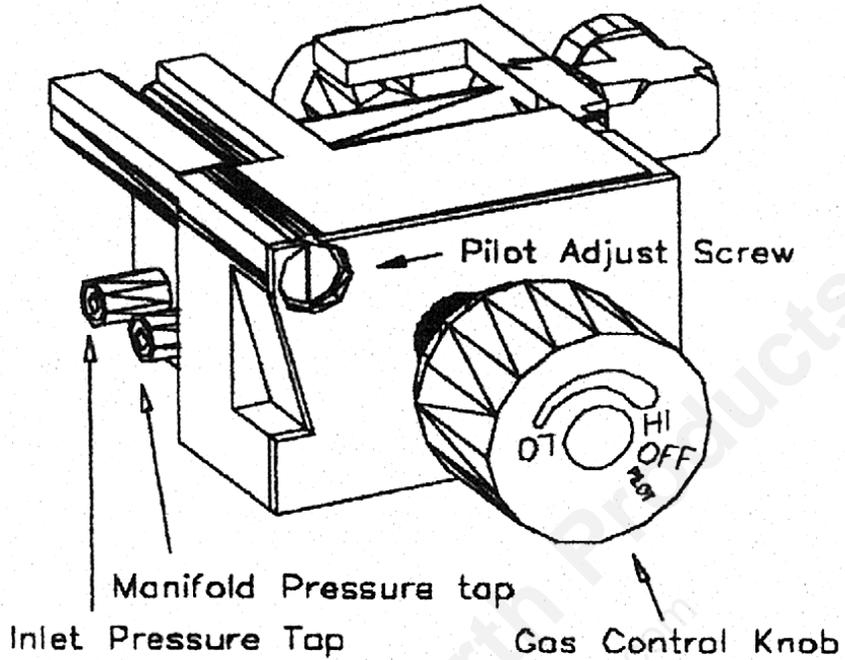
Clean thermocouple ends with Emery cloth or an abrasive sponge.  
**DO NOT USE A METAL FILE.**  
Replace if damaged.

Make sure the thermocouple has proper voltage (DC VOLTAGE).

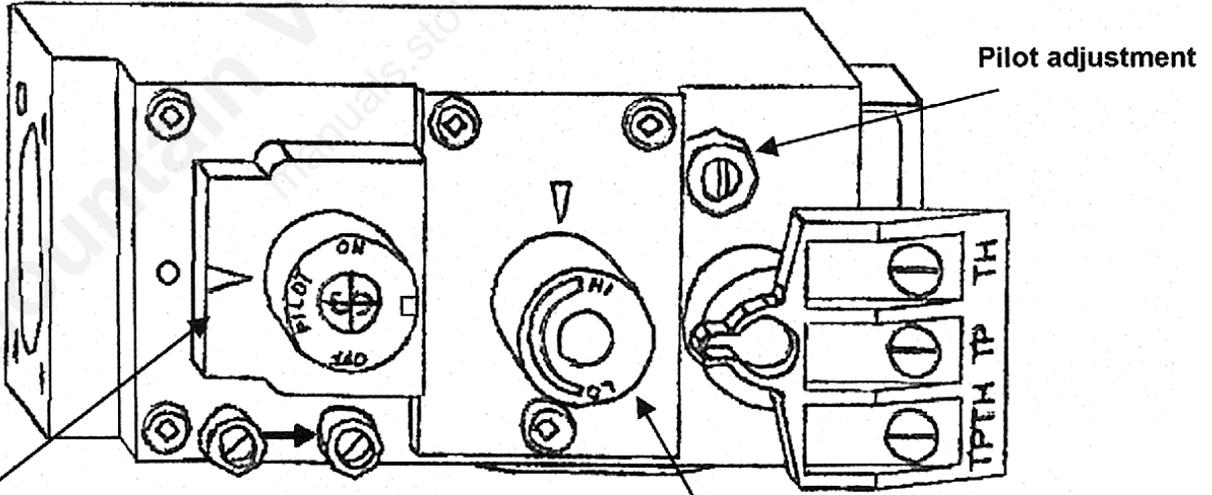


Using a multimeter, insert adapter between valve and thermocouple, if the readings are less than 2 TO 6 mV DC, replace thermocouple.  
**SEE PAGE 6 FIGURE 8.**

**S.I.T EUROSIT MODULATING 630 SERIES**



**S.I.T NOVA 820 SERIES**



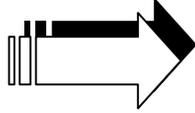
**FIG: 6**

Main gas control valve must be in the "ON" position

Hi-low flame adjustment

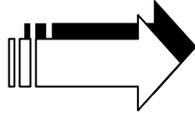
**3) MAIN BURNERS WILL  
NOT LIGHT**

Make sure gas valve knob is in the "ON" position. SEE PAGE 8 FIGURE 6.



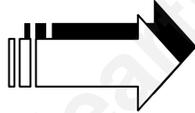
Correct if necessary. Turn valve to the "ON" position.

Make sure that the "ON-OFF THERMO" switch is in the "ON" position.



Turn switch "ON".

Make sure that the thermostat is "NOT" in the lowest position.



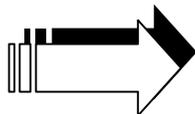
Turn thermostat "UP".

Make sure that all control wires are not damaged, broken or frayed and that all wire connections are tight.



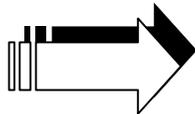
Replace damaged wires as necessary. Gently squeeze connectors with a pair of pliers and reinstall wires.

Make sure that the thermopile connections are tight on the valve.



Tighten the two screws on valve if necessary "TP/TP-TH" terminals on valve.

Make sure millivolt readings from thermopile are within manufactures specifications. MAKE SURE MILLIVOLT READINGS ARE CONSTANT. SEE PAGE 6 FIGURE 8.

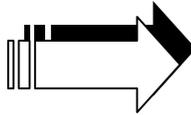


Place leads of multimeter on the "TP/TH-TP" terminals on gas valve. If the readings are less than 145mV DC, replace thermopile

Continued on next page.

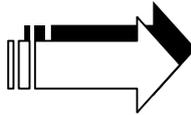
**MAIN BURNERS WILL NOT LIGHT CON'T.**

**Check spill switch operation on B-vented models only  
SEE PAGE 10 FIGURE 9.**



**Bypass spill switch with a jumper wire as shown. If the unit starts, replace the spill switch. DO NOT LEAVE BY PASSED IN.**

**Check the "ON-OFF" switch and thermostat for proper operation.**

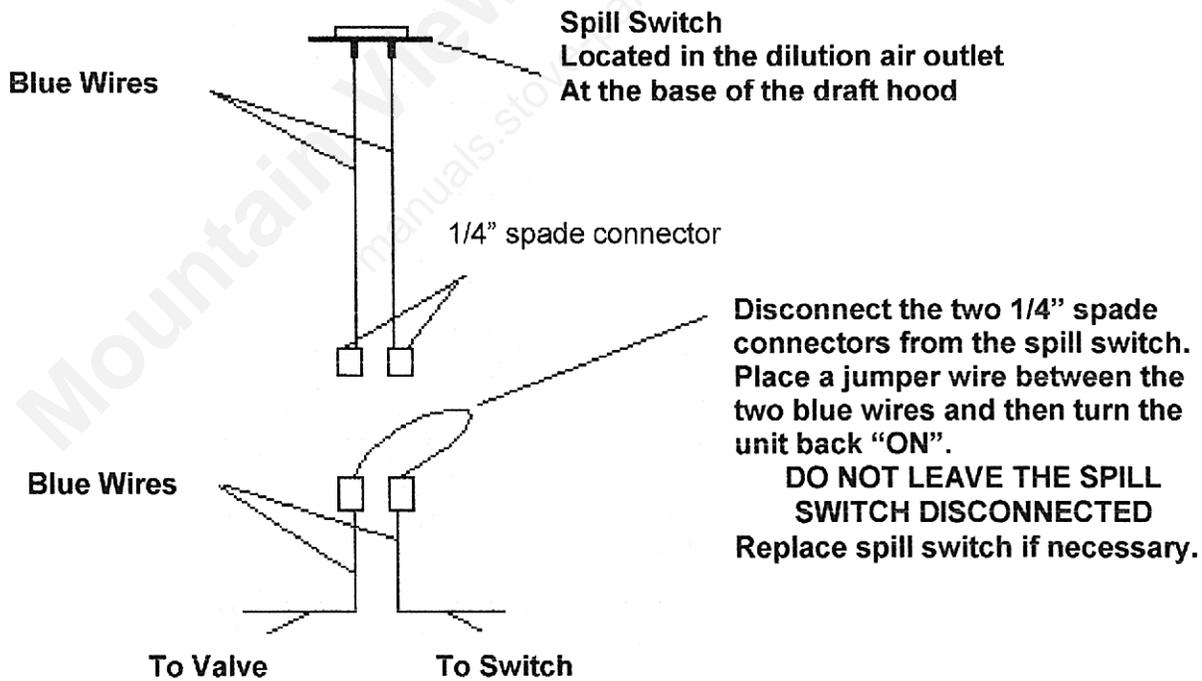


**Use a jumper wire. If the unit starts, replace switch if necessary.**

**Make sure that the main burner orifices are not clogged or damaged.**



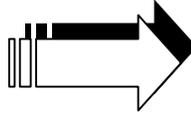
**Remove the top tray. Remove orifice and clean. Replace if damaged.**



**FIG: 9**

**4) MAIN BURNERS WILL NOT STAY LIT**

Make sure pilot flame engulfs the thermopile and does "NOT" have a yellow luminous flame.  
SEE PAGE 4 FIGURE 4.

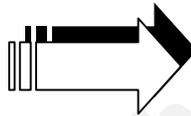


Adjust pilot if necessary.

Check outlet gas pressure.

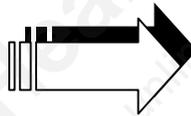
Check for clogged pilot injector or blocked air inlet.

Make sure millivolt readings from thermopile are constant.



Using a multimeter check thermopile. If not constant replace thermopile.

Make sure all wiring is not damaged or broken and all connections are tight.



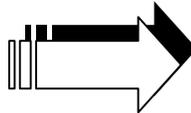
Correct if necessary.

**B-VENTED MODELS**  
Check spill switch.



By pas spill switch.  
If unit starts, replace spill switch.

Check to make sure the vent is drafting properly.



Check for spillage.  
SEE PAGE 12.

Make sure all venting meets manufactures specifications as well as local gas and building code requirements.



Correct if necessary.

Check chimney for blockage or restriction.



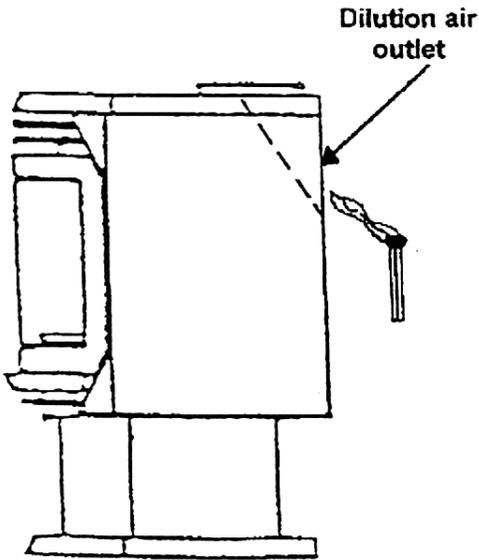
Correct if necessary.

**EXHAUST GASES SPILLAGE TEST**

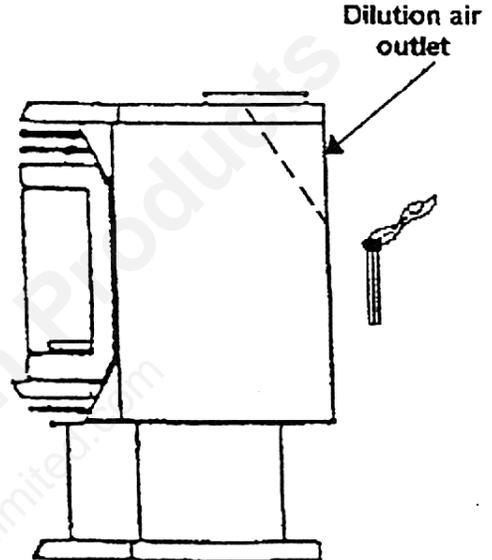
This is an illustration showing how to test for spillage of a B-Vented gas Fireplace. Some details have been omitted for clarity.

**FREESTANDING B-VENTED MODELS ONLY**

Place a match behind the dilution air outlet located on the back of the stove

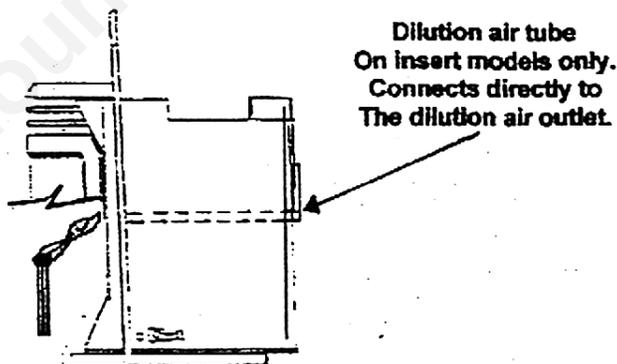


If the match flame gets pulled into the dilution air outlet there is no spillage

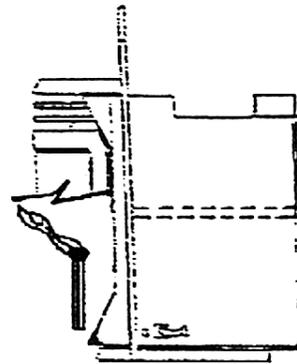


If the match flame gets blown away from the dilution air outlet, the chimney is NOT venting

**B-VENTED FIREPLACE INSERT MODELS ONLY**

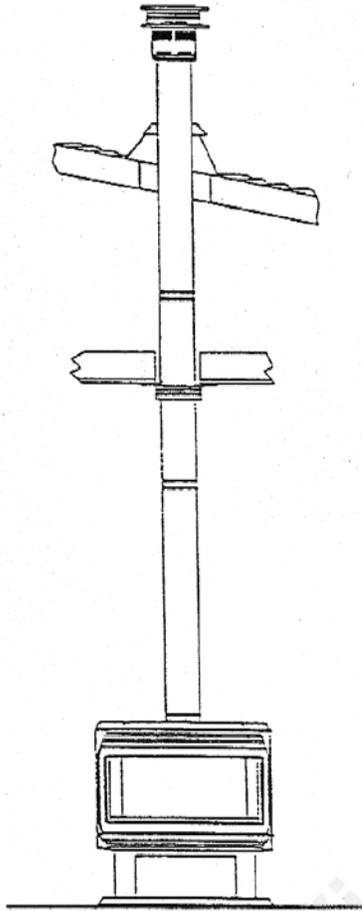


If the match gets pulled into the tube NO spillage

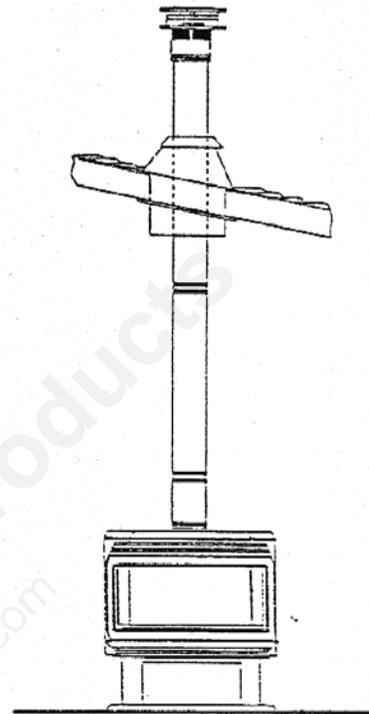


If the match gets blown away from the tube, the chimney is NOT venting

**SAMPLE DIRECT VENT CHIMNEY INSTALLATIONS**  
**ALL MODELS**

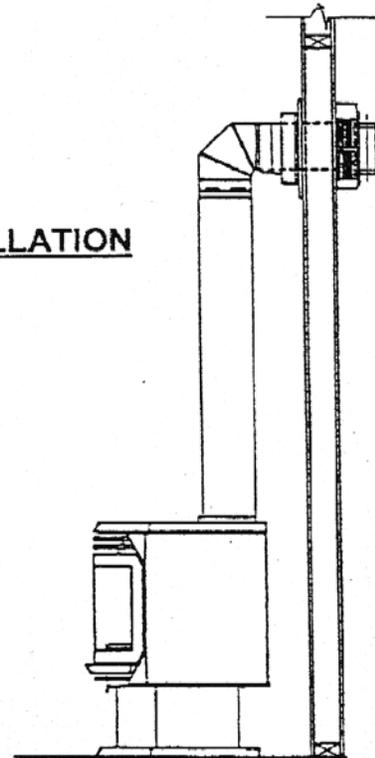


**THROUGH ROOF**  
**INSTALLATIONS**

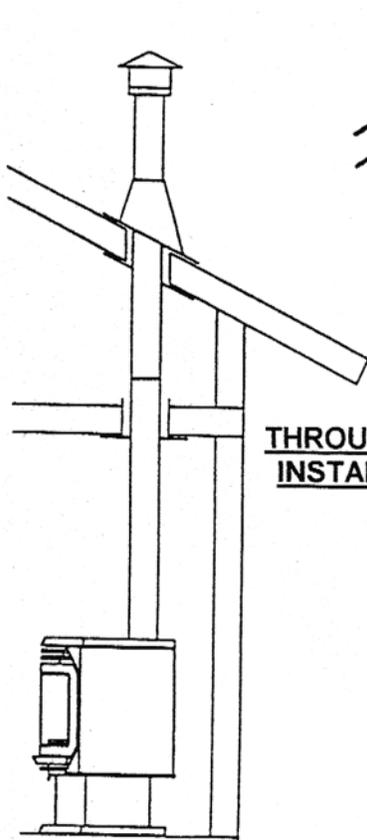


**THROUGH WALL INSTALLATION**

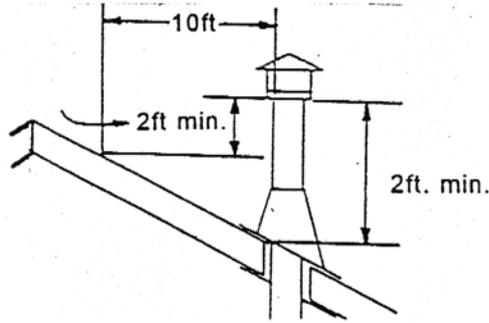
**SPECIAL NOTE: Please see owners and operators manuals for clearance to combustibles, as well as venting restrictions for the particular model that you might be using**



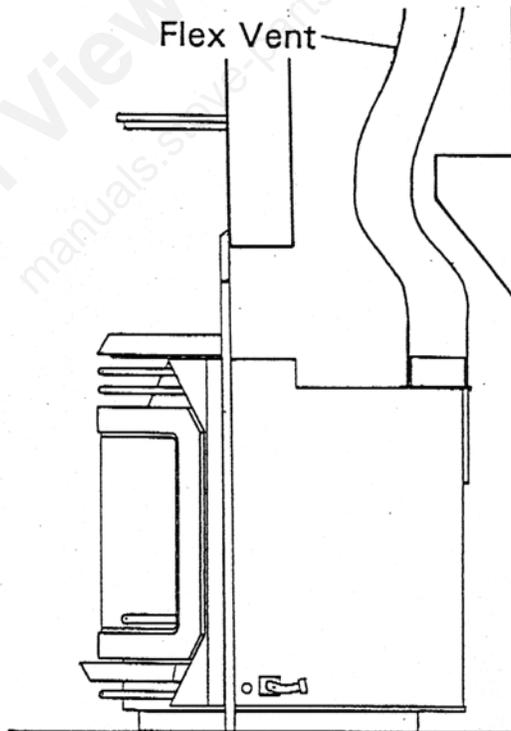
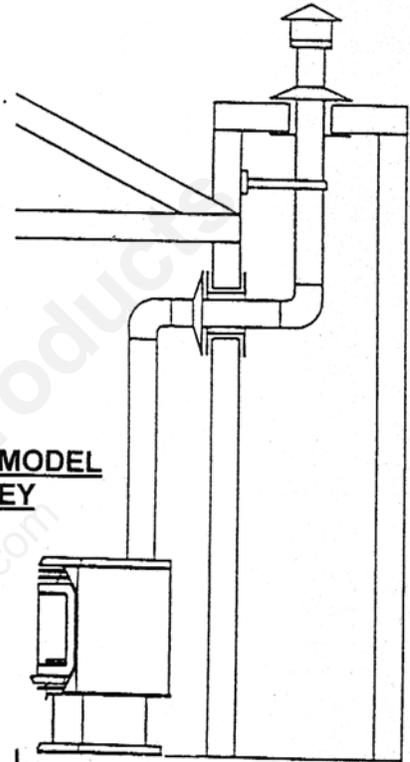
**SAMPLE B-VENTED CHIMNEY INSTALLATIONS**  
**ALL MODELS**



**THROUGH ROOF  
INSTALLATION**



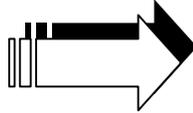
**FREESTANDING MODEL  
INTO CHIMNEY**



**MASONRY FIREPLACE  
INSTALLATION**  
**INSERT MODELS  
MUST BE FULLY  
LINED AND SEALED**

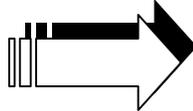
## **5) SOOTING**

**Make sure log placement is in the correct location.**



**Correct to manufactures specifications.**

**Make sure there is sufficient air supply.**



**Correct if necessary. Outside air supply may be required on B-vented models.**

**Check air shutter on the venturi tube for proper primary air adjustment. SEE PAGE 16.**



**Increase primary air. Open air shutter.**

**Make sure orifice matches that on the rating plate.**



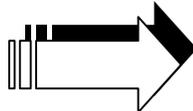
**Correct if necessary.**

**Make sure outlet (manifold) pressure is correct.**



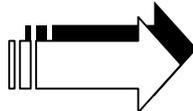
**Use a manometer to check the gas pressure. SEE PAGE 5 FIGURE 7.**

**Make sure the unit has been derated for high altitude applications. (if required)**



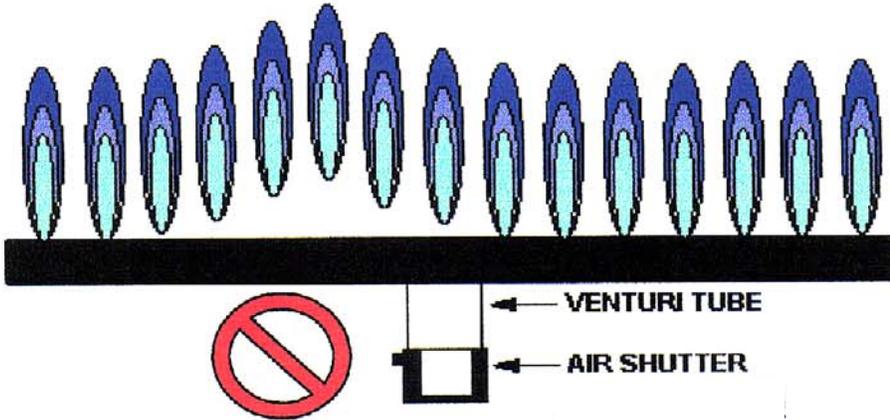
**Correct if necessary.**

**Check to make sure that the vent is drafting properly.**



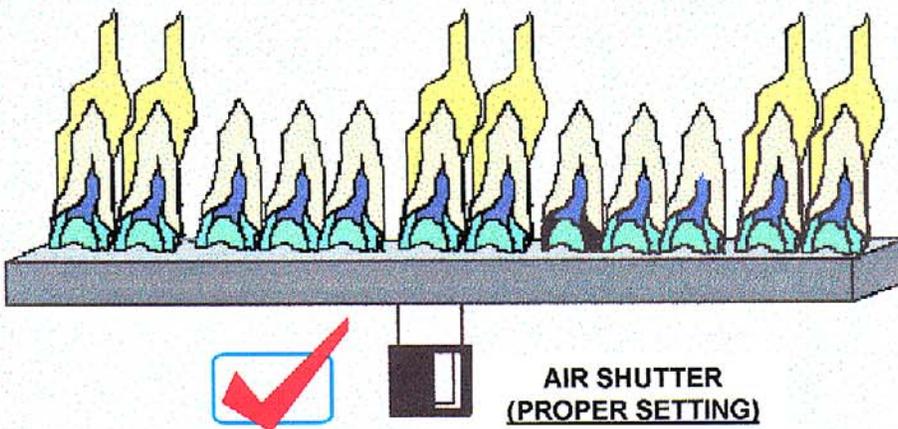
**Correct if necessary.**

## FLAME APPEARANCE PROPER VENTURI SETTING

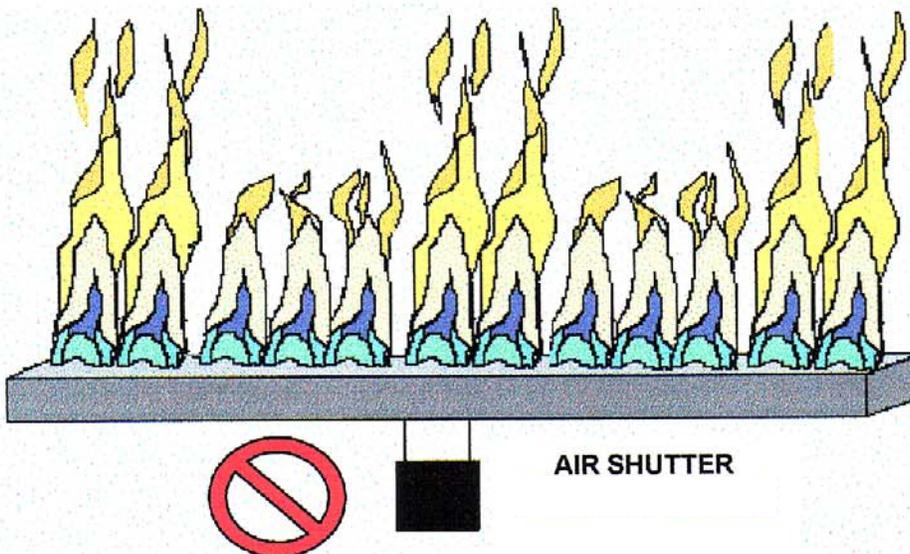


IF THE AIR SHUTTER IS OPENED WIDER, THE FLAME COULD APPEAR ALMOST ALL BLUE WITH FLAME LIFTING BEING THE END RESULT IF OPENED TOO MUCH

### PROPER FLAME APPEARANCE



WITH THE AIR SHUTTER SET PROPERLY, THE FLAME WILL SIT ON THE BURNER PORT AND THE FLAME PATTERN WILL START AT THE BOTTOM WITH A BLUE FLAME THEN TURNING TO A WHITE ALMOST YELLOW FLAME WITH A SLIGHT ORANGE EDGE

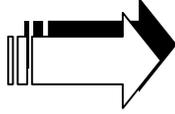


AS THE AIR SHUTTER IS CLOSED, THE FLAME COULD APPEAR TALLER WITH A VERY LAZY BLACK ORANGE TIPPED FLAME PRODUCING CARBON (SOOT)



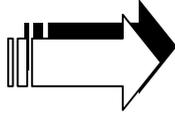
## **B) DIRECT VENT MODELS**

**Check air shutter on the burner tube (venturi).**



**Adjust air shutter.  
Close until flame sits onto the burner ports.**

**Make sure there are no leaks in the venting system.**



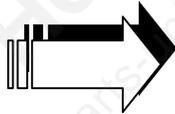
**Seal exhaust tube with high temperature silicone.  
Also make sure that combustion air pipe is sealed.**

**Make sure the unit is not recirculating flue products.**



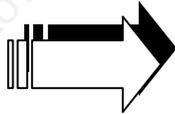
**Check flue for blockage or high wind situations.**

**Make sure the gas pressure is correct for fuel being used.**



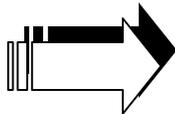
**Use a manometer to check gas outlet (manifold) pressure.  
SEE PAGE 5 FIGURE 7.**

**Make sure the orifice size is the same as the rating plate.**



**Correct if necessary.**

**Add a vent restrictor ring.  
SEE OWNERS MANUAL.**



**Only if necessary.**

## **7) BLOWER DIAGNOSIS** **ALL MODELS**

**Check to make sure that the fan is plugged in.**

**Make sure the fan control knob is in the “ON” position.**

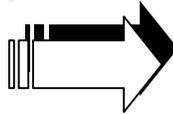
**Make sure the two wires are connected to the fan temperature sensor.**

**Make sure that the two wires are connected to the blower.**

**Make sure there are no broken, damaged or frayed wires.**

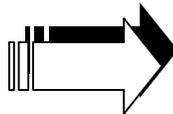
**Make sure that the fan sensor is secure and that it is not damaged.**

**Using a supply cord connected to the blower, plug the blower directly into wall outlet.**



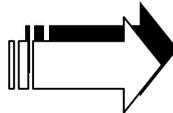
**If the blower does not work, replace the blower.**

**By pass the fan temperature sensor with a jumper wire.**



**If the blower works, replace the fan temperature sensor**

**By pass the fan controller with a jumper wire.**



**If the blower does not work, replace the fan controller.**



**MAKE SURE THAT THE FAN SENSOR IS AT OPERATING TEMPERATURE BEFORE TESTING THE FAN CONTROLLER.**

# ORIFICE SIZING CHART

DRILL#	SIZE	NATURAL GAS		PROPANE GAS	
		3.5"	3.8"	10"	11"
70	.0280	1991	2074	5221	5476
69	.0292	2165	2256	5678	5956
68	.0310	2440	2542	6400	6713
1/32	.0313	2487	2591	6524	6843
67	.0320	2600	2709	6820	7153
66	.0330	2765	2881	7253	7607
65	.0350	3110	3240	8158	8557
64	.0360	3291	3429	8631	9053
63	.0370	3476	3622	9117	9563
62	.0380	3666	3820	9617	10087
61	.0390	3862	4024	10130	10625
60	.0400	4062	4232	10655	11176
59	.0410	4268	4447	11195	11742
58	.0420	4479	4667	11748	12322
57	.0430	4695	4892	12314	12916
56	.0465	5490	5720	14400	15104
3/64	.0469	5585	5819	14649	15365
55	.0520	6865	7153	18008	18888
54	.0550	7680	8002	20146	21131
53	.0595	8989	9366	23578	24730
1/16	.0625	9918	10334	26014	27286
52	.0635	10238	10667	26854	28167
51	.0670	11398	11876	29896	31357
50	.0700	12441	12962	32633	34228
49	.0730	13530	14097	35490	37225
48	.0760	14665	15279	38467	40347
5/64	.0781	15487	16136	40622	42608
47	.0785	15646	16302	41039	43045
46	.0810	16658	17356	43695	45831
45	.0820	17072	17787	44780	46969
44	.0860	18778	19565	49256	51663
43	.0890	20111	20954	52753	55331
42	.0935	22197	23127	58221	61067
3/32	.0938	22339	23275	58596	61460
41	.0960	23399	24379	61377	64377
40	.0980	24384	25406	63961	67087
39	.0995	25137	26190	65933	69156
38	.1015	26157	27253	68610	71964
37	.1040	27462	28613	72032	75553
36	.1065	28798	30005	75537	79229
7/64	.1094	30388	31661	79707	83603
35	.1100	30722	32009	80582	84522
34	.1110	31283	32594	82055	86066

## STEP BY STEP SERVICE INSTRUCTIONS

These appliances do require to be serviced. Our best recommendation is that the appliance be serviced (1) once a year, maybe just before the heating season starts.

Annual service should and inspection should include:

- ⇒ Open the two side panels or remove the face frame from the appliance. Vacuum all areas around the convection blower making sure there are no obstructions near the convection blower or in the impeller fan blades.
- ⇒ EG-95 inserts and freestanding fireplaces convection blowers do require lubrication. Use lightweight oil 20 SAE, 3 in 1 oil, or sewing machine oil (2 drops only). Too much oil will contract dust and dirt, which could cause premature breakdown of the convection blower.
- ⇒ Check all wiring for loose connections and damage to any of the wires.
- ⇒ Check to make sure that the flue is connected and that the flue is not plugged and that it is free from obstructions.
- ⇒ Also check to make sure that the fresh air, if installed, is not clogged and that it is free from obstructions.
- ⇒ Open the glass door by undoing the ½” bolt on the right hand side of the appliance, swing the door all the way open and gently lift the door off the two pins on the left hand side of the appliance.
- ⇒ Carefully remove the log set from the firebox. **NOTE:** The edges of the logs become brittle with heat over time so they could be damaged when removing the logs. Remove the glowing ember material making sure not to drop any of the ember material, which could drop into air passages or drop on the pilot assembly.
- ⇒ Inspect the pilot assembly for build up on the Thermocouple and Thermopile; also make sure that the pilot assembly has not been damaged.
- ⇒ Vacuum all areas inside the firebox in and around the burner tray, control panel and surrounding areas.
- ⇒ Carefully replace the logs and glowing embers into the firebox making sure that the log and ember material are in the correct location (refer to the owner and operators manual).
- ⇒ Inspect the door gaskets to make sure that it is not cracked broken or frayed. Place the door assembly back on the two pins on the left side of the appliance, close the door and tighten the ½” bolt on the right hand side, make sure that the gasket is fully sealed (**pay special attention to the corners of the bay window**). Visually check for a small gap, if there is a gap, open the door and fluff the gasket up a little, reinstall the glass and re inspect the gasket to make sure it has sealed.
- ⇒ Relight the appliance, before you turn the gas control knob to the “ON” position, do a millivolt reading from the thermopile. Turn the gas control knob to the “ON” position, before the main burners are turned “ON” do another millivolt reading at the thermopile to make sure there is no change.

- ⇒ Turn the switch to the “ON” position; check the millivolt readings at the thermopile make sure that the readings meet manufacturers specifications. Turn the unit “OFF”.
- ⇒ Install a manometer on the inlet side of the gas valve marked (E), re light the appliance make sure that the inlet pressure meets the manufactures specifications.
- ⇒ Shut the unit “OFF” once again and do an outlet (manifold) pressure test. Relight the appliance and make sure the outlet (manifold) pressure is within manufactures specifications.
- ⇒ FINALLY, check to make sure that the unit is venting properly by placing a match in the dilution air outlet or in the draft tube on insert models. If the match is blown out then there is some sort of restriction. Correct if necessary.

### **CLEANING THE APPLIANCE**

- Only use a very soft cloth an a non abrasive cleaner, **DO NOT** use any alcohol’s, mineral spirits, gasoline’s or abrasive cleaners.
- ⇒ When cleaning the glass there could be some stubborn material left on the glass, **DO NOT** use a scraper or abrasive cleaning agents on the glass because this could scratch the glass which in turn will make he glass weak at the point of the scratch. There is a glass cleaner that is specially designed for gas fireplaces, which can be purchased at your local dealer.

## 10) GLOSSARY

### **B-VENTED SYSTEM**

A venting system using only approved double wall pipe and approved B-vent components. This system also uses room air for proper venting action through the dilution air inlet mounted on the back of the unit.

### **CONTINUITY TEST**

By using a multimeter set on OHMS, is determined if the circuit is complete, or continuous (no break in the circuit).

### **DIRECT VENT SYSTEM**

A venting system sealed from the structure for both the exhaust gases and fresh air supply.

### **ELECTRODE (ignition)**

Receives spark from the piezo ignitor to light the pilot.

### **IGNITOR (piezo)**

A component used to create an electrical spark to the electrode to light the pilot.

### **IMPINGEMENT**

When flame comes in contact with physical components. Impingement can cause incomplete combustion resulting in carbon monoxide production as well as soot.

### **MANOMETER**

Instrument used to measure gas pressure.

### **MILLIVOLT**

One –one thousands (1/1000) of a volt (.001mV DC)

### **MULTIMETER**

Instrument used to measure Volts, Amps, Ohms, (Volts DC, AC)

### **ORIFICE**

A component that controls gas flow through the burners.

### **PILOT INJECTOR**

A component that directs gas flow through the pilot assembly.

### **PRESSURE REGULATOR**

A device used to maintain downstream gas pressure.

### **RATING PLATE**

A plate in the appliance which shows all certifications and what type of fuel and what the appliance is rated for (example: BTU's, gas type, serial#, etc.).

### **SOOTING**

Carbon build up produced by incomplete combustion of the fuel being used.

### **SPILLAGE**

When flue products do not properly exit the structure through the venting system.

### **SPILL SWITCH**

A temperature sensitive switch designed to shut the appliance off in the case of improper venting action.

### **THERMOCOUPLE**

A device used to generate power with heat from the pilot, up to 25mV DC.

### **THERMOPILE**

A device used to generate power with heat from the pilot, up to 750mV DC.

### **VENTURI**

Where gas and air are mixed before entering the burner tube.