

COMFORTEC

Orifice Sizes

MAIN BURNERS

Model	Gas Type	Drill Number	Decimal Equivalent	COMFORTEC Part Number
C20	Natural	#47	.0785"	GF7610P1
C20	Propane	#55	.0520"	GF7610P2
C25	Natural	#47	.0785"	GF7610P1
C25	Propane	#55	.0520"	GF7610P2
C30	Natural	#41	.0960"	GF7610P7
C30	Propane	#56	.0465"	GF7610P8
C36	Natural	#39	.0995"	GF7610P3
C36	Propane	#53	.0595"	GF7610P4
CST36	Natural	#39	.0995"	GF7610P3
CST36	Propane	#54	.0550"	GF7610P6
CDV34	Natural	#43	.0890"	GF7610P9
CDV34	Propane	#55	.0520"	GF7610P2
CDV36	Natural	#41	.0960"	GF7610P7
CDV36	Propane	#56	.0465"	GF7610P8
C42	Natural	#37	.1040"	GF7610P5
C42	Propane	#54	.0550"	GF7610P6

FRONT BURNERS

C25	Natural	#58	.0420"	GF7611
C25	Propane	#73	.0240"	GF7611P2
C30	Natural	#53	.0595"	GF7611P3
C30	Propane	#69	.0292"	GF7611P4
CST36	Natural	#59	.0410"	GF7611P5
CST36	Propane	#72	.0250"	GF7611P6
CDV36	Natural	#58	.0420"	GF7611
CDV36	Propane	#73	.0240"	GF7611P2

PILOT ORIFICE

Models C20, C25, C36, CST36, CDV34, CDV36

(Model C30 Propane Orifice identified by Red Dot)

Natural Gas	.018"	GF7568
Propane	.010"	GF7569

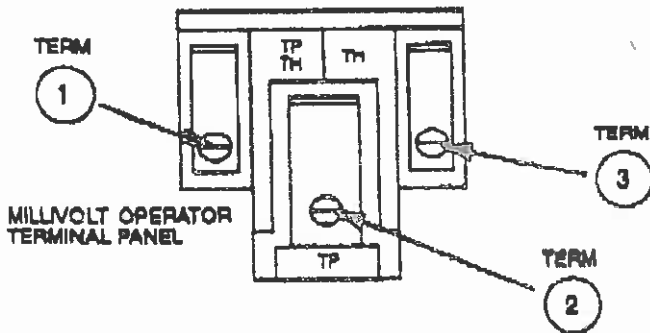
Diagram #12

Millivolt Check

The Unitrol 7000MV or 7000MVR is a thermopile self-powered combination gas control. Before checking the millivolt system, the following operations should be performed and observations made:

1. The thermostat must be a type suitable for millivolt operation.
2. Inspect system for proper wiring. (Fig. 1 or Fig. 2)
3. The thermostat leads and all wire connections should be cleaned and tightened to eliminate all unnecessary resistance.
4. Clean and/or adjust pilot for maximum flame impingement on thermopile.
5. If pilot will not remain lit when gas cock dial is released, check automatic pilot (Step D).

The millivolt system and individual components may be checked with a millivolt meter having a 0 - 1000 MV range. Conduct each check shown in chart below by connecting meter test leads to terminals as indicated. All readings are closed circuit:



A. Complete Millivolt System Check

("A" Reading - Thermostat contacts CLOSED -- Gas Cock Dial "ON" - Main Burner should come ON)

- a) If the reading is more than 100 millivolts and the automatic valve still does not come on - replace the automatic valve operator.
- b) If the closed circuit reading ("A" reading) is less than 100 millivolts, determine cause for low reading - proceed as follows:

B. Thermopile Output Reading Check

("B" Reading - Thermostat contacts OPEN - Main Burner OFF)

- 1) CP - 1 system - 250 millivolts minimum.
- 2) CP - 2 system - 325 millivolts minimum.

If the minimum millivolt reading is not obtainable, re-adjust pilot for maximum millivolt output. If millivolt reading is still below minimum specified, replace thermopile.

C. System Resistance Check

("C" Reading - Thermostat contacts CLOSED - Gas cock "ON" - Main burner should be ON)

- 1) CP - 1 system - less than 35 MV.
- 2) CP - 2 system - less than 80 MV.
- 3) If the "C" reading is more than that specified for the system being checked, this indicates the resistance in the system is excessive and must be reduced. To correct:
 - a) Clean and tighten thermostat leads and connectors.
 - b) Shorten thermostat lead wires and/or replace with heavier gauge wire.
 - c) Cycle thermostat rapidly (manually turn dial) to clean contacts.

D. Automatic Pilot Dropout Check

- 1) Hold gas cock dial depressed in pilot position until maximum output is observed. Then extinguish pilot and observe meter.
- 2) Dropout of automatic pilot magnet (sound should be audible) should occur between 120 millivolts and 30 millivolts. If dropout occurs outside these limits, change the automatic pilot magnet assembly.

NOTE: Use CP-2 System Readings

CHECK TEST	TO TEST	CONNECT METER LEADS TO TERMINALS	THERMOSTAT CONTACTS	METER READING SHOULD BE
A	COMPLETE SYSTEM	2 & 3	CLOSED	100MV OR MORE
B	THERMOPILE OUTPUT	1 & 2	OPEN	GREATER THAN 250 - (CP-1) 325 - (CP-2)
C	SYSTEM RESISTANCE	1 & 3	CLOSED	LESS THAN 35 - (CP-1) 80 - (CP-2)
D	AUTO-PILOT DROPOUT	1 & 2	OPEN	BETWEEN 120-30 MV

Diagram #11

Fan and Variable Speed Control Diagram

NOTE: USE ONLY KB ELECTRONICS FAN SPEED CONTROL ON COMFORTEC GAS FIREPLACES VARIABLE SPEED FANS.

To replace C36, CDV34, and CDV36 Fan

1. Open control door at bottom of unit. This will expose the gas valve and the fan assembly.
2. Shut off the gas to fireplace and remove gas line at the valve.
3. Shut off the power to the fan. (Shut off breaker and remove fuse).
4. Undo the (2) nuts holding down the fan assembly. The fan should then slide out.
5. Once the fan is in your hand you can remove it from the support bracket by undoing the nut and bolt located on either side of the fan. The electrical wiring can simply be removed by pulling off the push-on clips.
6. Replace the fan and reinstall.

NOTE: USE SOME CAUTION WHEN REMOVING AND REINSTALLING FAN SO AS NOT TO DAMAGE THE IGNITER WIRES, THE THERMOPILE, OR THE REMOTE WALL SWITCH WIRES.

This is a wiring diagram for the C36, CDV34 and CDV36 Fan.

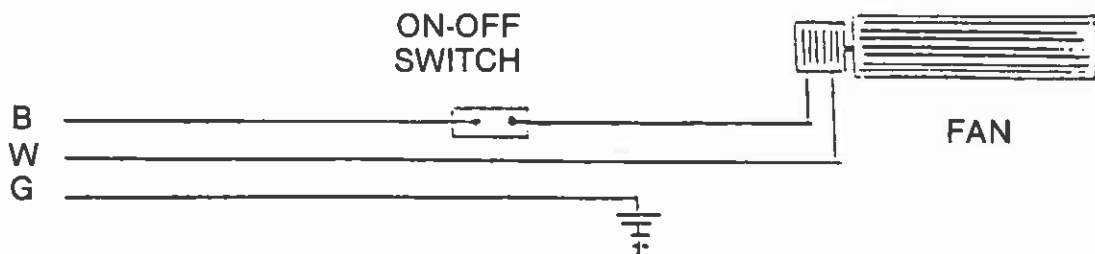


Diagram #10

Fan and Variable Speed Control Diagram

Use only Trivar Fan speed control on COMFORTEC gas fireplaces variable speed fans.

To replace C20, C25, C30 Fan

1. Remove window trim (2) screws.
2. Remove window (3) screws across the top.
3. Disconnect wiring from valve to wall switch.
4. Unplug or disconnect power to fan.
5. Shut off gas line leading to fireplace.
6. Disconnect gas line to fireplace at valve.
7. Remove (2) screws holding down burner tray.
8. Burner tray should now lift out in your hand.
9. Behind burner tray there is a panel with (8) screws holding it in.
10. Remove panel and you will find the fan assembly. There are two nuts holding down the fan. Remove the two nuts and unplug the two wires attached to the fan.
11. Remove fan and replace.

NOTE: WHEN REPLACING THE FAN COVER, THE BAFFLE MUST BE AT THE TOP.

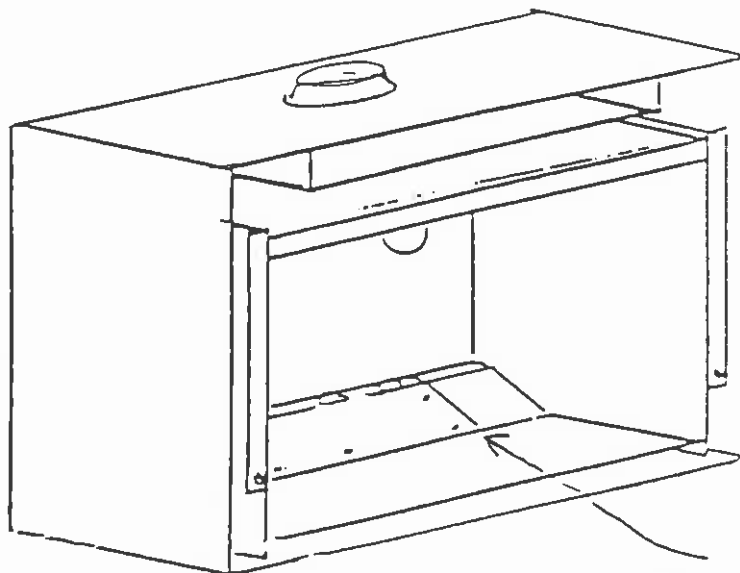
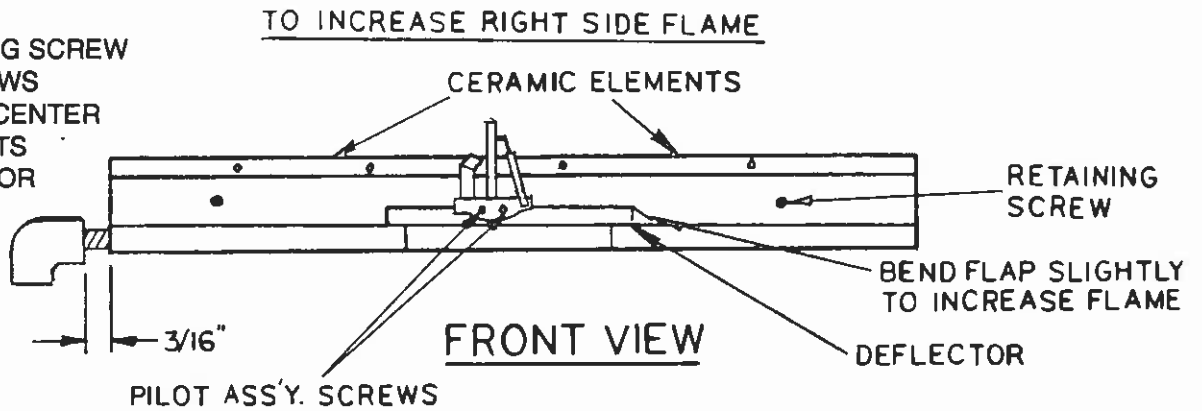


Diagram #9A

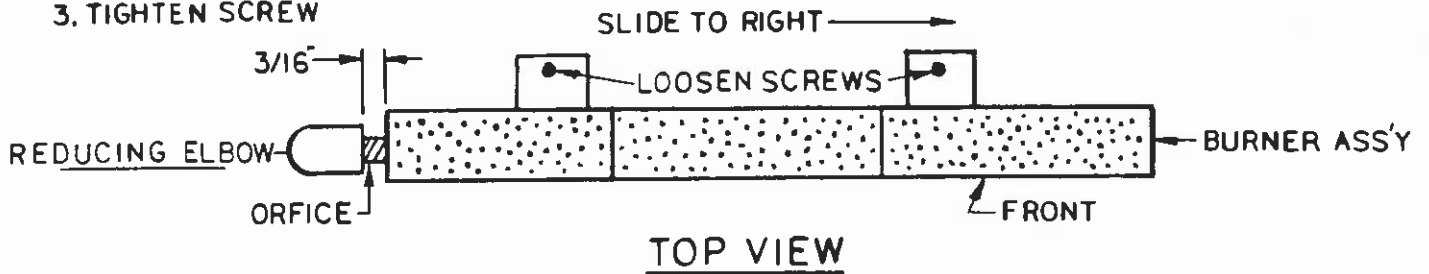
Primary Air Adjustment for Burner Tray

1. REMOVE RETAINING SCREW
PILOT ASS'Y SCREWS
2. REMOVE RIGHT & CENTER
CERAMIC ELEMENTS
3. REMOVE DEFLECTOR
AND BEND FLAP
SLIGHTLY (1/16")
4. RE-ASSEMBLE
AND TEST



TO REDUCE CARBON CONTENT OF FLAME

1. LOOSEN RETAINING SCREWS
2. SLIDE BURNER TO RIGHT
3. TIGHTEN SCREW



EXCESS CARBON CAN CAUSE WINDOW TO BLACKEN

Diagram #9

Primary Air Adjustment for Burner Tray and Manometer Hook Up

Pressure Regulator Adjustments

Adjustment of the pressure regulator is not normally necessary since it is preset at the factory. However, field adjustment may be accomplished as follows:

NOTE: Manometer attachment may be accomplished at pressure tap plug, above control outlet, as shown in figure below.

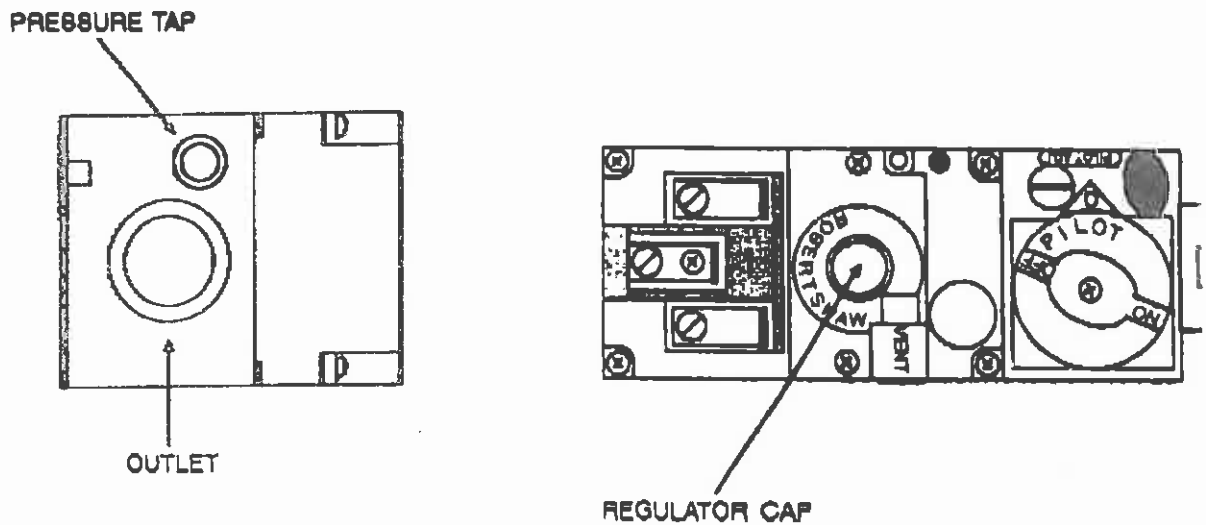
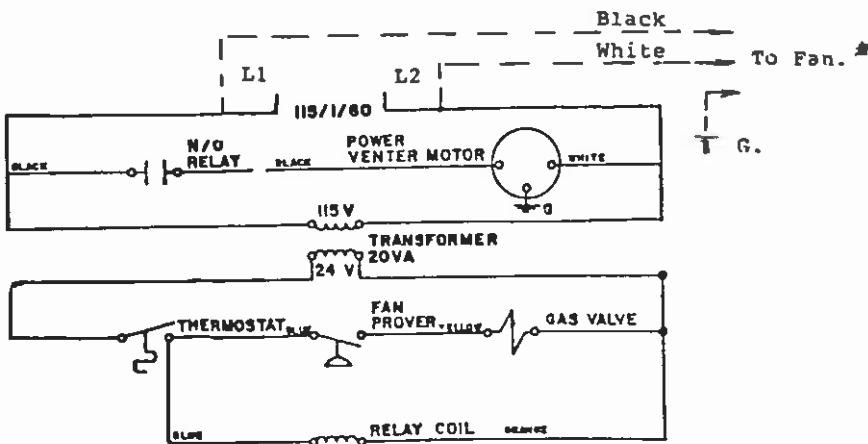
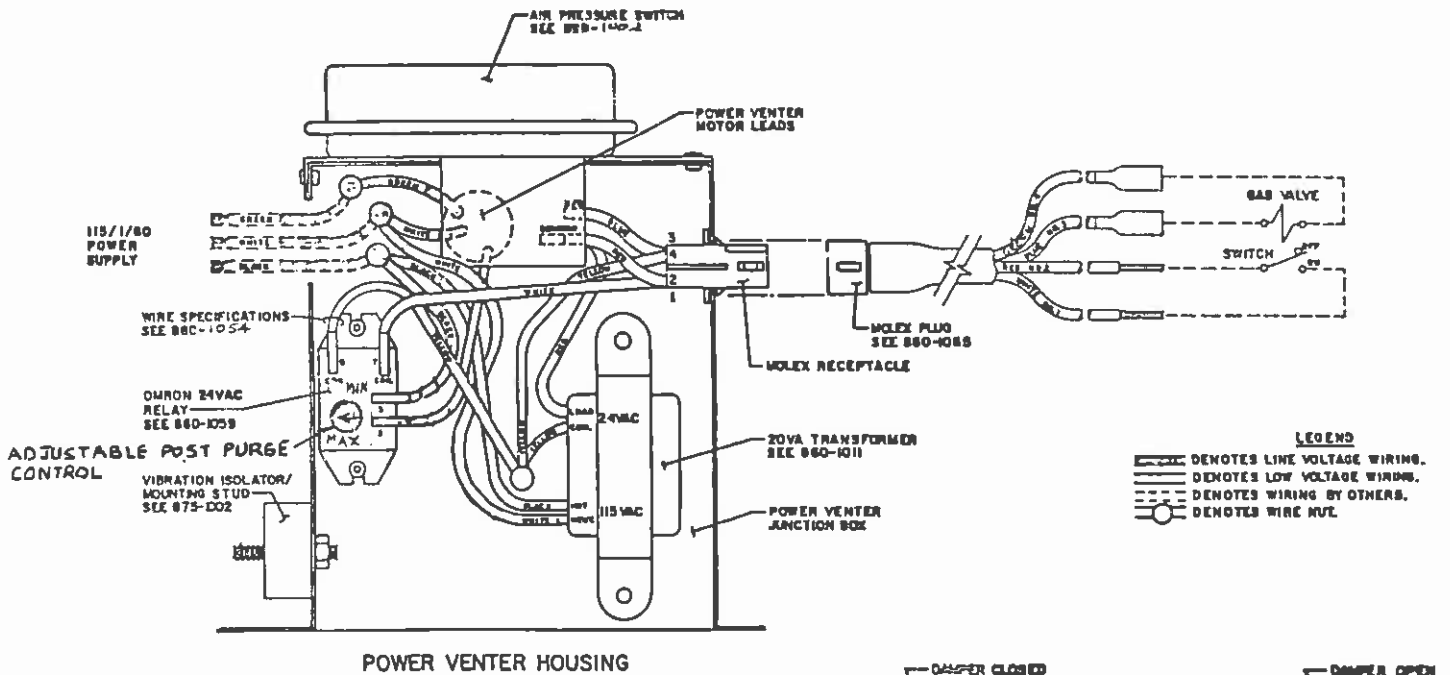


Diagram #8

Replacing Timer/Relay, Transformer and Lever for Controlling Back Pressure in the Venting System



Typical Wiring: 24 VAC Control

*If optional FAN and/or Power Venter is used, wire electrical system as shown in diagram (dotted line). Wiring connections must be made within junction box of Power Venter and/or optional Fan.

Diagram #7

Wiring for Powervent: Wall Switch and Control Valve

1. Green and blue wires from wiring harness go to the control valve.
2. Red and white wires from wiring harness go to wall switch.

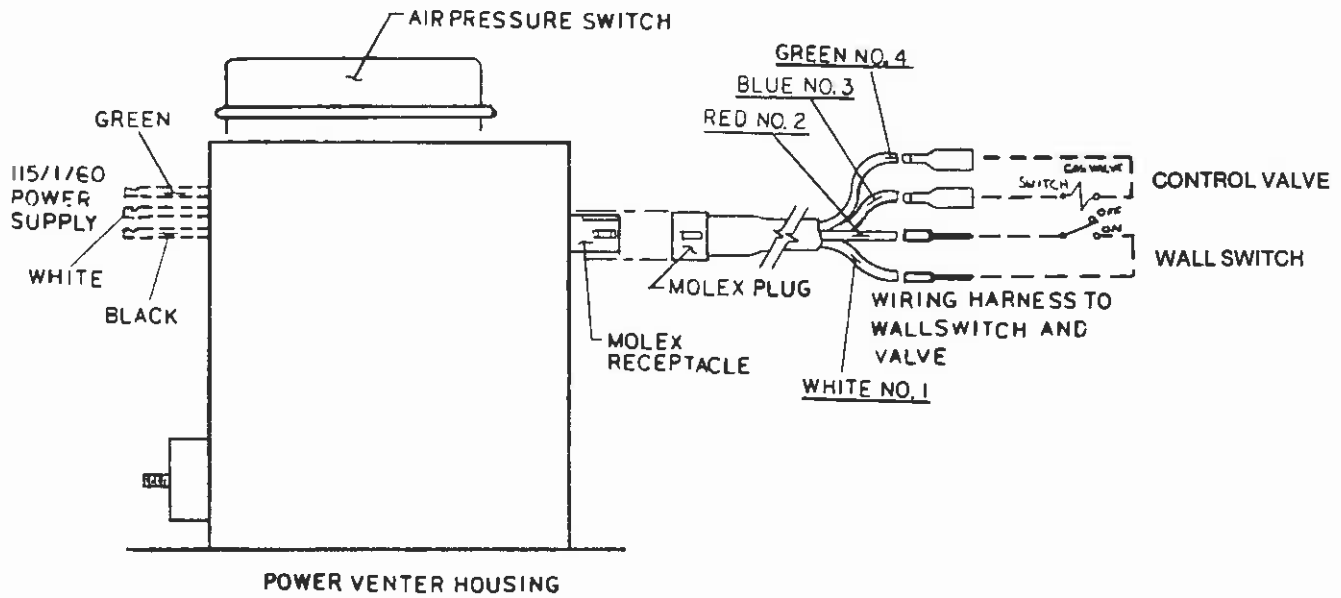
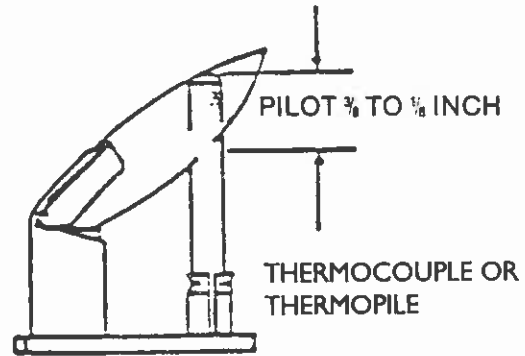
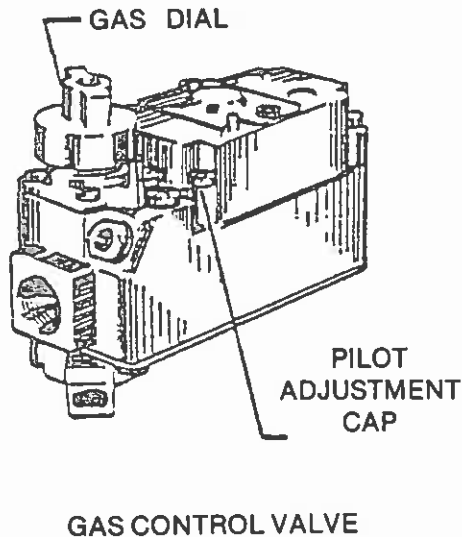


Diagram #5

Pilot Light Adjustment Diagram

1. Remove pilot adjustment cap.
2. Using flat screwdriver adjust pilot up or down depending on desired result.
3. A good pilot flame will cover the top 3/8 to 1/2 of the thermopile/thermocouple.
4. Replace pilot adjustment cap.
5. Leak test the valve.



- PILOT BURNER ADJUSTMENT:**
1. Remove Pilot Adjustment Cap.
 2. Adjust pilot key to provide properly sized flame.
 3. Replace Pilot Adjustment Cap.
 4. Leak Test.

Diagram #6

Wiring of the Wall Switch and Thermopile

1. Thermopile is connected to the top two screws on the gas valve.
2. The wall switch is connected, one wire to the top screw terminal and one wire to the bottom screw terminal.

NOTE: A THERMOSTAT IS CONNECTED IN THE SAME MANNER.

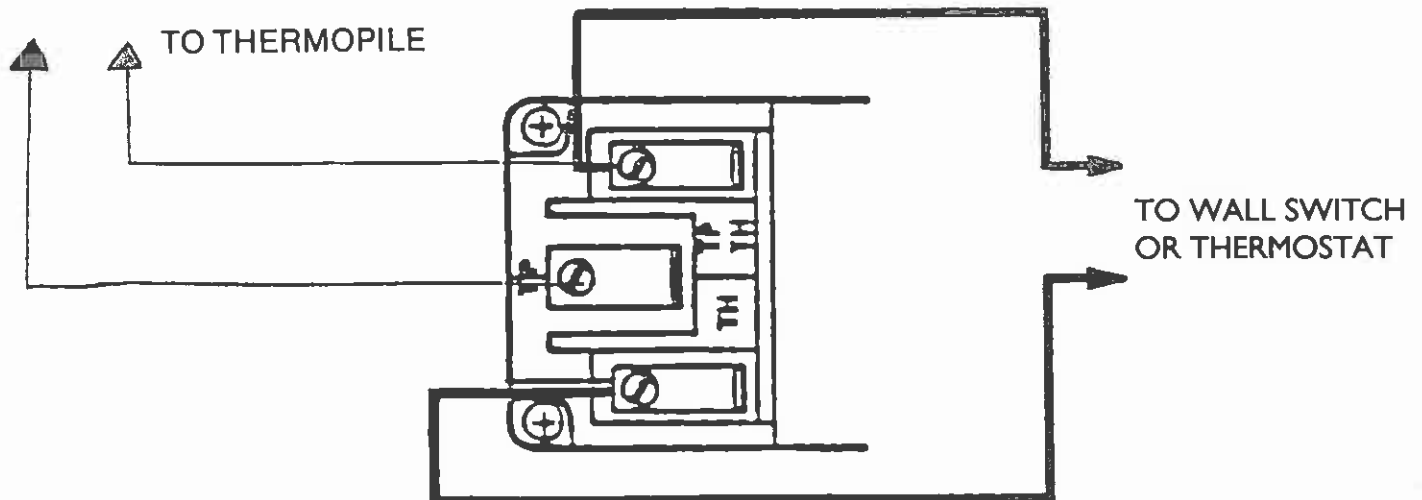


Diagram #4

Safety Switch Bypass Test Diagram

1. Remove wire #2 from top terminal of gas valve.
2. Remove wire #1 from flame safety switch.
3. Connect wire #1 to the top terminal of the gas valve.
4. Continue testing of the system in the bypass position.
5. Once testing is complete reconnect the flame safety switch.

NOTE: IT IS A VIOLATION OF THE SAFETY LISTING OF THIS FIREPLACE TO OPERATE IT WITHOUT ALL SAFETY FEATURES IN FULL WORKING ORDER. ONCE TESTING AND SERVICE IS COMPLETE RECONNECT ALL SAFETY FEATURES.

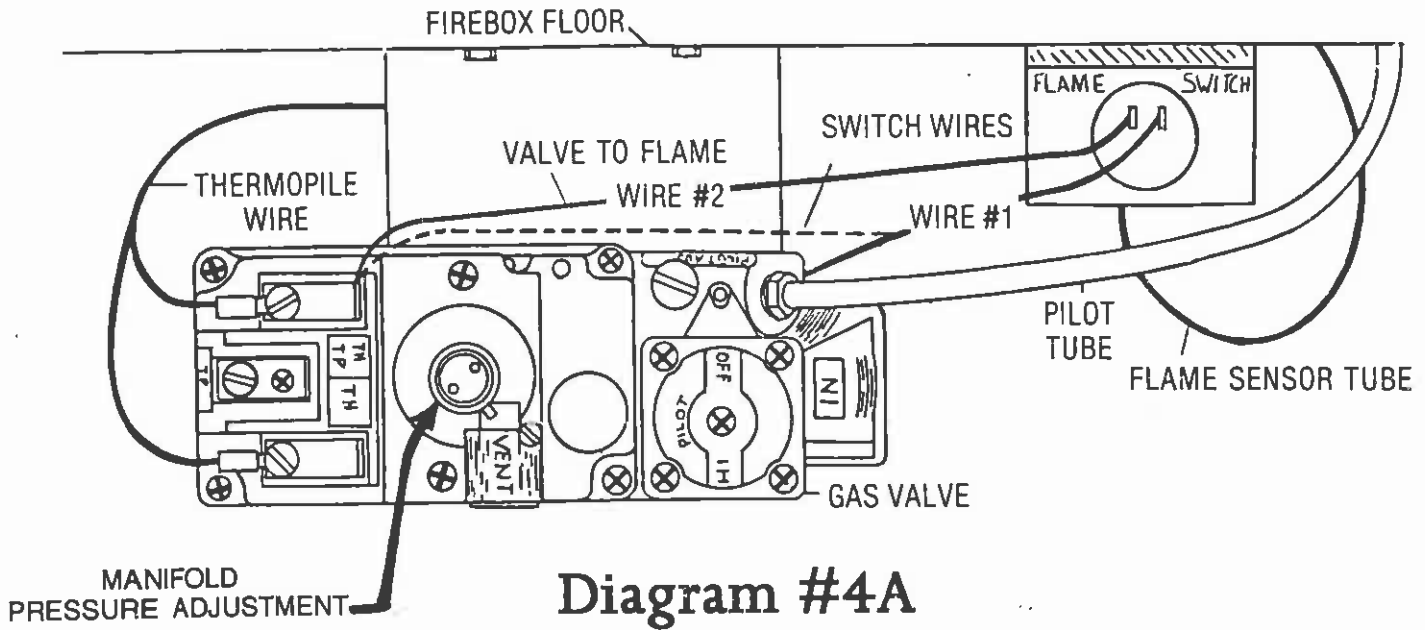


Diagram #4A

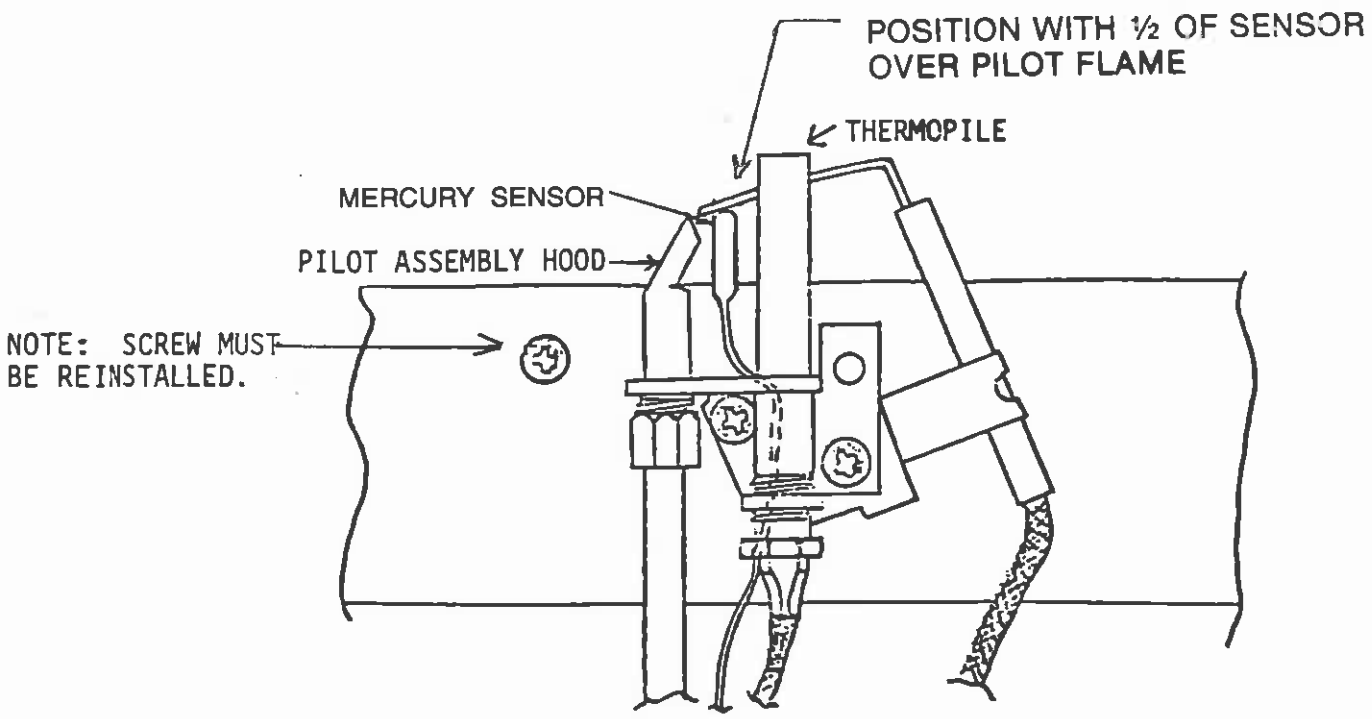


Diagram #2

Proper Connection of Thermopile

1. One wire is connected to the top terminal of the gas valve.
2. The second wire is attached to the middle screw terminal of the gas valve.
3. Make sure the connections to the thermopile wires are snug and a clean contact is made.
4. DO NOT overtighten. (Possibility of stripping the screw threads).

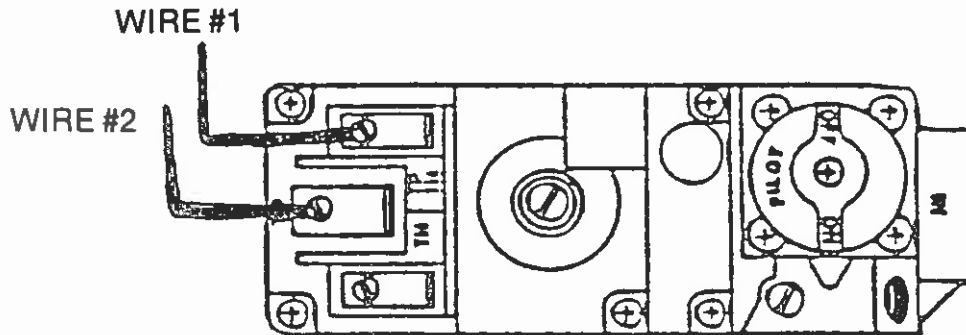


Diagram #3

Installation of Jump Wire

1. Remove wall switch from top and bottom screw of valve.
2. Attach short wire from top to bottom screw and tighten screws.

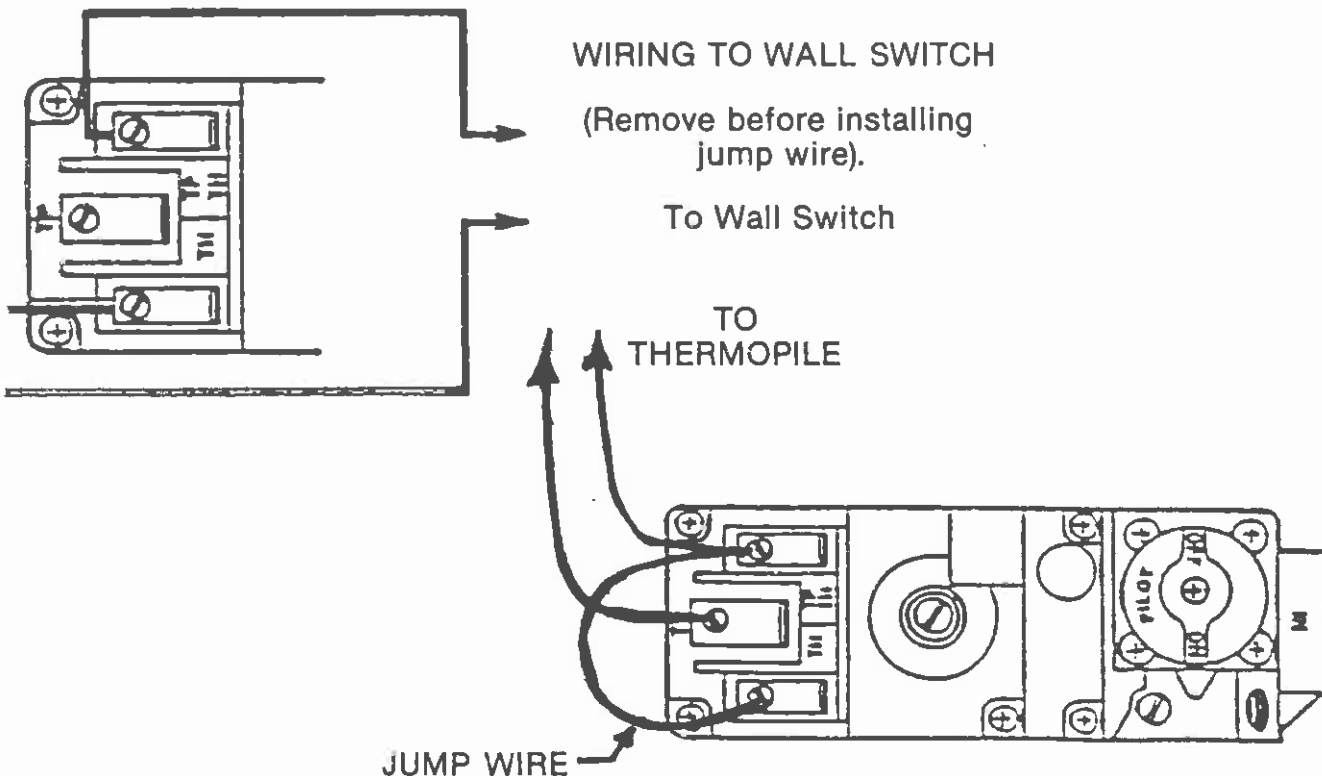
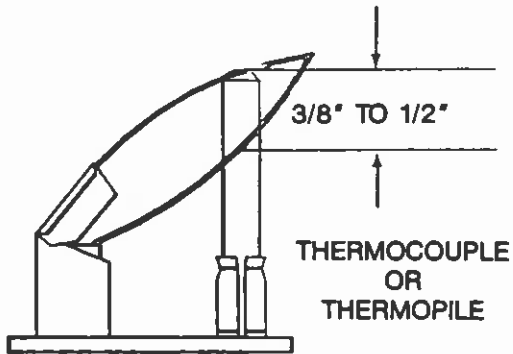


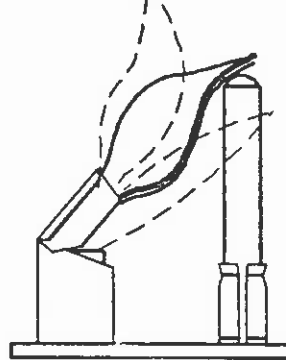
Diagram #1

Troubleshooting Pilot Flame

1. CORRECT FLAME



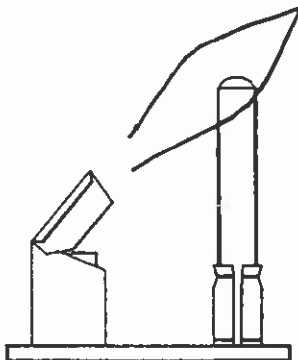
4. WAVY BLUE FLAME



CHECK FOR

- DRAFTS AT PILOT LOCATION

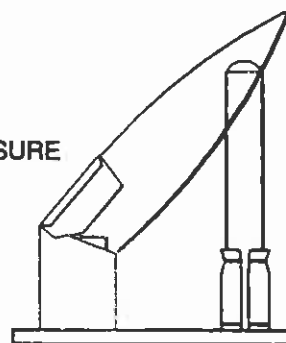
2. NOISY, LIFTING, BLOWING



CHECK FOR

- HIGH GAS PRESSURE
- WRONG ORIFICE

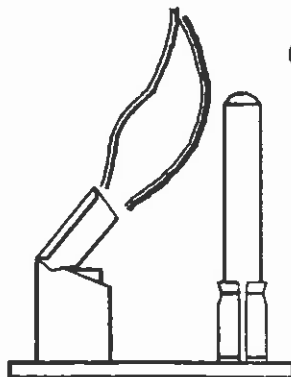
5. HARD SHARP FLAME



CHECK FOR

- HIGH GAS PRESSURE
- ORIFICE TOO SMALL

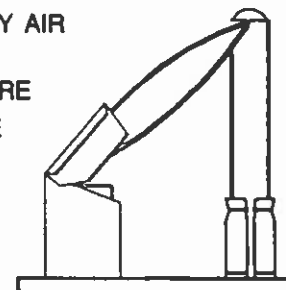
3. LAZY YELLOW FLAME



CHECK FOR

- CLOGGED PRIMARY AIR OPENING
- LOW GAS PRESSURE
- CLOGGED ORIFICE

6. SMALL BLUE FLAME



CHECK FOR

- WRONG ORIFICE
- LOW GAS PRESSURE
- CLOGGED PILOT LINE

MISCELLANEOUS

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
RN, RP units wall switch must be pushed multiple times to make flame come on.	Defective wall switch	Replace wall switch
Right or left flame is higher	Inside of burner needs adjust- ment.	1) Loosen retaining screws in burner tray. (Diagram #9 & 9A) 2) Carefully lift out tile from burner. (Make sure tile goes back the same way it came out. There are carry over lines for the flame and they must be re- installed correctly. 3) Look down in center of burner and you will see a tab. Push tab down slightly to decrease right flame and increase left. Bend tab up to increase right and decrease left. Reassemble unit - do not overtighten burner retaining screws or you will damage tiles in burner.

VENTING

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
Fireplace not venting (spilling, etc.)	Tight home.	Needs combustion air (See code book).
	Negative pressure caused by exhaust fans. See note below for definition of negative pressure.	Make up air necessary (See code book).
	Badly proportioned chimney	Check size of venting; too restrictive, too many elbows or wrong size.
	Back Drafts	Add height to chimney, install anti-down draft cap.
	Cold Chimney (outside B vent)	Insulate and box in (See chimney manufacturer's instructions).
	Chimney is too short	Add height to chimney
	Chimney blocked	Remove blockage (Or call chimney sweep)

*SPECIAL NOTE

DEFINITION OF NEGATIVE AIR PRESSURE: - The air pressure can be different between the exterior and the upstairs and downstairs in the house. Negative pressure is caused by more air leaving through exhaust fans, furnace, dryers, etc. than can be replaced by natural infiltration through cracks in the seals of windows and doors.

WINDOW

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
<p>Window keeps getting sooty.</p>	<p>Unit needs more primary air, blocked primary air port.</p> <p>Needs adjustment. Steel nipple against primary air hole restricting primary air into burner.</p> <p>Unit is spilling.</p> <p>Flame impingement on logs.</p> <p>Recycling of flue gases or blockage.</p> <p>Valve and Burner over-fired</p>	<p>Check between the steel elbow and orifice where it enters the side of the burner. Over time the primary duct can become blocked with dust, lint, etc. Clean. When finished you should have a blue based flame (2-3" of blue with a light orange top). (See Diagram #9A)</p> <p>Loosen screws that hold burner tray to unit (2 screws). Using a flat screwdriver between the steel elbow and the burner tray, Make a 1/8" to 3/16" gap. Tighten screws. (Diagram #9A)</p> <p>See page 10</p> <p>Readjust logs by lifting off pins, relocating and punching new holes in logs.</p> <p>A) Check for obstruction and proper clearances. B) Remove blockage.</p> <p>Check the amount of flow with manometer, and adjust regulator if necessary. (Diagram #9)</p>
<p>Dirty window (White on window)</p> <p>NOTE: Windows are made of Neo(pyro)ceramic, not glass. Because of this they will handle temperatures in excess of 1200°F constant temperature. The window only reaches between 500-600°F. It is almost impossible to bake something into the window. Most things will come off if you follow these directions.</p>	<p>Initial burn off of paint and sealants used to produce unit. (Needs 5 hours of continuous burning with circulating fan off, to cure).</p>	<p>Clean window using Ajax or Comet, and paper towels. Dissolve crystal Ajax or Comet in water on window. Clean in small circular motions. Rinse thoroughly and re-install in unit.</p> <p>DO NOT USE LIQUID CLEANSERS ON WINDOW.</p> <p>It will burn black on window when reinstalled.</p>

FAN SECTION

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
Circulating fan speed does not vary.	Variable speed rheostat defective	Replace rheostat NOTE: Only replace rheostat with a rheostat supplied by COMFORTEC. Light dimmer switches or incorrect rheostats will burn out the fan motor. This will void the warranty of the fan.
Fan makes humming sound, but won't come on.	Rheostat needs adjustment. Full of lint/dirt Fan defective	Adjust variable speed control. Clean fan, make sure it operates freely. Replace fan for C20, C25, C30 (see Diagram #10). For CDV34, CDV36, C36, (see Diagram #11).
Fan does not come on (No humming sound)	Not plugged in. Thermodisc not hot enough to create contact. Rheostat control defective Defective thermodisc	Plug in. A) Allow unit to run for 12-15 min. with fan circulating in on position. B) Check input. Bypass rheostat or spin fan. If fan runs freely, replace rheostat. If fan is stiff, replace fan and rheostat. Bypass thermodisc. If unit runs OK, replace thermodisc.
Noisy fan	Obstructed by paper or dust.	Clean fan so free of dust, lint, etc.

NOTE: MAKE SURE THE FAN PLUG IN CORDS ARE NOT NICKED BY DECORATIVE TRIM KITS. THIS COULD CAUSE THE FAN TO SHORT OUT AND ALSO DAMAGE THE GAS VALVE.

DIRECT VENT

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
Lifting flame, burns blue and goes out. (Direct vent models CDV36, CDV 34)	<p>Vent termination is obstructed, causing contaminated air to re-cycle back into fresh air inlet.</p> <p>The 4" inside vent is leaking into the 7" fresh air vent.</p>	<p>Remove obstruction</p> <p>Find leak and seal</p>
Excessive white on logs, glass and inside walls of firebox.	<p>Excessive use of silicone in venting DV36</p> <p>Dust (usually construction areas) in DV36 and DV34</p> <p>Unit overfired</p> <p>Flue gas recycling, DV36, DV34</p>	<p>Let unit cure for 2-3 times the regular curing time.</p> <p>Clean regularly</p> <p>Set inlet pressure at 3.5" W.C.</p> <p>A) Check vent termination. B) Reseal complete venting system. See installation instructions for DV36, 34</p>
Black soot on glass.	See window section	

POWER VENTING CONT'D.

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
<p>Power vented VN, VP unit runs for a short time and shuts off. It cools off & starts again.</p>	<p>Timer/Relay is defective</p>	<p>Check for shorts in blue/green wire causing short. Replace timer relay. (See Diagram #8)</p>
<p>Power venter VN, VP Flame repeatedly goes on & off in a fluttering motion, and you can hear it clicking.</p>	<p>The vacuum prove switch in the power vent motor is sensing back pressure in system.</p>	<p>There is a damper adjustment on the motor (a lever). Open up the damper 1/4 to 1/2 turn. This should release the back pressure and the on/off should stop immediately. If it doesn't, check vacuum prove switch. (See Diagram #8)</p>
<p>Power vented VN, VP Unit running OK, but a clicking sound is heard.</p>	<p>High winds, vacuum prove switch will not allow it to run in excessive winds.</p>	<p>Turn unit off until wind subsides.</p>
<p>Power vented VN, VP Unit running OK, but a clicking sound is heard.</p>	<p>A millivolt valve has been used instead of a 24 volt valve.</p>	<p>Replace valve or the millivolt valve will eventually fail. Also, power venter will short out.</p>

POWER VENTING SECTION

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
<p>Pilot won't stay on (24 volt valve) VN, VP units</p>	<p>Low Pilot Flame Thermocouple loose Thermocouple defective Gas valve defective</p>	<p>Adjust pilot flame up Snug tight thermocouple Replace thermocouple Replace gas valve</p>
<p>Pilot on, power vent won't come on. (24 volt)</p>	<p>Power venter not plugged in.</p> <p>Wired incorrectly</p> <p>Transformer in power venter burnt out or defective.</p> <p>Possible burnt out motor.</p>	<p>Plug in unit</p> <p>Red & White wire in wiring harness from power venter to wall switch. Green and blue wire from power venter wiring harness to valve. (See Diagram #7).</p> <p>Check to see if 24 volts coming out of red & yellow wires. If yes, replace timer relay. If no, replace transformer.</p> <p>Replace motor.</p>
<p>Pilot on, power venter on, burner won't come on.</p>	<p>Blue/green wire between power venter motor and valve assembly has been damaged.</p> <p>Possible blocked venting.</p> <p>Possible restricted venting. Venting too long or venting crushed.</p> <p>Timer/relay in power venter defective.</p>	<p>Replace blue & green wire. (If possible, replace complete wiring assembly).</p> <p>Remove obstruction. (Possible bird's nest in vent hood).</p> <p>Check venting - look for damage or venting too long.</p> <p>Replace timer relay. (See Diagram #8)</p>

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
<p>Pilot stays on, but burner won't come on.</p> <p>RN, RP units</p> <p>MN, MP units</p>	<p>Not enough voltage being generated by pilot</p> <p>Wired incorrectly</p> <p>Wall switch defective or thermostat defective</p> <p>Defective operator (Diagram #12).</p>	<p>Adjust pilot flame up to create more voltage. (See Diagram #5).</p> <p>One wire to top screw of valve, one to bottom screw. One wire to each side of switch or thermostat. (Diagram #6)</p> <p>Replace wall switch or thermostat.</p> <p>Replace valve.</p>

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
	<p>CDV36RN, RP, CDV34RN, RP Possible defective mercury flame switch.</p> <p>Defective automatic valve operation - or - defective pilot magnet. (See Diagram #12 for testing procedure)</p>	<p>Remove window from unit* (This is to prevent accidental buildup of gas in the firebox.) Bypass flame switch as follows:</p> <p>A) Follow wire from main gas valve to flame switch. Remove at flame switch.</p> <p>B) Remove wire from flame switch to operator of gas valve.</p> <p>C) Connect wire from main gas valve to operator directly. (See Diagram #4)</p> <p>If unit operates correctly at this point, replace the mercury switch, double check that flame switch is properly in pilot flame.</p> <p>Replace gas valve.</p>

SPECIAL NOTE: If unit fails to operate even after flame switch has been tested, leave in bypass condition until you are finished testing and correcting system.

RECONNECT SAFETY FEATURE AND RETEST AT THAT POINT. IT IS AGAINST THE LAW TO LEAVE THE UNITS OPERATING WITHOUT SAFETY SWITCHES PROPERLY SECURED AND OPERATIVE. UNITS HAVE BEEN APPROVED FOR CERTAIN APPLICATIONS WITH THESE SAFETY FEATURES.

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
	Thermopile is shorting out where it passes through floor of fireplace	Replace thermopile
Pilot will not stay lit. (Wall switch or thermostat is connected). RN, RP units only.	<p>Wire from valve to wall switch or thermostat is:</p> <ol style="list-style-type: none"> 1) Nicked and shorting out passing through side of F/P box, or 2) A nail has passed through or wire is pinched in wall. 3) Unit was installed using longer wire than recommended 	<p>Remove Wall switch or thermostat wires from top and bottom screw of millivolt valve. Install a "jump" wire from top to bottom screw in valve. If unit operates OK, replace wire in wall.</p> <p>If unit still fails to operate, leave in "jump" position and continue through troubleshooting chart. Remember to come back and remove "jump" wire, and reconnect wall switch or thermostat once unit is operative. REMEMBER: If unit is OK and you reconnect the wall switch or thermostat and it cuts out again, then check wires for any breaks in line, any fault in switch or thermostat. (See Diagram #3 for jump wire installation)</p>
Unit shuts down intermittently (Pilot & Main burner)	CDV36RN, RP, CDV34RN, RP Mercury Switch not in pilot.	1/2 of mercury sensor should be in the hot part of the pilot flame between thermopile and the pilot hood. (See Diagram #4A)

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
Piezo sparker won't light pilot	<p>Gas line has not been bled.</p> <p>Misaligned electrode.</p> <p>Wire not pushed completely on.</p> <p>Defective electrode (Crack in ceramic rod)</p> <p>Defective push button</p>	<p>Bleed gas lines</p> <p>Realign electrode so it produces spark into pilot hood. (See Diagram #1)</p> <p>Check connection</p> <p>Replace electrode</p> <p>Replace push button</p>
<p>Pilot will not stay lit MN, MP, RN, RP units only</p> <p>Troubleshooting gas valves Millivolt (RN or RP) (see Diagram # 12)</p>	<p>Incorrect lighting procedure</p> <p>Pilot flame too low.</p> <p>Bad connection between thermopile & screw terminals on gas valve.</p> <p>Wires on wrong terminals.</p> <p>Thermocouple, thermopile is defective or worn.</p>	<p>Check lighting instructions found on label in fireplace or in owners manual.</p> <p>Adjust pilot up (See Diagram #5 & #1)</p> <p>Make sure screws are snug. (See Diagram #2) (Do not overtighten or you will strip them).</p> <p>One lead from thermopile must go to top screw & second wire must go to middle screw. (MN units - make sure thermocouple is tight (Diagram #2)</p> <p>Test with millivolt meter & replace if necessary. Thermopile should read about 500 - 550 millivolts. Thermocouple 25 - 30 millivolts. (No Load). (See Diagram #12)</p>

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