

HIGH EFFICIENCY II
 TROUBLESHOOTING PROCEDURES

TURN ON 115 VOLT AC POWER SUPPLY--TURN UP THERMOSTAT--.8 AMP HEAT ANTICIPATOR SETTING

Symptom	Possible Causes	How To Check And/Or Correct
Induced draft blower does not operate	Thermostat or thermostat wiring defective	Remove thermostat wires from the blower control board. Jumper terminals R and W on blower control. If inducer Blower starts: A. Check thermostat wiring B. Change thermostat
	No 115 and/or 24 volt AC power supply	Remove low voltage wires from transformer to terminals X and C. Check for 24 volts AC coming out of transformer. If no voltage present: A. Check for 115 volt AC at terminals S5 and N3. If there is not 115 VAC check power supply, fuse, and door switch in blower compartment. B. If 115 VAC is present at terminals S5 and N3 and there is not 24 VAC at transformer leads the transformer must be replaced.
	Induced draft blower defective	Turn off power and remove the two inducer blower leads from terminals D1 and N2. Connect two leads to 115 volt AC power supply. If inducer blower does not start, it needs replaced.
	Blower control board defective	If 24 volt AC is present at R and C on the board and 115 volt AC is present at S4 and N4 and there is no power at N2 and D1 the blower board must be replaced.
Pilot burner assembly does not spark	Pressure switch defective or malfunctioning	Jumper out terminals normally open and common on the pressure switch if sparking starts--check: A. Length of vent system B. Sags or low spots in vent system C. Blockage in vent or terminal D. Plugged drain line E. Excessive dirt, lint, soot or scale on induced draft blower wheel F. Defective pressure switch (refer to instructions at the end of this trouble shooting chart) G. Check for any blockage in hose connecting pressure switch to the inducer assembly.
	Blower control board defective	Check for 24 VAC at terminals C and PS2. If no voltage present, blower board must be replaced.
	Ignition module (provided above checks are OK and 24 VAC is present at terminals 24V (1) and 24V (2) on ignition module	Turn off power supply. Disconnect orange ignition cable from ignition module. Attach an alligator clip with an insulated lead to the high voltage terminal on the ignition module. Strip a small portion (1/8") of insulation from the lead wire. Hold the stripped portion 1/8" from a grounded metal part. Turn on power supply. Do not touch the lead. If no spark occurs, change the ignition module.
	Defective ignition cable	Check ignition cable for breaks or a brittle section. Check continuity. Change if any defect noted.
	Defective pilot burner	Check ceramic insulator around electrode for any cracks, chips, etc. Replace if any defect noted.
Pilot burner sparks but does not ignite	No gas supply	A. Ensure that all gas cocks and gas valve are open. B. Ensure that the minimum gas supply pressure, stated on the furnace rating plate, is available just upstream of the gas valve. C. Ensure that pilot tubing and pilot orifice has no obstructions which may alter or halt gas flow.
	Defective ignition module	Turn power off. Turn power back on. After pilot starts sparking and within 1 - 1-1/2 minutes--check: A. 24 volts AC at terminals MV/PV and PV on ignition module. If no voltage present, replace ignition module.

Symptom	Possible Causes	How To Check And/Or Correct
Pilot burner sparks but does not ignite (continued)	Defective gas valve	When 24 volt AC is applied to the MV/PV and PV terminals of the gas valve a distinctive click can be heard at the gas valve when the pilot valve is opened. If no click is heard or felt at the valve replace the valve. NOTE: If click is heard and pilot does not light, it could be attributed to air in the gas line. Bleed off gas line and repeat lighting procedure two to three times to assure all air is purged from the system.
Pilot burner lights but spark does not quit	Defective ignition cable	Check ignition cable for breaks or a brittle section. Check continuity. Change if any defect noted.
	Bad ground circuit	Ensure that unit has been electrically grounded. Ensure ground wire on ignition module is connected to ground lug on the gas valve.
	Improper pilot flame or bad ignition module	Check to see if pilot flame covers electrode. Check pilot tube and orifice for any blockage of lint, spider webs, etc. Check gas pressure. If checks are OK, replace ignition module.
Pilot burner lights sparking quits, main burner does not light	Defective ignition module	Check for 24 volts AC across MV and MV/PV on ignition module. If no voltage, replace ignition module.
	Gas flow obstructed	Check to see that main burner orifice are clear and free of obstructions.
	Low gas supply or defective gas valve	Ensure that the minimum gas supply pressure stated on the furnace rating plate is available just upstream of the gas valve. Check electrical connections between ignition module and gas valve. If OK, replace the gas valve.
Main burner lights, comfort air blower does not run	Defective blower control board or blower motor	After ignition wait at least 60 seconds and then check for 115 volt AC at terminals NI and HEAT on the blower control board. If no voltage replace board. If voltage is present replace blower motor.
Main burner cycles on and off or stays off and induced draft blower and comfort air blower do not stop	Limit switch opening due to high outlet air temperature or defective limit control	Jumper terminals X and HL on blower control board, if this corrects cycling problem check: A. Limit setting on control should be at setting specified on the furnace rating plate B. Clogged or dirty filters C. Static pressure on supply side not to exceed that specified on the rating plate D. Inadequate return air sizing E. Defective limit control
	Upper limit switch on blower housing opening due to high outlet air temperature or dirty air filters or blower motor failure. (For Counterflow only)	The upper limit control is a manual reset control. Check to make sure the switch has been reset. Also check the air filters to make sure they are not dirty or clogged. If so, clean or replace filters. Check circulating air blower motor for failure. If defective, replace.
	Pressure switch defective or malfunctioning	Jumper out terminals normally open and common on the pressure switch, if this corrects cycling problem check: A. Length of vent system B. Sags or low spots in vent system C. Blockage in vent or terminal D. Plugged drain line E. Excessive dirt, lint, soot or scale on induced draft blower wheel F. Defective pressure switch (refer to instructions at the end of this trouble shooting chart)
Comfort air blower does not stop	Defective blower control board	If comfort air blower continues to run for more than 2-1/2 minutes after the call for heat has been satisfied, the blower control board must be replaced.

ATTENTION: Before replacing any electrical component, be sure there is continuity in the wires that leads to that component.

HIGH EFFICIENCY II

UNDERSTANDING THE PRESSURE CONTROL

All High Efficiency II Furnaces are equipped with a pressure sensing device, this device performs the four important functions shown below.

- *Prevents main burner operation in the event of inadequate combustion air or a failed combustion air blower.
- *Prevents main burner operation in the event the vent or its terminal should become obstructed.
- *Prevents main burner operation if the vent system is too long.
- *Prevents main burner operation in the event the drain should become obstructed and backup.

This pressure device is commonly referred to as a pressure switch. The switch consists of normally open contacts which close when a specified amount of negative pressure (vacuum) is applied to the mechanical side of the device. The switch will remain closed as long as the required amount of negative pressure is present. If that negative pressure or vacuum reduces below the required amount, the switch contacts will open, thus shutting down the furnace. The source of this negative pressure is created within the combustion air blower housing, and is transferred from the blower housing to the pressure switch through a 1/4" diameter silicone tube. If any unusual restriction is applied any point downstream of the combustion air blower, the negative pressure or vacuum within the blower housing will decrease, opening the switch contacts and shutting down the furnace.

Table A1 shows which pressure switch is used on various furnace models. Special attention should also be paid to vent size and permitted lengths.

TABLE A1

Furnace Model	Switch Part No.	Switch Contacts Close At	Switch Contacts Open At	Vent Size	Maximum Vent Length
CE060D36B	8406-043	.43 Inches W.C.	.35 Inches W.C.	2" PVC	60 Equiv*Ft
CE080D48B	8406-042	.36 Inches W.C.	.28 Inches W.C.	2" PVC	30 Equiv*Ft
CE080D48B	8406-042	.36 Inches W.C.	.28 Inches W.C.	3" PVC	60 Equiv*Ft
CE100D60B	8406-041	.41 Inches W.C.	.33 Inches W.C.	3" PVC	60 Equiv*Ft
CC060D36A	8406-042	.36 Inches W.C.	.28 Inches W.C.	2" PVC	60 Equiv*Ft
CC080D48A	8406-042	.36 Inches W.C.	.28 Inches W.C.	2" PVC	30 Equiv*Ft
CC080D48A	8406-042	.36 Inches W.C.	.28 Inches W.C.	3" PVC	60 Equiv*Ft
CC100D48A	8406-041	.41 Inches W.C.	.33 Inches W.C.	3" PVC	60 Equiv*Ft

In determining equivalent footage, each foot of straight pipe counts as one foot. Each 45 degree fitting counts as 2-1/2 foot, and each 90 degree fitting counts as 5 foot.

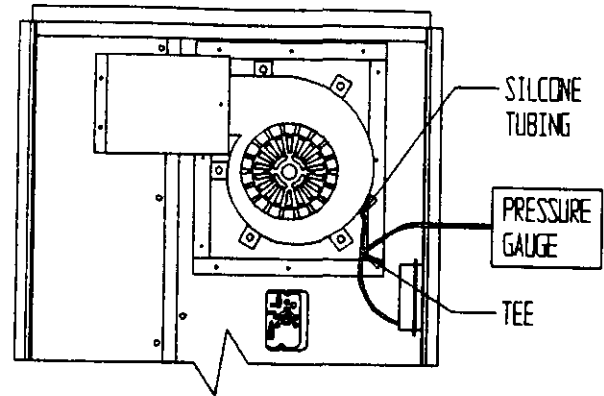
PRESSURE MEASUREMENT WITHIN THE SYSTEM

To measure the pressure within the system, a pressure gauge with a range of 0 to 1 inch water column in .02 inch W.C. increments is required.

Figure 1

This gauge is to be connected to the silicone tubing between the pressure switch and the combustion air blower. Refer to Figure 1. A small plastic or copper tee and a 1/4" diameter piece of hose is used to connect the gauge between the combustion air blower and the pressure switch.

With the gauge in place, start the furnace and monitor the pressure within the system. The ignition device will be activated once the pressure exceeds the switch contact close points shown in Table A1. As the furnace warms up, the pressure will drop about .2" W.C. The pressure within the system should not drop to or below the switch contacts open point shown in Table A1. If the switch contacts open above the specified set point $\pm .03$ " W.C., the switch must be replaced. If the pressure within the system drops to the switch open set points, the following items should be checked.



1. Vent diameter
2. Length of the vent
3. Sags, dips or low spots in the vent
4. Proper 1/4" per foot slope so that all condensate in the vent system can flow freely back to the furnace
5. Any obstruction in the vent or at the vent terminal
6. Any obstructions in the drain system
7. Any obstructions in the secondary heat exchanger
8. Any excessive lint, dirt or scale on the combustion air blower wheel
9. Any obstructions or moisture inside the 1/4" silicone tubing.