ENVIROFIRE Circuit Board Operation and Troubleshooting

OPERATION

MANUAL mode, Factory setting (No Thermostat or Wall Switch)

Start-up sequence (average is about 14 to 15 min.):

- Push the ON/OFF button to start.
- The On/Off light turns on solid.
- The ON/OFF Light starts to flash after the Vacuum Sensor has closed (approx. 15 sec.)
- The Auger light flashes (3s. on / 8s. off)
- The Combustion blower comes on at full speed
- The Ignitor comes on
- The Convection blower stays off
- The operator has no control over the Start-Up sequence. (The operator can press and hold the Manual Feed button to run the auger continuously. The operator can also pre-set the heat output setting for operation. When the unit reaches operating temperature the Heat Output will go to that setting.)
- The unit should light after 5-12 min.
- Once the 120F (49 C) Exhaust temp sensor closes, the Convection blower will come on
- 15 min. after pushing the start button, the On/Off light changes to solid. This signals that the unit is at operating temperature.

Normal Operation:

- The operator can now set the Heat Output, Low Feed Trim and whether the Convection Blower is ON or OFF. (Please note: when the Heat Output is changed, the Combustion Blower and Convection Blower speed change as well.)

Shut Down:

- Push ON/OFF button to turn stove off.
- All the lights will turn off
- The Auger will stop feeding
- The Combustion Blower goes to full speed until the Exhaust Temp. Sensor opens, stopping all motors.

HI / LOW mode w/ Thermostat or Wall Switch:

Start-up sequence (15 min.): *(Thermostat Contacts closed at time of Start-up)*

- Push the ON/OFF button to start.
- The On/Off light turns on solid
- The ON/OFF Light starts to flash after the Vacuum Sensor has closed (approx. 15 sec.)
- The Auger light flashes (3s. on / 8s. off)
- The Combustion blower comes on at full speed
- The Ignitor comes on
- The Convection blower stays off
- The operator has no control over the Start-Up sequence. (The operator can press and hold the Manual Feed button to run the auger continuously. The operator can also pre-set the heat output setting for operation. When the unit reaches operating temperature the Heat Output will go to that setting.)
- The unit should light after 5-12 min.
- Once the 120F (49 C) Exhaust temp sensor closes, the Convection blower will come on
- 15 min. after pushing the start button, the On/Off light changes to solid. This signals that the unit is at operating temperature.

- *(If the Thermostat contacts open during start-up stat is satisfied)*
    - The Circuit Board continues start-up unchanged

Note: *The Circuit board can only be turned OFF during start-up if vacuum has been established and the Thermostat contacts are closed. The ON/OFF light will continue flashing*

Initial Start-up: *(Thermostat Contacts open)*

- The Same as “Initial Start-up: *(Thermostat. Contacts closed stat calling for heat)*

Normal Operation: *(Thermostat Contacts are closed stat calling for heat)*

- The ON/OFF light is on solid
- Operator can now set; Heat Output, Low Feed Trim and Convection Blower ON/OFF. (Combustion Blower, Convection Blower and heat output all change together.)

Normal Operation: *(Thermostat Contacts are open stat is satisfied)*

- The ON/OFF light starts flashing
- All functions drop to LOW speed. (Combustion Blower speed, Convection Blower speed and heat output all change to LOW together.)
- Operator has no control over the Heat output, but can control the Low Feed Trim and Convection Blower ON/OFF.

Shut Down: *(With the Thermostat Contacts closed stat calling for heat)*

- Push ON/OFF button to turn stove off.
- All the lights turn off
- Auger stops feeding
- Combustion Blower goes to full speed until Exhaust Sensor opens and blower stops

Shut Down: *(With the Thermostat Contacts open stat is satisfied)*

- Push ON/OFF button to turn stove off.
- The ON/OFF light continues to flash.
- Auger stops feeding.
- Combustion Blower goes to full speed until Exhaust Sensor opens and blower stops
- The ON/OFF light will continue to flash (unless power is disconnected)

ON/OFF mode w/ Thermostat or Wall Switch:

Start-up sequence (15 min.):*(Thermostat Contacts are closed at time of start-up stat calling for heat)*

- Push the ON/OFF button to start.
- The ON/OFF light turns on solid.
- The ON/OFF Light starts to flash after the Vacuum Sensor has closed (approx. 15 sec.)
- The Auger light flashes (3s. on / 8s. off)
- Combustion blower comes on at full speed
- Convection blower stays off
- The operator has no control over the Start-Up sequence. (The operator can press and hold the Manual Feed button to run the auger continuously. The operator can also pre-set the heat output setting for operation. When the unit reaches operating temperature the Heat Output will go to that setting.)
- The unit should light after 5-12 min.
- Once the 120F (49 C) Exhaust temp sensor closes, the Convection blower will come on
- 15 min. after pushing the start button, the On/Off light changes to solid. This signals that the unit is at operating temperature.

- (*If the Thermostat Contacts open during start-up (stat is satisfied)*
    - The Circuit Board and all motors turn OFF and ON/OFF light remains flashing

Start-up sequence *Thermostat Contacts open (stat is satisfied) when ON/OFF button is pushed*

- The Circuit Board will not turn ON

Normal Operation: *(Thermostat Contacts close stat is calling for heat)*

- Unit starts Start-Up sequence
- After 15 min. start-up, Operator can set; Heat Output, Low Feed Trim and Convection Blower ON/OFF. (Combustion Blower, Convection Blower and heat output all change together.)

Normal Operation: *(Thermostat Contacts open stat is satisfied)*

- All the lights turn off
- Auger stops feeding
- Combustion Blower goes to full speed until Exhaust Sensor opens and blower stops

Shut Down: *(With the Thermostat Contacts closed stat is calling for heat)*

- Stove will not shut OFF
- If you Push ON/OFF button the Circuit board will go through a start-up sequence (see start-up section above)

Shut Down: *(When the Thermostat Contacts open stat is satisfied)*

- All the lights turn off
- Auger stops feeding
- Combustion Blower goes to full speed until Exhaust Sensor opens and blower stops

TROUBLE SHOOTING PROCEDURES

Light # 2 on Heat output bar flashing – The Vacuum Switch contacts have opened for more than 15 sec.

Possible causes:

Pinch, break or blockage in Vacuum Hose:

Check hose for pinch points or damage – replace or re-route as required,
Blow out Vacuum Hose

Blocked Hose Barb on Exhaust Channel:

Use a paper clip to clean out Hose Barb or remove the Vacuum Hose from the Vacuum Switch and blow into the hose to remove blockage.
To prevent further build up install, the ***Windsor Hose Barb Shield (part# 50-472)***

Blocked exhaust / venting system:

Have stove and venting cleaned and inspected.

Severe negative pressure in area where unit is installed.

Check the operation by opening a window, does this solve the problem? If it does, install fresh air intake to unit or room. Venting system may require vertical section to move termination into a low pressure zone.

Vacuum Switch failure:

Bypass vacuum switch, if this corrects the problem check for above problems before replacing the Vacuum Switch.

Damage to gray wires between Circuit Board and Vacuum Switch:

Inspect wires and connectors

Combustion Blower failure:

The Combustion Blower is not turning fast enough to generate the proper vacuum in the Exhaust Channel.

Visual Check – is the blower motor turning,

Check the Exhaust Blower voltage across the blower wires (>=114v on #5 setting and >= 82v on #1 setting). – replace the Circuit Board if the Voltage reading is less than 82v. with a line voltage >115vac.

Check Vacuum levels in the exhaust channel by bypassing the vacuum switch, then remove the Vacuum hose from Vacuum Switch. Check exhaust vacuum readings by placing the open end of the Vacuum Hose on a Magnahelic Gauge. (readings must be above .10" W.C. on low fire). If the motor fails to reach a 0.10" w.c. readings, then *replace the* ***Combustion Blower (part# 50-473)***

Light # 3 on Heat Output bar flashing – The Exhaust Temperature Sensor's contacts have opened.

Possible Causes:

Fire has gone out:

Check the hopper for fuel level, fill if required.

Incorrect air damper setting. - Excessive air may consume the fire to quickly before the next drop of fuel. Leaving completely unburned fuel in the burn pot liner. - Insufficient air will cause build up, further restricting the air flow through the Burn Pot Liner. This in turn will cause the fuel to burn cold and very slowly. Fuel may build up and smother the fire. *(NOTE: unit may require a change to the vent system or installation of fresh air to correct Air to Fuel ratio problems).*

Combustion Blower failure. - The Combustion Blower is not turning fast enough to generate the proper vacuum in the Exhaust Channel.

Visual Check – is the blower motor turning,

Check the Exhaust Blower voltage across the blower wires (>=114v on #5 setting and >= 82v on #1 setting). – replace the Circuit Board if the Voltage reading is less than 82v. with a line voltage >115vac.

Check Vacuum levels in the exhaust channel by bypassing the vacuum switch, then remove the Vacuum hose from Vacuum Switch. Check exhaust vacuum readings by placing the open end of the Vacuum Hose on a Magnahelic Gauge. (readings must be above .10" W.C. on low fire). If the motor fails to reach a 0.10" w.c. readings, then *replace the* ***Combustion Blower (part# 50-473***

Poor Quality Fuel – Insufficient energy in the fuel to produce enough heat to keep the stove burning or operational.

Exhaust Temperature Sensor failure. – Bypass sensor located on Exhaust Blower, if stove now operates properly replace sensor (Burn Pot Liner may be left with partially burned fuel and black glass)

To reset Circuit Board after a trouble code - push the ON/OFF button

Auger light flashes but auger motor does not turn at all:

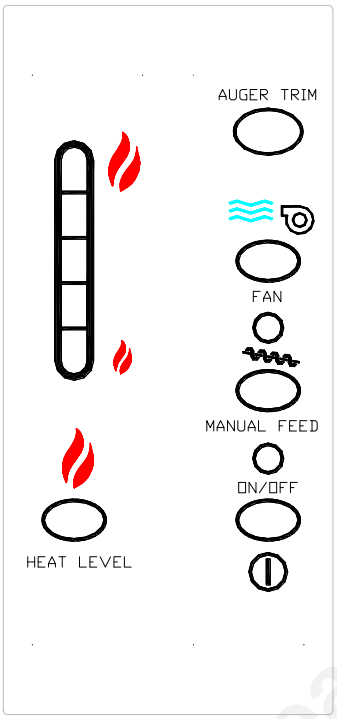
Possible Causes: **The 200F (93C) high limit temperature sensor has tripped.**

Reset sensor and determine cause – was it Convection Blower failure or 160F (71C) Temperature Sensor failure if unit is equipped.

If the Auger gear box does not turn but the motors armature does try to spin then the auger is jammed. – Try to break apart Jam by poking at the jam through the drop tube. If this fails then empty the hopper and remove the Auger Cover
Remember to re-seal the cover after installation

Heat level (Output) lights – shows the heat setting that the stove is operating in. Lowest setting is at the bottom.

Heat Level switch – press this button to set the Heat Level, The light will scale up thru the range then back to the lowest.



Auger trim switch – Press this button to choose between three different ON times when the heat output in the Low setting. Only the bottom Heat level light on shows that the on time is set at 3sec. ON (Factory setting). Push the switch and the lights change to the bottom and the top light being on, this means the auger ON time has been increased to 4sec. Push the button again and the lights change to the bottom and the second from the top position. The Auger ON time is now 2sec.

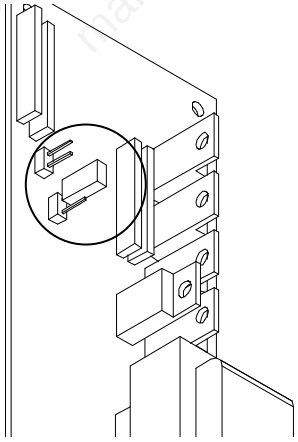
Convection Fan switch – press this switch to turn the Convection Blower OFF, press again to turn the blower on to the preset speed that corresponds to the Heat Level.

Manual Feed switch – hold this button down to manually run the auger continuously. The Auger returns to automatic when the switch is released.

ON/OFF switch – push this switch to start or stop the unit when the unit is operating in "manual or HI/LOW thermostat mode.(ON OFF is automatic once the stove has been started once.)

Caution: The use of thermostats with timers may result in the unit shutting off during start-up. This may allow smoke to enter the house through the air wash system.

Jumper pins J9 in the HI / LOW mode



Jumper pins J9 in the ON / OFF mode