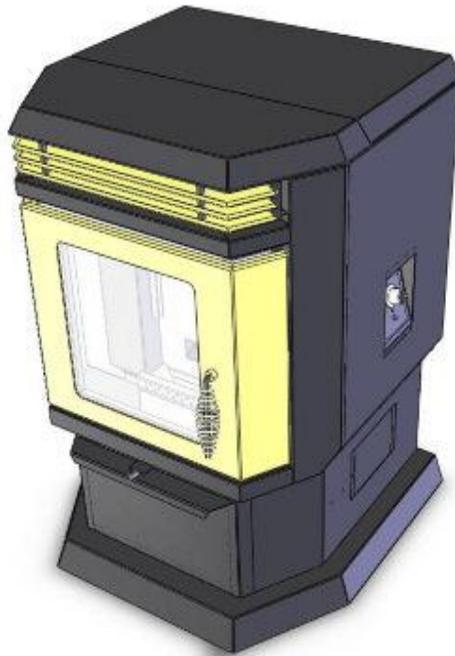
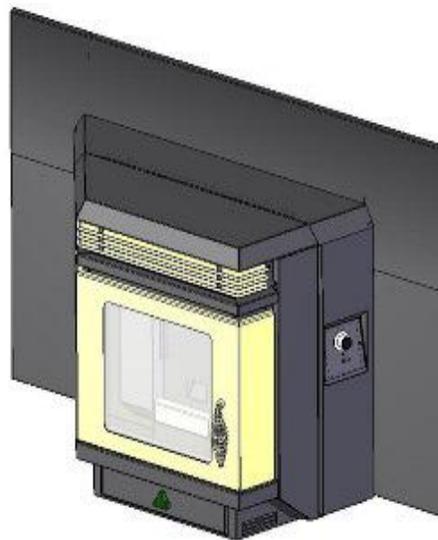


Please familiarize yourself with entire manual before attempting a repair or adjustment of the heaters.



MODEL EF3801 PELLETT HEATER



MODEL EF4001 PELLETT HEATER

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1. INTRODUCTION & SERVICE PHILOSOPHY

Following is a comprehensive service manual which will assist both dealer or service personnel in maintaining and servicing the Easyfire Pellet Heaters.

Before getting into the specifics of service we would like to give an overview of our service philosophy and what we expect of dealers when they take on the Easyfire line.

To become a pellet stove dealer means, by definition, that you will be making a commitment to service. This is an appliance, not another wood stove. If you are not prepared to enter into the appliance repair and service business then you should not even consider becoming a pellet stove dealer. Pellet stoves for the most part are wonderful heaters that will, with proper maintenance, provide years of clean, trouble free burning and quality heat. The simple fact is they have many moving parts, unlike a wood stove, and these parts require lubrication and maintenance. Because the pellet technology is new the user must be educated and trained as to the proper use and maintenance from season to season to avoid performance problems. For these reasons we require our dealers to set up a service department that is dedicated to keeping the customer happy with a care free unit. The user must be made aware of his or her responsibilities and what is required to keep the unit working at peak performance. The service department and personnel should adhere to the following guidelines:

1. Service personnel should possess a high degree of mechanical aptitude, good common sense coupled with an analytical mind. The ability to read and use electrical schematics, listen to customer complaints politely and determine what might be causing the difficulty. The customer needs to feel confident that the service person will be able to detect system malfunctions accurately, analyze problems and solve them.
2. When entering the customer's home the service person should be neat and clean in appearance, have the necessary tools and parts required to attend to the problem and share with the customer an explanation of charges and the customer's responsibilities in regards to future maintenance. This must be done in such a manner that there is no misunderstanding or ill feeling.
3. Remember, it is the service person who represents your business when in the customer's home. A good impression by the service person creates a good impression of your business. The work is expected to be neat and professionally done.
4. When a customer calls for service they should be greeted with a friendly calming voice, assuring them that the problem will be given prompt attention. It is important to get and give accurate, relevant information. The following is an information guideline:
 - a. Customer name, address and phone number.
 - b. Serial number of the stove.
 - c. What the customer thinks is wrong.
 - d. When did the problem start.
 - e. When was the unit last serviced?
 - f. When and where was the stove purchased?
 - g. Who installed the unit and when?

Note: At this point the problem can usually be dealt with by phone (90% of pellet stove problems are lack of cleaning).

5. If you need to schedule a service call remember the following:

Prioritize calls so that "no heat" calls are taken care of first. Do minor calls next but don't put them off or you will only have an angry, upset customer who will cause a lot of grief for you and your business. Stick to your schedule. If you tell a customer you will be there tomorrow at 2:00 p.m. Be there at 2:00 p.m. or call well in advance to let them know, their time is valuable too. If a part is needed and you don't have it, tell them, and order one as soon as you get back to the store. Give honest responses, not creative excuses.

6. Once on the job the service person must use a systematic approach and think in terms of cause and effect. After some experience with the stove you should be able to look at the fire, flame pattern, sounds and smells and detect problems immediately. To obtain this degree of expertise you must acquaint yourself with every component and stove function. Never guess!

TOOLS & SERVICE KIT

The tools and equipment needed for servicing the Easyfire Pellet Stove are as follows:

- a. Good shop vacuum with blower capabilities.
- b. Set of socket drivers which must include 11/32, 1/2 & 7/16 sockets or nut drivers.
- c. Phillips and plastic coated slot screw drivers
- d. Flashlight
- e. Extension cord with ground
- f. Allen wrench set (long handle)
- g. Wire stripper and cutter
- h. Electrical continuity tester with light or LED
- i. Fully charged 12V Gel Cell Battery at least 30amp
- j. Assorted crimp connectors with crimp tool

The Easyfire Service Kit which includes:

- a. Fan Motor, Feed Motor
- b. Main Circuit Board
- c. Switch Board (control board and knob)
- d. One each T-1 and T-2 Sensor
- e. Three (3) each fuses, (1A, SB) for rear panel AC Line and 5mm fuse (6.3A, SB) for main board 12V line.
- f. Digital read out volt multi meter
- h. One each bridge rectifier

EasyFire™ Pellet Heater Warranty Replacement Program

EASYFIRE LIMITED LIFE TIME, THREE, ONE YEAR WARRANTY

Sierra Products, Inc.(SPI) warrants to the original consumer that this stove will be **free of defective materials and workmanship for a period as listed below from the date of purchase**. This warranty does not extend to any parts damaged through abuse, accident, or neglect or warpage due to overfiring; nor does it apply if the stove has been repaired or modified without SPI's written authorization. If the stove proves to be defective in material or workmanship within the warranty period, SPI will, at no charge, repair or replace (at its option) any defective parts, if the purchaser ships the parts or the stove, freight prepaid, to SPI or the nearest authorized service center. SPI may require the consumer to supply reasonable proof of the stoves purchase date.

WARRANTY SCHEDULE: OUTER BODY - LIMITED LIFETIME, FIREBOX COMPONENTS - THREE YEARS, ELECTRIC COMPONENTS - ONE YEAR.

This warranty is in lieu of any other express warranty. Any implied warranties, including but not limited to any implied warranty of merchantability or fitness for a particular purpose shall not extend beyond one year from the date of purchase.

The purchaser's sole and exclusive remedy shall be for the repair or replacement of defective parts, as provided for in this warranty. No other remedy (including but not limited to incidental or consequential damages for lost profits, lost sales, injury to person or property, or other incidental or consequential loss) shall be available to the purchaser.

Some states do not allow limitations on how long an implied warranty lasts and some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

SPI's warranty obligation and the purchaser's rights under it can be altered only by a subsequent written agreement between SPI and the purchaser.

The remedies provided in this warranty are void unless the attached warranty registration card is received by SPI within 30 days from the date of purchase.

If you have a warranty claim or questions about the performance of your stove, you are requested to contact your dealer. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

WARRANTY WORK:

All warranty work must be authorized by the factory in advance of the repair and an authorization number assigned. A warranty claim form must be completed and signed by both the repair person and the customer. All claims must be submitted to your distributor, if you are buying products through a distributor. In the event a unit has to be replaced, the warranty claim form must be affixed to the unit with a description of the defect. **Only the factory can authorize a heater return!**

Any replacement parts required may be obtained from Sierra Products and will require a Purchase Order. Parts will be invoiced to the dealer account and credit will be issue upon return to Sierra. All returned parts must be accompanied by a warranty claim form. If you have a warranty claim for installing the part, use the same claim form and authorization number. **Please note... No credit will be issued until a warranty form with an authorization number is received along with the defective part.**

AUTHORIZED WARRANTY PAYMENT:

Sierra Products will credit the distributor/dealer account the sum of sixty five dollars (\$65.00) per occurrence and forty cents (\$.40) per mile, maximum one hundred miles round trip.

EasyFire™ Pellet Heater Warranty Claim Form

Customer Information:

Name: _____
Address: _____
City/State/Zip: _____
Phone: _____

Dealer Information:

Name: _____
Address: _____
City/State/Zip: _____

Unit Information:

RMA Number _____
Model Number _____
Serial Number _____
Date of Purchase _____

Date: _____
Mileage: _____
Serviceman _____

Describe Defect:

Describe Repair:

Customer Verification:

I verify that the above repairs were made to my EasyFire Heater and that I am the original owner of the above model.

Customer Signature: _____

Service Person Verification:

I verify that the above repairs were made to the above EasyFire Heater.

Service Person Signature: _____

Distributor Authorization: _____

SERVICE CALLS

The objective when making a service call is to get the customer up and running as quickly as possible. For this reason the best method of attack is to find the problem quickly and isolate the faulty component and swap it out with the good component in your dealer service kit. The defective module or part can then be repaired to returned to the factory away from the customer's home.

With this objective in mind the EasyFire troubleshooting can be divided into six (6) general categories:

1. The fan and feed motors.
2. The main circuit board.
3. The switch (control knob) circuit board.
4. The temperature sensors T-1 and T-2.
5. The AC power line components, i.e.,
6. The wiring harness and connectors thereto.

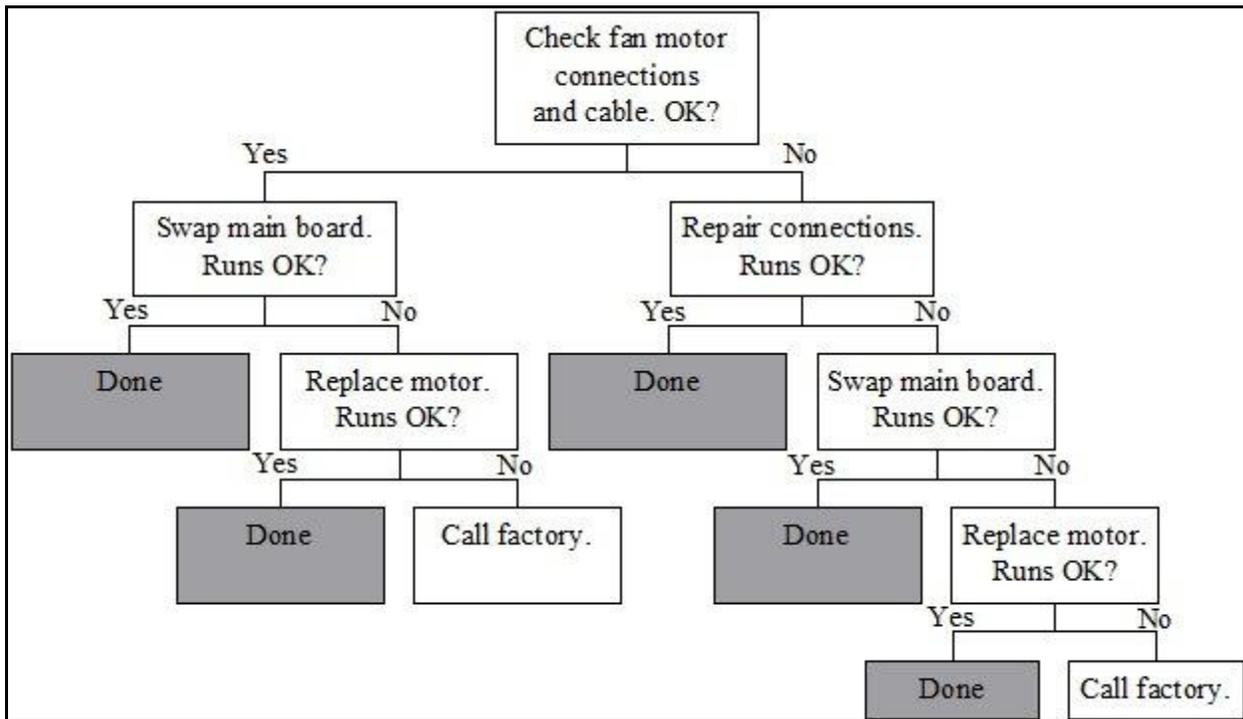
These six (6) areas represent the areas where problems might occur. They are listed in the order of highest probability, based on their history and level of complexity. The design of the electronics has been done with reliability as the highest priority, and the components which are under the most electrical or thermal stress are very conservatively rated.

The main board has been listed second due to the large number of parts, which increases its chances of failure on a statistical basis. In practice, however, it should be the most reliable due to the rigorous test procedure each board goes through before being installed on the stoves. Because of this mechanical items such as the motors should be suspect first. Remember, ninety per cent (90%) of pellet stove failures are due to improper maintenance by the end user! Check the stove for cleanliness and routine maintenance before doing any mechanical service work.

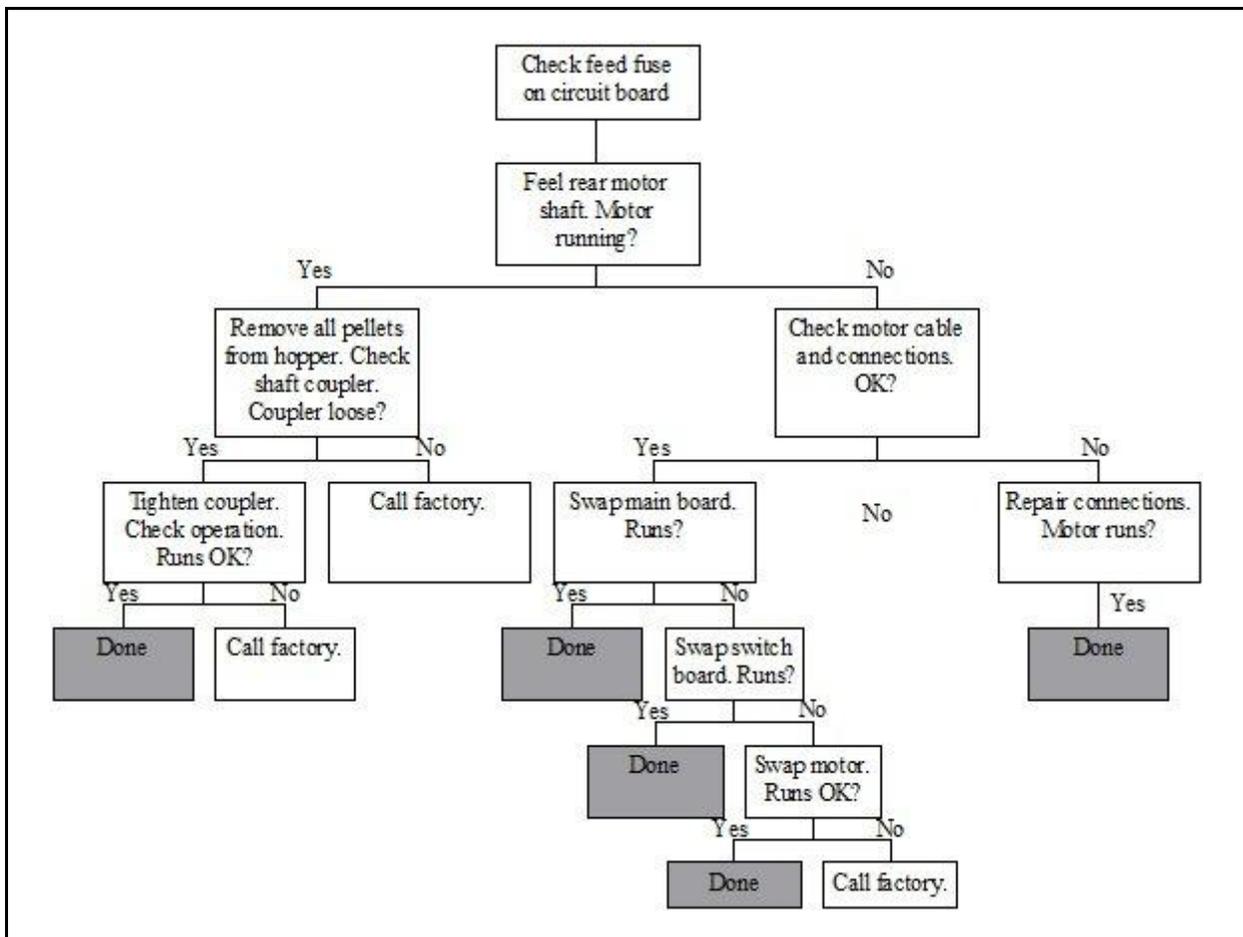
Following is a list of complaints and/or service problems which represent at least ninety five (95% per cent of possible service calls:

1. Stove not running at all.
2. Feed motor runs, but no fan.
3. Fan motor runs, but no feed.
4. Stove runs, but shuts down about 10 minutes after start up.
5. Stove runs, but keeps shutting down with over-temp (red) LED coming on.
6. Stove runs, but heat output remains at the LOW level, even when switch is on HIGH.
7. Stove does not run on battery or battery does not charge.
8. Stove runs on FAN position but when switched to LOW, MEDIUM or HIGH shuts off immediately.
9. Stove seems to be running very HIGH or CLEAN mode at all times.
10. Fan speed seems normal for each position, but feed rate seems excessive even on LOW.

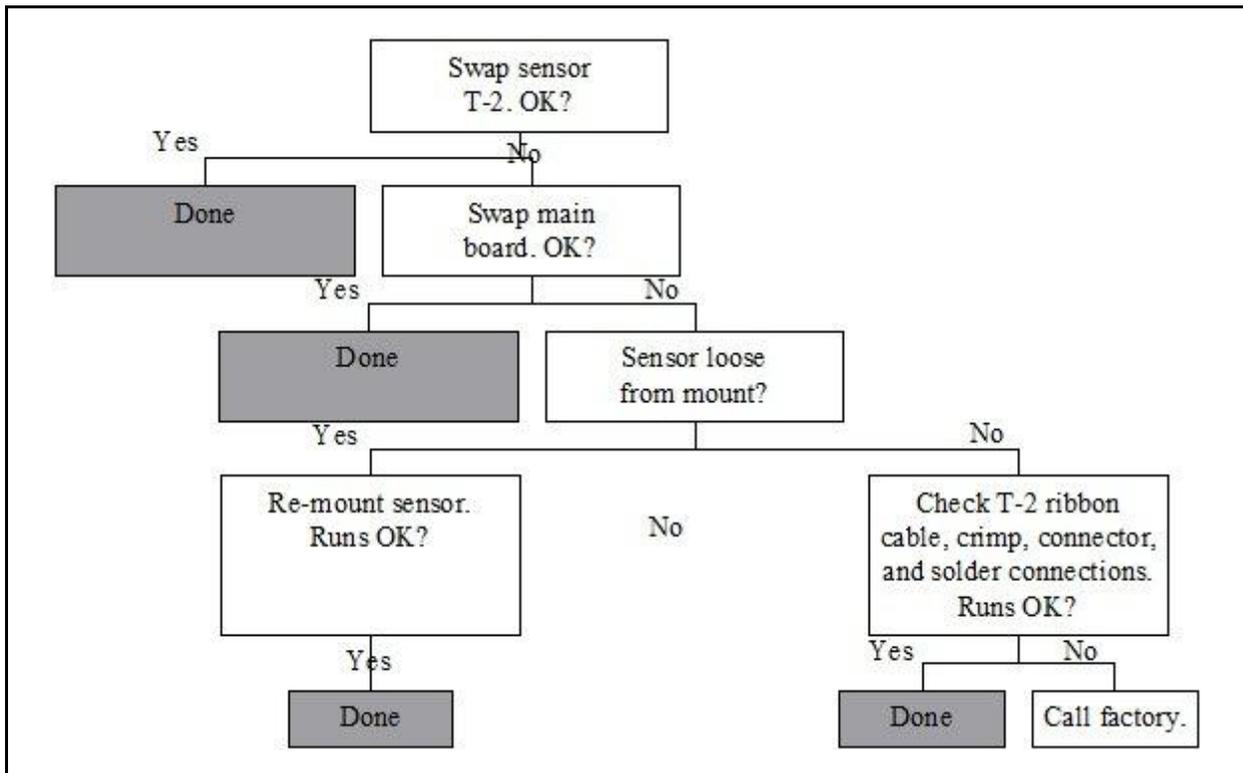
Following is a trouble shooting Flow Chart for each of the problems outlined above. If you follow the flow chart carefully each of the problems can be solved quickly and easily.



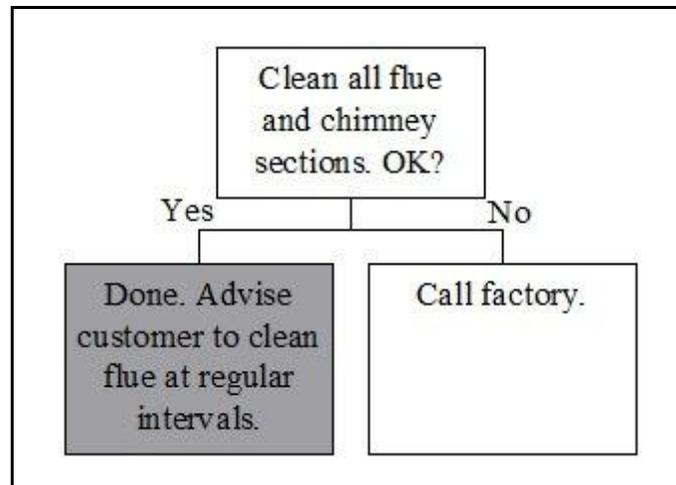
Trouble Shooting Flow Chart #2 - Feed motor runs, but no fan.



Trouble Shooting Flow Chart #3 - Fan motor runs, but no feed.

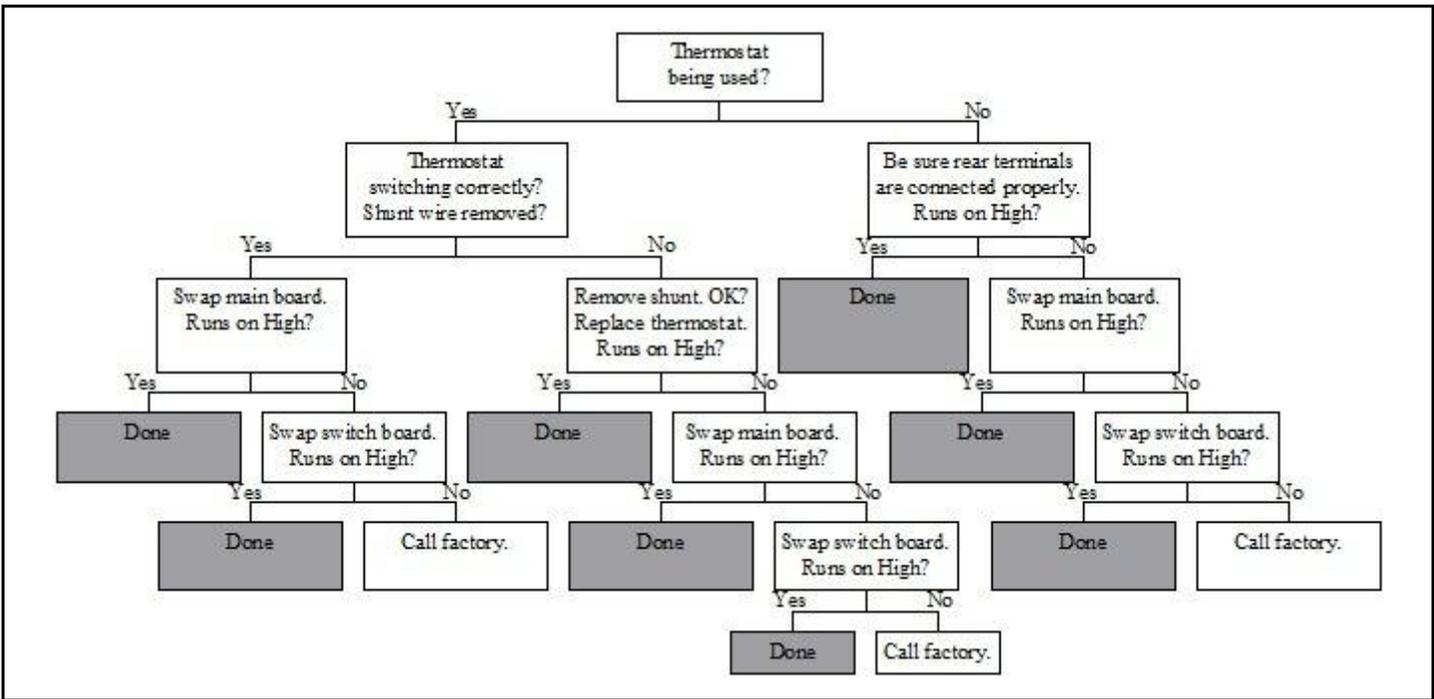


Trouble Shooting Flow Chart #4 - Stove runs, but shuts down in 10 minutes (Make sure stove is hot enough - 140°F).

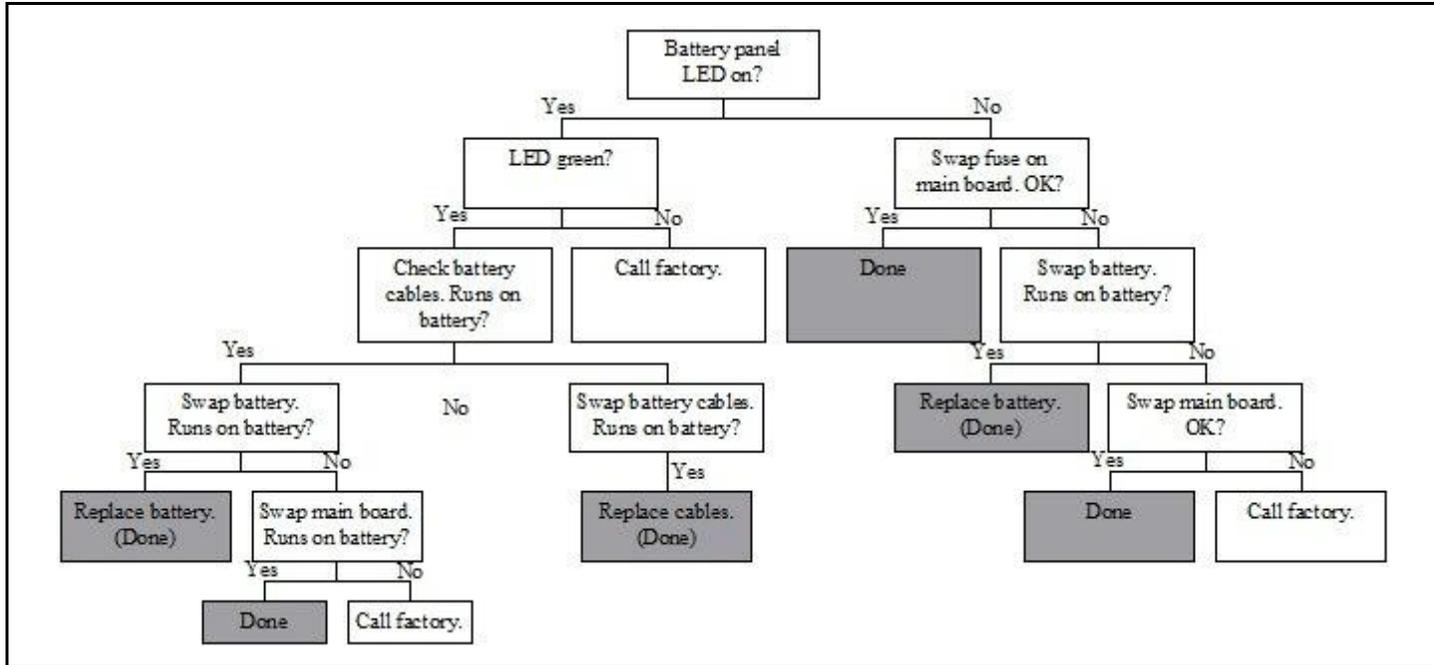


Trouble Shooting Flow Chart #5 - Stove runs, but shuts down randomly with over-temp LED On.

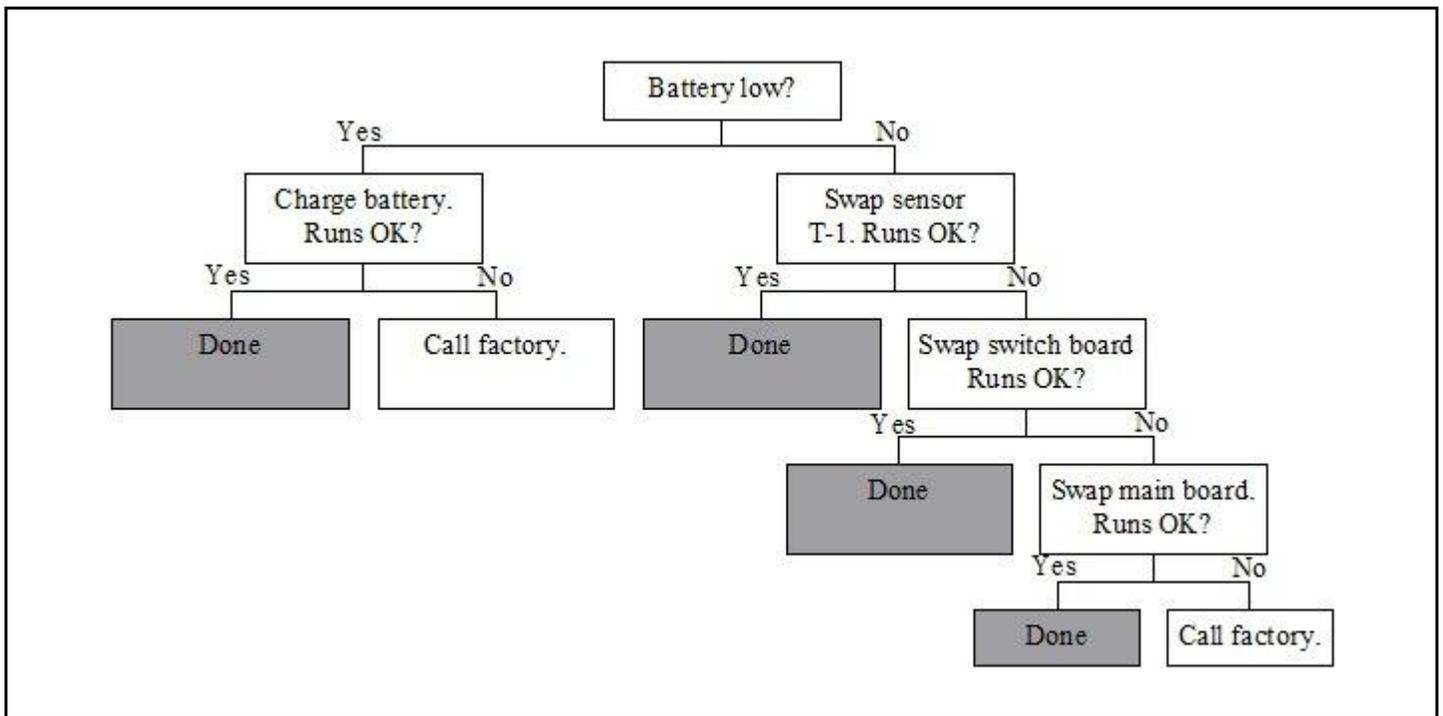
**Steady Red = High Temp
Blinking Red = Blocked Flue**



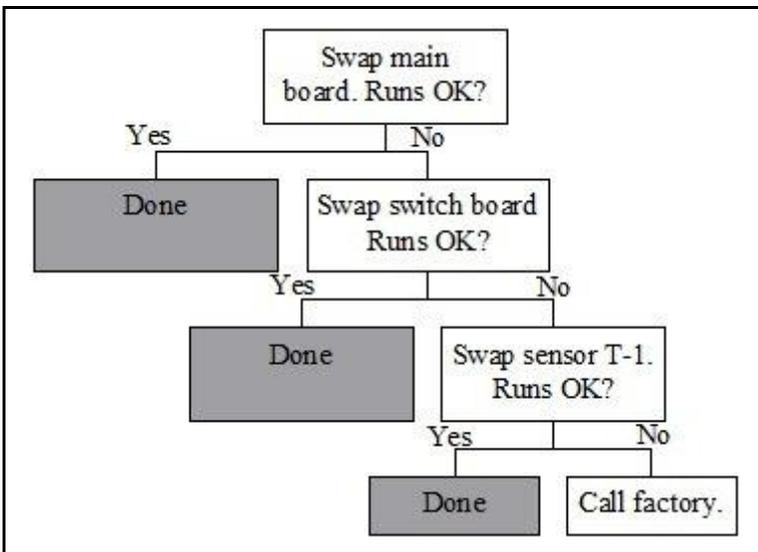
Trouble Shooting Flow Chart #6 - Stove runs, heat output stays Low, even on High setting.



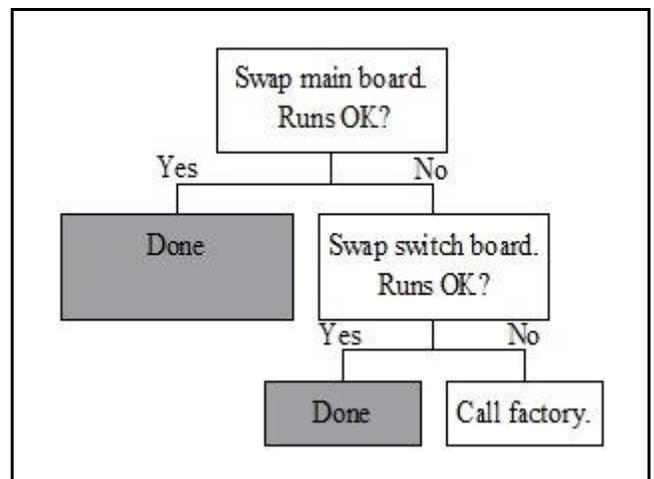
Trouble Shooting Flow Chart #7 - Stove will not run on battery or charge battery.



Trouble Shooting Flow Chart #8 - Stove runs in fan only mode, but when turned to Low, Med, or High, it shuts off immediately.

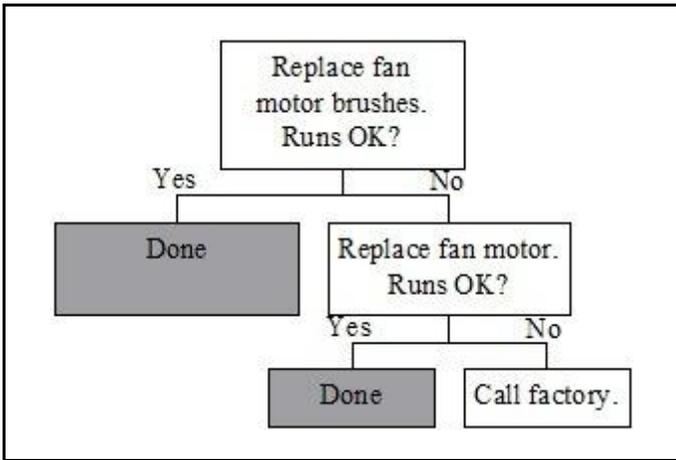


Trouble Shooting Flow Chart #10 - Feed always very high, all modes except off.

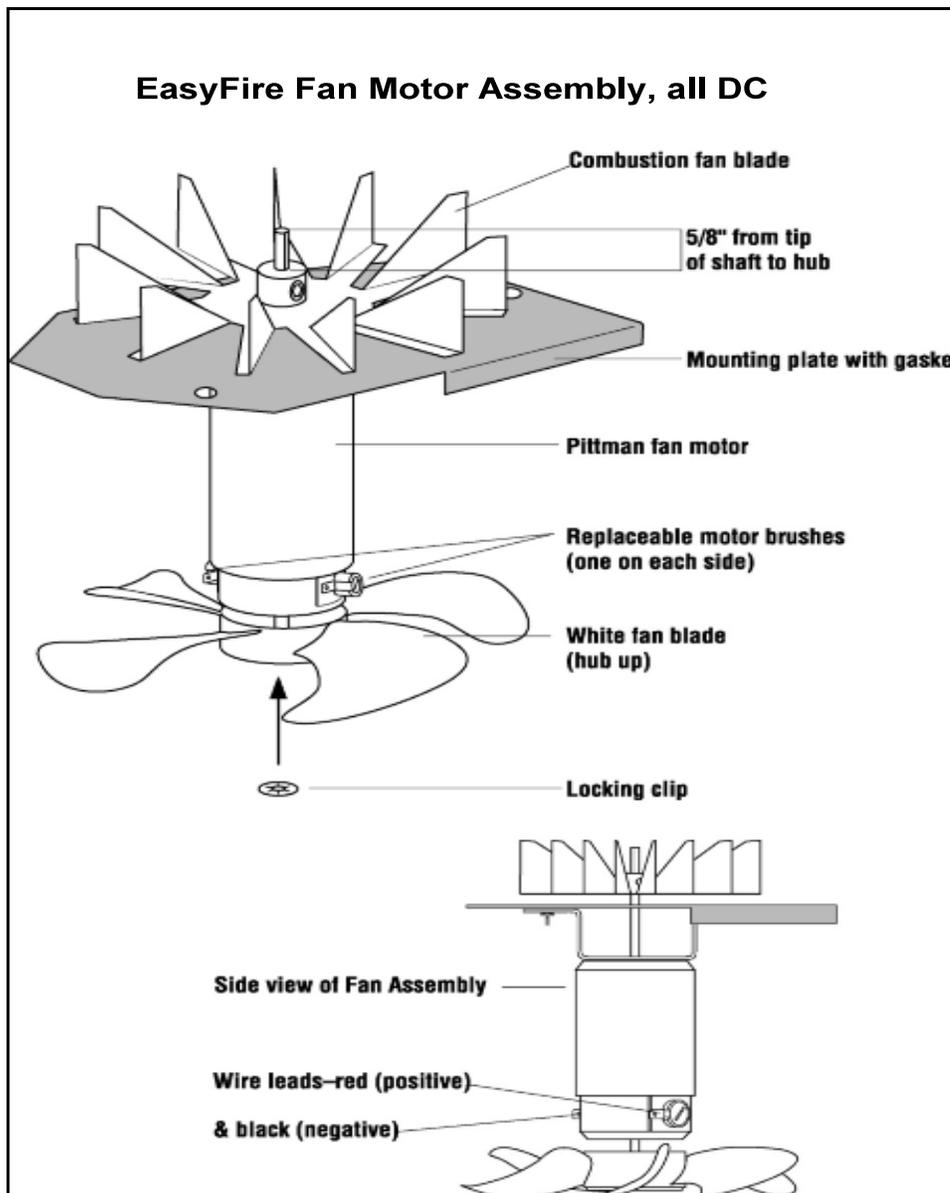


Trouble Shooting Flow Chart #9 - Fan always very high, all modes except off.

Check the feed "trim" button and adjust to higher (clockwise) setting. If the feed is too low, the stove will cool down and when it reaches a lower temperature will shut down automatically. This can be corrected by adjusting the feed setting to a higher setting.



Trouble Shooting Flow Chart #12 - Fan speed erratic (Surges)



EasyFire B Model Pellet Heater Quick Troubleshoot and Technical Guide

SPI's EasyFire pellet heaters are designed to operate as a seasonal zone heater burning 1/4" wood pellet fuel. Utilizing a 12VDC control and drive system allows for extended battery operation when AC power fails. The following outlines the general operating parameters and trouble shooting encountered during installation and seasonal operation. Basic operation is controlled combustion of wood pellets metered by the feed drive system into a burn pot and a combustion/convection fan motor providing separate air for combustion and heat exchange. This process is controlled by a digital main controller which monitors all function through two sensors and incoming outgoing operating voltages. Additionally, starting functions are provided by an industrial style cartridge heater located in the burn pot and both internal and optional thermostat.

Standard operation: With both 120VAC and 12VDC battery power attached and a functional pellet flue system the heater is designed to operate continuously during the heating season. On a daily bases the heater requires fuel to be added to the storage hopper and depending on the fuel quality, burn pot area cleaned. Starting and operating sequences are controlled by an operating software program contained on a EPROM memory chip. Fuel rate is controlled by mode setting and trim position (standard trim knob setting is 9:00 and is located on control panel next to operation buttons). Normal start up and operation summary follows:

Condition - Heater is cold, power connected, button to "OFF" position. Hopper door closed (safety switch closed). External thermostat jumped (factory standard) or optional thermostat closed to call for heat.

- 1) Select a run button (Low, Medium, High) and press. The LED light will shift from OFF to run button.
 - A) Feed motor starts initial fuel shot (approx. 40 seconds) and ignitor ON. Ignitor will begin to start heating and pass 300 degrees in 30 seconds.
 - B) Fan motor starts in 60 seconds @ 3 volts providing combustion and convection air. Feed will cycle OFF completing the start up fuel shot. Smoke will be visible normally visible through the door glass with in 2 minutes.
 - C) Feed will cycle ON for short periods during the start cycle add small amounts of fuel. Heater continue in START UP mode until temperature rise is confirmed by sensors or for a total of 10 minutes.

If temperature does not increase by 15C during this STARTUP phase the heater will begin the SHUTDOWN (for further information read SHUTDOWN in several paragraphs).

- 2) RUN mode begins when temperature rise is achieved (normally within 5-7 minutes).
 - A) Fan increases based on run button selected. Feed pulses increase based on temperature and TRIM setting. Feed trim adjustment allows for a lower or higher average fuel delivery. Initial flame is high based on a cool heater and fuel shots provided for start up. As operating temperature is reached the feed pulse will decrease and flame will drop.
 - B) Feed rate will vary up and down as the heater adjusts for operating temperature. Temperature measured at T-2 sensor mounted on fan housing manifold.
 - C) Heater will continue to operate as long as fuel, thermostat setting, and operating button remains.

Condition - Shutting down operating heater. Selecting the OFF button or external thermostat no longer calls for heat.

- A) Feed motor immediately stops. No fuel is added to the burn pot and the coals remaining began the burn out.
- B) Fan is reduced to shut off voltage of 5 volts and maintained until sensor T-2 records a 20C reduction of temperature or 20 minutes time elapses.

Other related operating parameters

Three basic functions are constantly monitored during operation including flue drafting, operating temperatures, and AC power input. Blocked flue will cause an unsafe condition and will cause the unit to shut down with a steady RED fault indication noted on the control panel. Continued high temperature may cause a unsafe condition. The heater will stop the feed during high temperatures to allow the heater to cool. A flashing RED will indicate high operating temperature. AC power outage will stop external thermostat function if the optional battery is connected allowing the heater to run continuously while AC is out.

Common operating problems:

(Refer to installation manual and repair manual for additional information regarding specific component replacement and testing).

Basic tools required for troubleshooting - Multi Volt/Ohm Meter, standard and phillips screw drivers, standard jewelers screw driver (fan speed adjustments on main control board).

No power - Power is provided by both AC and DC supplies. There are two replaceable fuses located near the power connections. They are identified as Main (1 amp) and Ignitor (5 amp). If AC power is present to the main control system a LED will be lit on the OFF button. If DC power is present a GREEN LED will be lit on the control panel.

Quick Testing -

- 1) Check AC power with volt meter at wall socket - 115VAC.
- 2) Check DC power at battery - 12VDC.
- 3) Remove fuses and check continuity with OHM meter. Blown fuses can be caused by voltage spikes (lightning, power company). If fuse is found blown, replace only once and retest. If the fuse blows again further troubleshooting is required before further fuse replacement.

Start up:

No fuel - Fuel located in the hopper is fed by an auger from the hopper bottom up to the shoot which directs the pellets into the burn pot. The feed motor is controlled by the main control system and on models EF3801B, 5001B, and 5001U-B a hopper safety switch (EF4001-B auger can not be accessed from the hopper door). The switch will disable the feed system if the hopper lid is open. The switch is located on the upper right hopper vertical panel and is accessed through a small panel. Fuel is only fed in Low to High operating modes and requires "priming" auger. If hopper is out of fuel, cycle from OFF to LOW several times to allow pellets to feed into burn pot.

Quick Testing -

- 1) Confirm hopper lid is sitting on the switch arm and the arm is closing. With hopper lid open, push the switch arm down and listen for click noting switch closure. With heater cold, and lid open, push switch arm down, push Low and the feed motor should start to turn.
- 2) Confirm feed motor is not jammed by emptying hopper and verifying a foreign object has not been caught. Remove top cover from feed tube from inside hopper if there is any question. If the feed motor is mechanically jammed, the control system has a built in circuit breaker. The breaker will require a reset by cycling from OFF to LOW. Do not recycle more than three times so the circuit does not become damaged by overheating.
- 3) Pellets Jammed in feed shoot (above burn pot). Remove all jammed pellets and clean shoot with scraper.

Ignitor does not heat up - The ignitor has a separate 120VAC circuit which includes a fuse, relay, and ignitor. This circuit is activated by the main control board via a 12VDC wire harness lead. When the main control calls for start the 12VDC circuit is closed sending 12VDC to the relay. As the relay closes, the 120VAC circuit is completed and the ignitor begins to heat. As noted in prior section, if 120VAC power is not available the heater will still start the fan and feed if 12VDC is connected allowing a manual start with starter and match light.

Quick Testing -

- 1) Inoperative ignitor most likely have a blown fuse. Remove the 5 amp ignitor fuse and test with OHM meter. Replace if blown. As noted before if fuse blows again then further testing is required.
- 2) Testing ignitor requires access to the relay located near the main board assembly. Access is through the lower right pedestal for the 3801/5001, junction box on the 4001 insert, and lower right cabinet for the 5001U. Remove the power to the unit. Unplug the ignitor lead from the relay and the neutral circuit. Using the OHM meter check for continuity between the two leads. If the circuit is open the ignitor has failed. If the circuit is complete check one lead and then ground the other lead to the ignitor base. If circuit is complete ignitor has failed. A grounded circuit will cause the fuse to blow.
- 3) If ignitor checks out, remove the harness leads to the relay and using the volt meter set to 20VDC, confirm 12VDC when the power is reapplied a run button is pushed. If 12VDC is found then the relay has failed.

Heater starts then burns out - The start up is controlled by the control system and best results are from a cold start. If a warm heater is immediately restarted it may not be able to confirm the required temperature increase as the heater temperature is already warm and the temperature is actually falling during the initial start up. Allow the heater to cool and shut down before restarting.

Trim settings - Will not change the first portion of the start up however will effect the initial run mode. If the trim is fully counter clockwise (Lowest) the heater may run low on fuel, most likely if the operating conditions are warm. High or Max

trim settings may cause the opposite problem as the heater feeds to much fuel and allows the HIGH TEMP control stop the feed to cool the stove. Best starting trim setting is the mid point or 9:00 o'clock.

High temp starts will also occur if the burn pot has additional fuel prior to start up. This additional fuel which is then added too as the start cycle begins pushes the temperatures up as the heater starts. This is considered an temperature overshoot as the temperature climbs quickly.

Heater will not start when run button is pushed - Check external thermostat jumper or remote thermostat as the unit will not attempt a start unless this circuit is closed.

Run mode Troubleshooting:

Once the heater reaches the run mode it will continue operation by using the coals in the burn pot to light the pellets continuing to fall. If the coal bed burns down at some point the pellets may not light and then the heater will shut down. This is normally confirmed by finding the burn pot with unburned fuel and shut off. This can also happen if the hopper runs low on fuel or the fuel bridges (hangs on the hopper sides).

Run mode problem generally are either operational or limits exceeded - Blocked Flue (loss of flue draft) or High Temperature is exceeded. Blocked flue indication is a solid RED LED on the control panel and requires a recycle of the heater to clear. This is for the operators protection as a blocked flue could cause a dangerous condition. Block flue most likely is not fully blocked and will occur if the flue pipe is subject to high wind conditions or is blocked by ash. If this happens during initial installation a corrective action to the flue system will be required. Check the installation manual for flue recommendations.

Operational problems are generally related to ash build up in the burn pot or the heat exchange system and can be correct by cleaning.

Over Feeding - Over feeding is a common problem and is related to a lack of combustion air rather than to much fuel. If the heater is clean and seems to feed more fuel adjust the trim down to slow the feed rate. If the heater has been operated for sometime since the last cleaning then shutting it down and cleaning will solve the over feed. Check the door for proper adjustment as a partially closed door will cause reduced combustion air. Operating the heater for an extended time with an open door will cause a shut down with RED LED and require a restart.

Immediate RED LED when a run mode is selected indicates a failed sensor (generally a T-1). Replacement of sensors are accomplished by removing the rear access panel and normally requires removing the flue pipe. Review repair manual for additional information.

Shutdown:

Shut down is the simplest mode as the feed is stopped and the fan continues to operate until the heater is cool. If the fan continues to run after it is fully cold then the T-2 sensor and the main control did not register the required temperature reduction. Unplug the heater to reset and run again. If problem persists then the T-2 sensor or the control system will require component replacement.

Battery Operation Troubleshooting -

Battery operation requires a fully charge 12VDC battery capable of sustained 2 amp/hr. loads while maintaining a minimum of 11.2 VDC. This voltage is required for proper system operation. Most battery operation problems can be traced to a battery in poor condition.

Quick Testing

Remove battery from heater and charge overnight with automotive type battery charger. Test battery with automotive load tester. Replace if required. Testing connections from terminals on rear of heater back to the harness. If all connects are secure a main control board will be required.

Additional detailed information is contained in the installation and repair manuals. Please refer to these for in depth troubleshooting guides and harness replacement.

Component Adjustments and Replacement:

Main Control Board - Main control board is located in the lower right pedestal (3801/5001) or lower right rear - 4001 insert and right switch plate for the 5001U. The control board is held in place with several phillips screws.

Fan speed adjustments are accomplished by turning the LOW and HIGH fan pots on the lower right corner. These adjustments are made in the corresponding run mode. Factory settings are based on fan voltage as read across the motor terminals 6.8VDC LOW, and 9.0VDC HIGH.

A GREEN LED light flashes on the control board to confirm AC or DC power is present.

Switch Board - Switch board is attached to access panel with several phillips screws. Harness plugs into bottom of switch.

Sensors - Access for sensors is through the rear panels. Both the T-1 and T-2 sensors are the same sensor type mounted differently. T-1 is mounted on the exhaust side of the combustion fan housing. It is held in place with a tie wrap. T-1 sensor allows for cabinet air to drawn through the high temp plastic holder. When door is open or flue blocks the flow reverses. T-2 sensor is attach to a aluminum block and attached to the manifold. Wire harness connections should be secure and not pulled tight.

Additional information is available on line@ www.sierraproductsinc.net

Technical Customer Service - 909-399-3355x29

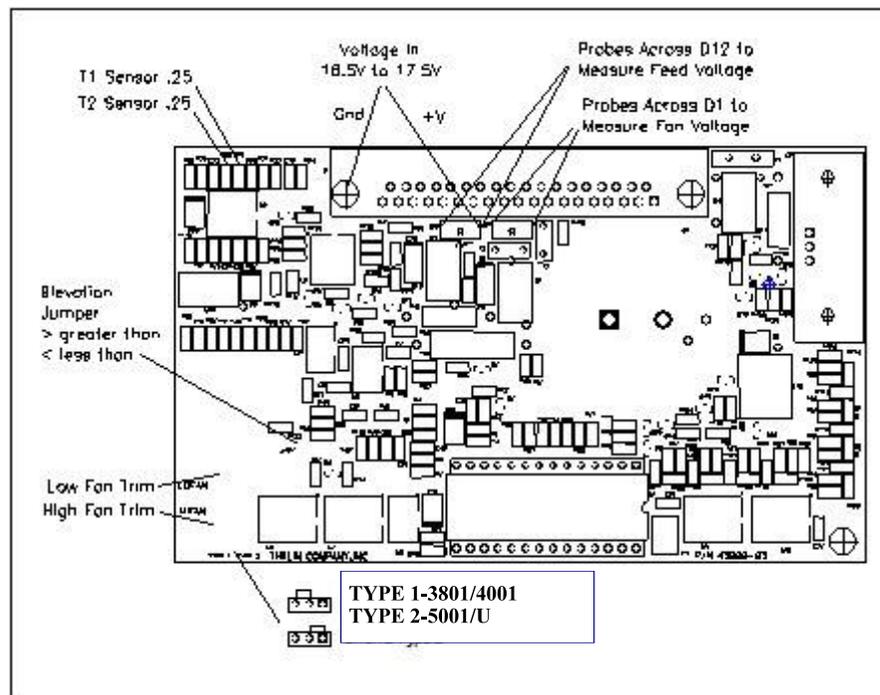
Red Light Fault Indications:

When the Hi-Temp/Flue indicator light comes on (red lite beneath control knob) it means a fault has been detected in either the flue system, over temperature, or fan/feed motor.

Slow Flash Red Light - Indicates a blocked flue. Check flue and clean out for built up ash deposits.

Solid Red Light - Indicates an over temperature. Check the air intake at rear of unit. Turn the feed trim down 25% to reduce fuel rate.

Fast Flash Red Light - Requires unit to be unplugged to reset. Indicates a feed motor jam or fan motor fault. Fan motor test would require running unit on "fan and clean" only to determine if red light indication is repeated. If not, feed system is jammed and requires the hopper access cover to be removed and jammed material to be removed



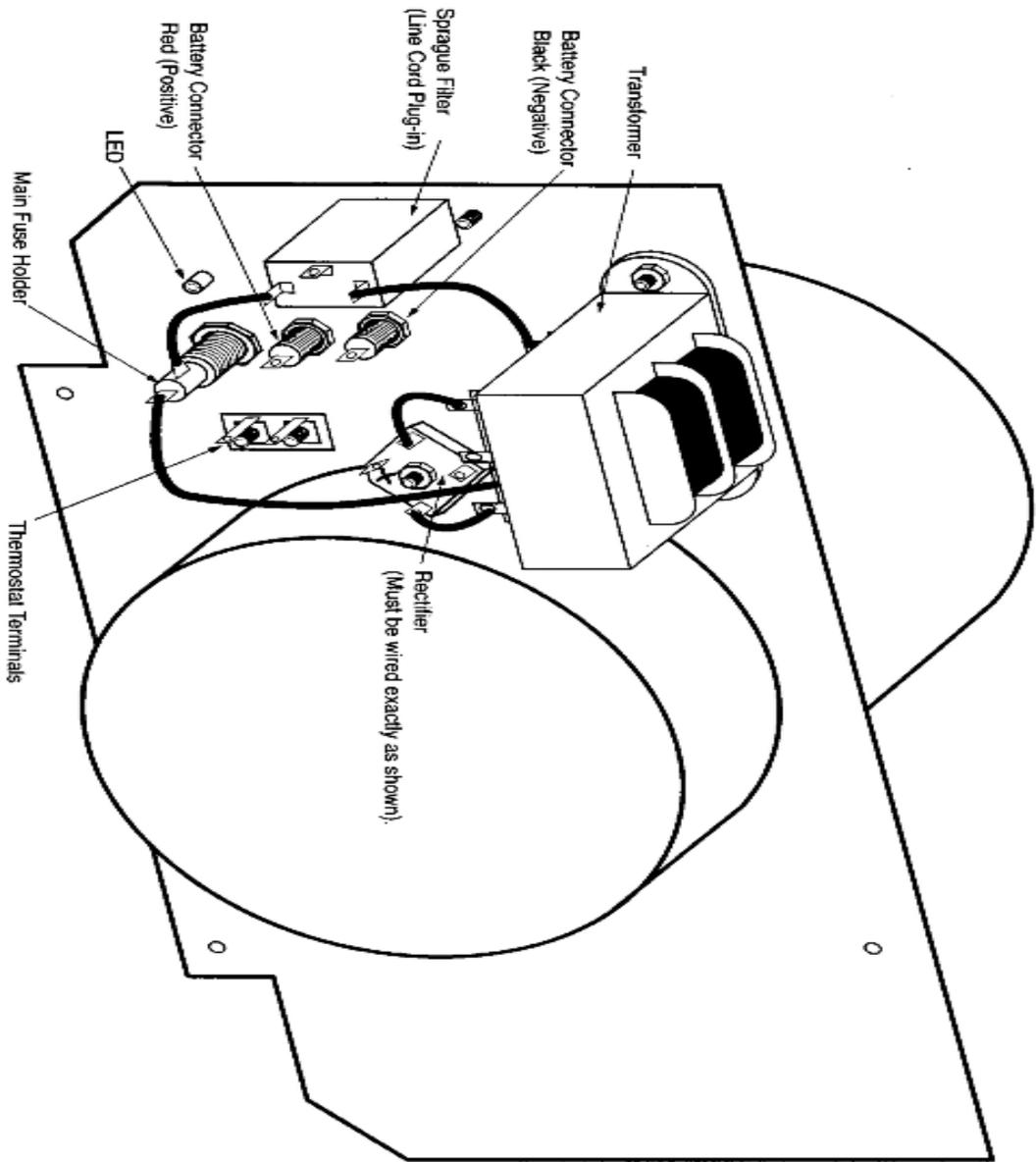




Figure 1



Figure 2



Figure 3

OVERVIEW

With one season of field service experience three service items have been noteworthy and should be completed during the next unit service.

Feed System Gasket and Attachment Nuts: Feed system attachment in past EF units had been accomplished with wing nuts. We have noted that the nuts tightened by hand may not be sufficient to properly secure the feed drive. If the drive become loose the feed gasket may fail and allow saw dust to fall into the cabinet. To correct this we have available 10-24 washer locking nuts to replace the wing nuts. Replacement of the feed gasket should include gluing the gasket to the bottom of the feed hopper using silicone sealant.

- 1) Remove the units rear panels to gain access to the feed drive. Empty the hopper of fuel. Loosen and remove the wing nuts. Lower the feed drive from the hopper (**Figure 1**). Remove old gasket.
- 2) Apply automotive type silicone gasket material around feed drive hole (**Figure 2**).
- 3) Press silicone applied gasket side to bottom of hopper (**Figure 3**).
- 4) Carefully install feed drive so as to not damage gasket. Install new lock nuts and tighten with 3/8 wrench (**Figure 4**).

Note: silicone gasket material should squeeze out from edges both inside hopper and out. Remove excess silicone.

***** Prior to re-installing back panels complete the following services *****

Sensor and Switch Harness Connections: These digital components connect to the main circuit board through the main wiring harness. The connections utilize industry standard pin and sockets.

Operating at low DC voltage these connections are subject to vibration, dust, and moisture. To minimize the loss of contact these three connections should be coated with a small amount of



Figure 4



Figure 5

“Silicone Di-Electric Compound”. This non-hardening silicone will keep moisture and dust from effecting the connection along with minimizing vibration. Available at auto parts and electronic stores a small tube will service many units.

- 1) Carefully pull the harness connection end connector from each of the two sensors and switch board **(Figure 5)**.
- 2) Apply a small amount of di-electric lube to the bottom of the connector allowing the lube to push into each pin opening.
- 3) Apply a small amount to pin area on receiver and plug harness back into original connection.

Checking Harness for Proper Slack: During unit assembly the harness is routed through the cabinet and bundled to keep wiring away from hot surfaces. The bundles may cause the harness connections to be pulled during servicing and allow for a poor connection. Check the harness and confirm there is at least ½" play when moving the bundle or harness up **(Figure 6)**.

- 1) Check all harness connections to make certain there is adequate slack. If additional slack is needed carefully pull additional wire from bundles.

Cleaning Cabinet and Re-assembly: Vacuum or sweep saw dust from cabinet prior to assembly of the rear access panels. Dust in the heat exchange area can cause smells during operation.

NOTE: CHECK FAN BLADE AFTER ASSEMBLING REAR PANEL TO CONFIRM NO INTERFERENCE FROM FAN SHROUD.

Upon completion carefully reinstall upper rear panel and confirm the fan blade is not hitting the fan shroud prior to powering up unit **(Figure 8)**.

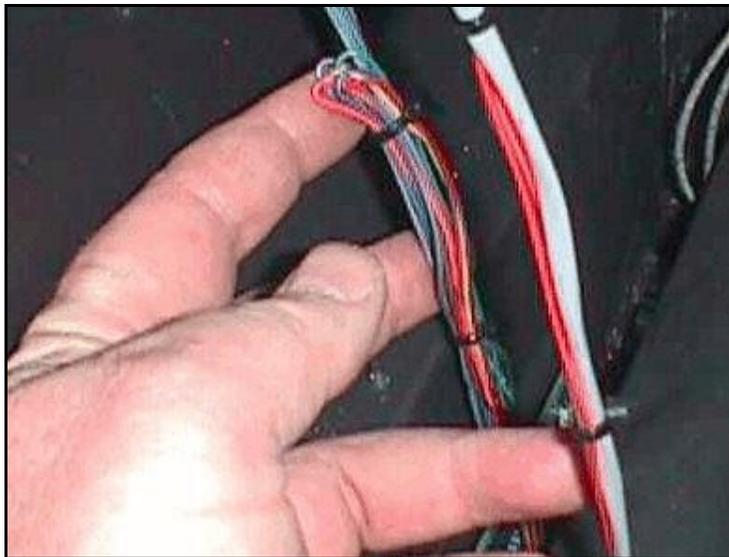


Figure 6

After completing the installation of the rear panel and tightening all the phillips screws. Plug the heater back into AC power and test run by running fan motor on “Fan” setting for 2 minutes and then running on “Clean” for 30 seconds. Run unit through a beginning start up by pressing “Low” and allowing fan and ignitor to start up. If all appears to activate reinstall unit.

**Additional information is available on line@
www.sierraproductsinc.net**

Technical Customer Service - 775-241-2586



Figure 7



Figure 1



Figure 2



Figure 3

OVERVIEW

The EasyFire heater is equipped with a long life DC fan motor (Figure 1). This motor utilizes a special brush material that may require additional break in time to properly wear in or seat the brushes. When the motor is new the brush has a contoured end that allows for minimum contact initially to facilitate the break in. As this wears the full width of the brush begins to contact the armature allowing for proper operation.

We have found that a small quantity of motors have not immediately seated the brushes causing a motor fault light (Red Flashing LED) on the control panel. The motor fault condition requires the unit to be powered down (unplugged) to clear. This condition may also be the result of a feed jamb. The control system is designed to address both inoperative fan and feed motor in the same manner to protect the user and minimize further damage to the unit. The fan motor condition is easily corrected by dressing the brushes and reinstalling them.

Testing for a fan motor brush problem is accomplished by two methods. After recycling the heater by unplugging and reestablishing power. Press the "Fan" switch only. If the fan runs push the Clean button and allow the motor speed to increase to full speed. If the "Red Safety Light" does not light then the fan motor is generally considered in proper operation. If pressing the Off button then pressing a run button such as Low provides a short period then a flashing "Red Safety Light" the feed may be jammed. This can be cleared by removing pellets from hopper and removing access cover. If the safety light operates on "fan or clean" then accomplish the following service.

Tools Required: #2 Phillips screw driver, medium flat blade, small flat blade, #200 or fine sand paper strip (Figure 2).

Accessing the motor for brush service: The fan motor is accessed from the rear of the heater by removing the phillips screws on the upper and lower rear access panels. Once the panels are free tilt the upper panel to the rear allowing the fan shroud to clear the convection fan blade (Figure 3)

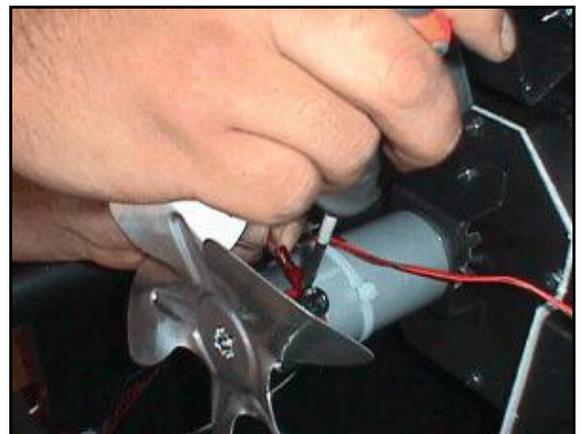


Figure 4

Removing the wire harness connections : Using care not to bend the fan blade, carefully use a flat blade screw driver to help pry off the red and black motor wire terminals (Figure 4). Note the brush holders have a corresponding red and black base to confirm wire connections.

Removing the brush caps: Using a small flat blade screw driver remove one brush cap at a time. Care should be taken as the brush holder has a spring that forces to the brush onto the armature. This spring may cause the cap to pop out unless held firmly (**Figure 5**).



Figure 6



Figure 5

Removing and dressing the brush: Remove the brush from the holder by lifting up and sliding the brush and spring clear (**Figure 5**). Once the brush is clear hold the brush base and carefully take a couple of swipes across the brush face with fine sand paper (**Figure 6**).

NOTE: WHEN SANDING THE FACE OF THE BRUSH DO NOT REMOVE ANY MATERIAL. WE ARE ONLY SCUFFING THE SURFACE TO ALLOW FOR BETTER BRUSH CONTACT.

Reinstalling the brush: Insert the brush back into the holder. Hold the terminal tab into the holder. Carefully insert the cap and turn with a small flat bladed screw driver. *Use care not to cross thread the cap.* Once the cap is threaded lightly tighten against terminal tab (**Figure 7**).

Repeat service on lower brush.

Assembly:

Reconnect motor wires to red and black terminals. Check fan blade for bent blades by spinning by hand. If blades are not aligned carefully bend back into place.

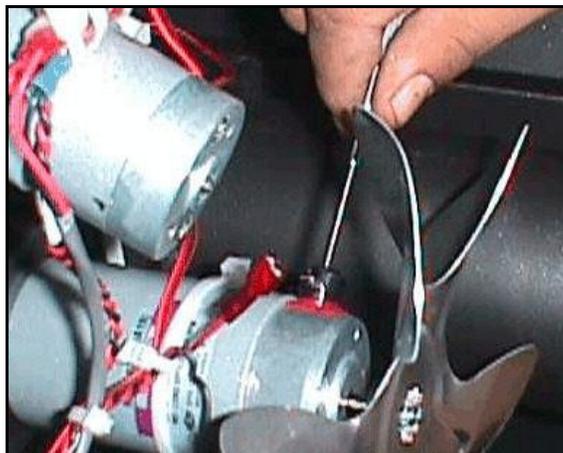


Figure 7



Figure 8

Carefully reinstall upper rear panel (**Figure 8**).

After completing the installation of the rear panel and tightening all the phillips screws. Plug the heater back into AC power and test run by running fan motor on "Fan" setting for 2 minutes and then running on "Clean" for 30 seconds. Open hopper lid and run unit through a beginning start up by pressing "Low" and allowing fan to ignitor and fan to start up. If all appears to activate reinstall unit.

Additional information is available on line@ www.sierraproductsinc.net

Technical Customer Service - 775-241-2586



General Information

From time to time, new operating software is updated for the EasyFire pellet stove. TC80 upgrade includes improved thermostat operation. The software is permanently burned onto a computer ROM memory chip. Changing the software is easily accomplished with common tools provided care is taken not bend any "legs" during the installation.

Installation of this software should be accomplished by a qualified technician familiar with electronic and mechanical equipment. This installation does not require changing any high voltage connections.



Figure 1 - Main control board

WARNING - ELECTRIC SHOCK POTENTIAL
All repairs must be accomplished with the 120VAC and 12 DC power disconnected from stove.

INCLUDED IN THIS KIT:

Qty	P/N	Description
1	11191	EF - Autolite Software - TC80T50
1	140806	Installation manual

Removal of old software

- 1) Disconnect all power to stove.
- 2) Remove control board access panel located on lower right side of pedestal (EF Freestanding or lower side frame on insert).
- 3) Find software chip on lower left side of board (**Figure 1**). Note label direction and position of small dot in upper right corner.
- 4) Using small flat blade screw driver carefully insert under chip between base. Lift chip a small amount then go to other side and complete same (**Figure 2**). Continue until chip is free of socket base.

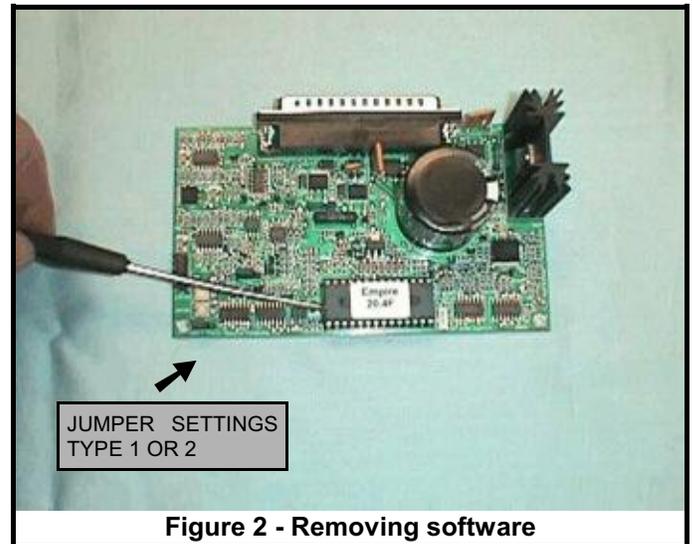


Figure 2 - Removing software

Installation of new software

- 1) Carefully layout new software noting the label direction and small dot on upper right corner (**Figure 3**).
- 2) Starting at the lower row of pins, carefully align each pin into top of socket.
- 3) Apply slight pressure down on chip and align top row of pins into socket (*Note: Pin placement is important for proper stove operation*).
- 4) With all pins carefully aligned with socket, push slightly on each side of chip slowly working into socket. *Make sure you support the circuit board with your other hand so it does not bend.*
- 5) After chip is seated into socket confirm no pins have been bent and all pins are firmly into socket.
- 6) Re-apply power and confirm the green LED light on main board is slowly flashing. If not check chip and pin placement.

Starting and operating new control system

All control function remain the same. The stove will require proper settings. Two key adjustments are required including Jumper and Fan Speed (**Figure 2**).

Jumper 1 Setting - #1 for EF3801/4001B

#2 for EF5001 & U.

Jumper 2 Setting - Altitude as required.

Fan Speed Setting if required - Adjust Low on "Low" switch selection in run mode. View fire with Feed Trim @ 3:00 o'clock - 2" flame over burn pot after 15 minutes.

Adjust High on "High" switch selection. View fire with flame active and blowing ash out of pot 6" flame.

After adjustments re-install all cover plates.

For additional assistance, contact technical service -

csepi@sierraproductsinc.net

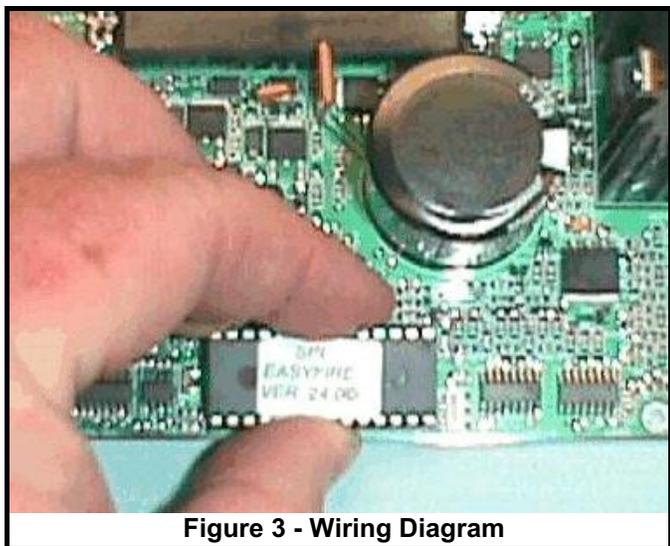


Figure 3 - Wiring Diagram

Start Up Operation

Timers allow for fixed feed amounts during 20 minute start up cycle. Timing for ignitor - 8 minutes, fan is started at 3.5 volts after 1 minute and the feed is turned on for 1 minute at 10.5 volts. If unit under 40°C Fan on @ 3.5 volts. This fan voltage continues until T2 reaches 40°C. If unit over 40°C fan on Low. Additional fuel added at 4 minutes at low feed. Operation confirmed with T2 rise of 12°C in 20 minutes. If no rise noted, cycle ignitor off at 8 minutes and fan on for 20 minutes. No start confirm requires reset of button to Off to continue.

T-1 = Electronic temperature sensor used to monitor flue back pressure and operating temperature.

T-2 = Electronic temperature sensor used to monitor manifold temperatures during start up and normal operation.

Normal Operation

Fan settings Low, Medium, High - Low operation a fixed fan voltage and feed based on trim. Medium and High will cycle to lower setting when T1 temps cycle temps reached. Shut down is confirmed by temp reduction or Off button activation. Both run 25 minutes fan shut down or until unit is cool. Shut down from fuel out requires reset of Off button. Thermostat operation functions only when AC power has been confirmed. Thermostat start operation functions only when AC power has been confirmed (autolite system requires AC power to function).

"Fan" setting is used for manual lighting of heater when AC power is off. "Clean" setting is used to increase fan speed to blow ashes from burn pot and fan housing.

Abnormal Operation

High temp is monitored by both T1 and T2. When either gets above 120°C the feed is stopped until the stove cools to below 120°C. This condition is indicated by a solid red High Temp LED. However, if T1 rises quickly and then stays at least that hot for another 16 seconds the red LED (light emitting diode) flashes rapidly and the stove begins an auto shutdown. Pressing Off then one of the run modes will clear this condition after T1 gets low enough.

AC power input, fan motor, and feed motor operation is checked continuously. Fan and feed motor checked for open condition will require recycle of control system. If onboard circuit breaker has been activated it will require removal of AC and battery power to reset.

Battery operation is available when AC power is Off. Thermostat functions are disabled and unit will cycle between Low to High depending on switch setting. Battery charging provide a low 1.5 amp rate and is switched off at 13.2 volts. Battery LED light is flashed when charging and is steady when the battery is fully charged.

Clean mode operation is limited to 100 seconds. If exceeded, will require an Off cycle to clear.

Indicator Light Summary

LED lights are installed on the main control board and switch board. These lights are designed to indicate various operating conditions.

Main board LED Light (Green) - This light verifies main board power and flashes green when AC or Battery power is present. A flashing light will confirm AC power and main board fuse is functioning.

Switch Board LED Lights

High Temp/Block Flue - Red - High temperature conditions result in a Red Light Indication.

Flashing Red LED indicates a blocked flue and a T-1 fast temperature rise which then stays at least that hot for another 16 seconds. This indicates a flue system malfunctioning. Blockage or a positive pressure on the flue system will trigger this type of indication.

Solid Red LED indicates a high temperature condition of either T-1 or T-2 (120°C). LED will stay red until heater cools as fan continues to operate.

Fast Flashing LED indicates a motor jam on either the feed system or fan system. Requires unplugging the unit to clear. Check motors for proper operation before continuing to run unit.

Battery LED indicates battery status with three indications - Clear no battery present, Green - Battery connected, and Red - Battery connected improperly (leads reversed). A steady green light indicates a fully charged battery. A slow flashing green LED - Indicates a charging battery. A fast flashing green LED indicates heater operating on battery and AC power "Off".

Customer Service & Replacement Parts

Replacement parts are available from your local dealer or on-line @ www.sierraproductsinc.net . or call or write:

Customer Service
Sierra Products, Inc.
63 Laxalt Dr.
Carson City, NV 89706
Phone 775-241-2586
Fax 775-241-2704
www.sierraproductsinc.net



EF AutoLite Igniter Replacement Instruction

Please read this entire instruction before attempting repair.

WARNING - ELECTRIC SHOCK POTENTIAL. All repairs must be accomplished with the 115VAC and 12 DC power disconnected from heater.

GENERAL INFORMATION

Your EASYFIRE Pellet Heater is equipped with the Autolite Automatic ignition and operating system.

The AutoLite system is integrated into the heater to allow for

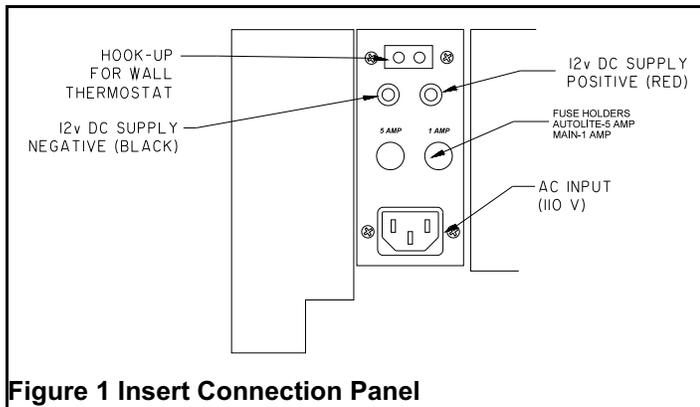


Figure 1 Insert Connection Panel

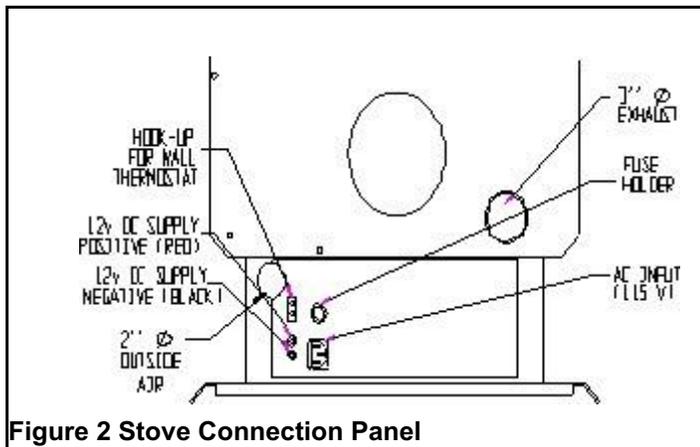


Figure 2 Stove Connection Panel

automatic start up using a heating element located in the burn pot. This element starts the initial fire required to burn the wood pellets. The system operates on 115VAC power supplied through a separate fuse for seven minutes during the initial heater start up. After the seven minute period the AutoLite system is deactivated and the heater operates based on the EasyFire digital control system requirements. If the house AC power should quit, the AutoLite system will not be available. however, with the optional battery attached the heater can be manually lit.

Basic start up operation is as follows (with thermostat jumped):

- 1) From "Off" press operating button (Low). DC controller energizes the 115VAC relay completing the igniter high

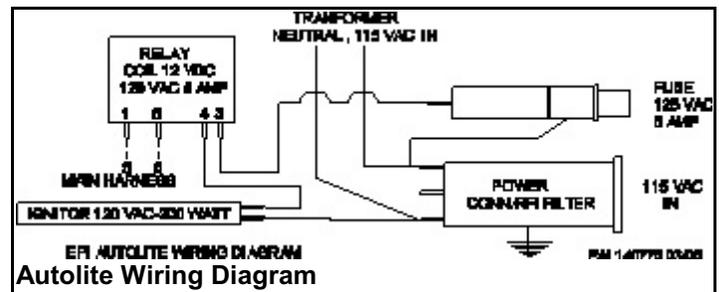
- 2) Combustion fan starts at 1 minute along with feed motor for 1 ½ minutes providing start up fuel.
- 3) Pellets start to ignite approx. 3 to 4 minutes. Feed motor starts at 4 minutes to provide additional start up fuel.
- 4) At 7 minutes unit should have flame in burn pot. If no temperature rise is noted by T-1 (sensor) at 20 minutes heater starts shut down process.

TROUBLESHOOTING IGNITER SYSTEM

The igniter system incorporates a cartridge style high wattage 115VAC igniter located at the bottom of the pellet burn pot. This system is continuously cooled by incoming combustion air and provides years of general service. However, for the igniter to work properly the burner pot must be cleaned as required to allow the pellets to fall onto the igniter. Generally, this is accomplished during normal cleaning which would include removing the burn pot and brushing the ash from the pot and igniter. Removing the screen from below the igniter and brushing all ash from the burn pot holder will also aid in the starting process.

Check the igniter rod surface for disintegration or obvious damage. If any white ceramic material is showing through the SS protective cover the igniter should be replaced.

Once the burn pot is cleaned and the igniter inspected the remaining system checks are electrical. A simple check of the system may be accomplished on a cold heater by placing a gloved hand on the igniter rod and pressing one of the operating button (Low). The igniter will start to get hot immediately (2 minute temperature 500°F). If not temperature rise is noted then continue with electrical trouble shooting.

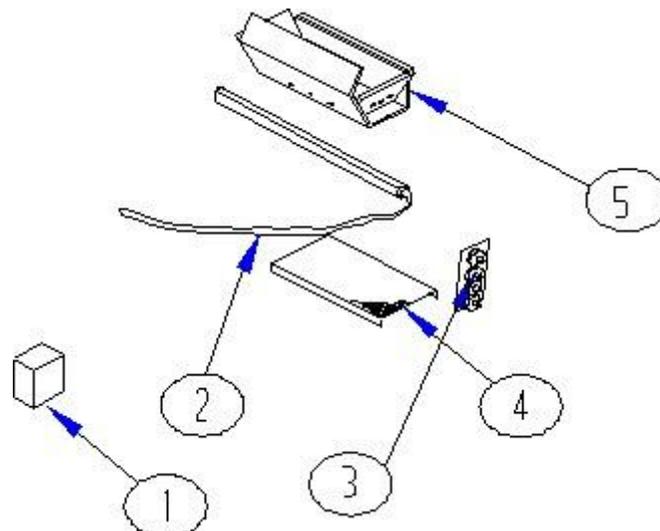


ELECTRICAL TROUBLE SHOOTING

WARNING: Only a trained technician should attempt to repair a pellet heater electrical system.

Note: All tests should be accomplished with the unit thermostat by-passed.

Remove both AC and DC power from unit. The igniter system is protected with a 5 amp fuse located on the back or side of the heater (**Figure 1**). The igniter is switched "Off" and "On" by the control system via a relay located in the lower right pedestal in front of the control board (EF3801/5001) or in lower left rear of the unit accessed from the back (EF4001). Wiring on all igniter systems are the same. The following test steps will require a multi-meter with AC/DC volt and ohm functions:



- a. Unplug heater from wall outlet and 12VDC power!
- b. Remove 5 amp fuse holder cap and fuse by pressing in and turning counter clockwise. Test fuse with ohm meter to confirm is not "open". If fuse is open go to Testing Igniter "d". If fuse is good continue.
- c. Check 115VAC power wire connection to relay and neutral wire connection to igniter terminal. This can be accomplished with the ohm meter. If wire is disconnected or open replace.
- d. Disconnect igniter leads from relay and neutral. Test continuity with ohm meter between leads. If open igniter is defective. If continuity exists then check for internal grounding by checking each lead to the shielded conduit of the igniter leads. If continuity exists to ground then igniter is defective. If meter reads open on both leads to ground then igniter should produce heat when properly connected to 115VAC.
- e. With igniter disconnected from relay, attach volt meter (set meter to 200VAC) leads to relay 115VAC out terminal and igniter neutral. Reapply 115VAC power. Press operating button low. Relay should immediately engage applying 115VAC to meter. If meter has 115VAC then replace igniter as it should be activated. If no AC power outputted from relay. Continue to next test.
- f. Disconnect DC control wires from harness to relay. Attach volt meter (set meter to 20VDC) leads to harness terminals. Reapply 115VAC power. Press operating button low. Control system should immediately engage applying 12VDC to meter. If meter has 12VDC then replace relay as it should be activated. If relay does not engage, exchange control board and/or main switch board.

REPLACEMENT PARTS:

ITEM NO.	PART NO.	DESCRIPTION
1	120120	12VDC RELAY
2	120117	CARTRIDGE HEATER
3	120118	AUTOLITE CONTROL SWITCH
4a	202163	BURN POT SCREEN 5001
4b	202164	BURN POT SCREEN 3801/4001
5a	300501	BURN POT 5001-AUTOLITE
5b	300500	BURN POT 3801/4001-AUTOLITE
6	110510	5 AMP FUSE MDL5 (NOT SHOWN)

Customer Service & Replacement Parts

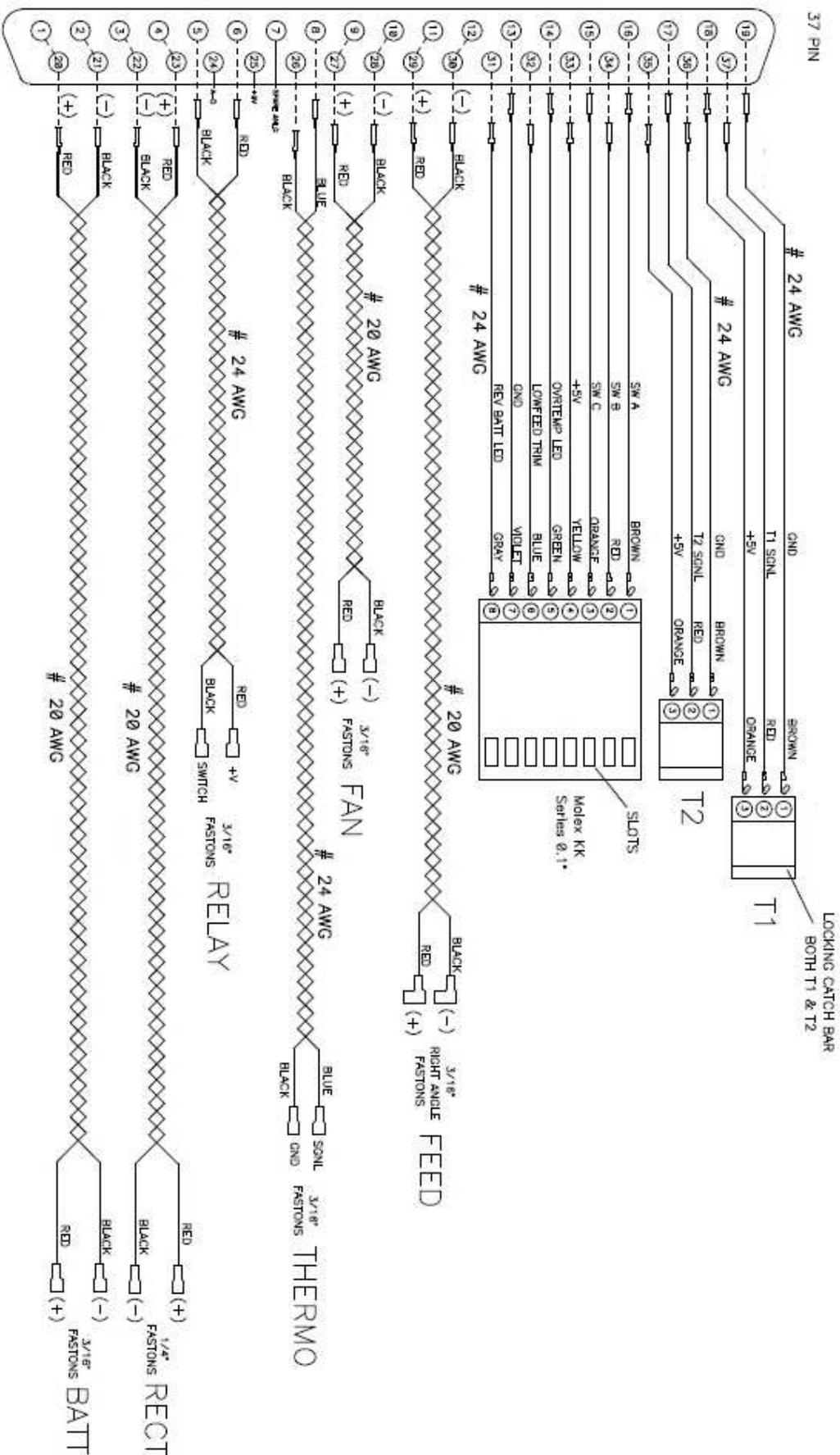
Replacement parts are available from your local dealer or on-line @ www.sierraproductsinc.net or call or write:

Customer Service
Sierra Products, Inc.
63 Laxalt Dr.
Carson City, NV 89706
Phone 775-241-2586
Fax 775-241-2704
www.sierraproductsinc.net

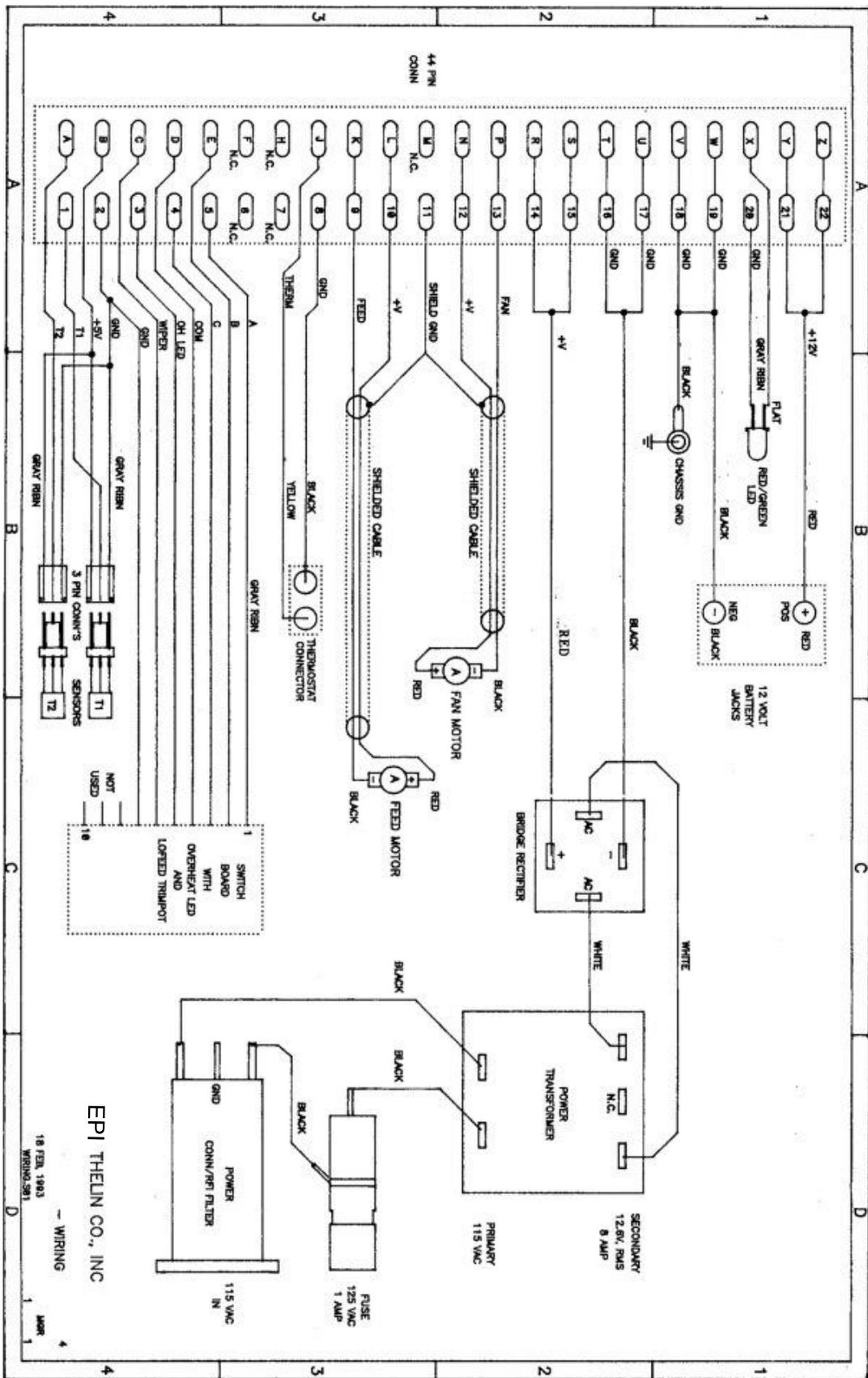


REAR VIEW OF FEMALE HARNESS CONNECTOR FOR J1

37 PIN



Pre 2004 Pellet Stove Wiring Detail

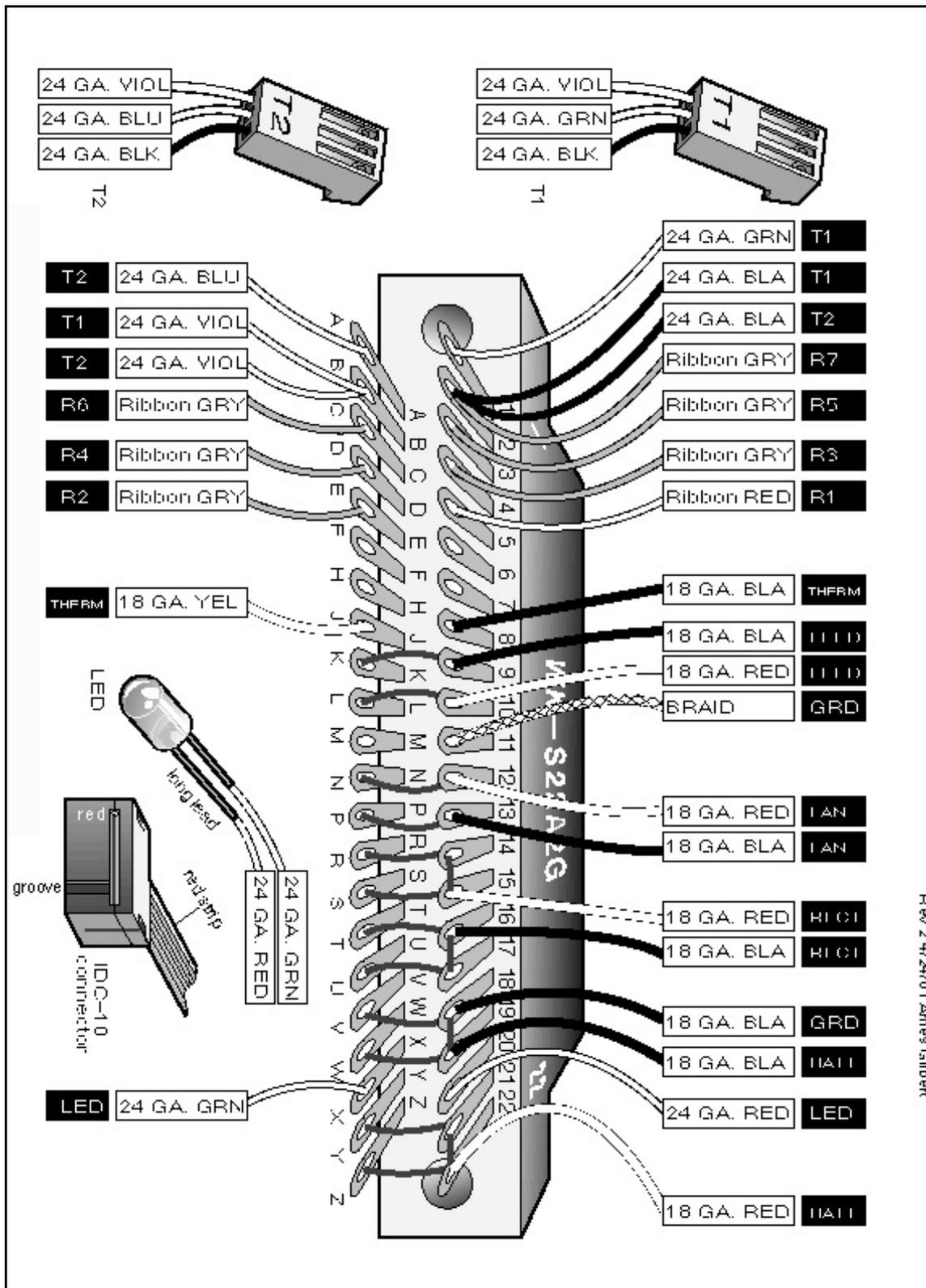


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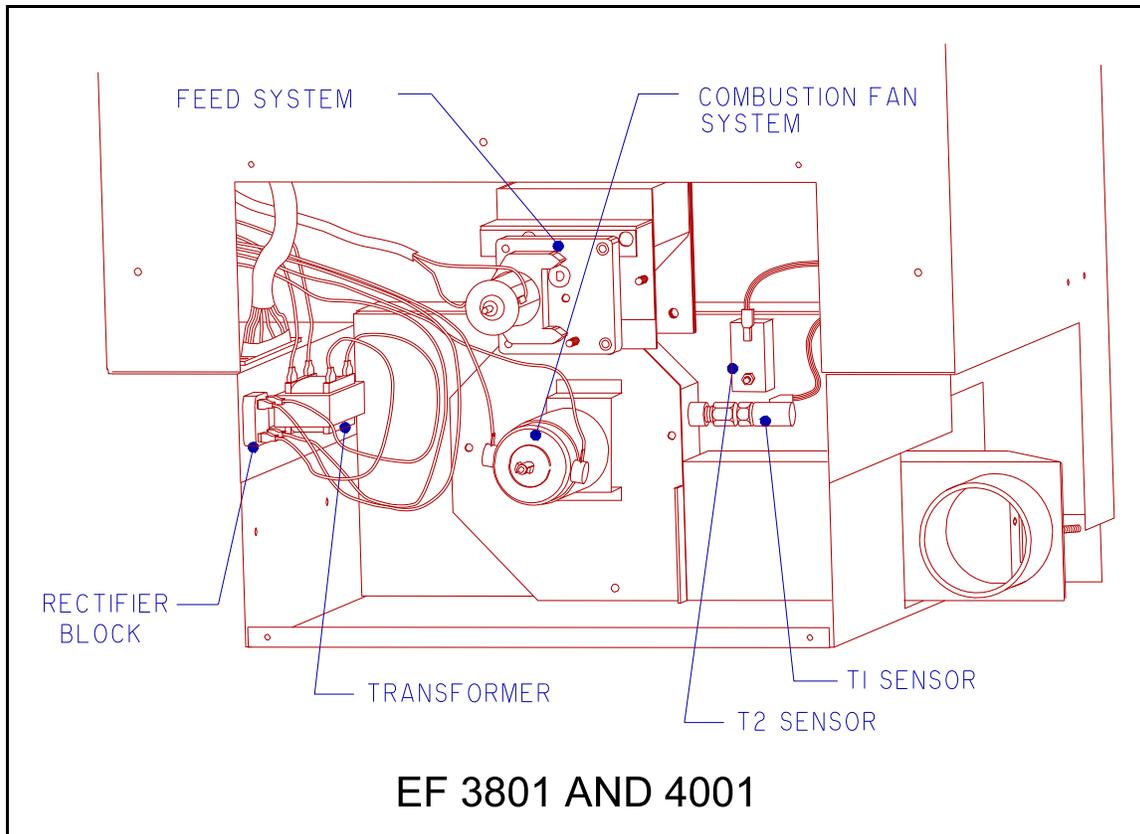
18 FEB. 1983
WIRING 2871

- WIRING

2005 HARNESS WIRING DETAIL



Rev 2.4/24/01 Ames, Gilbert



OVERVIEW

First production 2005 stoves Serial #3384 to #3420 require precautionary replacement of both T-1 and T-2 sensors. The sensors located in the stove body sense the operating temperatures and overall parameters of the stove. The T-1 sensor provides blocked flue and operating sensing while the T-2 sensor provides start up, shut down, and over temp. sensing. The first 26 units have a sensor assembly attached in such a way that may cause the stove to act erratically. As a precaution we are requiring replacement of the sensors and offering a repair credit. Please contact customer service @ 775-241-2586 or <http://www.sierraproductsinc.net/guides.php> for further information.

T-1 and T-2 Sensor Replacement:

Removal from 3801 and 4001 Insert: The T-1 and T-2 sensors maybe accessed by removing the inspection covers on back of the unit. The T-1 sensor is installed into to the right side of the combustion housing just above the exhaust tube. Unplug the harness connector to the sensor. Using a wrench, unscrew the brass fitting and sensor holder from the exhaust pipe. The T-2 sensor is located right of the combustion housing attached on the lower portion of the manifold. Unplug the harness connector the sensor. Remove the #10 nut attaching the sensor holder and remove the sensor. Reverse process to install new sensor fitting and holder. Reinstall the rear panel and confirm standard operation.

REMOVAL AND REPLACEMENT OF COMPONENTS

WARNING: RISK OF ELECTRIC SHOCK! REMOVE ALL POWER CORDS FROM UNIT BEFORE ATTEMPTING ANY SERVICE.

1. **Circuit Board:** The circuit board is located on the lower right hand side of the heater or insert (facing from the front **fig.1 - pg. 21**).

Removal from Heater: Remove the two #8 phillips screws securing the panel to the pedestal side. Open the panel by lifting up and out. Lay panel flat and remove two #8 phillips screws securing the control board stand-offs to the panel. Gently remove board from 44 pin connector by firmly holding panel and pulling board toward you. Remove #8 nuts attaching stands to the board and remove stands (these nuts are located on the lower right and left corners of the board). Reverse the process to install new control board.

Removal from Insert: Remove the two #8 phillips screws securing the control cover from the hopper side. Remove the two #8 phillips screws attaching the control board the stand-offs (these screws are located at the lower right and left corners of the board). Gently remove board from 44 pin connector by pulling down on the board. Reverse the process to install a new control board.

2. **Fan Motor:** The fan motor is located directly under the combustion fan housing. Access is provided through the rear inspection covers on both the heater and insert. Remove the #8 screws attaching the covers. Remove the wire harness leads to the motor noting there position both red and black. Next remove the plastic convection fan blade by carefully pushing against the fan hub. Remove the four #10 nuts holding the fan motor base plate to the housing. Carefully pry the base plate breaking the factory silicon seal. Remove motor from unit. Using a long allen wrench loosen the allen set screws holding the combustion fan blades on the motor shaft. Remove the two #10 nuts holding the motor mount tho the fan plate. Remove the two #8 phillips screws holding the motor mount to the motor. Reverse the process to replace fan motor assembly.

NOTE: WHEN INSTALLING THE COMBUSTION FAN BLADES ON THE MOTOR SHAFT, USE LOCK TIGHT (RED) ON THE ALLEN SET SCREWS. THE PROPER POSITION OF THE BLADES IS THE OUTER BLADE POSITIONED AT THE END OF THE SHAFT AND THE SECOND BLADE TIGHT TO THE BACK OF THE FIRST. WHEN ASSEMBLING THE FAN MOTOR PLATE BACK INTO THE UNIT, USE HIGH TEMPERATURE SILICONE SEAL ON CLEANED MATING SURFACES. IMPROPER SEALING OF FAN ASSEMBLY WILL ALLOW FLUE GASES AND SMOKE INTO HEATING SPACE.

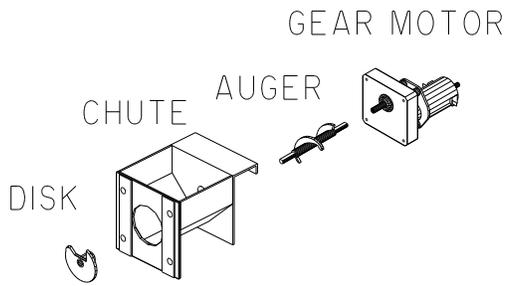
Fan motor brushes maybe replaced by carefully removing the plastic screw caps on each side of the motor and replacing with factory replacements.

3. **Control Switch:** The control switch is located on the right side of both the heater and insert. In both units remove the two #8 phillips screws holding the cover. Using a small blade standard screw driver carefully loosen the set screw on the control knob. Next remove the 9/16 nut attached to the switch shaft. Remove the switch and unplug the harness connector. Reverse procedure to install new switch.

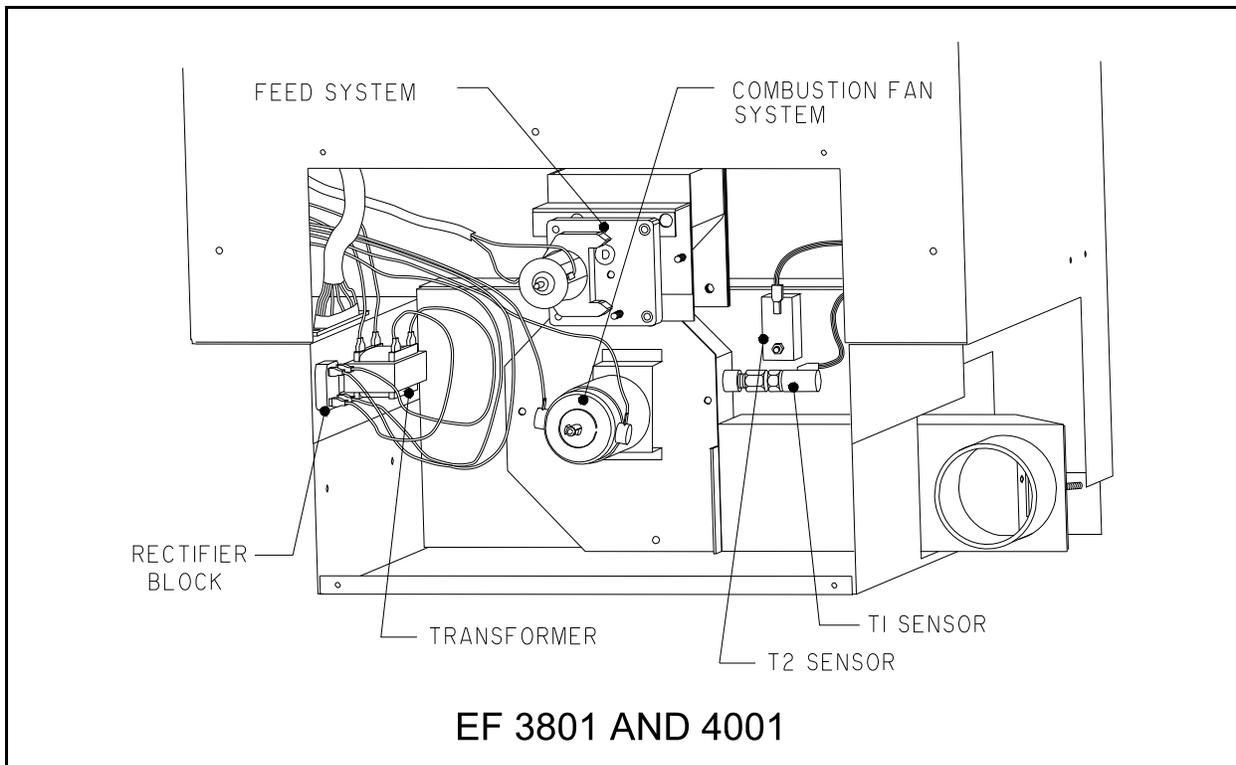
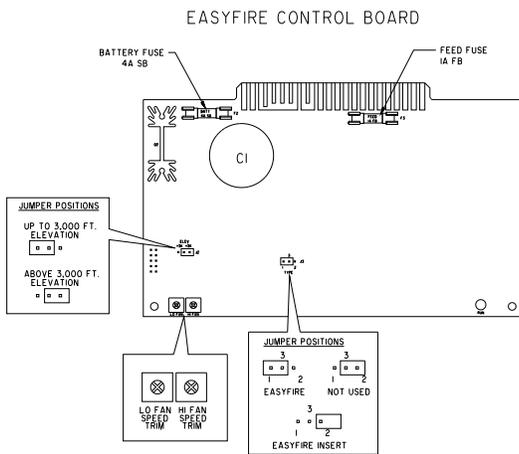
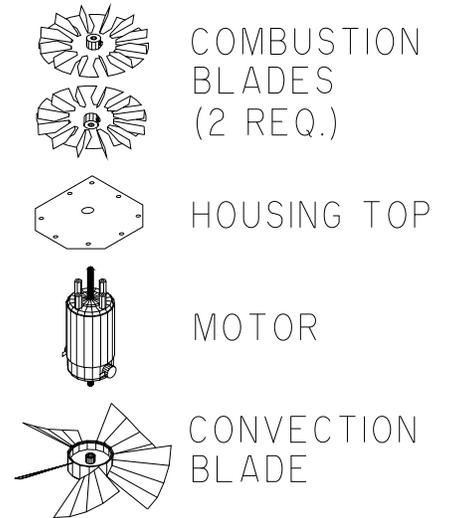
4. **Transformer and Rectifier:** The transformer and rectifier are located inside the cabinet on both the heater and insert. Remove the inspection cover on the rear and locate the transformer. Remove the two #6 phillips screws and nuts. Remove the wires noting the positions. Remove the transformer. The rectifier maybe removed by unplugging the wires from the harness and transformer (note the position of the red and black harness wires). **Remove the #6 phillips screw and nut. Remove the rectifier. Reverse the procedure to install new parts.**



PELLET FEED SYSTEM



COMBUSTION FAN ASSEMBLY



EF 3801 AND 4001

