

BRECKWELL HEARTH PRODUCTS

DEALER DIGITAL TROUBLESHOOTING GUIDE

I. Stove shuts off and the # 2 light flashes

Possible Causes:

1. Airflow switch hose or stove attachment pipes for hose are blocked.
2. The air inlet, burnpot, interior combustion air chambers, combustion blower, or exhaust pipe are blocked with ash or foreign material.
3. The firebox is not properly sealed.
4. Vent pipe is incorrectly installed.
5. The airflow switch wire connections are bad.
6. The gray wires are pulled loose at the molex connector on the wiring harness.
7. Combustion blower failure
8. Control board not sending power to combustion blower
9. Control board not sending power to air switch
10. Air switch has failed (very rare)

Possible Remedies: (Unplug stove first when possible)

1. Unhook air hose from the air switch and blow through it. If air flows freely, the hose and tube are fine. If air will not flow through the hose, use a wire coat hanger to clear the blockage.
2. Follow all cleaning procedures in the maintenance section of the owner's manual.
3. Make sure the door is closed and that the gasket is in good shape. If the ash door has a latch, make sure the ash door is properly latched and the gasket is sealing good. If the stove has just a small hole for the ashes to fall through under the burnpot, make sure the slider plate is in place to seal off the firebox floor.
4. Check to make sure vent pipe installation meets criteria in owner's manual.
5. Check the connectors that attach the gray wires to the air switch.
6. Check to see if the gray wires are loose at the molex connector.
7. With the stove on, check to see if the combustion blower is running. If it is not, you will need to check for power going to the combustion blower. It should be a full current. If there is power, the blower is bad. If there is not, see remedy 8.
8. If there is no current going to the combustion blower, check all wire connections. If all wires are properly connected, you have a bad control board.
9. There should be a 5-volt current (approximately) going to the air switch after the stove has been on for 30 seconds.
10. To test the air switch, you will need to disconnect the air hose from the body of the stove. With the other end still attached to the air switch, very gently suck on the loose end of the hose (you may want to remove the hose entirely off the stove and the air switch first and make sure it is clear). If you hear a click, the air switch is working. **BE CAREFUL TOO MUCH VACUUM CAN DAMAGE THE AIR SWITCH.**

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II. Stove shuts off and the # 3 light flashes

Possible Causes:

1. The hopper is out of pellets.
2. The air damper is too far open for a low feed setting.
3. The burnpot is not pushed completely to the rear of the firebox.
4. The burnpot holes are blocked.
5. The air inlet, the interior chambers, or exhaust system has a partial blockage.
6. The auger shaft is jammed.
7. The auger motor has failed.
8. The Proof of Fire (POF) thermodisc has malfunctioned.
9. The high limit thermodisc has tripped or is defective.
10. The F2 fuse on the control board has blown.
11. The control board is not sending power to the POF thermodisc or other auger system components.
12. On some early generation digital stoves, the POF may not be getting an accurate temperature reading at its current location.

Possible Remedies: (Unplug stove first when possible)

1. Refill the hopper.
2. If burning on the low setting, you may need to close the damper all the way (push the knob in so it touches the side of the stove).
3. Make sure that the air intake collar on the burnpot is touching the rear wall of the firebox.
4. Remove the burnpot and thoroughly clean it.
5. Follow all cleaning procedures in the maintenance section of the owner's manual.
6. Start by emptying the hopper. Then remove the auger motor by a) loosening the tension screw on the auger coupler (you will need a 1/8 Allen key) or b) removing the auger pin. If the stove has the auger shaft inspection plate in the hopper, remove the plate so that you can see the auger shaft. Gently lift the auger shaft straight up so that the end of the auger shaft comes up out of the bottom auger bushing. Next, remove the two nuts that hold the top auger biscuit in place (some early model did not have the two nuts and the top biscuit is held in place by a tab that sticks through the plate that you just removed). Then rotate the bottom end of the auger shaft up towards you until you can lift the shaft out of the stove. Early generation digital stoves did not have the auger shaft plate. In these cases, remove the two screws that hold the bottom auger biscuit in place and very gently free it from the RTV silicone that holds it in place. Once the bottom biscuit is removed, the auger shaft can be dropped down out of the auger tube. After you have removed the shaft, inspect it for bent flights, burrs, or broken welds. Remove any foreign material that might have caused the jam. Also, check the auger tube for signs of damage such as burrs, rough spots, or grooves cut into the metal that could have caused a jam.

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7. Remove the auger motor from the auger shaft and try to run the unit. If the motor will turn the shaft is jammed on something. If the motor will not turn, the motor is bad.
8. Temporarily bypass the POF thermodisc by disconnecting the two brown wires and connecting them with a short piece of wire. Then plug the stove back in. If the stove comes on and works, you need to replace the POF thermodisc. This is for testing only. **DO NOT LEAVE THE THERMODISC BYPASSED.** Your blowers will never shut off and if the fire went out the auger will continue to feed pellets until the hopper is empty if you leave the POF thermodisc bypassed.
9. Using the owner's manual, locate the high limit thermodisc. There is a red button located on the back of it. Press the red button. If you hear a click, the high limit had tripped. The stove should now function normally. To test if the thermodisc is bad, you can bypass it as described previously for the POF thermodisc.
10. Remove the control board. On the back there are two fuses. The one closer to the edge is the F2 fuse. If it appears to be bad, replace it with a 5 Amp 250 Volt fuse. Plug the stove back in and try to run the unit.
11. There should be a 5-volt (approximately) current going to the POF thermodisc after the stove has been on for 10 minutes.
12. If the thermodisc on the stove is located on the backside of the firewall, it needs to be relocated. See the directions for relocating the POF thermodisc located at the back of this manual.

III. Stove will not feed pellets, but fuel feed light comes on as designed

Possible Causes:

1. F2 fuse on control board blew
2. High limit switch has tripped or is defective
3. Bad auger motor
4. Auger jam
5. Loose wire or connector
6. Bad control board

Possible Remedies:

1. Remove the control board. On the back there are two fuses. The one closer to the edge is the F2 fuse. If it appears to be bad, replace it with a 5 Amp 250 Volt fuse. Plug the stove back in and try to run the unit.
2. Using the owner's manual, locate the high limit thermodisc. There is a red button located on the back of it. Press the red button. If you hear a click, the high limit had tripped. The stove should now function normally. To test if the thermodisc is bad, you can bypass it as described previously for the POF thermodisc.
3. Remove the auger motor from the auger shaft and try to run the unit. If the motor will turn, the shaft is jammed on something. If the motor will not turn, the motor is bad.

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4. Start by emptying the hopper. Then remove the auger motor by a) loosening the tension screw on the auger coupler (you will need a 1/8 Allen key) or b) removing the auger pin. If the stove has the auger shaft inspection plate in the hopper, remove the plate so that you can see the auger shaft. Gently lift the auger shaft straight up so that the end of the auger shaft comes up out of the bottom auger bushing. Next, remove the two nuts that hold the top auger biscuit in place (some early model did not have the two nuts and the top biscuit is held in place by a tab that sticks through the plate that you just removed). Then rotate the bottom end of the auger shaft up towards you until you can lift the shaft out of the stove. Early generation digital stoves did not have the auger shaft plate. In these cases, remove the two screws that hold the bottom auger biscuit in place and very gently free it from the RTV silicone that holds it in place. Once the bottom biscuit is removed, the auger shaft can be dropped down out of the auger tube. After you have removed the shaft, inspect it for bent flights, burrs, or broken welds. Remove any foreign material that might have caused the jam. Also, check the auger tube for signs of damage such as burrs, rough spots, or grooves cut into the metal that could have caused a jam.
5. Check all wires and connectors that connector to the auger motor, high limit switch, and the molex connector.
6. If the F2 fuse is good, the wires and connectors check out good, and the high limit switch did not trip, test for power going to the auger motor. If there is not a full current going to the auger motor when the fuel feed light is on, you have a bad control board.

IV. After stove has been on for a while, the burnpot overfills

Possible Causes:

1. Stove or vent pipe is dirty, which restricts airflow through the burnpot.
2. Vent pipe installed improperly.
3. Air damper is set too far in (closed) for a higher setting.
4. Burnpot holes are blocked.
5. Burnpot holes are too small.
6. Air damper is broken.
7. Blockage in air intake pipe.
8. Circuit board malfunction.
9. Combustion blower is not spinning fast enough.

Possible Remedies:

1. Follow all cleaning procedure in the maintenance section of the owner's manual.
2. Check to make sure the vent pipe has been installed according to the criteria in the owner's manual.
3. Pull the damper knob farther out away from the side of the stove and try to burn the unit again.
4. Remove the burnpot and thoroughly clean it.

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5. The holes in the bottom of the burnpot should be at least 3/16". If they are smaller than 3/16" drill them out. It is possible go larger than 3/16" if needed, but stay under 1/4". If the holes are made too big, you could have a problem burning on the low setting.
6. Visually inspect the damper assembly. Make sure the damper plate is attached to the damper rod. When the damper rod is moved the plate should move with it.
7. Visually inspect the air intake pipe that leads into the burnpot for foreign material.
8. Time the fuel feed light at each setting (after the stove has completed the startup cycle). Make sure the times match the auger timing chart. If the auger motor runs constantly, the board is bad.
9. Test the RPM on the blower after the blades have been cleaned. The RPM should be approximately 3000 RPM.

V. Flame is lazy, dark, and has black tips

Possible Causes:

1. Stove or vent pipe is dirty, which restricts airflow through the burnpot.
2. Vent pipe installed improperly.
3. Air damper is set too far in (closed) for a higher setting.
4. Burnpot holes are blocked.
5. Burnpot holes are too small.
6. Air damper is broken.
7. Blockage in air intake pipe.
8. Circuit board malfunction.
9. Combustion blower is not spinning fast enough.

Possible Remedies:

1. Follow all cleaning procedure in the maintenance section of the owner's manual
2. Check to make sure the vent pipe has been installed according to the criteria in the owner's manual.
3. Pull the damper knob farther out away from the side of the stove and try to burn the unit again.
4. Remove the burnpot and thoroughly clean it.
5. The holes in the bottom of the burnpot should be at least 3/16". If they are smaller than 3/16" drill them out. It is possible go larger than 3/16" if needed, but stay under 1/4". If the holes are made too big, you could have a problem burning on the low setting.
6. Visually inspect the damper assembly. Make sure the damper plate is attached to the damper rod. When the damper rod is moved the plate should move with it.
7. Visually inspect the air intake pipe that leads into the burnpot for foreign material.

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8. Time the fuel feed light at each setting (after the stove has completed the startup cycle). Make sure the times match the auger timing chart. If the auger motor runs constantly, the board is bad.
9. Test the RPM on the blower after the blades have been cleaned. The RPM should be approximately 3000 RPM.

VI. Glass "soots" up at a very fast rate

Possible Causes:

1. Stove or vent pipe is dirty, which restricts airflow through the burnpot.
2. Vent pipe installed improperly.
3. Air damper is set too far in (closed) for a higher setting.
4. Burnpot holes are blocked.
5. Burnpot holes are too small.
6. Air damper is broken.
7. Blockage in air intake pipe.
8. Circuit board malfunction.
9. Combustion blower is not spinning fast enough.
10. Bad Pellets
11. The trim setting on the low feed rate is too low

Possible Remedies:

1. Follow all cleaning procedure in the maintenance section of the owner's manual.
2. Check to make sure the vent pipe has been installed according to the criteria in the owner's manual.
3. Pull the damper knob farther out away from the side of the stove and try to burn the unit again.
4. Remove the burnpot and thoroughly clean it.
5. The holes in the bottom of the burnpot should be at least 3/16". If they are smaller than 3/16" drill them out. It is possible go larger than 3/16" if needed, but stay under 1/4". If the holes are made too big, you could have a problem burning on the low setting.
6. Visually inspect the damper assembly. Make sure the damper plate is attached to the damper rod. When the damper rod is moved the plate should move with it.
7. Visually inspect the air intake pipe that leads into the burnpot for foreign material.
8. Time the fuel feed light at each setting (after the stove has completed the startup cycle). Make sure the times match the auger timing chart. If the auger motor runs constantly, the board is bad.
9. Test the RPM on the blower after the blades have been cleaned. The RPM should be approximately 3000 RPM.
10. The brand of pellets or the batch of pellets that are being used may be of poor quality. If possible, try a different brand of pellets. You might also want to try

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a brand that is made from a different type of wood (softwood vs. hardwood). Different woods have different characteristics when being burned.

11. Use the "Reset Trim" button to increase the low feed rate setting. If the 1 & 4 lights (1 & 3 on the P22) are on, the stove is currently on the lowest setting. If only the 1 light is on, the stove is in the default (medium) setting. If the 1 & 5 lights (1 & 4 on the P22) are on, the stove is in the high trim setting for the low feed rate. If the stove is being burned on one of the two lower settings, advance to the next trim setting and try burning the stove.

VII. Smoke smell coming back into the home

Possible Causes:

1. There is a leak in the vent pipe system.
2. The gasket on the combustion blower has gone bad.

Possible Remedies:

1. Inspect all vent pipe connections. Make sure they are sealed with RTV silicone that has a temperature rating on 500 degree F or higher. Also, seal joints with UL-181-AP foil tape. Also, make sure the square to round adapter piece on the combustion blower has been properly sealed with the same RTV.
2. Inspect both gaskets on the combustion blower to make sure they are in good shape.

VIII. Convection blower shuts off and comes back on

Possible Causes:

1. The convection blower is overheating and tripping the internal temperature shutoff.
2. Circuit board malfunction.

Possible Remedies:

1. Try lubricating the convection blower. Put 1-2 drops of SAE 20 oil in each of the two oiling ports. Also, clean any dust off of the windings and fan blades. If oiling the blower does not help, the blower may be bad.
2. Test the current going to the convection blower. If there is power being sent to the blower when it is shut off, then the control board is fine. If there is NOT power being sent to the blower when it shuts off during operation, then you have a bad control board.

IX. High limit switch keeps tripping

Possible Causes:

1. The convection blower is overheating and tripping the internal temperature shutoff.
2. The stove is being left on the highest setting for extended periods of time.
3. Fuel other than wood pellets is being burned in the stove.
4. Power surge or brown out situation.

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5. High limit switch is malfunctioning.

Possible Remedies:

1. Try lubricating the convection blower. Put 1-2 drops of SAE 20 oil in each of the two oiling ports. Also, clean any dust off of the windings and fan blades. If oiling the blower does not help, the blower may be bad.
2. The highest heat level setting is designed for use over short periods of time. Burning the stove on the highest setting for longer than 1 – 2 hours could lead to potential overheating situations.
3. Breckwell pellet stoves are designed and tested to use wood pellets. While it is possible to burn a corn mixture (corn mixed in with wood pellets) in the stove, it is not recommended to burn above the number 3 heat level. Check for signs of fuel other than wood pellets. If there are signs of corn being used, find out what mixed was being used and what setting. No other types of fuel have been approved for Breckwell pellet stoves. If there are signs of other types of fuel being used, advise the consumer to stop using them immediately.
4. A power surge, spike, or voltage drop could cause the high limit switch to trip. Check to see if a surge protector is being used on the stove. If not, recommend one to the consumer
5. If the other items check out ok, replace the high limit switch.

X. Stove feeds pellets, but will not ignite

Possible Causes:

1. Air damper open too far for ignition.
2. Blockage in ignitor tube or inlet for ignitor tube.
3. The burnpot is not pushed completely to the rear of the firebox.
4. Bad ignitor element
5. The control board is not sending power to the ignitor

Possible Remedies:

1. Push the air damper in closer to the side of the stove for startup. In some situations it may be necessary to have the damper completely closed for ignition to take place. After there is a flame, the damper can then be adjusted for the desired feed setting.
2. Find the ignitor housing on the backside of the firewall. The air intake hole is a small hole located on bottom side of the housing. Make sure it is clear. Also, look from the front of the stove to make sure there is not any debris around the ignitor element inside of the ignitor housing.
3. Make sure that the air intake collar on the burnpot is touching the rear wall of the firebox.
4. Put power directly to the ignitor element. Watch the tip of the ignitor from the front of the stove. After about 2 minutes the tip should glow. If it does not, the element is bad.

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5. Check the voltage going to the ignitor during startup. It should be a full current. If the voltage is lower than full current, check the wiring. If the wiring checks out good, the board is bad.

XI. Stove came on by itself

Possible Causes:

1. Power surge, spike, or voltage drop to early generation digital board
2. Stove body temperature went above the POF thermodisc activation temperature.

Possible Remedies:

1. Install surge protector. Replace existing control board with a more current generation control board.
2. If the stove is going to be in areas where the ambient temperature reaches 90 degrees F during the non-burning season, the stove should be unplugged.

XII. Auger motor runs, but the stove does not feed very many pellets

Possible Causes:

1. Broken weld on auger shaft flights
2. Tension screw on auger coupler (early generation digital stoves only) is not set properly.
3. Incorrect circuit board, auger motor, or auger shaft on stove.

Possible Remedies:

1. Remove and inspect the auger shaft (see section on flashing # 3 light, remedy 6). If one of the welds that holds the auger flights in place has broken loose, the shaft is defective.
2. Check to make sure the tension screw goes through the hole in the auger shaft and presses securely against the flat side of the auger motor shaft.
3. The circuit board, auger motor, and auger shaft must all match (RPM wise). Check to see what the RPM rating is on the auger motor. This can be found on the motor itself. Then time the control board fuel feed rates and use the auger feed rate chart (auger timing chart located at the back of this manual) to determine which board you have. Next, check the spacing of the auger flights on the auger shaft. 4RPM systems should have a flight spacing of approximately 1". 1RPM systems should have a flight spacing of approximately 2". If all three components are not the same then, the feed rate of the stove will be off (either feeding too much or not enough)

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Digital Circuit Board Timing Rates			
Heat Level Setting	4 - RPM	1 - RPM / 5 Pos.	1 - RPM / P22
1 & 4 (1 & 3 P22)	0.8	1.4	1.4
1	0.9	2	2
1 & 5 (1 & 4 P22)	1.2	2.5	2.5
2	1.9	4	4
3	2.4	7	7
4	3.6	9	10
5	4.5	12	N/A
Total Cycle Time	14.5	14.5	14.5

Digital Circuit Board Conv. Blower Voltages			
Heat Level Setting	4 - RPM	1 - RPM / 5 Pos.	1 - RPM / P22
1	78	78	85
2	92	92	98
3	98	98	104
4	104	104	119
5	118	118	N/A

BRECKWELL ELECTRICAL SPECS.

4 RPM AUGER MOTOR = 1.65 AMPS

1 RPM AUGER MOTOR = .45 AMPS

COMBUSTION BLOWER = 1.3 AMPS

CONVECTION BLOWER = 1.5 AMPS

HOT ROD = 2.72 AMPS

TOTAL AMPS = 7.17 AMPS WITH 4 RPM AUGER MOTOR

TOTAL AMPS = 5.97 AMPS WITH 1 RPM AUGER MOTOR

DURING START-UP WITH HOT ROD ON THE STOVES PULL 789 WATTS WITH 4-RPM AUGER MOTOR.

DURING START-UP WITH HOT ROD ON THE STOVES PULL 657 WATTS WITH 1 RPM AUGER MOTOR.

DURING NORMAL OPERATION THE STOVES PULL 490 WATTS MAX WITH 4-RPM AUGER MOTOR.

DURING NORMAL OPERATION THE STOVES PULL 358 WATTS MAX WITH 1 RPM AUGER MOTOR.

BASED ON 110 WATTS PER AMP

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VERTICALLY VENTING INSIDE VERSUS OUTSIDE THE HOUSE.

- Inside vent will draft better.
- Air becomes heavier as it cools.
- Get benefit of heat off of stack.

HOW TO DETERMINE IF 3" OR 4" PELLET VENT SHOULD BE USED IN YOUR INSTALLATION.

EQUIVALENT VENT LENGTH.

- Developed by pellet vent test lab.
- See owner's manual for explanation on how to figure EVL.
- If over 15' - > 4"
- Altitudes above 3000' - > 4" at elevation of 7'.

LEAKAGE OR SEALING OUT CHIMNEY ODORS.

- Pellet vent joints can leak from positive pressure.
- Recommend sealing - > aluminum tape - > 1" strip.
- Smooth out with round object - paint.
- Properly seal pellet vent adapter to combustion blower transition.
- To seal out odors in insert installation:
 - Paint (latex), blanking plate, top plate or flashing seal.

-
- POWER OUTAGE NATURAL DRAFT
 - SCREWING SECTIONS TOGETHER ALMOST IMPOSSIBLE TO UNSCREW.

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THE IDEAL VENTING SCENARIO

WHAT IS IT?

Any venting configuration that provides sufficient draft for optimum stove performance.

Most venting problems are caused from lack of draft, or pressure variances caused by a couple of things:

1. High and low pressure areas outside the home.
2. Pressures created within the venting configuration itself.

THERE ARE MANY TYPES OF PELLET STOVES.
THEY ALL HAVE ONE THING IN COMMON:

- Positive or power assisted draft.
- The combustion blowers running at optimum on higher settings.
- Pressure change at stove's exhaust can cause a lack of combustion air.
- Static Pressure – CONSISTENT.
- Dynamic Pressure – CHANGING.

PRESSURES OUTSIDE THE HOME ARE DYNAMIC.

- Side of home with PREVAILING WINDS or WINDWARD SIDE = HIGH PRESSURE AREA.
- Side opposite of windward side = LOW PRESSURE AREA.
- Direct venting (horizontal pipe only) or vertical venting inside and outside WORK BETTER ON LOW PRESSURE SIDE.

UNFORTUNATELY:

IF YOU MUST VENT OUT THE WINDWARD SIDE:

- Out wall and vertically above peak.
- Inside vertically above peak.
- Corner install or close to corner.

INSTALL SO PIPE EXHAUST POINTS TO LOW PRESSURE SIDE OF HOUSE.

- Vent caps are available that draw air.

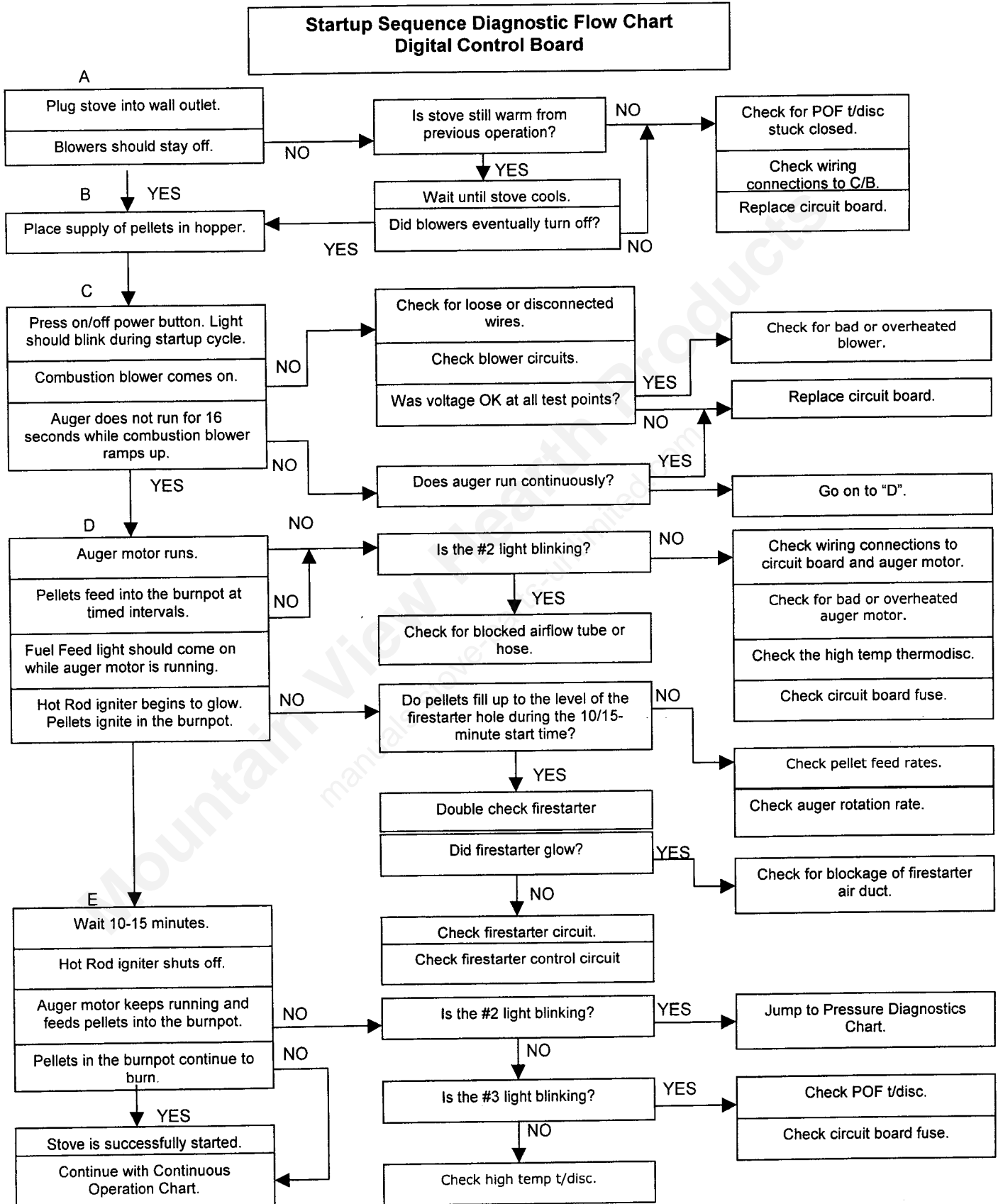
CLASS "A" CHIMNEYS:

INSERT OF FREESTANDING INSTALLED INTO A FIREPLACE OR CHIMNEY.

- Run to chimney top.
- Rigid is quieter.

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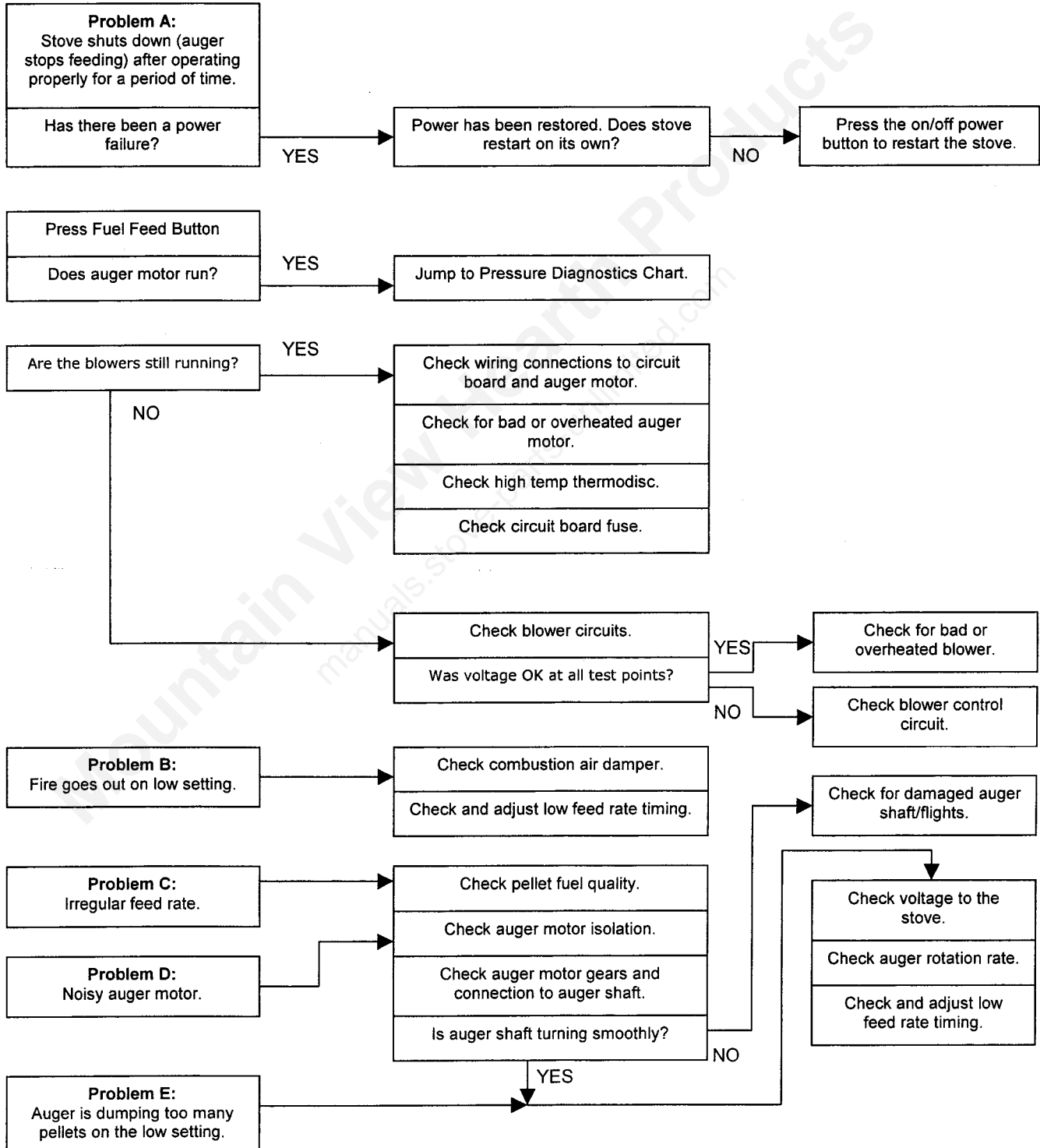
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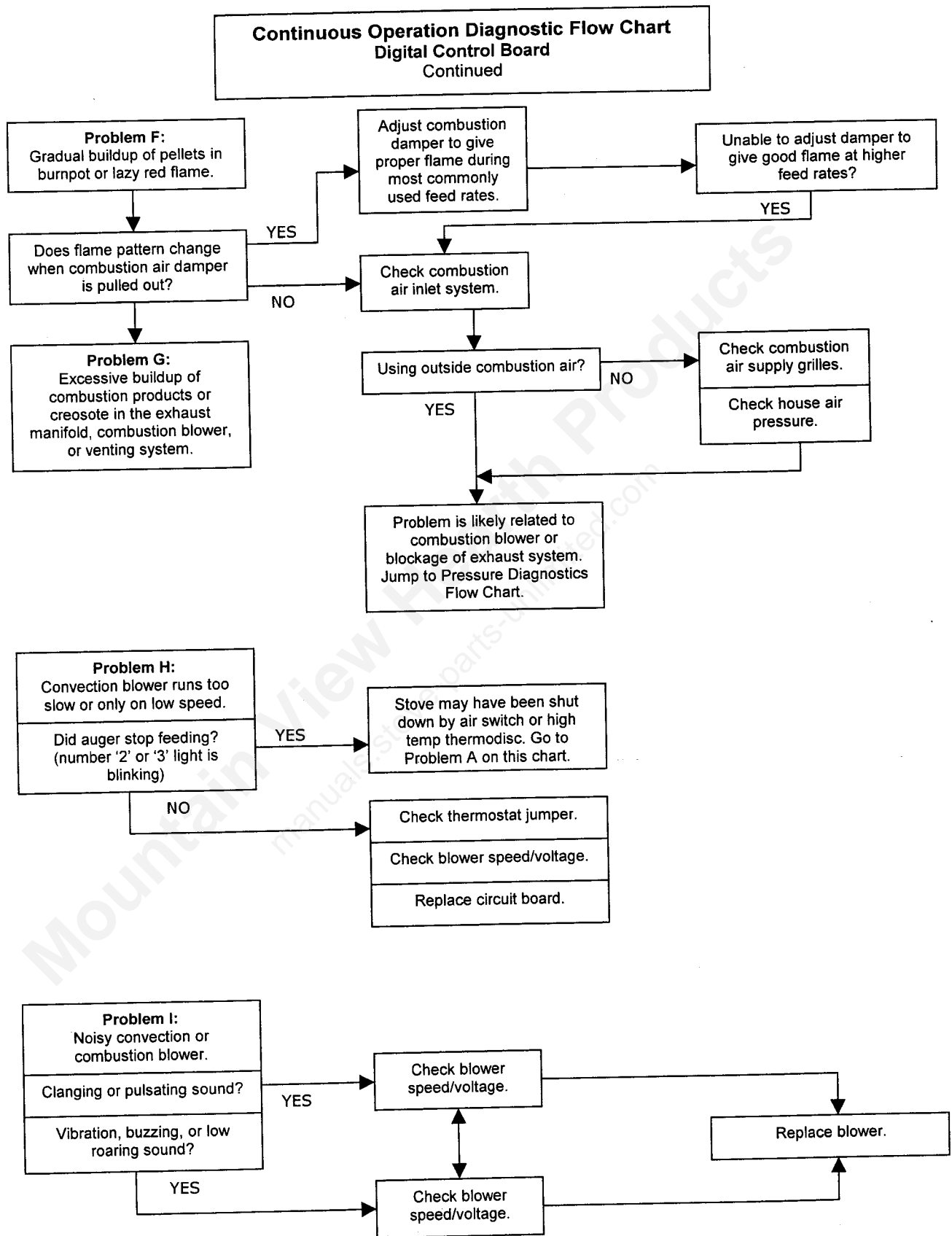
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**Continuous Operation Diagnostic Flow Chart
Digital Control Board**
For problems that develop after the stove has been successfully started. If no problems, continue with the Shut Down Diagnostic Flow Chart.



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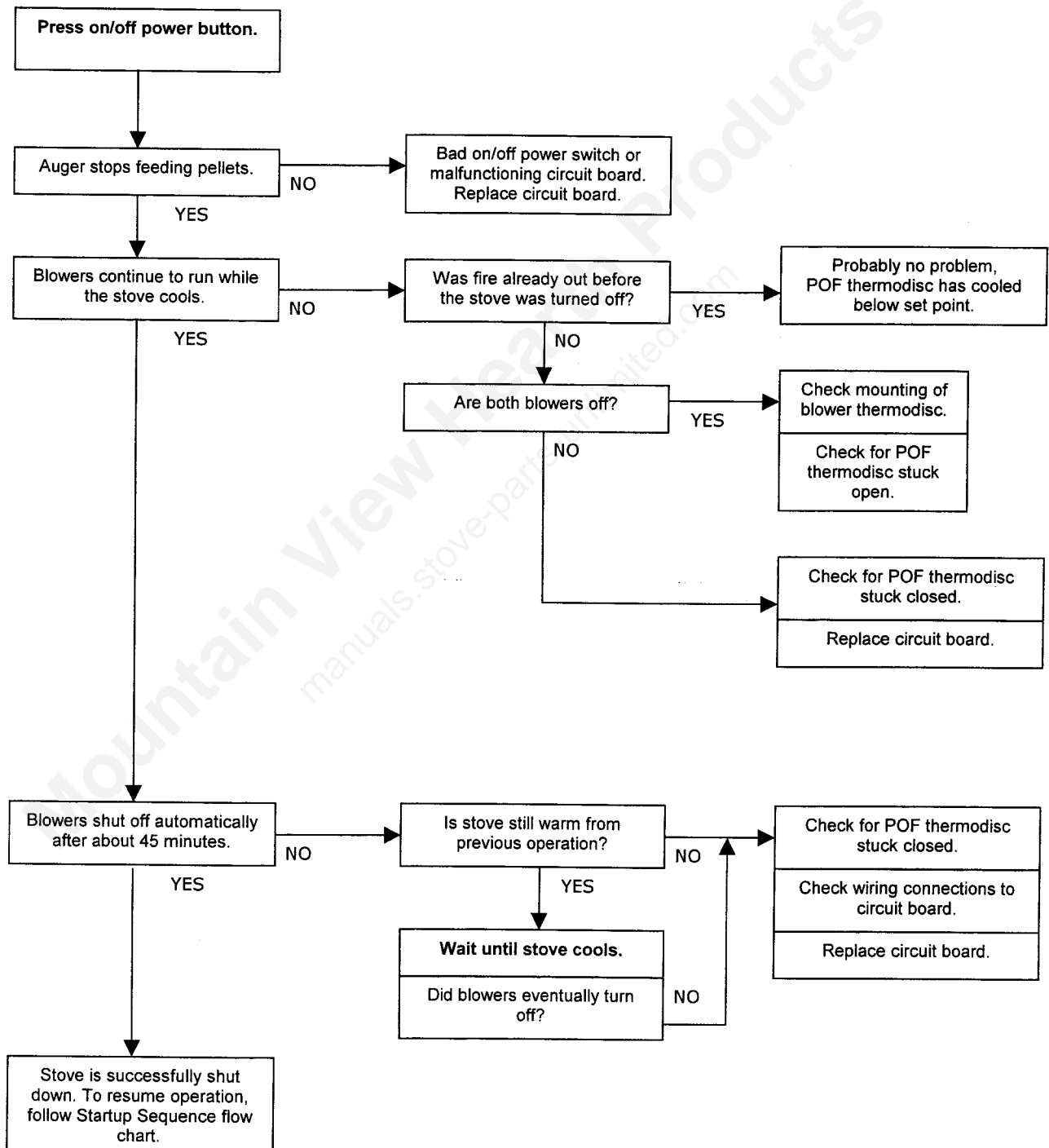
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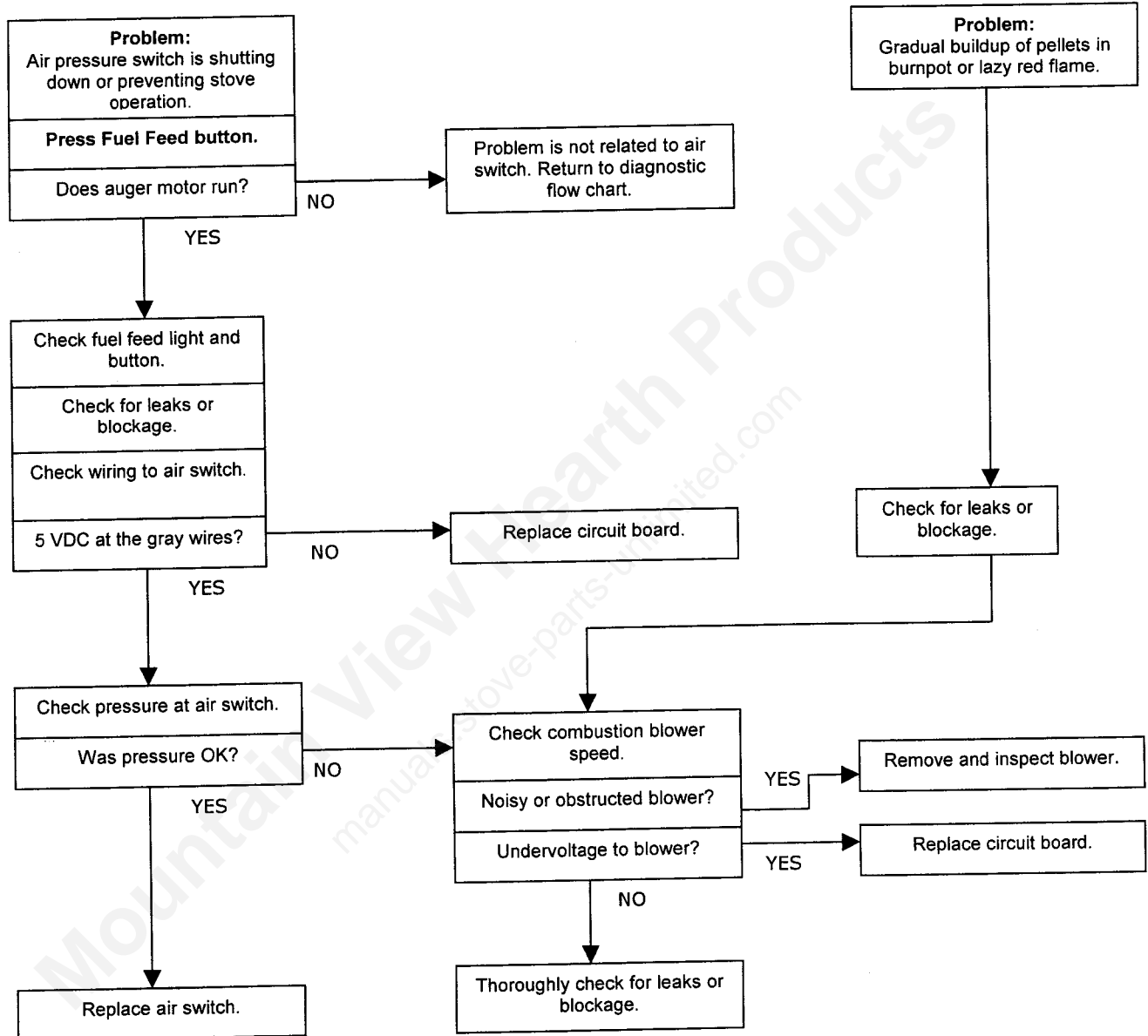
Shut Down Sequence Diagnostic Flow Chart
Digital Control Board
 Assumes that Startup Sequence and Continuous Operation charts have been followed, and that the operation is correct up to this point.



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Pressure Diagnostic Flow Chart Digital Control Board



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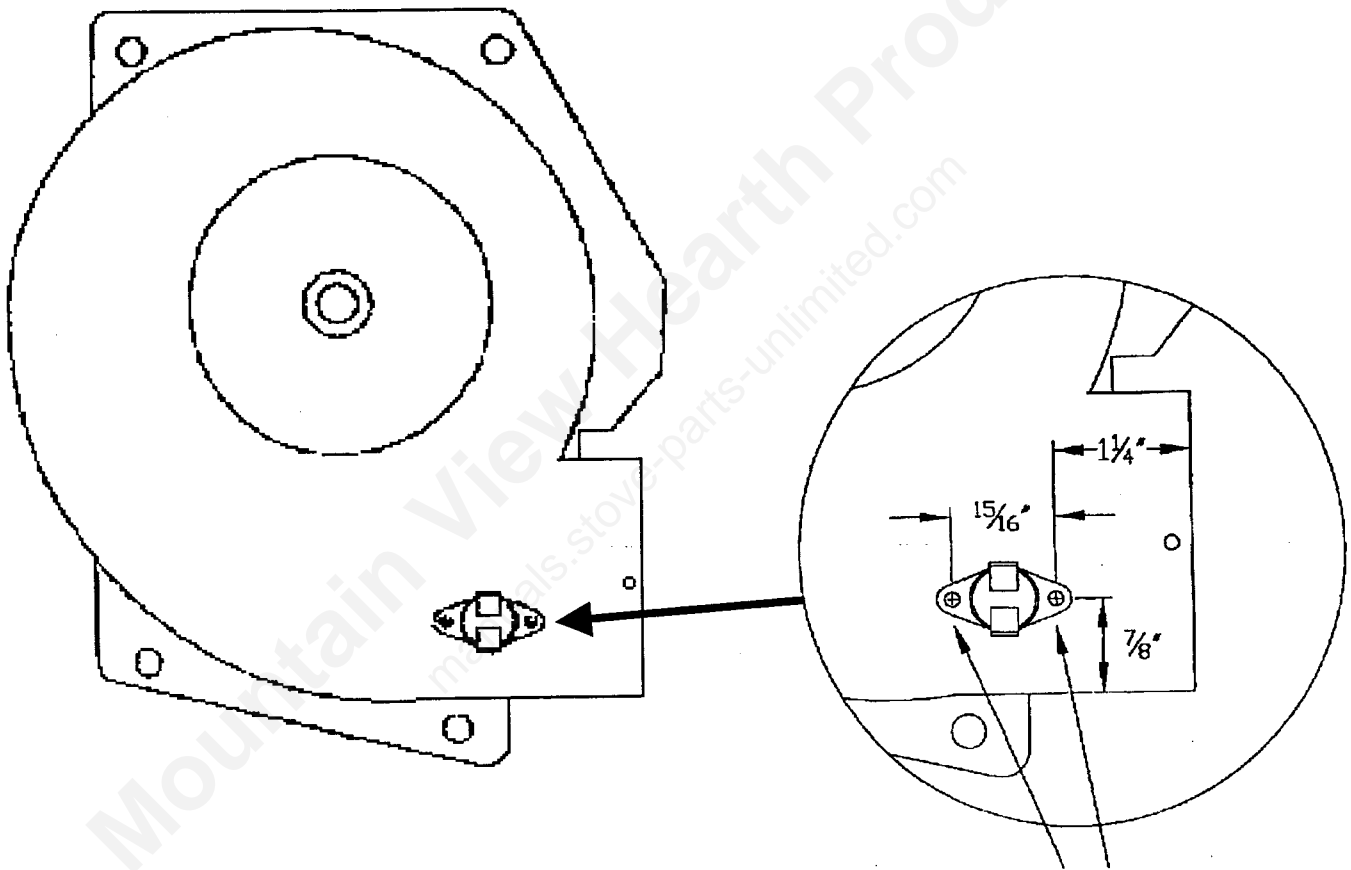
PROCEDURE TO RELOCATE THE POF THERMODISC TO THE COMBUSTION BLOWER HOUSING

- Step 1. Unplug the stove.
- Step 2. Remove the right hand (if you are facing the front of the stove) side panel.
- Step 3. Remove the 2 brown wires from the POF thermodisc. The disc is located near the combustion blower.
- Step 4. Remove the thermodisc by unscrewing the 2 mounting screws.
- Step 5. Re-install the 2 screws in the same location.
- Step 6. Drill 2 mounting holes in the combustion blower housing using the diagram on the following page.
- Step 7. Install the thermodisc onto the combustion blower housing. You will need two 6-32 thread cutting screws or #6 sheet metal screws.
- Step 8. Attach the brown wires to the thermodisc.
- Step 9. Re-install the side panel.
- Step 10. Plug stove in.

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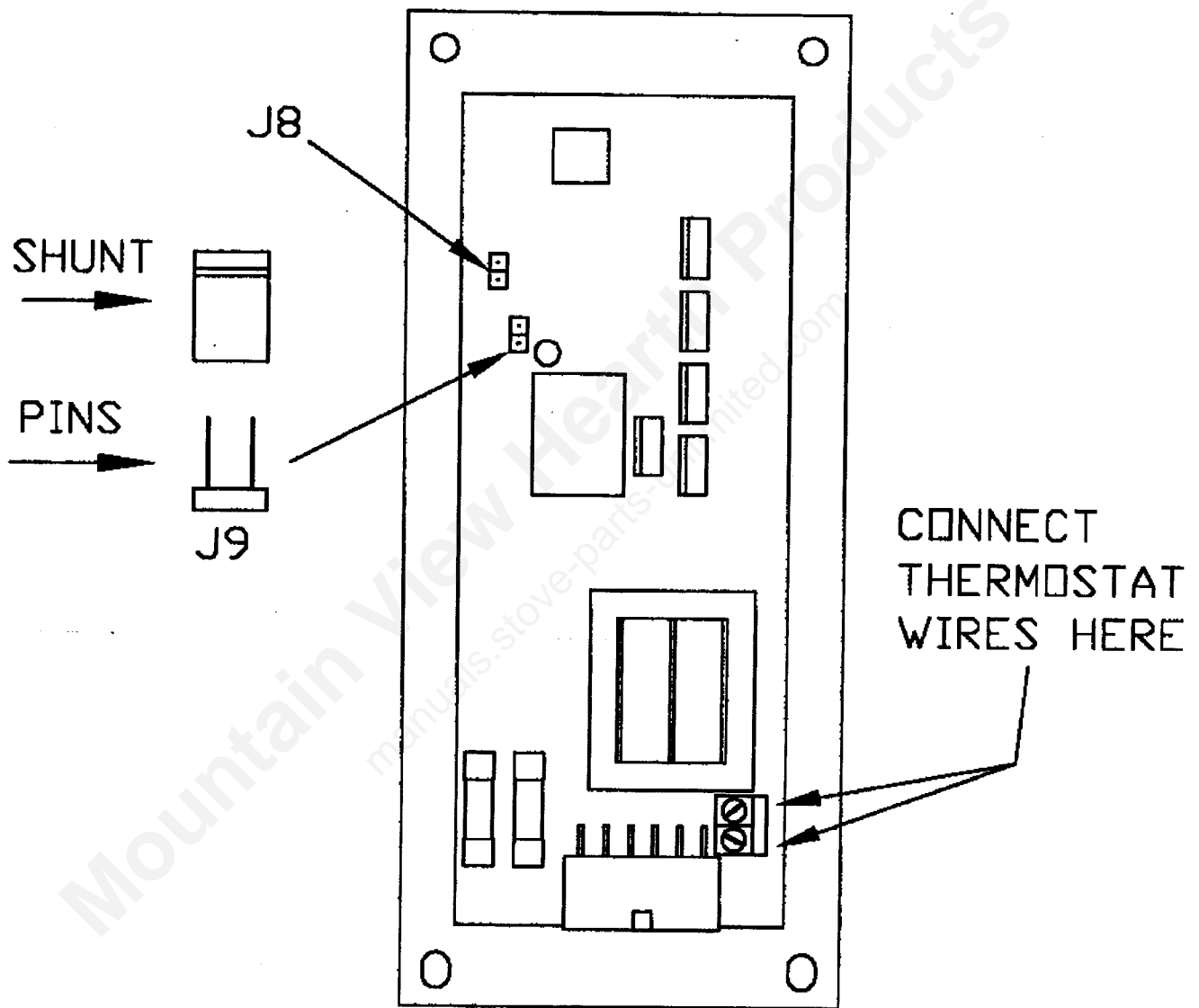
PROCEDURE TO RELOCATE THE POF THERMODISC TO THE COMBUSTION BLOWER HOUSING



Drill 2 holes (#36 or 7/64" drill bit)
and mount with 6-32 thread cutting
or #6 sheet metal screws.

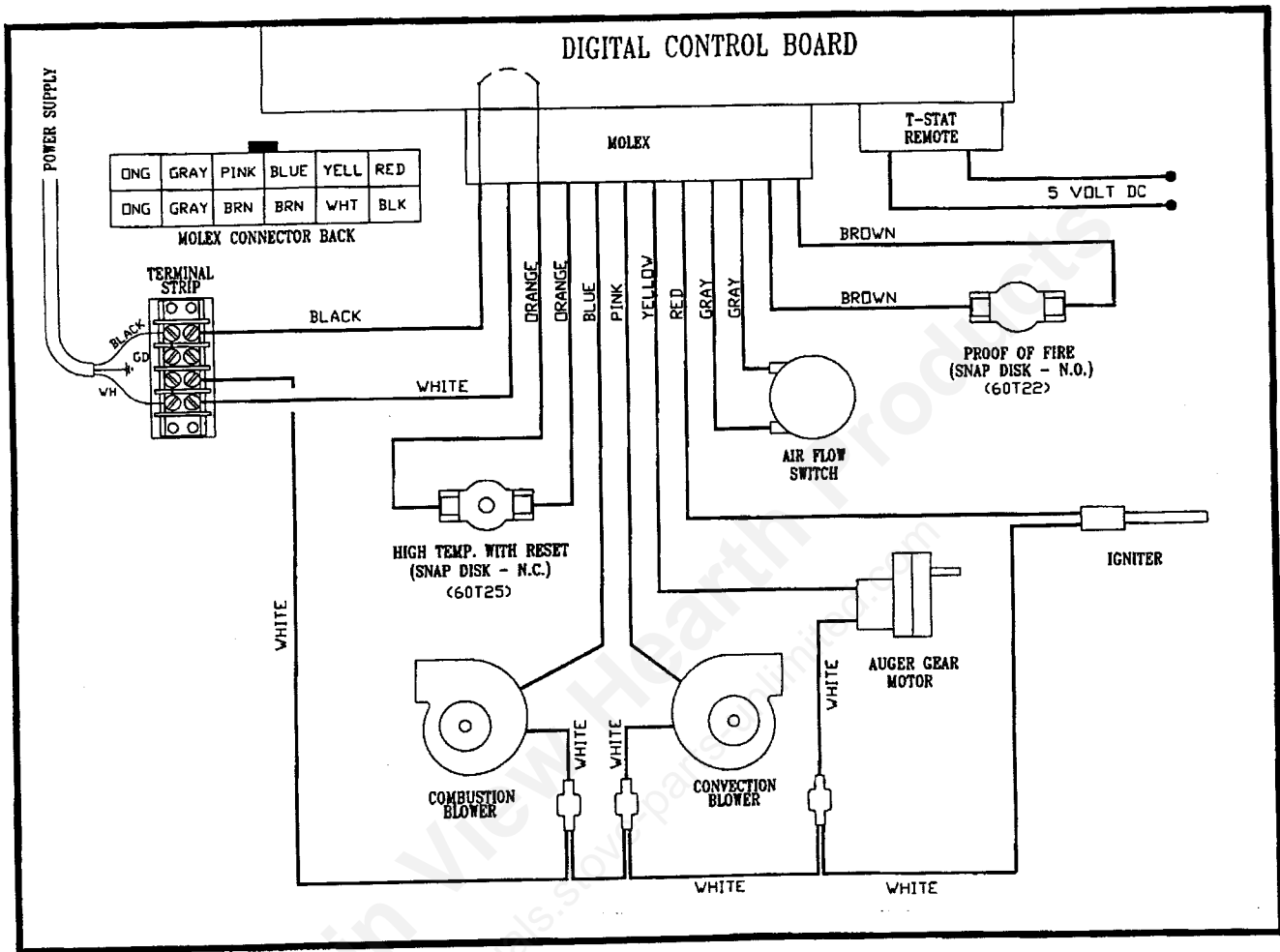
BRECKWELL HEARTH PRODUCTS

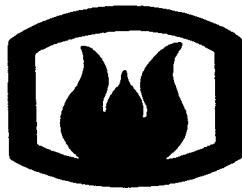
DEALER DIGITAL TROUBLESHOOTING GUIDE



BRECKWELL HEARTH PRODUCTS

DEALER DIGITAL TROUBLESHOOTING GUIDE





BRECKWELL

Hearth Products

PELLET STOVE SEMINAR

AGENDA:

1. ELECTRICAL PARTS DESCRIPTION
2. INSTALLATION
3. OPERATION
 - DIGITAL BOARD
 - ANALOG BOARD
4. MAINTENANCE
5. TROUBLESHOOTING
6. DEALERS PRE-DELIVERY INSPECTION

**THIS PACKET WILL DEAL WITH BRECKWELL PELLET
MODELS 1992 AND NEWER.**

1. ELECTRICAL PARTS DESCRIPTION

CONVECTION BLOWER:

- 2 POLE, 3000 RPM, 165 CFM
- AIR COOLED
- THERMALLY PROTECTED
- 1/8" THICK NEOPREME RUBBER GASKET AND MOUNTED WITH RUBBER BACKED SCREWS ---- KEEPS NOISE DOWN
- CAN BE RETROFITTED TO PRE 1992 MODELS WITH AN ADAPTER PLATE. ADAPTER COMES WITH GASKET AND SCREWS.
- BALL BEARING BLOWER

NOTE: OLD STYLE CONV. BLOWER (PRE 92) WAS 265 CFM, 4 POLE, 1800 RPM

COMBUSTION BLOWER:

- 2 POLE, 3000 RPM, 72 CFM
- OILLESS BLOWER
- BALL BEARING BLOWER
- ALL NEW STOVES HAVE A 1/4" THICK DIE-CUT CERAMIC FIBER GASKET. STOVES PRIOR TO 2001 MODELS HAVE A 1/8" X 3/8" GASKET ATTACHED TO THE BLOWER HOUSING. ALL REPLACEMENT BLOWERS WILL HAVE THE NEW STYLE GASKET.

Note: Motor to Housing gasket available.

AUGER MOTOR:

- 4 RPM --- PRE 2002
- 1 RPM --- 2002 & LATER
- THERMALLY PROTECTED
- 1 RPM --- USED ON PRE 2000 P23 & P22
- 2002 MODELS ALL HAVE 1 RPM AUGER MOTORS

AIR SWITCH:



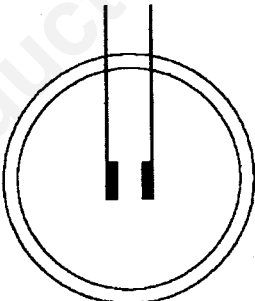
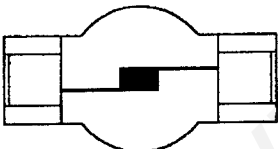
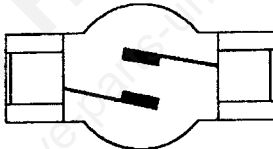
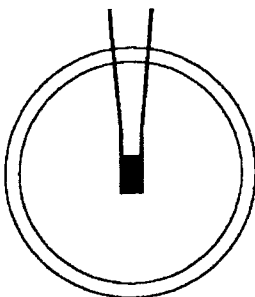
- NORMALLY OPEN DIAPHRAM SWITCH
- 0.1" WATER COLUMN NEGATIVE PRESSURE CLOSSES DIAPHRAM

AUGER/BLOWER/PROOF OF FIRE THERMODISC:

- NORMALLY OPEN
- CLOSE AT 110° F
- OPEN AT 90° F
- ANOLOG BOARD HAS 2
 - 1 for the auger motor
 - 1 for the combustion blower
- DIGITAL HAS 1 (for Proof Of Fire)
- OLDER STOVES HAD THERMODISC(S) MOUNTED THE EXHAUST TRANSITION OR CONVECTION CHAMBER BACK, NOW ALL ARE MOUNTED ON THE COMBUSTION BLOWER HOUSING.

HIGH TEMPERATURE THERMODISK:

- NORMALLY CLOSED
- OPEN AT 300° F
- THE THERMODISK USED ON THE DIGITAL BOARD HAS A RESET BUTTON BUT HAS THE SAME RATING

AUGER, BLOWER & POF THERMODISK	HIGH TEMPERATURE THERMODISK	AIR SWITCH
<p>60T22 (OLD STYLE) NORMALLY OPEN (PLASTIC)</p> <p>B 43 (NEW STYLE) NORMALLY OPEN (CERAMIC)</p>	<p>60T21 NORMALLY CLOSED</p>	<p>NORMALLY OPEN</p>
		
 <p>CLOSES WHEN STOVE TEMPERATURE REACHES 120 DEG. F.</p>	 <p>OPENS WHEN STOVE TEMPERATURE REACHES 300 DEG. F.</p>	 <p>CLOSES WHEN STOVE NEGATIVE PRESSURE REACHES 0.1" W.C.</p>

HOT ROD IGNITER:

- 300 WATTS
- IGNITER HOUSING WILL BE REMOVABLE AND REPLACABLE ON ALL STOVES IN THE NEAR FUTURE.

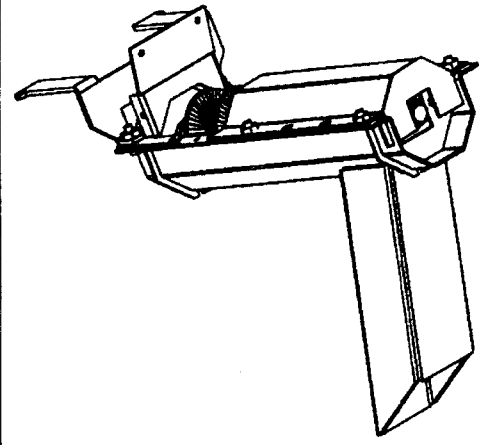
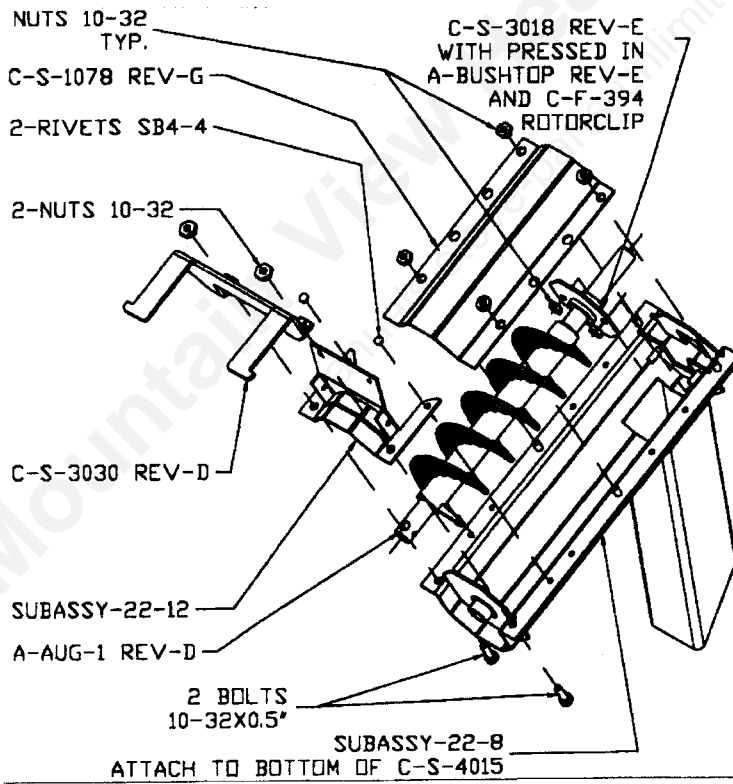
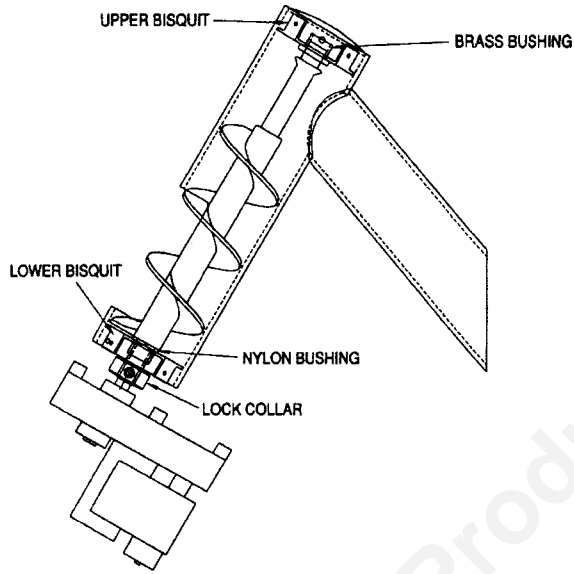
ANALOG CIRCUIT BOARD:

- 4 RPM & 1 RPM

DIGITAL CONTROL BOARD:

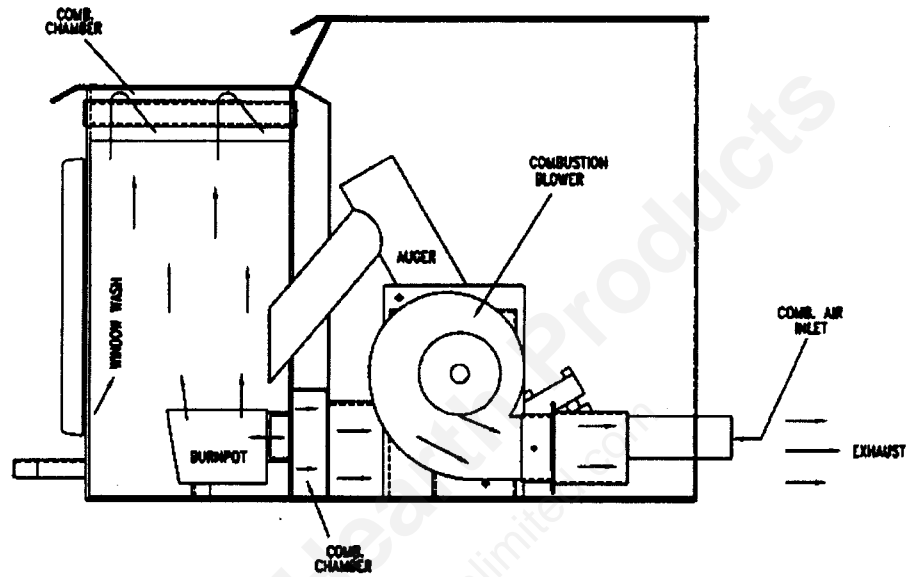
- 4 RPM BOARDS (PART # C-E-300)
(COLOR CODED WHITE SQUARE
AND/OR HAVE 2000 OR 2001 DATE ON MOLEX)
(BOARDS PRODUCED IN EARLY 2002 & EARLIER WILL HAVE A GREY
FACE, THOSE PRODUCED IN LATE 2002 & LATER WILL HAVE A BLACK
FACE AND SHOULD HAVE A STICKER ON THE BACK STATING C-E-300 /
4 RPM AND WHITE DOTS IN SEVERAL PLACES)
- 1 RPM / 5 POSITION BOARDS (BLACK FACE)
(EARLY VERSIONS HAD A GREY FACE)
(STICKER ON THE BACK INDICATING C-E-400 / 1 RPM AND RED DOTS IN
SEVERAL PLACES)
THIS BOARD FITS ALL 2002 AND NEWER STOVES, EXCEPT THE P22.
FEED RATES RANGE FROM 1 LB/HR TO 5 LB/HR
- THE P22 BOARDS (2002 & NEWER) (PART # C-E-100)
(BLACK FACE / 4 POSITION / GREEN DOTS)
FEED RATES RANGE FROM 1 LB/HR TO 4.5 LB/HR.

AUGER DIAGRAMS

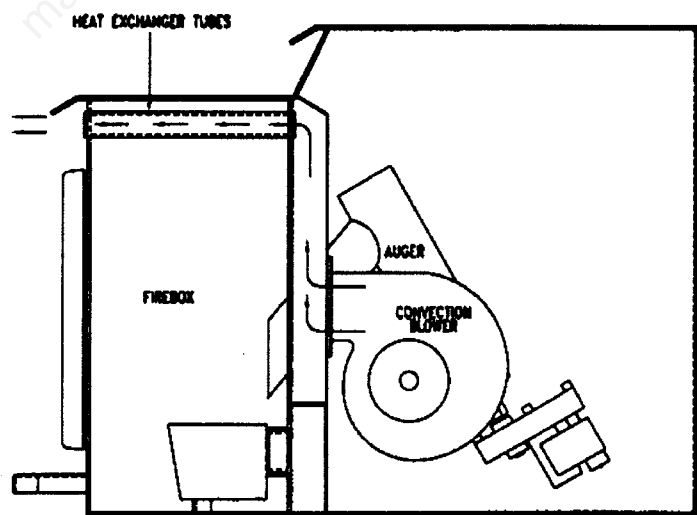


ISOMETRIC

COMBUSTION AIR FLOW DIAGRAM



CONVECTION AIR FLOW DIAGRAM



2. INSTALLATION

ALL FREESTANDING BRECKWELL PELLET STOVES ARE LISTED FOR INSTALLATION INTO RESIDENTIAL, MOBILE HOMES AND ALCOVES.

ALL INSERT BRECKWELL PELLET STOVES ARE APPROVED FOR INSTALLATION INTO MASONRY FIREPLACES, FACTORY BUILT ZERO CLEARANCE FIREPLACES AND BUILT IN FIREPLACES IN MOBILE HOMES.

- INSERTS ARE ALSO APPROVED AS A BUILT IN FIREPLACE FOR NEW CONSTRUCTION.

BASIC ELECTRICAL REQUIREMENTS:

- AC VOLTAGE SHOULD BE 120 VOLTS
- UTILITY COMPANYS ALLOW FOR PLUS OR MINUS 5%. THIS EQUATES TO PLUS OR MINUS 6 VOLTS.
- THE STOVE WILL OPERATE AS DESIGNED AT VOLTAGES BETWEEN 114 AND 126 VOLTS.
- THE VOLTAGE SHOULD ALWAYS BE CHECKED AT THE WALL PLUG PRIOR TO THE INSTALLATION.
- THE CONSUMER SHOULD EXPECT THE UTILITY CO. TO PROVIDE THE PROPER VOLTAGE.

GROUNDING:

- ALL NEWER HOMES HAVE 3 PRONG RECEPTACLES.
- OLDER HOMES MAY HAVE 2 PRONG RECEPTACLES
 1. ONE TYPE HAS ONE SIDE LARGER THAN THE OTHER.
 2. ANOTHER TYPE HAS BOTH SIDES THE SAME SIZE.
- BOTH 2 PRONG RECEPTACLES NEED TO HAVE A SEPARATE GROUND INSTALLED. RUN A COPPER WIRE TO A LIGHTNING ROD OR A COPPER WIRE TO THE HOUSE PLUMBING.

GENERATORS:

THE ANALOG AND THE DIGITAL BOARDS WILL OPERATE USING A GENERATOR.

- 500 WATT MIN. WITHOUT HOT ROD IGNITER.
- 800 WATT MIN WITH HOT ROD IGNITER.
- 1RPM RATINGS
400 WATT WITHOUT HOT ROD
700 WITH HOT ROD

AC INVERTERS:

- 12 VOLT DC TO 110 VOLT AC.
- 500 WATT MIN. WITHOUT HOT ROD IGNITER.
- 800 WATT MIN WITH HOT ROD IGNITER.
- 1 RPM RATINGS
400 WATT WITHOUT HOT ROD
700 WATT WITH HOT ROD

BRECKWELL ELECTRICAL SPECS.

4 RPM AUGER MOTOR = 1.65 AMPS
1 RPM AUGER MOTOR = .45 AMPS
COMBUSTION BLOWER = 1.3 AMPS
CONVECTION BLOWER = 1.5 AMPS
HOT ROD = 2.72 AMPS
TOTAL AMPS = 7.17 AMPS WITH 4 RPM AUGER MOTOR
TOTAL AMPS = 5.97 AMPS WITH 1 RPM AUGER MOTOR

DURING START-UP WITH HOT ROD ON THE STOVES PULL 789 WATTS WITH 4 RPM AUGER MOTOR.

DURING START-UP WITH HOT ROD ON THE STOVES PULL 657 WATTS WITH 1 RPM AUGER MOTOR.

DURING NORMAL OPERATION THE STOVES PULL 490 WATTS MAX WITH 4 RPM AUGER MOTOR.

DURING NORMAL OPERATION THE STOVES PULL 358 WATTS MAX WITH 1 RPM AUGER MOTOR.

BASED ON 110 WATTS PER AMP

COMBUSTION AIR:

- NSO PREFERS INSIDE AIR FOR COMBUSTION AS LONG AS THE HOME IS NOT AIR TIGHT. WHY? ---- OUTSIDE AIR IS COLD AND MOIST. CONDENSATE IN THE SYSTEM CAUSES CREOSOTE BUILD-UP AND DIRTY GLASS.
- SOME BUILDING INSPECTORS MAY REQUIRE OUTSIDE AIR FOR COMBUSTION.
- IN INSERT INSTALLATIONS IF THE FIREPLACE IS TOO SMALL, SPACE IT OUT ABOUT ¼" TO 3/8" FROM THE FLASHING BACK TO THE FACE OF THE FIREPLACE.

OUTSIDE AIR:

OUTSIDE AIR IS REQUIRED IN MOBILE HOME AND MOST ZERO-CLEARANCE FIREPLACES.

- USE 2" ALUMINUM Z-FLEX OR 1 ¾" METAL PIPE (FLEXIBLE OR RIGID).
- ATTACHES TO AIR INLET PIPE AT REAR OF UNIT. 2" FLEX CAN BE INSTALLED FROM DAMPER TO REAR OF STOVE IF BUILDING INSPECTOR WANTS IT.
- TERMINUS SHOULD HAVE A WIND HOOD OR BE TURNED 45 DEG. TO PREVENT OVERDRAFT.
- LOCATION OF INLET IS SHOWN IN MANUAL.

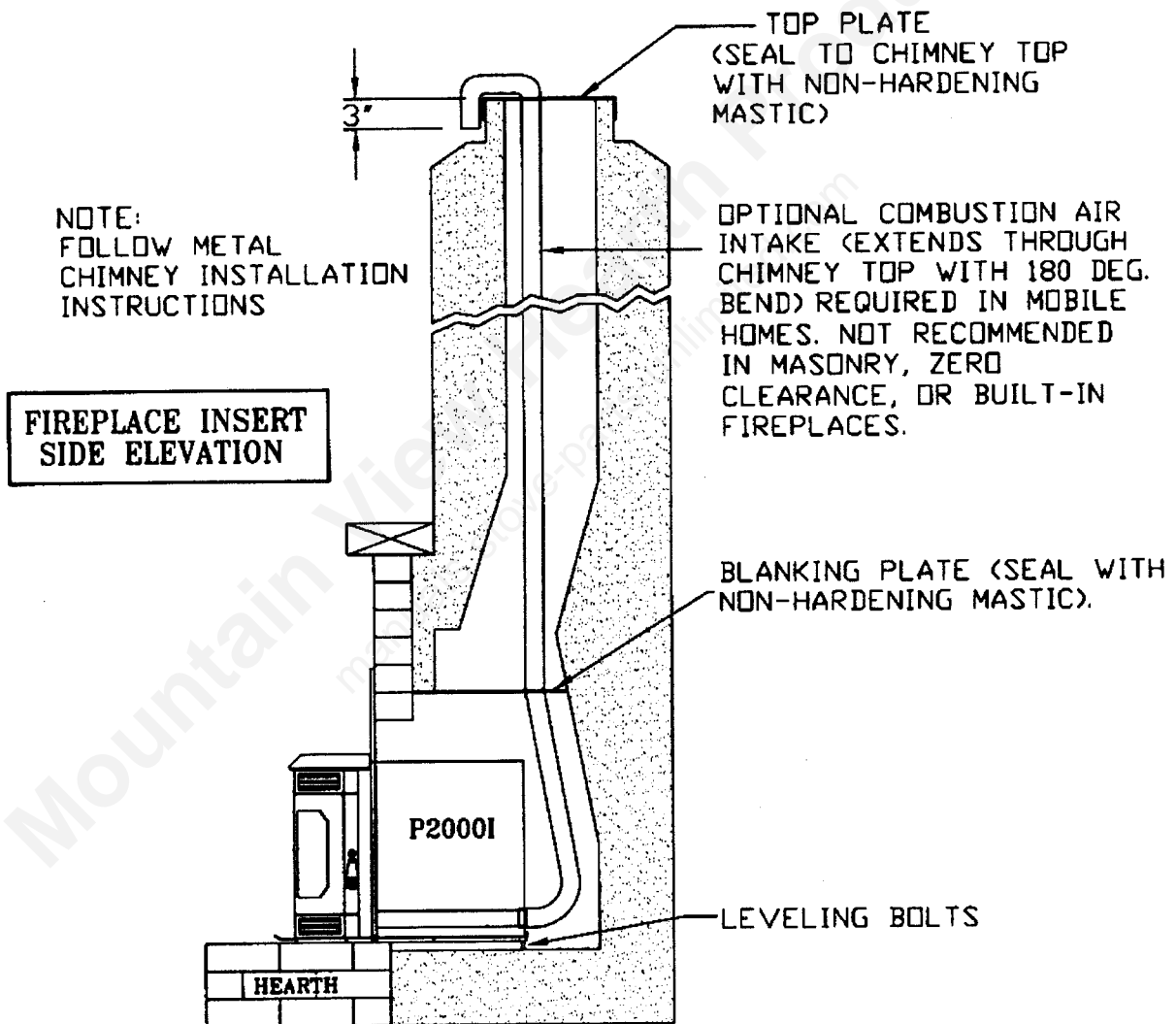
OUTSIDE AIR SOURCE:

INSERTS:

- TOP OF CHIMNEY OR ASH CLEANOUT DOOR.

FREESTANDINGS:

- HOLE IN THE FLOOR NEAR THE REAR OF THE STOVE.
- HOLE IN THE WALL BEHIND THE STOVE.



VENT TYPE:

- BRECKWELLS ARE CERTIFIED FOR USE WITH LISTED TYPE L-VENT 3" OR 4".
- STOVES WERE TESTED WITH SIMPSON DURAVENT BRAND.
- STOVES COME WITH DURAVENT ADAPTER.
- WHEN INSTALLING REFER TO VENT MANUFACTURES INSTRUCTIONS.

VENT SEALING:

- SILICONE
- ALUMINUM TAPE
- ¼" STRIP AROUND JOINTS AND PAINT.
- SEAL BLANKING PLATE WITH HIGH TEMP SILICONE
- PAINT FIREPLACE PRIOR TO INSTALLATION

CHIMNEY TERMINATION:

NFPA 211 (GOV. REG.) ELEMENTS OF TERMINATION

- NOT LESS THAN 3' ABOVE ANY FORCED AIR INLET LOCATED WITHIN 10'.
- NOT LESS THAN 4' BELOW, 4' HORIZONTALLY FROM OR 1' ABOVE ANY DOOR, WINDOW, OR GRAVITY AIR INLET INTO ANY BUILDING.
- NOT LESS THAN 2' FROM ANY ADJACENT BUILDING AND NOT LESS THAN 7' ABOVE GRADE WHEN LOCATED ADJACENT TO PUBLIC WALKWAYS.

NOTE: IT IS IMPORTANT THAT THE TERMINATION BE POSITIONED SO THAT THE EXHAUST CANNOT BE RECIRCULATED BACK INTO THE INLET.

EQUIVALENT VENT LENGTH:

THIS IS A WAY TO DETERMINE WHETHER TO USE 3" OR 4" VENT IN AN INSTALLATION. IF YOU HAVE OVER 15' OF EQUIVALENT VENT LENGTH (EVL), WE RECOMMEND THE USE OF 4" PIPE.

TO CALCULATE EVL USE THE FOLLOWING CONVERSIONS:

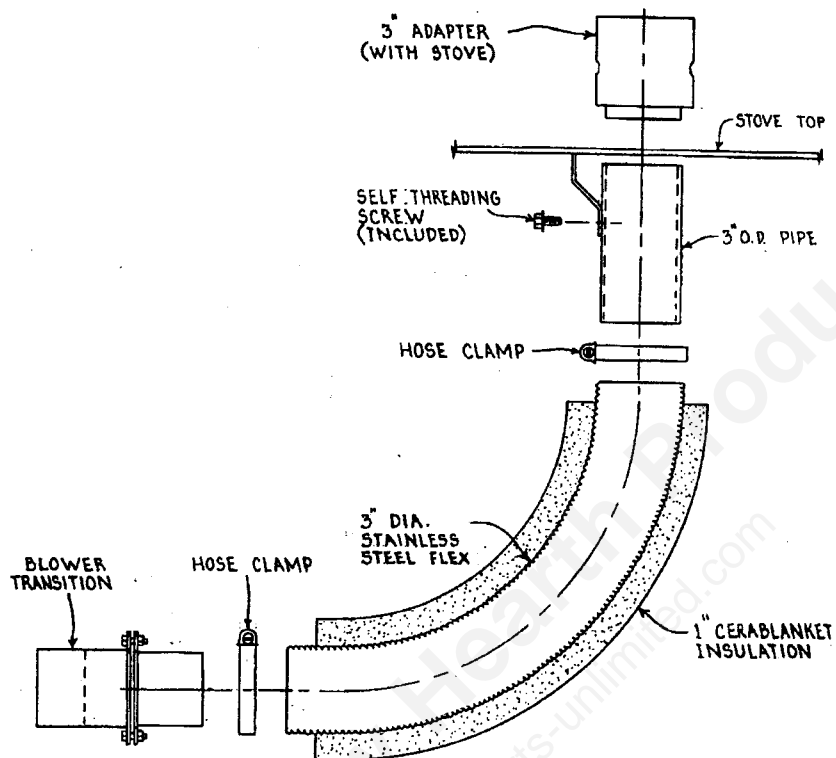
- 90 DEG. ELBOW OR TEE = 5 EQUIVALENT FEET
- 45 DEG. ELBOW = 3 EQUIVALENT FEET
- HORIZONTAL PIPE RUN = 1' PER ACTUAL FOOT
- VERTICAL PIPE RUN = .5' PER ACTUAL FOOT

NOTE: AT ALTITUDES ABOVE 3000' WE SUGGEST THE USE OF 4" DIAMETER VENT AT AN EVL OF 7 FEET.

FREESTANDING INSTALLATIONS

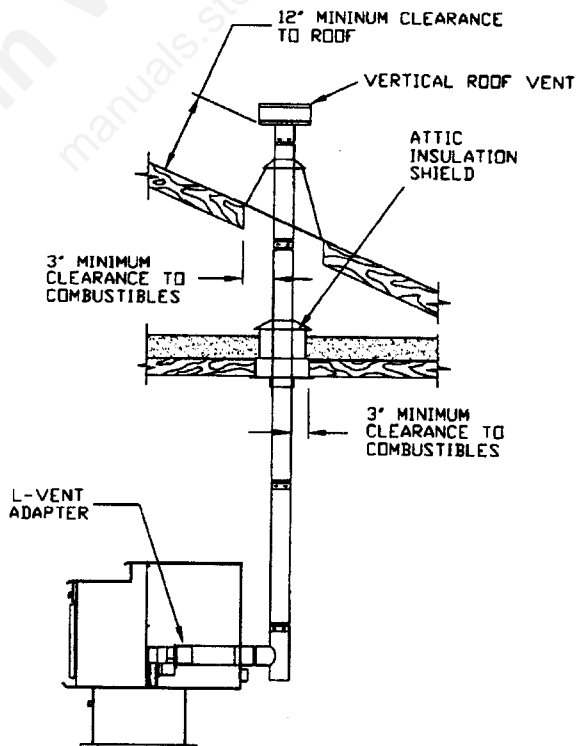
VERTICAL INSTALL KIT: (P24FS ONLY)

- WITH THE OPTIONAL VIK THIS STOVE CAN BE VENTED OUT THE STOVETOP.



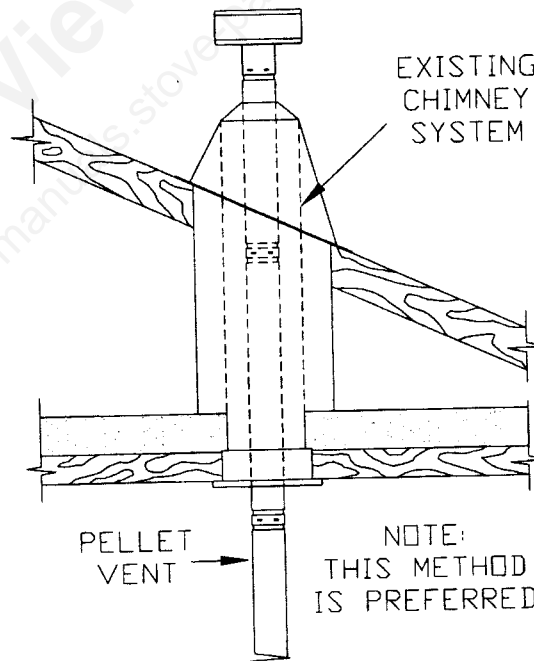
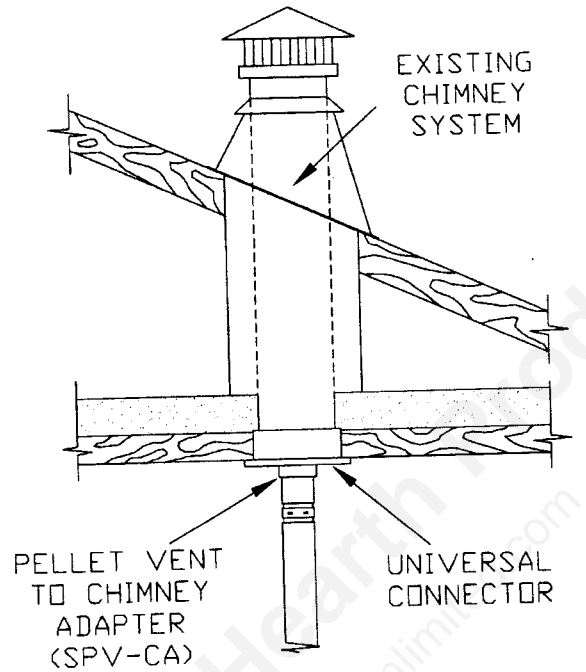
ALL OTHER MODELS:

- MUST BE VENTED OUT THE BACK WITH ELBOW OR CLEANOUT TEE.



VENTING INTO A CLASS "A" CHIMNEY:

- IN SOME INSTALLATIONS (ESPECIALLY IN COLDER AREAS) WHEN ATTACHING DIRECTLY TO CLASS "A" CHIMNEYS THE COLD HEAVY AIR MASS IS FORCED THROUGH THE CHIMNEY CAUSING A BACK PRESSURE IN THE STOVE.
- WE RECOMMEND RUNNING THE VENT TO THE CHIMNEY TOP AND USING AN APPROPRIATE CAP.



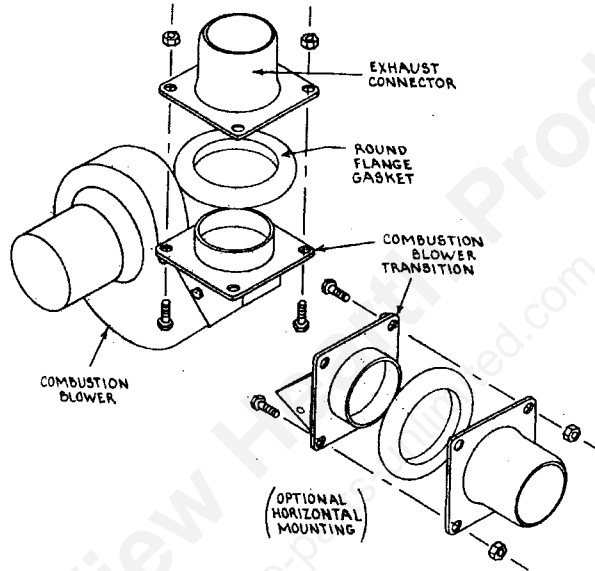
INSERT INSTALLATIONS

WHEN INSTALLING AN INSERT:

- THE CHIMNEY SHOULD BE CLEANED.
- THE FIREPLACE SHOULD BE CLEANED THOROUGHLY.
- THE FIREPLACE SHOULD BE PAINTED TO SEAL OUT ODORS.
- A BLANKING PLATE SHOULD BE INSTALLED TO SEAL OUT ODORS FROM THE CHIMNEY.

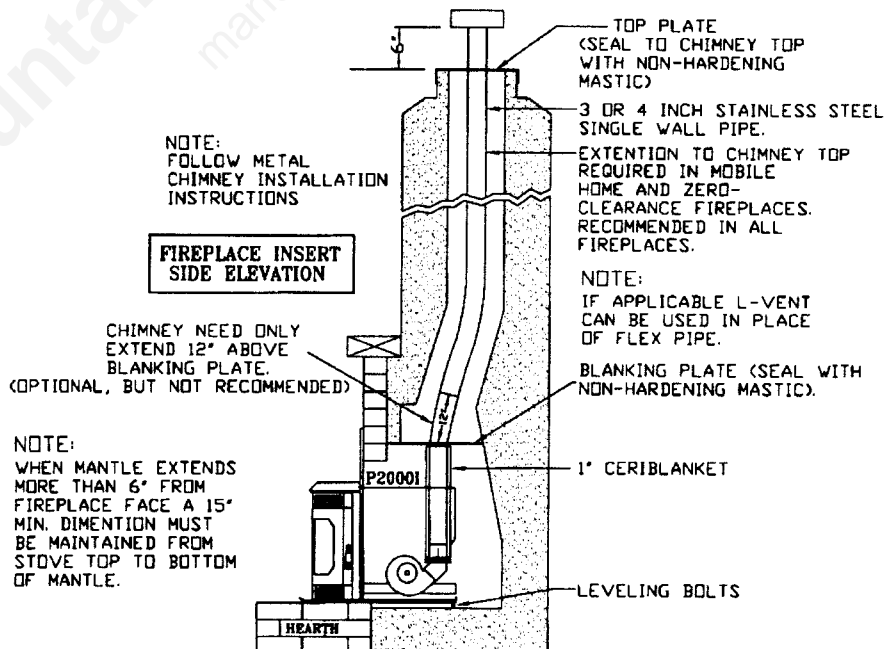
EXHAUST ADAPTER: (P24I AND P2000I)

- TOP OR REAR VENTING
- RESEAL!



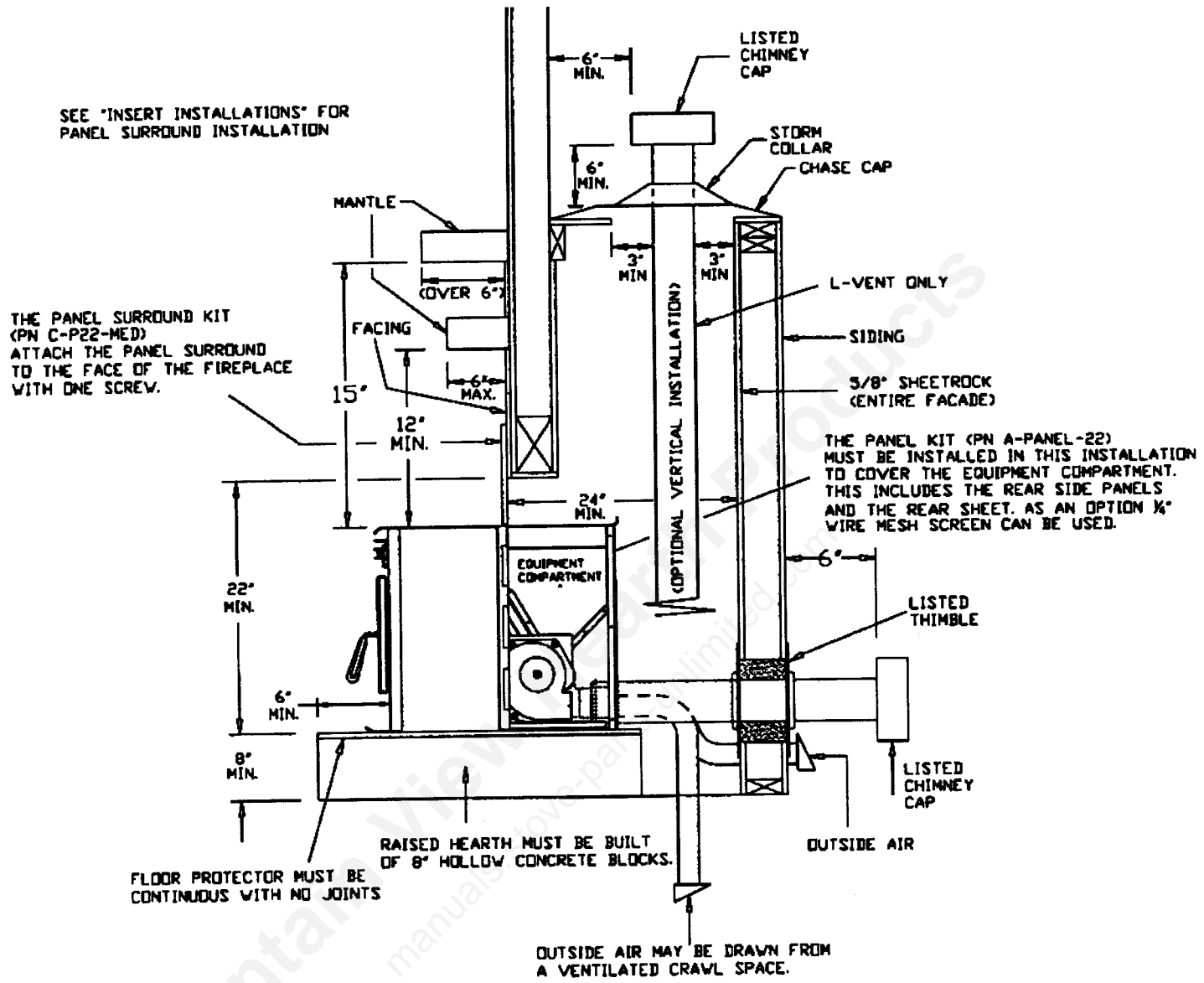
EXHAUST PIPE INSTALLATION:

- THROUGH CHIMNEY TOP
- 12" THROUGH BLANKING PLATE



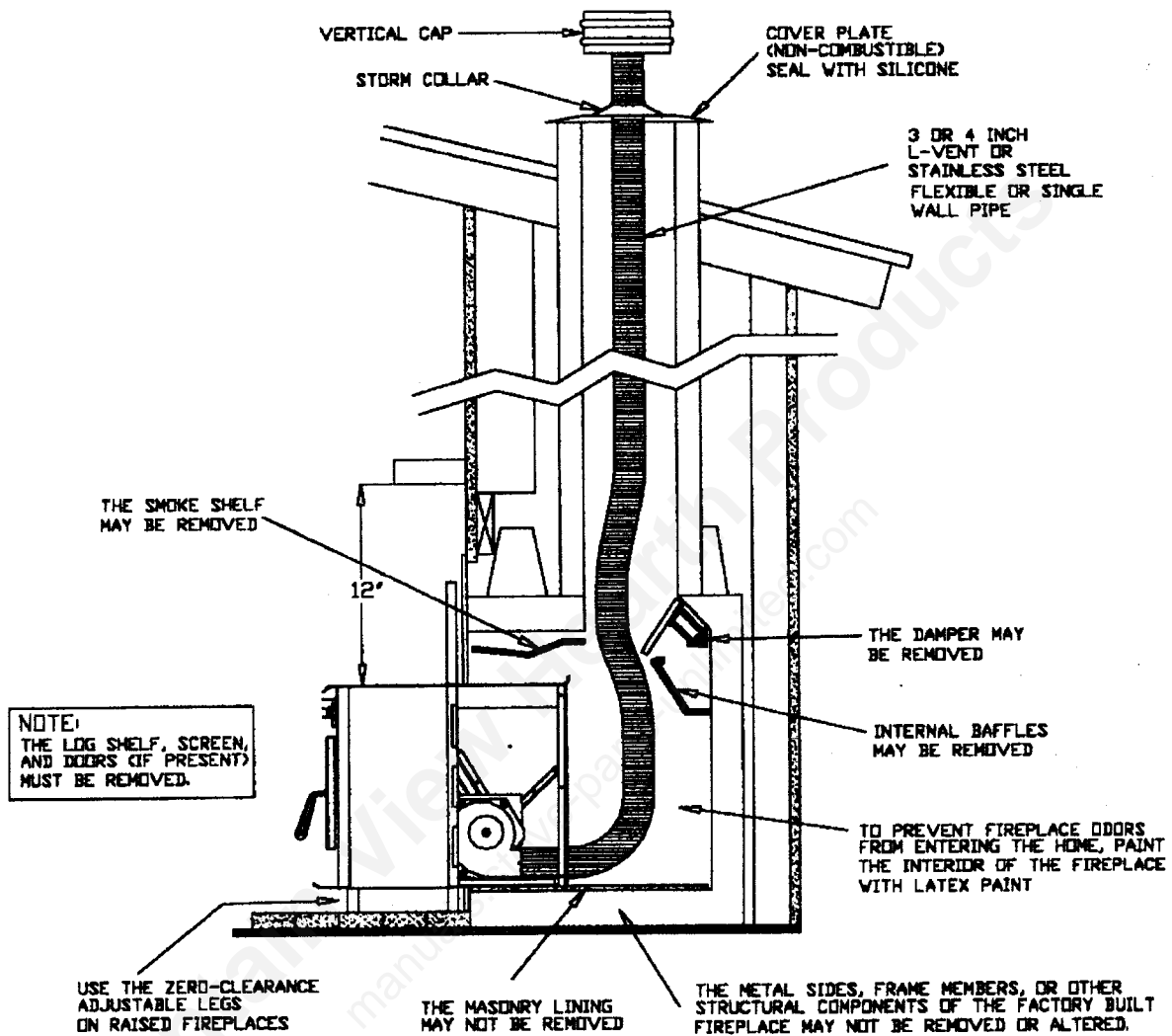
BUILT IN FOR NEW CONSTRUCTION:

- CLEARANCES
- HOLLOW CORE CONCRETE BLOCKS



FACTORY BUILT OR ZERO CLEARANCE FIREPLACES:

- ALL PARTS TAKEN OUT FOR THE INSTALLATION MUST NOT BE DAMAGED SO THEY CAN BE REPLACED IF THE STOVE IS EVER REMOVED.
- A LABEL MUST BE ATTACHED TO THE FIREPLACE WHEN INSTALLING THE STOVE IN A ZC.



THIS FIREPLACE HAS BEEN ALTERED TO ACCOMODATE A FIREPLACE INSERT AND SHOULD BE INSPECTED BY A QUALIFIED PERSON PRIOR TO RE-USE AS A CONVENTIONAL FIREPLACE.

SPECIAL MOBILE HOME REQUIREMENTS: HUD

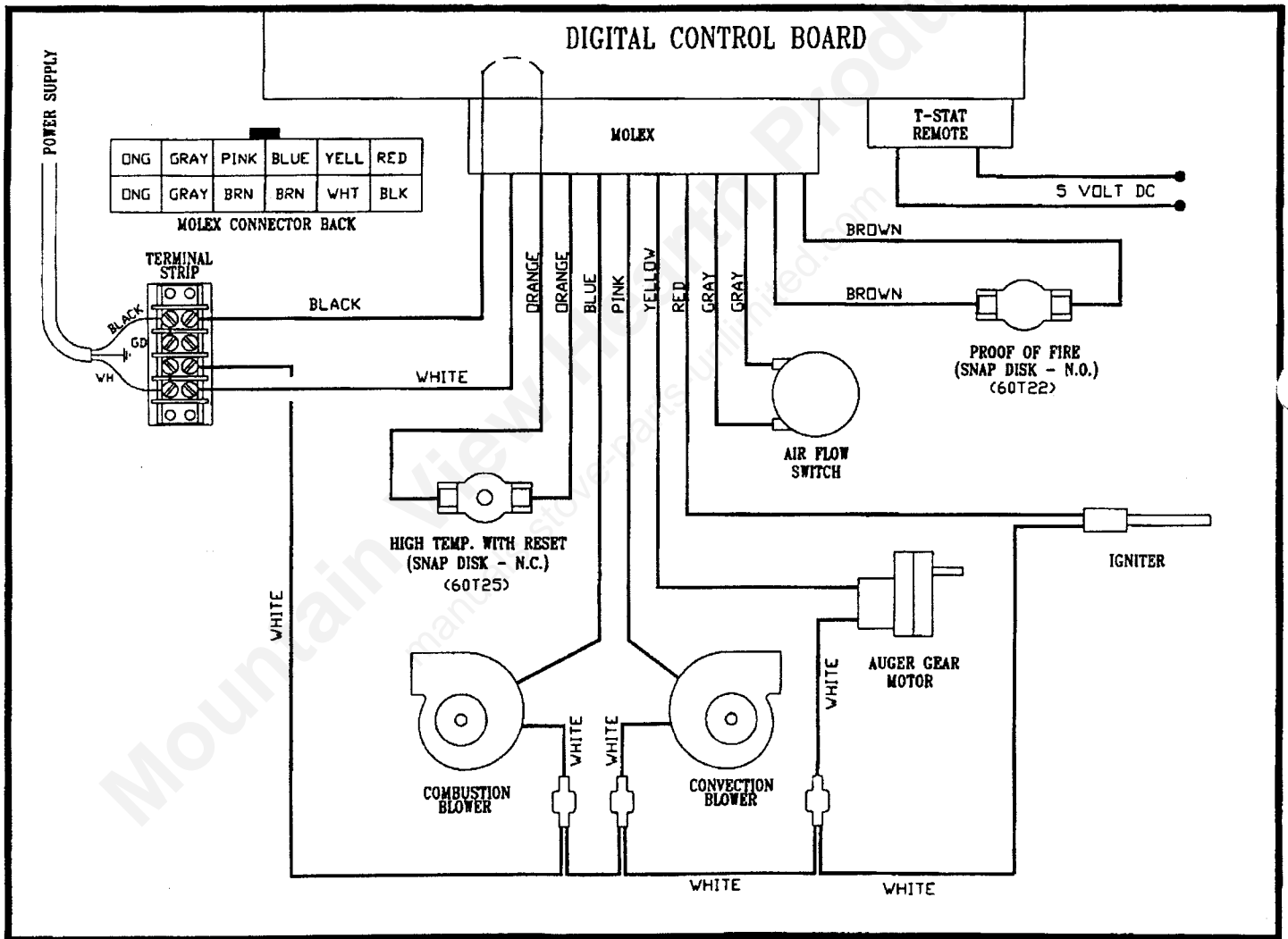
- STOVE NEEDS TO BE GROUNDED WITH #8 COPPER WIRE.
- GROUND MUST BE TERMINATED WITH A NED GROUNDING DEVICE
- STOVE MUST BE ATTACHED TO MOBILE HOME OR SCREWED DOWN FOR SHIPMENT.

3. OPERATION (2 PARTS – ANALOG & DIGITAL)

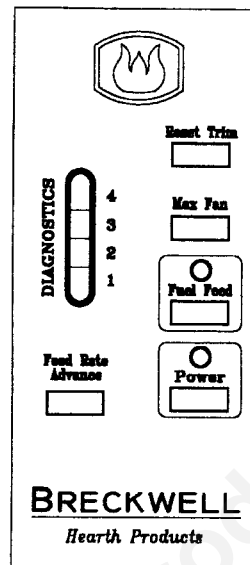
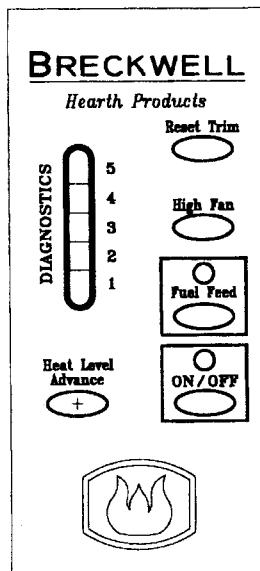
DIGITAL CONTROL BOARD

- NOTE: ALL P22'S PRODUCED AFTER MARCH OF 2003 HAVE THE SAME THERMOSTAT OPTIONS AS OUR OTHER DIGITAL CONTROL BOARDS.

ELECTRICAL DIAGRAM



PANEL CONTROLS



ON/OFF POWER SWITCH

- When pushed the stove will automatically ignite.
- When pushed the Igniter has a guaranteed minimum "on time" of 10 minutes
- When pushed the igniter will stay on for 10 minutes if the POF thermodisc closes in 10 minutes or less.
- When pushed the igniter will stay on for 15 minutes if the POF thermodisc does not close. (From 10 to 15 minutes, when the POF thermodisc closes, the igniter will turn off)
- When pushed the green light (red on the P22) in the power / on/off box will flash until the igniter goes off. (Initial startup only)
- The heat level / feed rate advance is inoperable during the ignition start period. The stove will operate at the #3 setting until the green light (red on the P22) stays on continuously.
- After the ignition start period the green light stays on continuously and the stove will operate at the heat setting selected.

NOTE: If the stove has been shut off, and you want to re-start it while it is still warm, the "on/off" button must be held down for 2 seconds.

FUEL FEED SWITCH

- When the "Fuel Feed" button is pushed and held down the stove will feed pellets into the burnpot continuously. (Same as manual feed on analog board)
- When this button is pushed or when the stove is feeding automatically the green light (amber on the P22) in the "Fuel Feed" box will be on. (This is convenient for timing the board)

HIGH FAN SWITCH

- The room air fan or Convection blower varies directly with the feed rate. On this board the blower varies throughout the entire range from 1 to 5, or 1 to 4 on the P22 board.
- The high fan switch overrides the variable speed function.
- When the high fan switch is pushed the room air fan will switch to its highest setting
- When this button is pushed again the room air fan will return to its original setting based on the previous heat level advance setting.

RESET TRIM

With the different sizes and quality of fuel the low feed rate sometimes needs to be adjusted. This is usually a one-time adjustment when the stove is first installed or if the customer changes pellets. The "Reset Trim" button when adjusted allows for 3 different feed rate settings for the 1 or low feed setting. To adjust simply push the "Reset Trim" button while the stove is running and watch the bar graph.

- When the 1 & 4 (C-E-300 & C-E-400) or 1 & 3 (C-E-101 & C-E-401) lights are illuminated on the bar graph the low feed rate is at its "Lowest" setting.
- When the 1 light is illuminated on the bar graph the low feed rate is at its "normal" setting.
- When the 1 and 5 (C-E-300 & C-E-400) or 1 & 4 (C-E-101 & C-E-401) lights are illuminated on the bar graph the low feed rate is at its "Highest" setting.

NOTE: These values will be shown whenever the stove is set to the 1 setting. For example when the reset trim is set to its lowest setting every time the stove is set on low the 1 & 4 (C-E-300 & C-E-400) or 1 & 3 (C-E-101 & C-E-401) lights will be illuminated on the bar graph.

HEAT LEVEL / FEED RATE ADVANCE

When this button is pushed the pellet feed rate or heat output will be adjusted. The levels of heat output change incrementally on the bar graph from level 1 to 5, or 1 to 4 on the P22.

START-UP PROCEDURE

1. Fill hopper and clean burnpot.
2. Press power / on/off button. The green light (red on the P22) will come on.
3. Adjust the damper to ¼" open from all the way in.
(This may vary depending on the installation)
4. Adjust the feed rate to the desired setting by pressing the heat level / feed rate advance button. This setting will not take effect until the start-up cycle has completed, the control board is programmed to operate at the #2 setting, regardless of what setting is selected, while it is in the start-up cycle.
5. Once the fire is well established the damper may have to be re-adjusted.
 - If the fire doesn't start within 15-min. press the power / on/off button, wait a few minutes and start the procedure again.

OPENING DOOR

If the door is opened while the stove is in operation it must be closed within 30 seconds or the stove will shut down. If the stove shuts down push the "POWER / ON/OFF" button to re-start the stove.

AIR SWITCH DELAY

The air switch is delayed through the circuit board for 30 seconds on startup to allow the combustion blower to ramp up.

ROOM AIR FAN

When starting the stove the Room Air Fan will not come on until the stove's heat exchanger warms up and closes the POF thermodisc. This usually takes about 8 minutes from start-up.

IF THE POF THERMODISC DOESN'T CLOSE DURING THE IGNITION SEQUENCE

- The comb. Blower will continue to run for 10 min.
- After the comb. Blower shuts off the #3 light on the bar graph will blink indicating a POF failure.

RE-STARTING A WARM STOVE

- If the stove has been shut off, and you want to re-start it while it is still warm, the "on/off" button must be held down for 2 seconds.

IF STOVE RUNS OUT OF PELLETS

- The fire will go out and the auger motor and blowers will run until the stove cools below 90° F. The POF thermodisc will open.
- When the POF thermodisc opens the auger motor and the convection blower will shut off. The combustion blower will run for 10 min. During this 10 min. period the POWER / ON/OFF led will flash.
- When the combustion blower stops running the #3 bar graph light will flash indicating that the POF thermodisc has opened.

To restart, refill hopper and press "Fuel Feed" button until pellets begin to drop into burnpot. Press "POWER / ON/OFF" button.

POWER OUTAGE

- In the event of a power outage the stove will restart when the power is restored as long as the POF thermodisc is still closed (over 90° F). This is usually 30 to 45 minutes.
- When in ON/OFF thermostat mode a power failure will shut the stove off. When the power is restored the stove will go through its start-up procedure and reset to level 1.

HIGH TEMP. THERMODISC

The stove is equipped with a resettable high temperature thermodisc. This disk has a reset button on its backside. This safety switch has two functions.

- To recognize an over-heat situation in the stove and shut down the fuel feed or auger system.
- To recognize an internal control board failure causing a constant feed of pellets and shut down the fuel feed or auger system. This applies to 4-RPM boards.

Once tripped, the reset button will have to be pushed before restarting the stove. The manufacturer recommends that the customer call the dealer if this occurs as this may indicate a more serious problem.

CIRCUIT BOARD FUSES

The Digital board (C-E-100, C-E-300, C-E-400) is equipped with two 5-amp fuses on the bottom left corner of the board back. They are listed on the board as F1 and F2.

F1 - Power input fuse.

When blown the power input to the unit is terminated and the entire board will stop functioning.

F2 - Auger and Igniter fuse.

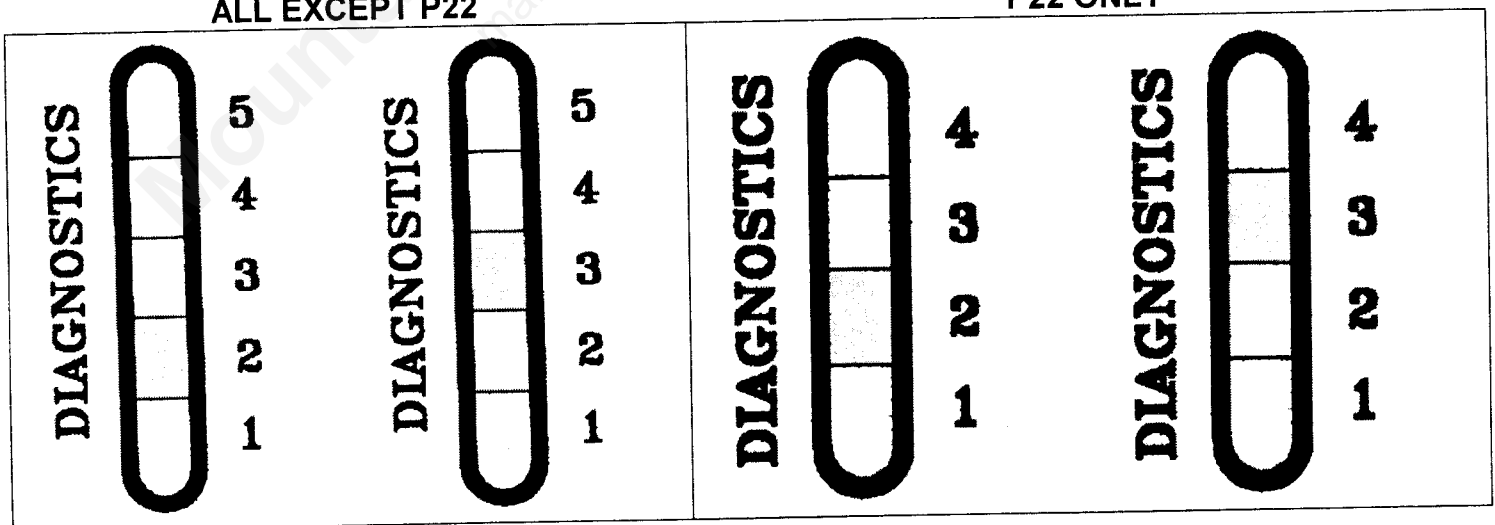
When blown the Auger Motor and the Igniter will stop functioning.

NOTE: The fuses are provided as a safety feature. Once the fuse or fuses are replaced the board may feed constantly requiring a board replacement.
New fuse configuration for new boards.

DIAGNOSTICS

ALL EXCEPT P22

P22 ONLY



PROOF OF FIRE

If the #3 light on the Heat Level / Feed Rate Advance bar graph is flashing this indicates the stove has lost PROOF OF FIRE or has not achieved normal operating status. This means the POF thermodisc has opened. The disk normally opens at 90° F.

- When the #3 light starts flashing the Igniter and the Auger will shut down.
- When the #3 light starts flashing the Combustion Blower will operate for 10 minutes and shut down.

POSSIBLE CAUSES:

1. The hopper is out of pellets.
2. The burnpot is not pushed completely to the rear of the firebox.
3. The burnpot holes are blocked.
4. The High Temp Thermodisc has tripped and needs to be reset.
5. The air damper was open too far and a low feed setting.
6. The F2 fuse on the circuit board has blown.
7. The POF thermodisc needs to be relocated to the combustion blower housing. (Mid 2002 and older digital control board models only)
8. The POF thermodisc has malfunctioned.
9. The Digital board is not supplying power to the POF thermodisc.

AIR SWITCH

If the #2 light on the Heat Level / Feed Rate Advance bar graph is flashing this indicates that the stove has lost negative pressure. The air switch has opened.

- When the #2 light starts flashing the Digital Board will shut down the Igniter and the Auger Motor.
- The Combustion blower will run for 10 minutes.

POSSIBLE CAUSES:

1. The air switch hose or attachment pipes are blocked with ash.
2. The air inlet, burnpot, combustion air chambers, exhaust blower or exhaust pipe are blocked with ash or foreign matter.
3. The air switch is stuck open.
4. The Combustion Blower has failed.
5. The stove door or the ash container doors are not completely latched tight.
(P24FS & P2000FS ONLY)
6. The Air Switch connections are bad.
7. The gray wires are pulled loose at the Molex connector on the wire harness.
8. The circuit board is not supplying power to the air switch.
9. The slider plate is not properly sealing the firebox floor.
10. The exhaust vent pipe does not meet EVL requirements.

THERMOSTAT

A 250-500 millivolt thermostat is required. A fixed wall mount or Breckwell's hand held model can be used. The control panel can be set up two ways to operate the stove in thermostat mode.

1. MANUAL

- When not using a thermostat make sure the shunt is over just one pin at J9, (C-E-100, C-E-300 & C-E-400) or off altogether, and that the thermostat jumper wire is securely in place in the terminal block. The circuit board will not operate properly otherwise in this mode.
- Manual position in C-E -101 & C-E-401

2. HIGH/LOW THERMOSTAT MODE

- When engaged in this mode the stove will automatically switch between two settings. When warm enough, it will switch to the #1 or low setting. The room air blower will also slow to its lowest speed.
- The Heat Level Advance setting on the bar graph will stay where it was initially set. When the house then cools below the thermostat setting, the stove will switch to the feed rate of the heat level advance setting.
- High/low position on C-E-101 & C-E-401

3. ON/OFF THERMOSTAT MODE

- In this mode when the home is warm enough the stove will shut off. The fans will continue to run until the POF thermodisc opens.
- When the home cools below the thermostat setting, the stove will automatically start itself and run where the feed rate is set.
- On/Off position on C-E-101 & C-E-401

NOTE: When in High/Low or On/Off thermostat mode -

- Do not operate the stove higher than the #3 setting.
- Set the damper control rod approximately 3/8" out. This will vary depending on elevation and weather conditions.
- When the stove is hooked up to a thermostat it will not operate manual mode. This means that if the thermostat is switched to its "off" position the unit cannot be operated at the control panel.

THERMOSTAT INSTALLATION

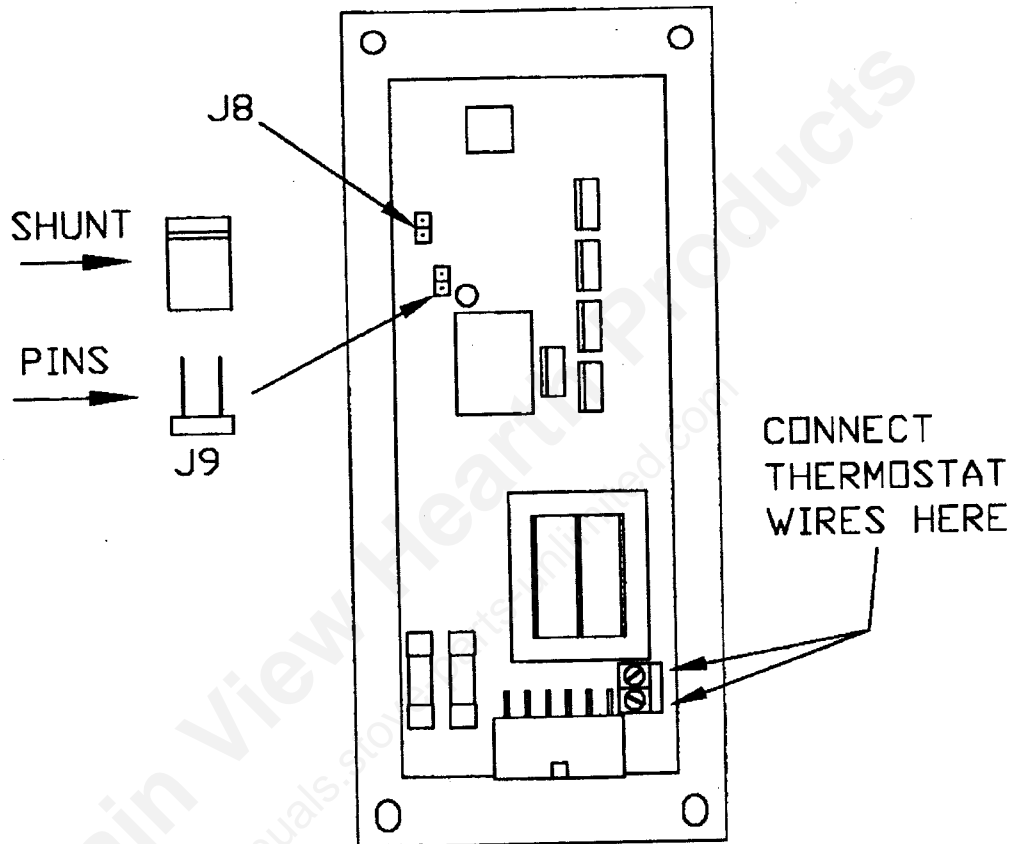
WIRE CONNECTIONS

The two thermostat wires connect to the terminal block on the lower right side of the back of the digital board. (See diagram) Make sure to remove the jumper wire from the terminal block prior to connecting the wires. Loosen the two screws, insert the wires in the terminal side and tighten the two screws.

SHUNTS

There is one shunt and 2 sets of pins on the rear upper left part of the board. J8 or the upper shunt and pins should be disregarded as it's for factory testing of the board. J9 is the lower shunt and pins.

- When the J9 shunt is over one pin, or off both pins, the digital board is in HIGH/LOW thermostat mode. THIS IS THE FACTORY SETTING FOR THE DIGITAL BOARD.
- When the J9 shunt is over both pins the digital board is in ON/OFF thermostat mode.



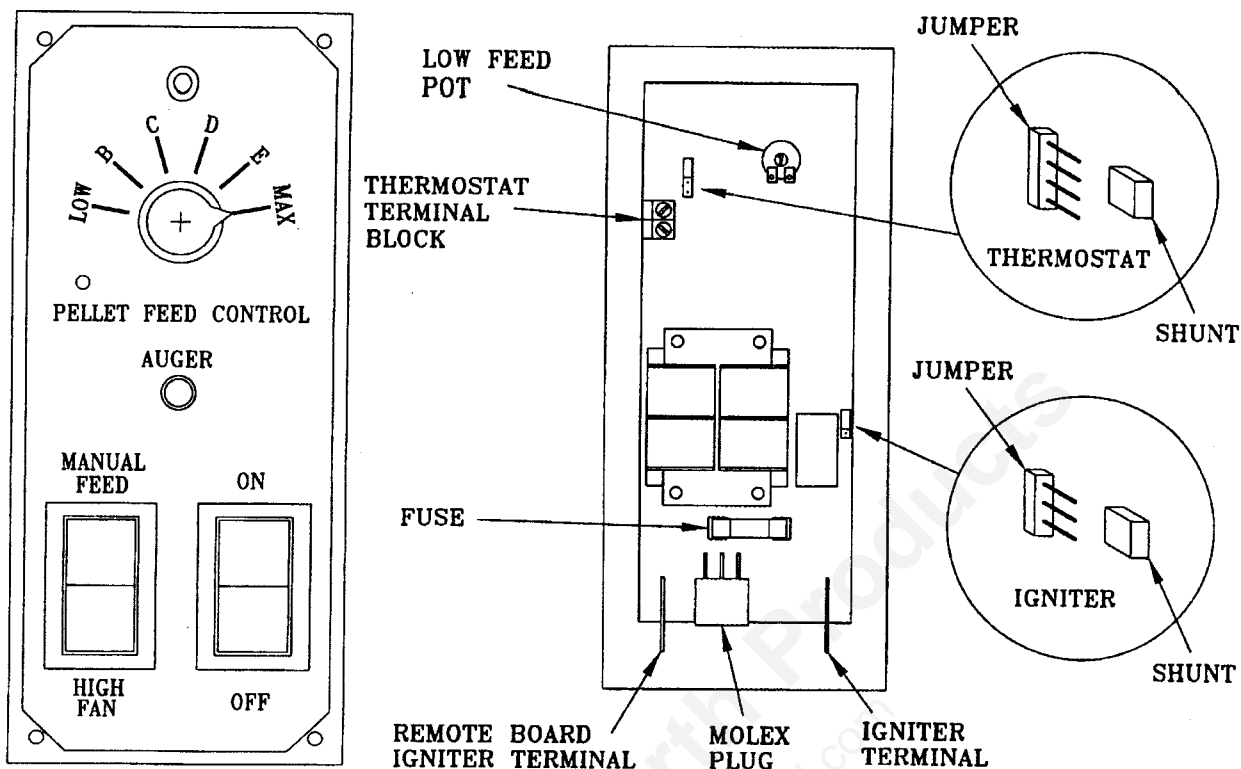
BRECKWELL REMOTE THERMOSTAT (ACUMEN)
(SEE INSTALLATION & OPERATING INSTRUCTIONS)
(SEPARATE DOCUMENT)

DIGITAL CIRCUIT BOARD TIMING CYCLES

Digital Circuit Board Timing & Feed Rates

Heat Level Setting	4 - RPM	1 - RPM / 5 Pos.	1 - RPM / P22
	On Time	On Time	On Time
1 & 4 (1 & 3 P22)	0.8 sec.	1.4 sec.	1.4 sec.
1	0.9 sec.	2 sec.	2 sec.
1 & 5 (1 & 4 P22)	1.2 sec.	2.5 sec.	2.5 sec.
2	1.9 sec.	4 sec.	4 sec.
3	2.4 sec.	7 sec.	7 sec.
4	3.6 sec.	9 sec.	10 sec.
5	4.5 sec.	12 sec.	N/A
Total Cycle Time	14.5 sec.	14.5 sec.	14.5 sec.

ANALOG CIRCUIT BOARD:



PANEL CONTROLS:

ON/OFF SWITCH:

- TURNS THE COMB. AND CONV. BLOWERS ON.

MANUAL FEED SWITCH:

- MOMENTARY SWITCH
- ALLOWS FUEL TO BE ADDED TO THE BURNPOT AUTOMATICALLY

HIGH FAN SWITCH:

- THE CONVECTION BLOWER VARIES THE FEED RATE TO THE 'E' SETTING.
- THE HIGH FAN SWITCH OVER-RIDES THE VARIABLE FEED RATE AND ALLOWS THE CONV. BLOWER TO RUN AT HIGH SPEED OR 120 VOLTS.

AUGER BUTTON:

- ACTIVATES THE IGNITER FOR 10 MINUTES AND SUPPLIES POWER TO THE AUGER THERMODISC.
- TURNS THE GREEN LIGHT ON.
- THE GREEN LIGHT INDICATES THAT THERE IS POWER TO THE AUGER CIRCUIT OR TO THE AUGER THERMODISC.
- THE AUGER WILL NOT FEED PELLETS AFTER THE 10 MIN. IGNITER CYCLE UNLESS THE AUGER THERMODISC HAS CLOSED.
- IN A POWER OUTAGE LASTING LONGER THAN 3 TO 6 SECONDS, THIS BUTTON MUST BE RE-PUSHED TO RE-ENGAGE THE AUGER FEED.