United States Stove Company Tech Manual

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Pellet/Multifuel Stove Installation

Installation MUST meet the following standards:

- ✓ 3ft of VERTICAL piping
- ✓ No more than 4ft HORIZONTAL
- ✓ No more than 12ft for 3" pellet vent (any longer and 4" pipe must be used)
- ✓ Over 2,500ft above sea level must use 4" pellet vent
- ✓ No more than 180 degrees in elbows
- ✓ Must include a Cleanout-T
- ✓ Through and existing chimney: 3"-4" must run the entire length of the chimney and out 1 ft
- ✓ Do NOT use Type B Gas vent or galvanized pipe
- ✓ Joints fastened by at least 3 screws and/or sealed with silicone
- ✓ Chimney connector CAN'T pass through attic, roof space, closet, floor, or ceiling

Wood Stove Installation

- ✓ 6"-8" flue
- ✓ MUST have at least 12ft of vertical pipe
- ✓ No more than two 90° elbows
- ✓ Dampers are installed BELOW heat reclaimers
- ✓ Pipes must be sealed
- ✓ There must be a ¼" rise for every 1ft of horizontal length.
- ✓ FOLLOW THE 3-2-10 RULE:
  - The chimney must rise a MINIMUM of 3ft above the roof.
  - The chimney must be at least 2ft above ANYTHING within 10ft.

Chimneys

- ✓ To vent into an existing chimney the fireplace must be closed and sealed at the damper in the flue.
- ✓ Wood stove piping must be ran all the way through the chimney and at least 2ft above.
- ✓ Inspect chimney connectors at least twice monthly during the heating season for creosote build-up
- ✓ Connection of the stove pipe directly into the masonry chimney over the fireplace is the only approved method.

Furnace Installation

- ✓ Chimney must meet the same standards as free standing woodstoves (with the exception of the 1600EF which only requires a 6ft vertical chimney)
- ✓ Needs to include a cold air return/make-up air return that draws from outside the room containing the furnace.
- ✓ Plenum needs to be the same size (no adaption bigger or smaller) from the stove to the trunk of the duct work.
- ✓ The trunk of the duct work should not exceed 40ft (anymore will require the installation of an inline blower which an HVAC specialist will supply)
- ✓ SEE OWNER'S MANUAL FOR INSTALLATIONS REGARDING ADD-ON/SIDE BY SIDE.

4-digit Error Codes

Error	Description	Possible Causes
Err1	Over Heating	• Inadequate Ventilation • Check High Limit • Room Fan Failure • Exhaust Blockage • Electrical Open in Wiring
Err2	Vacuum Error/No fuel	• Vacuum Problem • Hopper empty
Err3	Didn't reach temp during start-up	• Malfunctioning Low-Temp switch • Fuel/Flame Quality • Auger not feeding or jammed
Err4	Power Loss	• Electrical open in wiring • Power Loss
Err5	Auger Fuse	• Auger motor bad or jammed
Err6	Ignitor Fuse	• Ignitor shorted or bad
Err7	Exhaust Fan Fuse	• Exhaust Fan bad or jammed
Err8	Room Fan Fuse	• Room Fan bad or jammed
Err9	Bad Board	• Board/Programming Bad
Err10	Ignitor Fuse (6041)	• Ignitor shorted or bad
Err11	Vacuum Error	• Vacuum problem

ABC Error Codes

Error	Description	Possible Causes
A Flashing	Vacuum Error	• Vacuum Problem
B Flashing	Over-Heating	• Inadequate Ventilation • High-Limit Malfunctioning • Room Fan Failure • Exhaust Blockage • Electrical Open in Wiring
C Flashing	Hopper Lid	• Hopper lid is open • Microswitch is bent • Microswitch wiring is damaged • Microswitch is bad
C Constant	Control Board Malfunction	• Board needs to be reset • Board needs to be replaced with 4-digit

Top Mounted Board Error Codes

Display is Flashing "E1"	
Possible Causes	**Possible Remedies: (Unplug stove first when possible)**
1. The convection blower is overheating and tripping the internal temperature shutoff.	Clean any dust off of the windings and fan blade. If oiling the blower does not help, the blower may be bad.
2. The stove is being left on the highest setting for extended periods of time.	If operating the heater on the highest heat setting, the room temperature could increase enough and lead to potential overheating situations. If this happens try operating at a lower heat setting.
3. Fuel other than wood pellets is being burned in the stove.	This pellet stove is designed and tested to use wood pellets. Check for signs of fuel other than wood pellets. No other types of fuel have been approved for this pellet stove. If there are signs of other types of fuel being used, stop using them immediately.
4. Power surge or brown out situation.	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 customer.
5. High Limit Switch is malfunctioning.	If the other items check out OK, replace the high limit switch.

Display is Flashing "E2"	
Possible Causes	**Possible Remedies: (Unplug stove first when possible)**
1. Airflow switch hose or stove attachment pipes for hose are blocked.	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 throw the hose, use a wire coat hanger to clear the blockage.
2. The air inlet, burnpot, interior combustion air chambers, combustion blower, or exhaust pipe are blocked with ash or foreign material.	Follow all cleaning procedures in the maintenance section of the owner's manual.
3. The firebox is not properly sealed.	Make sure the door is closed and that the gasket is in good shape.
4. Vent pipe is incorrectly installed.	Check to make sure vent pipe installation meets criteria in owner's manual.
5. The airflow switch wire connections are bad.	Check the connectors that attach the gray wires to the air switch.
6. Combustion blower failure.	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 #8.
7. Control board not sending power to combustion blower.	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.
8. Control board not sending power to air switch.	There should be a 5-volt current (approximately) going to the air switch after the stove has been on for 30 seconds.
9. Air switch has failed.	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.

Display is Flashing "E3"	
Possible Causes	**Possible Remedies: (Unplug stove first when possible)**
1. The hopper is out of pellets	Refill the hopper.
2. The air dampener is too far open for a low feed setting	If on the low setting, you may need to close the dampener all the way.
3. The burnpot holes are blocked.	Remove the burnpot and thoroughly clean it.
4. The air inlet, the interior chambers, or exhaust system has a partial blockage.	Follow all cleaning procedures in the maintenance section of the owner's manual
5. The hopper safety switch has failed or hopper is open.	When operating the unit, be sure the hopper lid is closed so that the hopper safety switch will activate. Check the wires leading from the hopper safety switch to the control panel and auger motor for secure connections. Use a continuity tester to test the hopper safety switch; replace if necessary.
6. The auger shaft is jammed.	"Start by emptying the hopper. Then remove the auger motor by removing the auger pin, then remove the two bolts that hold the auger bracket to the auger tube. The auger bracket will now be able to be removed form the auger tube. Remove the two bolts on the side of the auger tube to remove the lower bearing of the auger. Pull the auger out of the tube to free the jam. "
7. The auger motor has failed.	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. The Proof of Fire (POF) thermodisc has malfunctioned.	Temporarily bypass the POF thermodisc by disconnecting the two wires and connecting them with a short piece of wire. Then plug the stove back up. 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. The control board is not sending power to the POF thermodisc or other auger system components.	There should be a 5-volt (approximately) current going to the POF thermodisc after the stove has been on for 10 minutes.

Display is Flashing "E4"	
Possible Causes	**Possible Remedies: (Unplug stove first when possible)**
1. The air inlet, burnpot, interior combustion air chambers, combustion blower, or exhaust pipe are blocked with ash or foreign material.	Follow all cleaning procedures in the maintenance section of the owner's manual.
2. The Proof of Fire (POF) thermodisc has came unpluged	Check the (POF) thermodisc to see if the wires are connected properly.
3. The Proof of Fire (POF) thermodisc has malfunctioned.	Temporarily bypass the POF thermodisc by disconnecting the two wires and connecting them with a short piece of wire. Then plug the stove back up. 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.
4. The hopper is out of Pellets.	Refill the hopper.
5. The hopper safety switch has failed or hopper is open.	When operating the unit, be sure the hopper lid is closed so that the hopper safety switch will activate. Check the wires leading from the hopper safety switch to the control panel and auger motor for secure connections. Use a continuity tester to test the hopper safety switch; replace if necessary.
6. The auger shaft is jammed.	Start by emptying the hopper. Then remove the auger motor by removing the auger pin. Remove the auger shaft inspection plate in the hopper 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. Then rotate the bottom end of the auger shaft up towards you until you can lift the shaft out of the stove. 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.
7. The auger motor has failed.	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.

Display is Flashing "E5"	
Possible Causes	**Possible Remedies: (Unplug stove first when possible)**
1. The stove automaticaly flashes "E5" when turned on	The T-stat sensor has come unpluged form the control board. Check to see if the sensor is unpluged. If the sensor is not unpluged then the sensor is damaged or has a short. If the sensor is damaged or has a short it will need to be replaced.

5660 Side Mount Error Codes

Error	Possible Cause
3 & 4 flashing	Over-Heated or High limit has malfunctioned
1 & 2 Flashing	Vacuum Error
4 & 5 Flashing	Low Limit was tripped or has malfunctioned
1 & 5 Flashing	Pellets have failed to ignite

Breckwell/Golden Eagle Error Codes

#2 Light Flashing

Possible Causes

1. Pressure 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 pressure switch wire connections are bad.
6. The grey 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 pressure switch
10. Pressure switch has failed (very rare)

Possible Remedies

1. Unhook the air hose from the pressure 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 grey wires to the pressure switch.
6. Check to see if the grey 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 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 pressure switch after the stove has been on for 30 seconds.
10. To test the pressure 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. If you hear a click, the air switch is working. BE CAREFUL! TOO MUCH VACUUM CAN DAMAGE THE PRESSURE SWITCH!

#3 Light Flashing

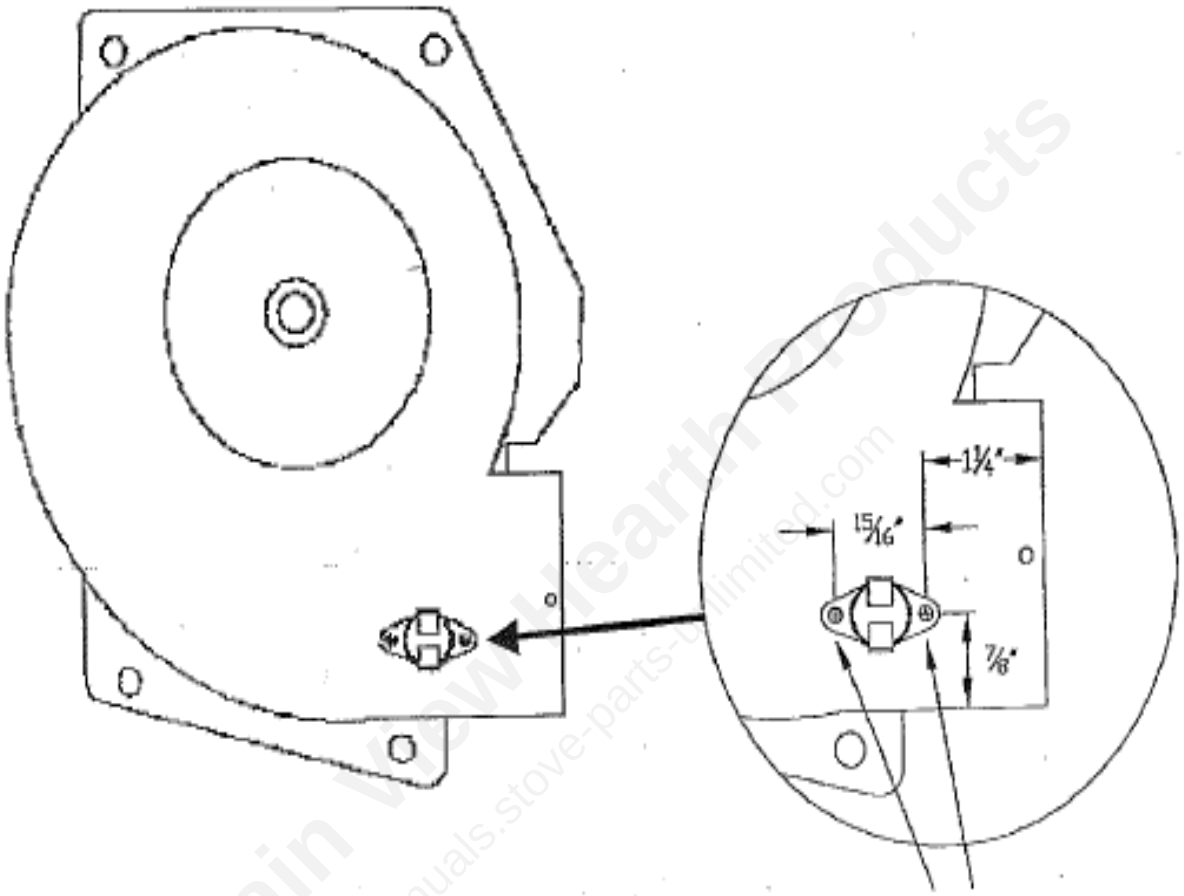
Possible Causes

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 (Low-limit) thermodisc has malfunctioned.
9. The High-limit thermodisc has tripped or is defective.
10. The F2 fuse on the control board has blown. (ONLY PERTAINS TO 4-SETTING BOARD)
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

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. Free the auger of jams.
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. Bypass the POF and run the stove. If it runs normally the POF is bad.
9. Push the red reset button on the high limit (if it has one). If not bypass the high limit.
10. Remove the control board. On the back there are two fuses. The one clower 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 it.
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. INSTRUCTIONS FOR RELOCATION ON NEXT PAGE.

Breckwell POF Relocation



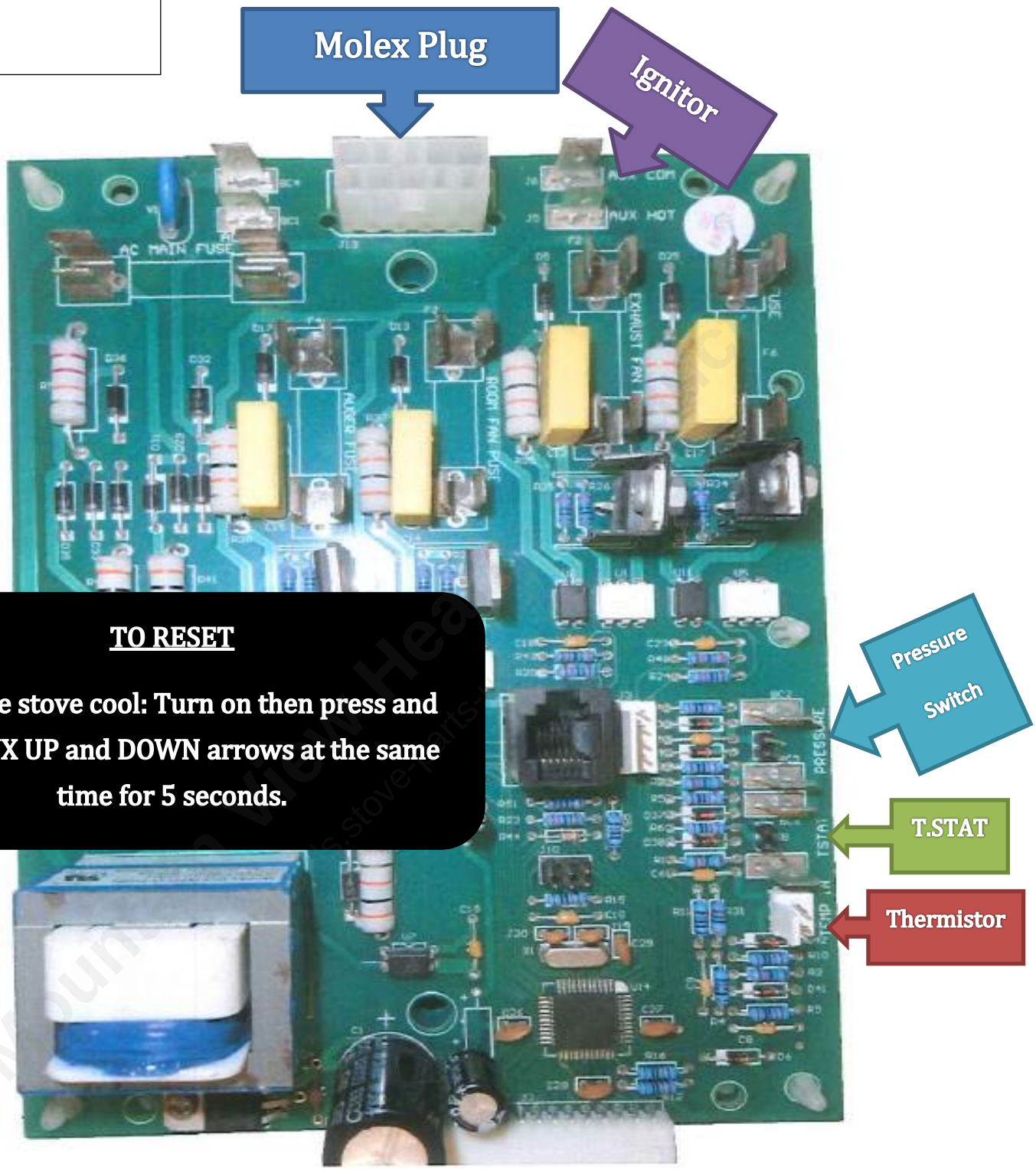
Drill 2 holes (#36 or 7/64" drill bit) and mount with 6-32 thread cutting or #6 sheet metal screws.

4-Digit 5500, 5502, 5510 Factory Test

USSC Factory Test

The USSC Factory Test is used at the factory where the stoves are assembled to test the functionality of the control and the stove before the unit is shipped. To perform this test, press and hold the OFF and AUGER DELAY buttons simultaneously for 3 seconds. To advance through the test, press any key unless otherwise noted in the test step.

1. Exhaust Fan Output Test – The display will show "drft". The exhaust fan is turned on full then reduced to a level just above the typical minimum pressure switch setting. The ON LED indicates whether the pressure sensor is detected. If the pressure switch is not detected, the fan ramps to full on for two seconds then returns to the previously established level if the pressure switch closes. If the Draft Fan Fuse is not blown and the fuse detection circuit is functioning, the Draft Fan LED will be lit and the other three top row LEDs will be off.
2. Room Fan Output Test - The display will show "rfan". The room fan is turned on full. If the Room Fan Fuse is not blown and the fuse detection circuit is functioning, the Room Fan LED will be lit and the other three top row LEDs will be off.
3. Ignitor Output Test - The display will show "ignt". The ignitor motor is turned on full. If the Ignitor (AUX) Fuse is not blown and the fuse detection circuit is functioning, the Aux LED will be lit and the other three top row LEDs will be off.
4. Auger Output Test - The display will show "augr". The auger motor is turned on full. If the Auger Fuse is not blown and the fuse detection circuit is functioning, the Heat Range LED will be lit and the other three top row LEDs will be off.
5. Hopper Switch Test – The display will show "hppr". If the hopper switch is open (lid is open), the ON LED will turn on otherwise, it will be off. If the hopper switch is wired in series with the auger, this test is not valid, and the validation of the hopper switch should be done in the previous Auger Output Test.
6. Thermostat Input Test – The display will show "stat". If the thermostat input is closed, the ON LED will turn on, otherwise it will be off.
7. Fluegas Thermistor Test – The display will show the fluegas temperature in degrees F.
8. AC Frequency Test - Displays the measured AC Frequency in hertz followed by the letter 'H'.
9. Watchdog Reset – The watchdog timer is tested to ensure that the board can be reset. The message "BYE" is displayed until the watchdog resets the board.



TO RESET

With the stove cool: Turn on then press and hold AUX UP and DOWN arrows at the same time for 5 seconds.

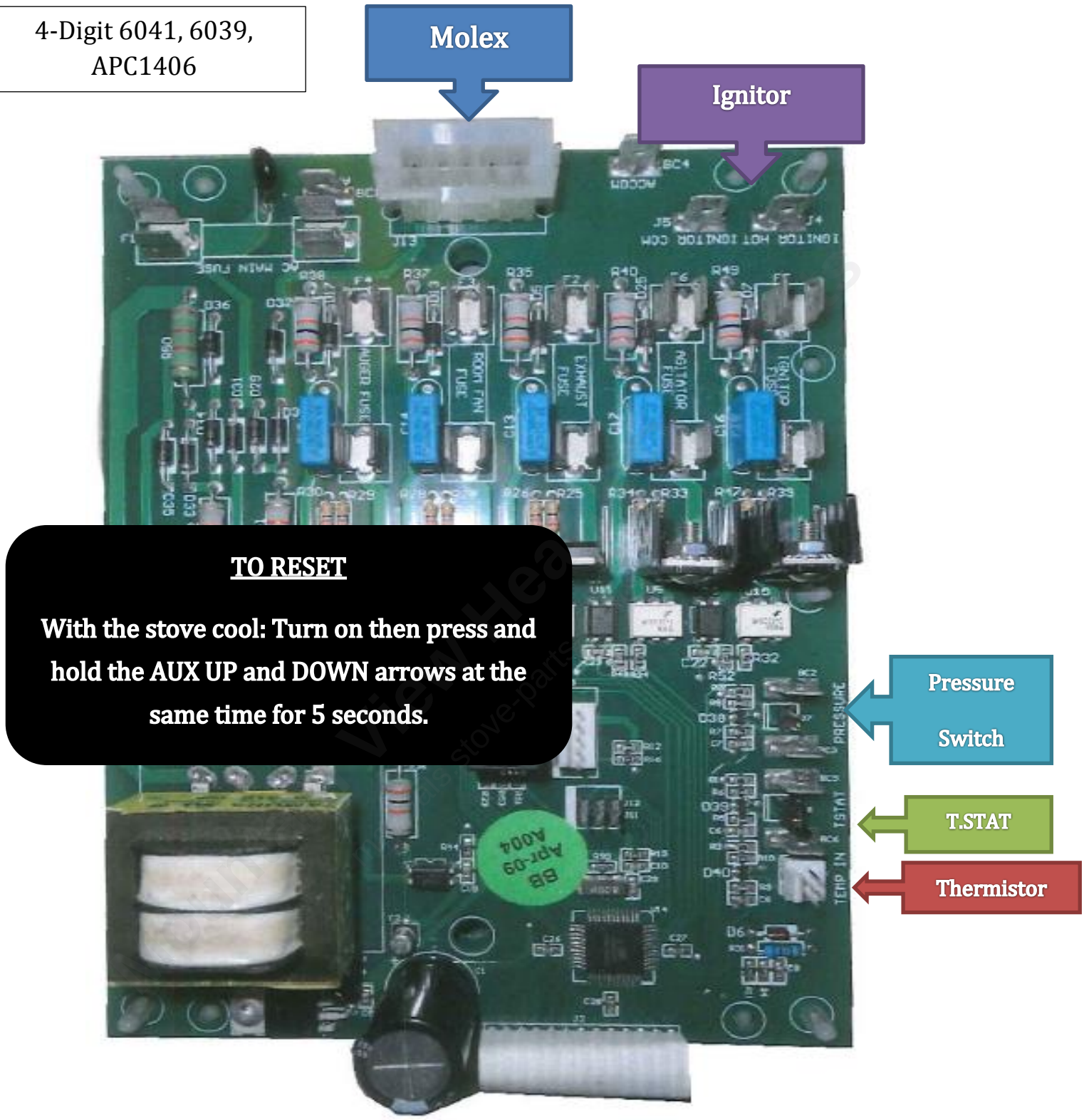
4-Digit 6041, 6039, APC1406 Factory Test

USSC Factory Test

The USSC Factory Test is used at the factory where the stoves are assembled to test the functionality of the control and the stove before the unit is shipped. To perform this test, press and hold the OFF and AUGER DELAY buttons simultaneously for 3 seconds. To advance through the test, press any key unless otherwise noted in the test step.

1. Exhaust Fan Output Test - Exhaust Fan is turned on full then reduced to a level just above the typical minimum pressure switch setting. The ON LED indicates whether the pressure sensor is detected. During this test, the display shows "drft", and if a load is present, the Draft Fan LED will be on if the fuse is good and the output is detected.
2. Room Fan Output Test - The Room Fan is turned on full. During this test, the display shows "rfan", and if a load is present, the Room Fan LED will be on if the fuse is good and the output is detected.
3. Agitator Output Test - The Agitator is turned on full. During this test, the display shows "Agit", and if a load is present, the Aux LED will be on if the fuse is good and the output is detected.
4. Auger Output Test - The Auger is turned on full. The ON LED will light when the over temperature snap disc is in the cool state. During this test, the display shows "Augr" , and if a load is present, the Heat Range LED will be on if the fuse is good and the output is detected.
5. Ignitor Output Test - The Ignitor is turned on full. During this test, the display shows "Igni" , and if a load is present, the Auto LED will be on if the fuse is good and the output is detected.
6. Low Limit Switch Test - If the stove is warm (above 110 deg. F), the ON LED will turn off, but if the stove is cool, the ON LED will turn on. During this test, the display shows "Snap"
7. Thermostat Test - If the thermostat input is closed, the ON LED will light, otherwise if the thermostat input is open, it will turn off. During this test, the display will show "Stat"
8. Hopper Switch Test – The display will show "hppr". If the hopper switch is open (lid is open), the ON LED will turn on otherwise, it will be off.
9. AC Frequency Test - Displays the measured AC Frequency in hertz followed by the letter 'H'.
10. Watchdog Reset – The watchdog timer is tested to ensure that the board can be reset. The message "BYE" is displayed until the watchdog resets the board.

4-Digit 6041, 6039, APC1406



4-Digit Furnace Factory Test

USSC Factory Test

The USSC Factory Test is used at the factory where the furnaces are assembled to test the functionality of the control and the furnace before the unit is shipped. To perform this test, press and hold the OFF and AUGER DELAY buttons simultaneously for 3 seconds. To advance through the test, press any key unless otherwise noted in the test step.

1. Exhaust Fan Output Test – The display will show "drft". The exhaust fan is turned on full then reduced to a level just above the typical minimum pressure switch setting. The ON LED indicates whether the pressure sensor is detected. If the pressure switch is not detected, the fan ramps to full on for two seconds then returns to the previously established level if the pressure switch closes. If the Draft Fan Fuse is not blown and the fuse detection circuit is functioning, the Draft Fan LED will be lit and the other three top row LEDs will be off.
2. Room Fan 1 Output Test - The display will show "rfn1". The room fan 1 is turned on full. If the Room Fan 1 Fuse is not blown and the fuse detection circuit is functioning, the Room Fan LED will be lit and the other three top row LEDs will be off.
3. Room Fan 2 Output Test - The display will show "rfn2". The room fan 2 is turned on full. Since there is no blown fuse detection circuit on the daughter board fan, none of the top row LEDs should be lit.
4. Agitator Output Test - The display will show "agit". The agitator motor is turned on full. If the Agitator (AUX) Fuse is not blown and the fuse detection circuit is functioning, the Aux LED will be lit and the other three top row LEDs will be off.
5. Auger Output Test - The display will show "augr". The auger motor is turned on full. If the Auger Fuse is not blown and the fuse detection circuit is functioning, the Heat Range LED will be lit and the other three top row LEDs will be off.
6. Hopper Switch Test – The display will show "hppr". If the hopper switch is open (lid is open), the ON LED will turn on otherwise, it will be off.
7. Thermostat Input Test – The display will show "stat". If the thermostat input is shorted, the ON LED will turn on, otherwise, it will be off.
8. Interlock Switch Test – The display will show "intl". If the interlock is made (closed), the ON LED will turn on otherwise, it will be off.
9. Fluegas Thermistor Test – The display will show the fluegas temperature in degrees F.
10. Vent Thermistor Test – The display will show the vent temperature in degrees F.
11. Ambient Thermistor Test – The display will show the temperature of the daughter board thermistor in degrees F.
12. AC Frequency Test - Displays the measured AC Frequency in hertz followed by the letter 'H'.
13. Watchdog Reset – The watchdog timer is tested to ensure that the board can be reset. The message "BYE" is displayed until the watchdog resets the board.

ABC Factory Test—5500 Series

VERSION 25

5500/5500XL Testing Procedure

Power up the unit by plugging in the power supply cord to the back of the stove. Circuit Board display will show a "2" and a "0". When display clears, follow these steps:

Step 1: Press and hold down the A and B buttons at the bottom of the board until the display shows an "0" and a "1". This steps checks the Exhaust Blower and Vacuum Switch. Check to see if blower is running and if the red LED is on above the "A" button. Open the door and see if the LED goes off; shut the door and make sure it comes back on. Press any button to go to the next step.

Step 2: Display will show an "0" and a "2". This step checks the Distribution Blower (Room Air Blower). Check to see if blower is running, if so press any button to go to the next step.

Step 3: Display will show an "0" and a "3". This step does not pertain to this unit, press any button to go to the next step.

Step 4: Display will show an "0" and a "4". This step checks the Auger Drive Motor. With the lid closed, the auger drive motor should be running. If so, lift the lid to check the micro switch mounted on the right side of the hopper (when looking from the back of the stove); The Motor should stop. Closed the lid to make sure it comes back on. Do this a couple of times. Press any button to go to the next step.

Step 5: Display will show a "0" and a "5". This step checks the Automatic Ignitor. *If Board skips this step, something is wired wrong or wires are missing.* Do not skip this step. Check to see if Auto-Ignitor is working. This can be done by CAREFULLY touching the Ignitor tube from the back of the stove or visually check to see if it glows from the front of the unit by looking thru the hole at the bottom-left corner of the burn pot. ***This Ignitor gets VERY HOT touch at your own risk.***

Step 6: Display will show an "i" and a "1". This step does not pertain to this unit, press any button to go to the next step.

0 Step 7: Display will show an "i" and a "2". This checks the Thermostat Plug. Make sure that the LED (red light) over the "A" button is on. If so, press any button to go to the next step.

Step 8: Display will show a numerical value. This is the room temperature measured at the thermistor attached to the Exhaust Housing. The displayed temperature should be close to the room (ambient) temperature. Press any button to go to the next step.

Step 9: Display will show the Frequency of the *A/C* input voltage. Display should show a 59, 60, or 61.Press any button to continue.

The Display will show a "2"and a "0" as it did when first powered up. The unit is thru With test mode.

ABC Factory Test—6039

6039 Test Instructions

1. After applying power to the stove, press and hold switches A and B until the control displays "o 1". The control will then turn on the condenser fan. The tester should verify that the condenser fan is running. The LED over switch A will be turned on if the pressure switch contacts are closed. The tester should verify the operation of the pressure switch by opening and closing door on the stove. Press any switch to continue to step 2.

2. The control will display "o 2" and will turn on the room fan. The tester should verify that the room fan is operating. Press any switch to continue to step 3.

3. The control will display "o 3" and will turn on the agitator. The tester should verify that the agitator is operating. Press any switch to continue to step 4.

4. The control will display "o 4" and will turn on the auger. The tester should verify that the auger is operating. If the high temperature thermal disc is closed, the LED over switch A will be turned on. Press any switch to continue to step 5.

5. The control will display "i 1" and will turn on the LED over switch A if the low temperature thermal disc is open (which it should be at room temperature). Press any switch to continue to step 6.

6. The control will display "i 2" and will turn on the LED over switch A if the thermostat input is shorted (which it should be if the shorting clip is in place). Depress any switch to continue to step 7.

7. The unit will then display the temperature measured by the temperature sensor. For corn stoves, "00" will be displayed since a temperature sensor is not used. Press any switch to continue to step 8.

8. The control will then display the frequency of the A/C input voltage. The displayed frequency should be 59, 60 or 61. Press any switch to end the test.

6039 ABC

Internal Rates—4 Digit Control Board

Changing Feed Rates

High End (HR 3-5):

- Press HEAT RANGE & AUX arrows UP simultaneously and hold for about 5 seconds.
- This will display the current high end feed rate.
- Using the AUX arrows, adjust this number up or down.
- Press ON to save the adjustment.

Low End (HR1-2):

- Press HEAT RANGE & AUX arrows DOWN simultaneously and hold for about 5 seconds.
- This will display the low end feed rate.
- Using the AUX arrows, adjust this number up or down.
- Press ON to save the adjustment.

5500 Series Default:

- High end-4.50
- Low end-1.75

6041 Default:

- High end-5.00
- Low end-2.00

4-Digit Internal Rates—continued…

Changing Draft Speeds

High End (HR3-5):

- Press DRAFT FAN & AUX arrows UP simultaneously and hold for about 5 seconds.
- This will display the current high end draft setting.
- Using the AUX arrows, adjust this number up or down.
- Press ON to save the adjustment.

Low End (HR1-2):

- Press DRAFT FAN & AUX arrows DOWN simultaneously and hold for about 5 seconds.
- This will display the current low end draft setting.
- Using the AUX arrows, adjust this number up or down.
- Press ON to save the adjustment.

5500 Series Default:

- High end-300
- Low end-100

6041 Default:

- High end-270
- Low end-230

Internal Rates—ABC Board

➲ **You will need to know the version of the control board. This number will appear when the stove is plugged in. The number will only appear for a few seconds so have the customer pay close attention. Once you know the version, the internal adjustments are as follows:**

Version 11B, 12B, and 13B

- To activate A & B buttons hold HR DOWN and BLOWER UP for 5 seconds.

FEED RATE

- Press the A button and the HR number will disappear. The current FEED RATE setting will appear in the blower screen. Use the HR arrows to adjust this number. THE DEFAULT IS 4.

COMBUSTION SPEED

- Press the B button and the HR number will disappear. The current COMBUSTION SPEED setting will appear in the blower screen. Use the HR arrows to adjust this number. THE DEFAULT IS 3.

TO RESET

- Hold B & C until P1 appears. Use the HR arrows to adjust this to P9. Then press ON.

Version 32B

- This version was famous for blowing fuses. It can also cause the Exhaust & Room Fan to turn on and off. Please tell the customer we need to update the control board and send them the latest version.

Version 33B

- To activate A & B buttons hold HR DOWN and BLOWER UP for 5 seconds.

FEED RATE

- Press the A button and the HR number will disappear. The current FEED RATE setting will appear in the blower screen. Use the HR arrows to adjust this number. THE DEFAULT IS 4.

COMBUSTION SPEED

- Press the B button and the HR number will disappear. The current COMBUSTION SPEED setting will appear in the blower screen. Use the HR arrows to adjust this number. THE DEFAULT IS 3.

TO RESET

- Hold B & C until P1 appears. Use the HR arrows to adjust this to P9. Then press ON.

Version 34B

- To activate A & B buttons hold HR DOWN and BLOWER UP for 5 seconds.

FEED RATE

- Press the A button ONCE and the HR and BLOWER numbers should change. This will be the current LOW END feed rate in pounds per hour. Use the BLOWER arrows to adjust. THE DEFAULT IS 1.5LBS/HR--DO NOT tell the customer this. Refer to the number as 15.
- Press the A button TWICE and the HR and BLOWER numbers should change. This will be the current HIGH END feed rate in pounds per hour. Use the BLOWER arrows to adjust. THE DEFAULT IS 5.0LBS/HR.

COMBUSTION AIR

- Press the B button ONCE and the HR and BLOWER numbers should change. This will be the current LOW END combustion speed. Use the BLOWER arrows to adjust. THE DEFAULT IS 90.
- Press the B button TWICE and the HR and BLOWER numbers should change. This will be the current HIGH END combustion speed. Use the BLOWER arrows to adjust. THE DEFAULT IS 08 AND THE C LIGHT WILL BE ON.

TO RESET

- Hold B & C until P1 appears. Use the HR arrows to adjust this to P9. Then press ON.

ALL VERSIONS

- Press and Hold the ON button—auger will feed continuously.
- Blower UP & DOWN simultaneously—resets to factory settings.
- 5AMP/250V Fuse.

C-Codes

C-Codes are used to make changes to the control board programming. DO NOT give these codes to the customer. The wrong adjustments can be dangerous and cause irreparable damage to the stove.

- **To enter the C-code menu: press and hold MODE & AUGER DELAY.**

TELL THE CUSTOMER TO LET GO OF THE BUTTONS AS SOON AS C-1 APPEARS! IF THEY HOLD IT TOO LONG THE BOARD WILL RESET AND TURN OFF!

- **To move through the C menu use the HR ARROWS.**
- **Once the desired menu option is reached press ON to select.**
- **To adjust the setting, use the AUX ARROWS.**
- **Once the desired setting is reached press ON to return to the C menu.**
- **Press OFF to exit.**

C-Code Menu—5500 Series

- C-1—Reset to defaults (hold MODE and AUGER DELAY buttons for 3 seconds to reset all too defaults)
- C-2—LOW END FEED RATE—The default is 1.75lbs/hr.
- C-3—HIGH END FEED RATE—The default is 4.5lbs/hr.
- C-4—LOW END DRAFT SPEED—The default is 100. Change by 15 at a time.
- C-5—HIGH END DRAFT SPEED—The default is 300. Change by 15 at a time.
- C-6—HOPPER SWITCH—On setting 0 the hopper switch is ignored (default). On setting 1 the hopper switch is monitored.
- C-7—RAMP SECONDS FOR INCREASING LEVEL—This is the amount of time it takes to ramp from one level to another when the HR is changed. The default is 90 seconds.
- C-8—STARTUP TIME FOR WARM UP—This is the amount of time allowed for the stove to reach 110°F before it reports an error. The default is 30 minutes.
- C-9—OVERTEMP SETPOINT—The default is 445°F.
- C-10—CUTBACK SETPOINT—The temperature at which the stove will go into a cutback condition to prevent overheating. The default is 430°F.
- C-11—ROOM FAN ON SETPOINT—The default is 130°F.
- C-12—COLD STOVE SETPOINT—The temperature at which the stove will turn off after shut-down. The default is 110°F.
- C-13—LOW END ROOM FAN SPEED—The default is 300.
- C-14—HIGH END ROOM FAN SPEED—The default is 500.
- C-15—AUGER LOAD TIME—This is the amount of time the auger feeds at a high rate during start-up
- C-16—IGNITOR ON TIME—The length of time the ignitor is on during start-up. The default is 8 minutes.
- C-17—IGNORE FUSE ERROR—On setting 0 the fuses are detected (default). On setting 1 the fuses are ignored. ONLY do this for diagnostic purposes.
- C-18—IGNORE VACUUM SWITCH—On setting 0 the switch is detected (default). On setting 1 the switch is ignored. ONLY do this for diagnostic purposes.
- C-19—PELLET BUMP RATE—The rate the auger cuts back to in order to prevent a burnback scenario. The default is 0lbs/hr but can be adjusted to a maximum of 0.5lbs/hr.
- C-20—PURGE TIME—The amount of time the auger will purge during shutdown. The default is 30 seconds, but can be set between 0 and 120.
- C-21—ENABLE SERIAL COMMUNICATION—On the 0 setting serial communication is not enabled (default). On the 1 setting communication is enabled.

C-Code Menu—6041

- C-1—RESET TO DEFAULTS—(hold MODE and AUGER DELAY buttons for 3 seconds to reset all to defaults)
- C-2—LOW END FEED RATE—The default is 2.00lbs/hr.
- C-3—HIGH END FEED RATE—The default is 5.00lbs/hr.
- C-4—AGITATOR ON % ON LOW END—This is the percent ON time for the agitator for the low end HR settings. The default is 25%.
- C-5—AGITATOR ON % ON HIGH END—This is the percent ON time for the agitator for the high end HR settings. The default is 50%.
- C-6—LOW END ROOM FAN SPEED—The default is 250.
- C-7—HIGH END ROOM FAN SPEED—The default is 370.
- C-8—LOW END DRAFT SPEED—The default is 230.
- C-9—HIGH END DRAFT SPEED—The default is 270.
- C-10—DRAFT FAN FULL ON AT SETTING 9—If this parameter is set to 1(default), the setting for C9 is used for a fan speed of 8, and a value of 500 is used for a fan speed of 9. If the parameter is set to 0, the setting for C9 is used for a fan speed of 9, and all remaining fan speeds are set based on the interpolation between C9 and C8.
- C-11—RAMP SECONDS FOR INCREASING LEVEL—This is the amount of time it takes to ramp from one level to another when the HR is changed. The default is 90 seconds.
- C-12—STARTUP TIME FOR WARM UP—This is the amount of time allowed for the stove to reach 110°F before it reports an error. The default is 30 minutes.
- C-13—PELLET/CORN SWITCH—On the 0 setting the unit will operate in Corn mode. On the 1 setting the unit will operate in Pellet mode. The default is Corn mode
- C-14—PELLET AUGER % ADJUSTMENT—This parameter controls the adjustment of the auger duty cycle when in pellet mode. If set to 100 (default) the auger will run at the same duty cycle in pellet and corn modes, but if set to 50, the auger will run at 50% of the corn rate when in pellet mode, and if set to 150, the auger will run at 150% of the corn rate.
- C-15—PELLET AGITATOR % ADJUSTMENT—This parameter controls the adjustment of the agitator duty cycle when in pellet mode. If set to 100 the agitator will run at the same duty cycle in pellet and corn modes, but if set to 50 (default), the agitator will run at 50% of the corn rate when in pellet mode, and if set to 150, the auger will run at 150% of the corn rate.
- C-16—PELLET LIGHTING PHASE 1 PERIOD—This is the amount of time (in seconds) spent in the first phase of pellet lighting. The default is 180 (3 minutes). During the first lighting phase, the cycle for the auger is set to 100%.

C-Code Menu—6041 Continued…

- C-17—PELLET LIGHT PHASE 2 PERIOD—This is the amount of time (in seconds) spent in the third phase of pellet lighting. The default is 120 (2 minutes). During the second lighting phase, the cycle for the auger is set to the value specified in C-19 (default-50%).
- C-18—PELLET LIGHTING PHASE 3 PERIOD—This is the amount of time (in seconds) spent in the third phase of pellet lighting. The default is 120 (2 minutes). During the third lighting phase, the cycle for the auger is set to the value specified in C-20 (default 20%).
- C-19—PELLET LIGHTING PHASE 2 DUTY CYCLE—This variable controls the duty cycle of the auger during the 2nd phase of pellet lighting. Default-50%
- C-20—PELLET LIGHTING PHASE 3 DUTY CYCLE—This variable controls the duty cycle of the auger during the 3rd phase of pellet lighting. Default-20%.
- C-21—CORN MODE LIGHTING TIME—This is the amount of time (in seconds) spent in the corn lighting state where the ignitor is on and the auger is off. Default-240 (4 minutes).

C-Codes—8500

- C-1—RESET TO DEFAULTS—(hold MODE and AUGER DELAY buttons for 3 seconds to reset all to defaults)
- C-2—LOW END FEED RATE—The default is 5.00lbs/hr.
- C-3—HIGH END FEED RATE—The default is 13.00lbs/hr.
- C-4—AGITATOR ON % FOR LOW END—This is the percent ON time for the Agitator for the low end HR settings.
- C-5—AGITATOR ON % FOR HIGH END—This is the percent ON time for the Agitator for the high end HR settings.
- C-6—LOW END DRAFT SPEED—The default is 150.
- C-7—HIGH END DRAFT SPEED—The default is 400.
- C-8—FUEL RATE TYPE COMPENSATION—This parameter affects how much the auger runs to produce a given fuel rate. The default fuel rates are based on corn. The default is 100%. If the parameter is adjusted up, the auger rate is increased proportionally. If the fuel being used is less dense than corn (wood pellets), it may be necessary to raise this parameter to compensate. This make the programmed lbs/hr correspond to the particular fuel type. Typically, wood pellets need to be run at 120% to compensate for their lower density and slower travel through the auger system.
- C-9—RAMP SECONDS FOR INCREASIN LEVEL-- This is the amount of time it takes to ramp from one level to another when the HR is changed. The default is 120 seconds.
- C-10—STARTUP TIME FOR WARM UP-- This is the amount of time allowed for the stove to reach 110°F before it reports an error. The default is 30 minutes.
- C-11—OVERTEMP SETPOINT—The default is 575°F.
- C-12—CUTBACK SETPOINT— The temperature at which the stove will go into a cutback condition to prevent overheating. The default is 550°F.
- C-13—ROOM FAN ON SETPOINT—The default is 200°F.
- C-14—COLD STOVE SETPOINT-- The temperature at which the stove will turn off after shut-down. The default is 120°F.
- C-15—LOW TEMP VENT HEATRANGE—this variable is used to control the vent controlled room fan. If the pseudo heat range (1-9) is greater than this number, the vent controlled room fan will turn on. If the pseudo heart range is less than this number, the vent controlled room fan will turn off. The default is 3.
- C-16—HIGH TEMP VENT SETPOINT—this variable is used to limit the maximum vent temperature. If the measured ven temp is greater than the HTVS, the furnace will reduce the heat range by 1. If the vent temperature falls below the setpoint -5, the heat range will ramp back to normal. The default is 225°F.

C-Codes—8500 Continued…

- C-17—AUGER PERIOD IN SECONDS—This is the fixed auger period. The On-time is calculated based on the setpoint fuel rate in lbs and the full on rate set in C-18. The default is 10 seconds.
- C-18—FULL ON FUEL RATE—This is the fuel rate that would be delivered if the auger was turned 100% of the time. This definition is for corn only(C-8 for pellet). The default is 36lbs of corn per hour.
- C-19—IGNORE SENSE ERRORS—On setting 0 (default) the sensor and fuse errors are detected. On setting 1 they are ignored.
- C-20—IGNORE VACUUM SWITCH—On setting 0 (default) the switch is detected. ON setting 1 the switch is ignored.
- C-21—BUMP RATE—when the furnace is in shutdown, this parameter can be used to force a small amount of fuel to be pushed through the auger to keep the fuel in the auger from getting hot. The default is 0lbs/hr.
- C-22—PURGE TIME— The amount of time the auger will purge during shutdown. The default is 30 seconds, but can be set between 0 and 120.

U-Codes

U-Codes allow you to check the exhaust and duct temperature in real time.

Pellet Stoves

- Press and hold MODE and Draft Fan UP until U1 appears.
- Press ON.
- A 3-digit number should appear. This is the current exhaust temperature.
- Press OFF to go back to U1.
- Press OFF again to go back to the main control screen.

Furnaces

- Press and hold MODE and Draft Fan UP until U1 appears.
- Press Heat Range UP and U2 will appear.
- Press ON.
- This is the current exhaust temperature.
- Press OFF to go back to U2.
- Press OFF again to go back to the main control screen.

Wood Stoves

How to Light a Fire

- After making sure that the stove air intake controls are fully open, place several rumpled sheets of paper in the center of the combustion chamber.
- Place 8 to 10 pieces of small dry kindling wood over the paper in the form of a tent. You may also place a few pieces of heating wood, but choose the smaller ones. NO CHEMICAL PRODUCT SHOULD BE USED TO LIGHT THE FIRE.
- Before igniting the paper and kindling wood, it is recommended that you warm up the chimney. This is done in order to avoid back draft problems often due to negative pressure in the house. If such is the case, open a window slightly near the stove and twist together a few sheets of newspaper into a torch. Light up this paper torch and hold it as close as possible to the mouth of the pipe inside the combustion chamber to warm up the chimney.
- Once the updraft movement is initiated, you are ready to ignite the stove by lighting the paper and kindling wood inside the combustion chamber.

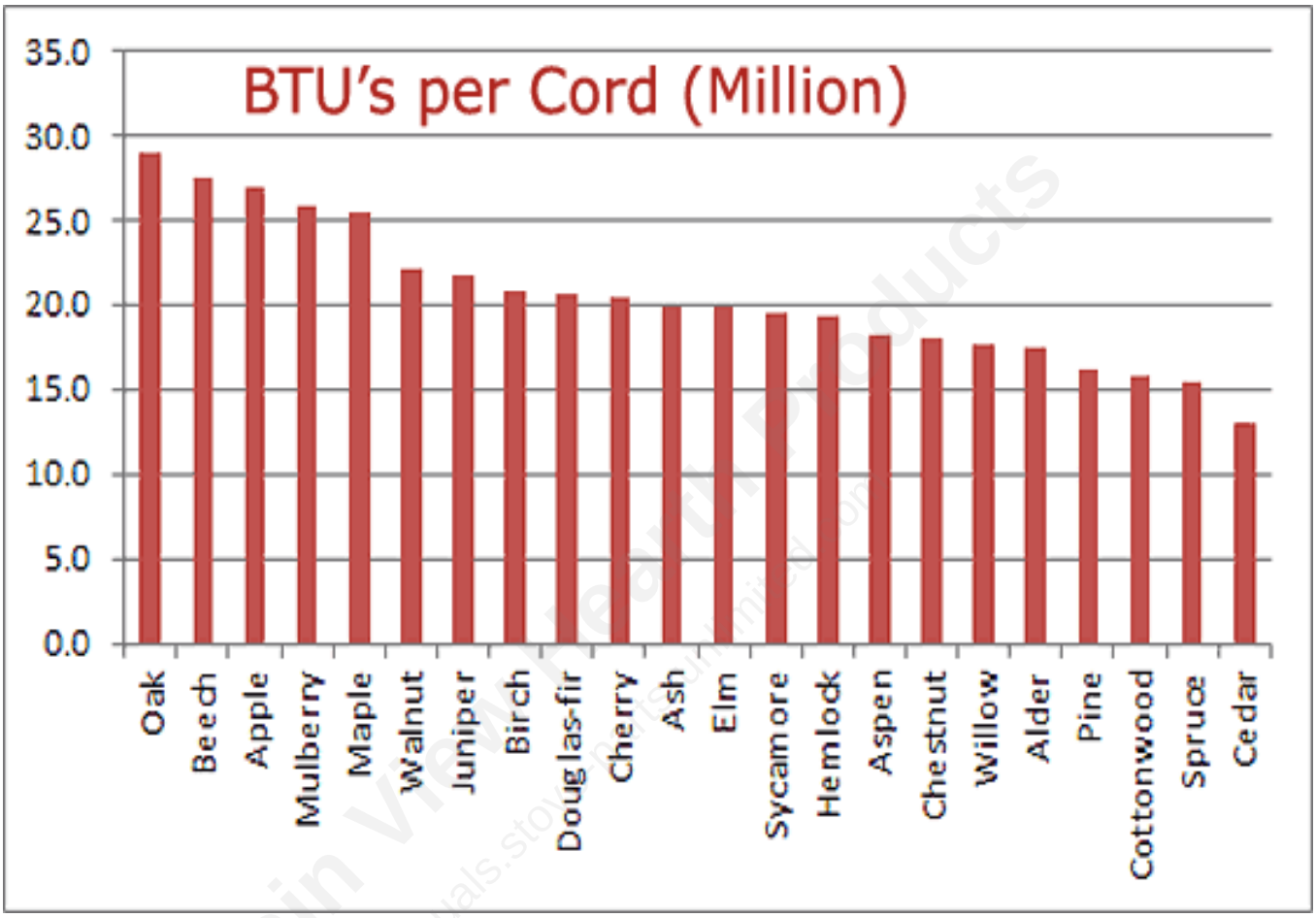
When you have a good bed of hot embers it is important to adjust the air intake damper appropriately. There is usually a chart in the owner's manual that lists the specific damper settings for each stove.

Example:

2000

Primary Air Settings (Slide Damper is located in center of stove under hearth plate) (Damper Adjustment: Pulling out on damper increases air)	
Burn Rate	Adjust Damper from fully closed
Low	1/4" (6.3mm)
Medium - Low	3/8" (9.5mm)
Medium - High	1/2" (12.7mm)
High	approx. 3" (76mm)

Types of Wood



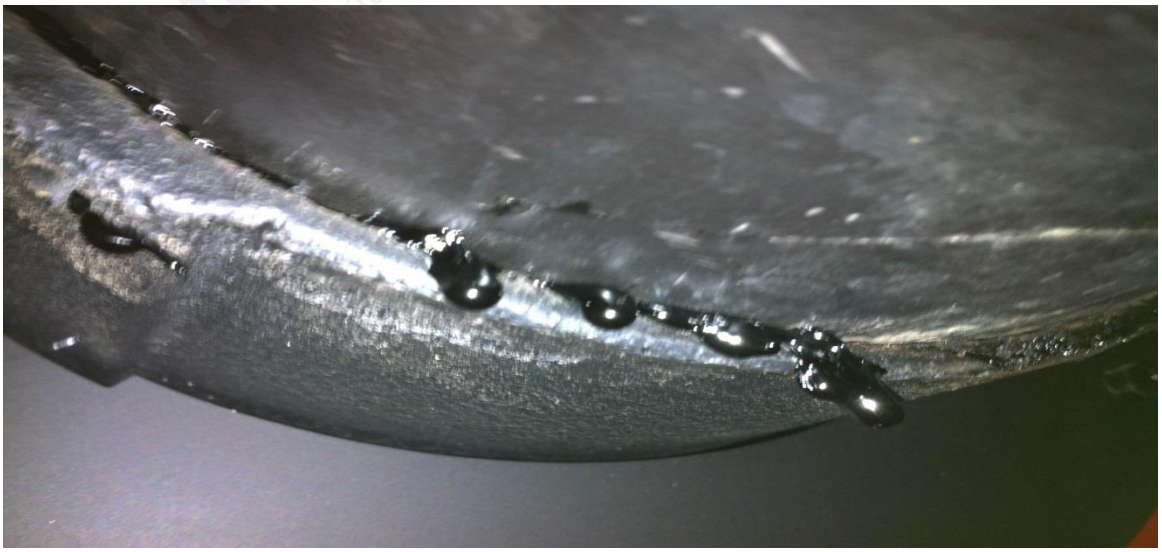
Wood should meet the following criteria:

- SEASONED and split hardwood. Seasoned means the wood has been dried for at least a year in a well ventilated sheltered area.
- Avoid green, unseasoned wood. It will only burn at 60% compared to dry, seasoned wood. It will also produce creosote.
- Do not use wood containing SAP!
- Do not use wet wood. This will produce Creosote.

Creosote

Creosote is a corrosive and extremely combustible substance. It is formed when gases given off in the burning process combine and condense on their way out of the chimney. The gases leave the burning wood with the smoke. If the smoke is cooled below 250° F, the gases liquefy, combine, and solidify, forming creosote. Creosote takes several forms. As a liquid, it can run down the insides of pipes and chimneys, oozing out of any openings. It can form a hard layer coating the insides of pipes and chimney liners. It can form into a fluffy substance that plugs pipes and breaks off and falls down, filling low spots in piping. It is the cause of most chimney fires and the main reason chimneys and pipes have to be cleaned and inspected periodically.

Creosote-continued…



Tips for Preventing Creosote

- Burn only seasoned hardwood that has dried for at least a year.
- Burn hardwood rather than soft wood. Hardwood is more dense/heavy and burns hotter.
- Do not attempt to burn (or mix in) green wood or wet wood. This will cause rapid creosote buildup. Wood that hisses, sizzles, pops, and blackens without igniting in five minutes may be too wet to burn.
- Do not attempt to extend burn time by using wet wood. Not only does burning wet wood increase creosote buildup, but it also reduces heat output by up to 25%.
- Burn the stove with the air inlet control wide open for 10-25 minutes every time fresh wood is loaded. Do not load more than ¼ to ½ of the fuel capacity at one time.
- Burn the stove with the control open for several minutes at numerous intervals throughout the day, being careful not to over-fire the unit. This will help to warm the chimney and reduce the amount of creosote forming condensation within the chimney.
- Creosote tends to build on itself. So, chimney cleaning and maintenance is very important!

Seasoning Cast Iron Parts

There are two ways to season cast iron parts:

Build 3-5 small kindling fires in the stove. These fires should be small and in between each fire the stove needs to cool completely.

Place the cast iron in your oven (if it will fit). Start the oven temperature at 325°F. Every 30 minutes turn the oven up 25°F. Do this until the oven reaches its highest temperature (usually around 500°F). Let the part cool completely before use.

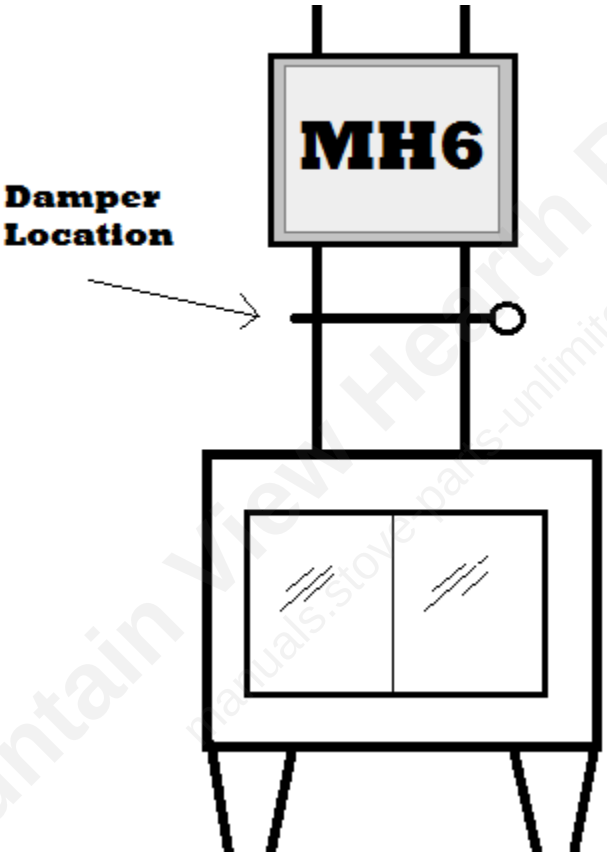
Dampers/Draft Regulators

Dampers and Draft Regulators are used to control draft on a wood stove. Dampers require manual adjustments and Draft Regulators operate automatically. Some stoves do not require and/or possibly prohibit the use of dampers.

Manual Dampers are installed inside the flue pipe.

Damper Location

- The damper must be placed in the flue pipe at least 18" from the stove.
- If combined with a Heat Reclaimer the damper should be installed BELOW.



Draft Regulator DR6, DR8

6” BAROMETRIC DRAFT REGULATOR

Owner’s Manual

(Save this manual for future reference)

SAFETY INSTRUCTIONS

READ ALL INSTRUCTIONS CAREFULLY BEFORE STARTING THE INSTALLATION OR OPERATING THE UNIT. FAILURE TO FOLLOW INSTRUCTIONS MAY RESULT IN PROPERTY DAMAGE, BODILY INJURY, OR EVEN DEATH.

TO BE USED WITH SOLID FUEL BURNING APPLIANCES ONLY. (NO EXCEPTIONS)

DO NOT USE THIS UNIT IN A MANUFACTURED HOME, MOBILE HOME, TENT, OR TRAILOR. (NO EXCEPTIONS)

SAFETY NOTICE: IF THIS UNIT IS NOT PROPERLY INSTALLED, A HOUSE/BUILDING FIRE MAY RESULT. FOR YOUR SAFETY, CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT PERMITS, RESTRICTIONS, AND INSTALLATION REQUIREMENTS FOR YOUR AREA.

SAFETY INSTRUCTIONS

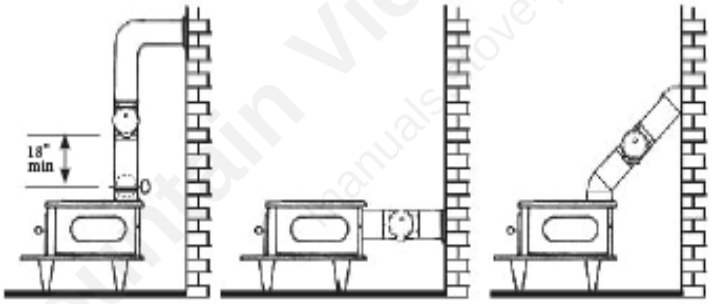
READ ALL INSTRUCTIONS CAREFULLY.

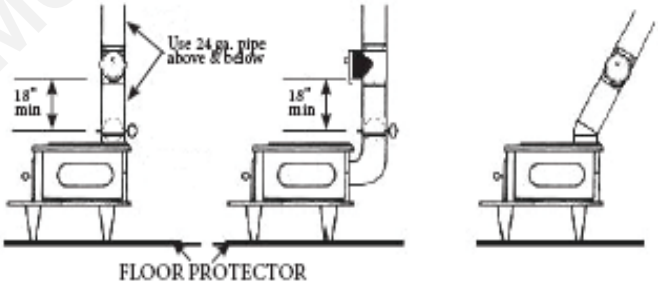
1. The installation of this unit must comply with your local building code rulings. Please observe the clearances to combustibles as specified in the stove manufacturer's manual.
2. Do not install this unit in a manufactured home, mobile home, tent or trailer (NO EXCEPTIONS).
3. Always connect this unit to a chimney that is vented to the outside. Never vent to another room or inside a building.
4. The paint used on your draft regulator may give off smoke and/or odor during the first fires. This may occur during the first dozen fires until the paint has cured. This will end and not reoccur after paint has cured. Persons with lung conditions or owners of susceptible domestic pets (such as birds) should take prudent precautions. Open windows and doors as needed to clear smoke and odor.
5. Be sure that your chimney is safely constructed and in good repair. Have the chimney inspected by the fire department or a qualified inspector. Your insurance company may be able to recommend a qualified inspector.
6. Creosote or soot may build up in the tee section, chimney connector and/or chimney and cause a house/building fire. Regularly Inspect this unit, the chimney connector, and chimney twice monthly during the heating season and clean if necessary.
7. Do not use a Draft Regulator that has a smaller diameter than the flue outlet on your stove, heater, or fireplace.
8. Do not restrict the air movement inside or through the Draft Regulator.
9. Do not install on a stove with an operating temperature of less than 350 degrees Fahrenheit.
10. Do not install the Draft Regulator closer than 18" to any combustible object or material.
11. Use at least three (3) sheet metal screws at each connection to secure the Draft Regulator to the flue pipe.
12. Do not touch the Draft Regulator while it and the heating appliance is in operation. The surfaces are hot and can cause severe burns. Keep children, clothing, and combustible materials away from the unit.
13. Maintain all clearance requirements of the heating appliance (see the appliance's owner's manual.)

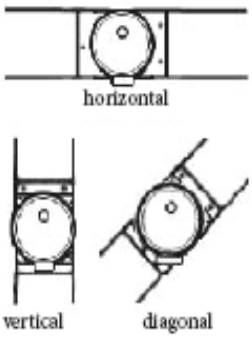
NOTE: A professional, licensed heating and cooling contractor should be consulted if you have questions regarding the installation of this appliance.

INSTALLATION INSTRUCTIONS

1. Check the Owner's Manual for your stove and install according to the stove manufacturer's instructions. If there are no instructions for draft control devices, follow the instructions below. **NOTE:** For proper operation, the chimney must be clean and free of any obstructions before installation.
2. Do not reduce any minimum clearances which may be listed in the stove manufacturer's manual. Check your local and state building codes for proper and safe installation.
3. **This product is intended to overcome excessive draft.** Your chimney should be capable of developing at least 0.045" w.c. (measured in inch water column) draft below the Barometric Draft Regulator after installing the unit.
4. Install the Barometric Draft Regulator as close to the stove as possible. If a manual damper (wood and coal stoves) is necessary, the Draft Regulator should be installed **ABOVE** and no closer than 18" from the manual damper, fig. 1.
5. All stove pipe above or below your Draft Regulator must be 24-gauge or heavier to provide adequate support. Any horizontal run of pipe must pitch upward toward the chimney at least 1/4" per foot of horizontal run. All stove pipe and/or elbow joints must be secured by at least **three** (3) sheet-metal screws.
6. The Barometric Draft Regulator may be installed with the crimped end up or down (depending on the stove arrangement) fig. 2. It may be installed in a horizontal, angled or vertical run of connector pipe provided the hinge pins are aligned horizontally and the face of the regulator is plumb, fig. 3. To re-orient the damper position loosen the machine screw at the bottom and remove the damper from the t-fitting. Reposition the damper for proper operation and retighten the machine screw.
7. Do not over fire. Refer to your heating appliance owner's manual regarding over firing.
8. Do Not install the Barometric Draft Regulator closer than 18" from any combustible material.







OPERATING INSTRUCTIONS

Chimney draft is critical to the proper operation and control of wood or coal burning stoves. Too much draft will cause fuel to be quickly consumed, create excessive heat and potentially cause the stove to over fire. Proper draft for most coal and wood burning stoves will be measured with a draft gauge reading of between 0.04" to 0.08" w.c.

The Barometric Draft Regulator is designed to be easily adjusted and provide proper operating draft levels.

CAUTION: BURN HAZARD. AS A CONNECTED COMPONENT OF A HEATING APPLIANCE,THE SURFACES AND CONTROLS OF THE DRAFT DAMPER ARE HOT DURING OPERATION. DO NOT TOUCH WITHOUT PROPER PERSONAL SAFETY EQUIPMENT.

The Barometric Draft Damper consists of a hinged vane and a counter balance assembly to control the opening of the vane. The counter balance has a weight attached to a threaded screw. This passes through a threaded hole in the vane with a knurled knob and lock nut situated on the outside of the vane.

To adjust the draft setting:

1. Turn the knurled knob counter clockwise for less draft or clockwise to increase draft.
2. When the desired draft setting has been reached, lock the counter balance in place by tightening the lock nut against the vane.

As stated above, the best setting for a wood or coal burning stove is a draft gauge reading of 0.04" to 0.08" w.c. If a draft gauge is not available, the barometric draft regulator may be set as follows:

1. Prepare a fire in your stove.
2. With a good fire burning open the stove door slightly.

CAUTION: BURN HAZARD. ALL THE SURFACES AND CONTROLS ARE HOT DURING OPERATION. USE PERSONAL SAFETY EQUIPMENT AND TOOLS WHEN ADJUSTING.

3. Wear fireplace gloves or similar personal protective equipment to adjust the knurled knob. Turn the knob counter clockwise for less draft and clockwise for more draft.
4. Adjust the draft setting so that the fire does not diminish or cause smoke-back from the stove. You want to use as low a draft setting as possible without affecting the fire level or causing smoke-back.
5. For best combustion efficiency, the stove pipe stack temperature below the Barometric Draft Regulator should be between 350° to 450° F. for seasoned (dry) wood. Consult the stove manufacturers' instruction manual for proper settings when burning coal.
6. To increase the heat levels, turn the knurled knob clockwise to increase the draft.
7. When the desired setting has been reached, tighten the lock nut against the vane of the damper.
8. Make sure to close and latch the door of your stove.
9. Follow your stove manufacturer's instructions for setting the heat output from your stove.

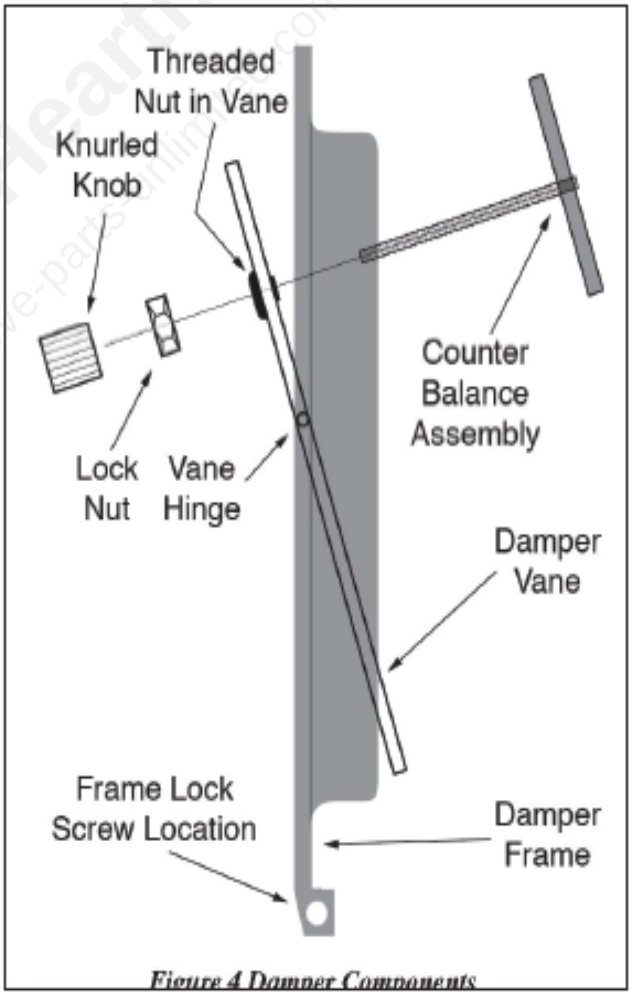


Figure 4 Damper Components

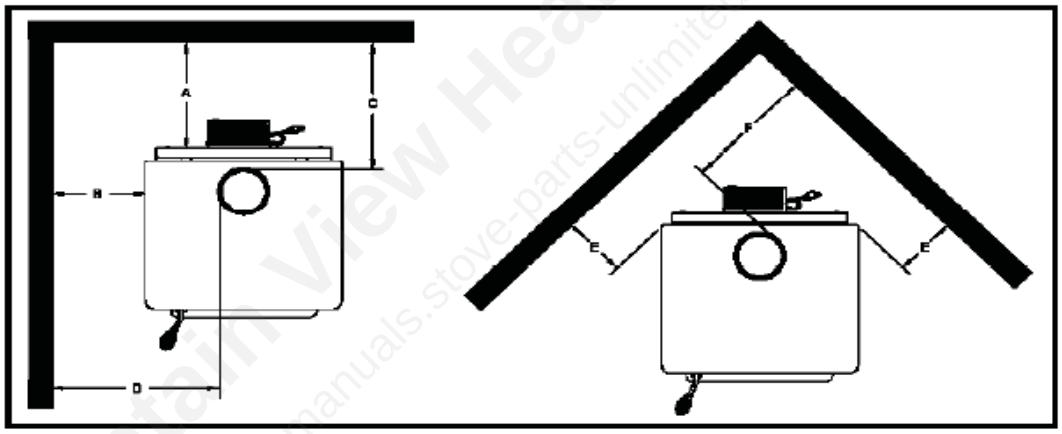
Clearances and Reductions

Clearances can be found in each stove's owner's manual. These clearances can, in some cases, be reduced with the use of non-combustible wall protection. Clearances are measured from the combustible sub-wall/floor underneath.

Clearances will be listed in the manual in this format:

CLEARANCES TO COMBUSTIBLES

It is of utmost importance that the clearances to combustible materials be strictly adhered to during installation of the stove. Refer to the tables below :



Single Wall Pipe (Double Wall Pipe)						
Model	A	B	C	D	E	F
2000	20(14) (508mm(356mm))	22(20) (559mm(508mm))	22.5(16.5) (572mm(419mm))	32(30) (813mm(762mm))	12(11) (305mm(279mm))	22(21) (559mm(533mm))

- Floor to ceiling height must be at least 7' (2.13m) in all cases.
- Do not place any combustible material within 4' (1.2m) of the front of the unit.
- The clearance between the flue pipe and a wall are valid only for vertical walls and for vertical flue pipe.
- The chimney connector must not pass through an attic or roof space, closet or similar concealed space, a floor, or a ceiling.
- For Canadian installations, where passage through a wall, or partition of combustible construction is desired, the installation must conform to CAN/CSA-B365.
- A flue pipe crossing a combustible wall must have a minimum clearance of 18" (457.2mm).
- To reduce flue clearances from combustible materials, contact your local safety department.

Clearances Reductions

- Clearances can be reduced to a minimum of 12" using the following chart:

Table 12.6.2.1 Reduction of Appliance Clearance with Specified Forms of Protection

Clearance Reduction Applied to and Covering All Combustible Surfaces within the Distance Specified as Required Clearance with No Protection *(See 12.6.1 through 12.6.1.3)*		Maximum Allowable Reduction in Clearance (%)		Minimum Clearance			
				As Wall Protector		As Ceiling Protector	
		As Wall Protector	As Ceiling Protector	in.	mm	in.	mm
(a)	3½ in. (90 mm) thick masonry wall without ventilated air space	33	—	24	610	—	—
(b)	½ in. (13 mm) thick noncombustible insulation board over 1-in. (25.4-mm) glass fiber or mineral wool batts without ventilated air space	50	33	18	457	24	610
(c)	0.024-in. (0.61-mm), 24-gauge sheet metal over 1-in. (25.4-mm) glass fiber or mineral wool batts reinforced with wire, or equivalent, on rear face with ventilated air space	66	50	12	305	18	457
(d)	3½ in. (90 mm) thick masonry wall with ventilated air space	66	—	12	305	—	—
(e)	0.024-in. (0.61-mm), 24-gauge sheet metal with ventilated air space	66	50	12	305	18	457
(f)	½ in. (13 mm) thick noncombustible insulation board with ventilated air space	66	50	12	305	18	457
(g)	0.024-in. (0.61-mm), 24-gauge sheet metal with ventilated air space over 0.024-in. (0.61-mm), 24-gauge sheet metal with ventilated air space	66	50	12	305	18	457
(h)	1-in. (25.4-mm) glass fiber or mineral wool batts sandwiched between two sheets 0.024-in. (0.61-mm), 24-gauge sheet metal with ventilated air space	66	50	12	305	18	457

Notes:
1. All clearances and thicknesses are minimums; larger clearances and thicknesses may be permitted.
2. To calculate the minimum allowable clearance, the following formula can be used: $C_p = C_{wp}(1 - R/100)$. C_p is the minimum allowable clearance, C_{wp} is the required clearance with no protection, and R is the maximum allowable reduction in clearance.
3. Refer to Figures 12.6.2.1(e) and 12.6.2.1(f) for other reduced clearances using materials found in (a) through (h) of this table.

FOR EXAMPLE: If a customer has 24-gauge sheet metal with a 1" ventilated air space behind it, they can reduce their minimum clearance by 66%, according to the chart. Using the "A" clearance from page 49 (22.5") the reduced clearance is:

22.5 x .66 = 14.85 → 66%of 22.5

22.5 – 14.85 = ~~7.65~~ → Minimum 12"

Reduced Clearance = 12"

EPA

You will probably get calls from customers asking why the information for a specific stove on the EPA tag is different from the information that is advertised. The EPA tests stoves in a way that will produce the least amount of harmful emissions. This is their purpose. For the stove owner, the amount of heat that can be produced by a stove is more important. The EPA uses a controlled burn environment and a low level fuel load (a "crib") during testing. Their goal is to see how few emissions can be produced from a stove in order to determine whether or not it qualifies as an EPA certified stove. The BTU rating listed on the EPA tag will be much lower than the actual BTU capabilities of the stove. This is what usually concerns the customer.

EPA-Continued…

Be green, Heat Clean…

Choosing the Right Wood Stove

Label and Tag

Today's wood stoves feature improved safety and efficiency. They produce almost no smoke, minimal ash, and require less firewood. While older uncertified stoves release 15 to 30 grams of smoke per hour; new EPA-certified stoves produce only 2 to 7 grams of smoke per hour. Be sure to look for the EPA certification label on the back of the stove. Labels depicted here will be similar to what you will find. Also check for safety labeling by authorized testing agencies.

Understanding What Information the Label Provides

To help compare one wood stove to another, the EPA and Hearth Industry have developed hang tags that easily identify common data. Since in the real world wood stoves would be exposed to different fuel, fuel size, fuel loading, operation, installation and chimney types, specific laboratory fuel and procedures are used to help make these comparisons.

Smoke and Efficiency

In the lab, a predetermined fuel load is made from specific material, arranged and loaded the same way for every stove. This fuel load is called the crib. This crib and loading procedures are repeated in each test of wood stoves to offer the best side by side comparison. During testing, samples of flue gases are collected to determine smoke pollution and listed on the label with an arrow rating. The percentage reported on the EPA label is a default value. It does not represent the tested efficiency of the unit. Actual efficiency could be much higher. (Tax Credits may require a "Heat Return" efficiency or a "Combustion" efficiency. Check with the manufacturer to confirm actual efficiency and see what models are approved.)

BTU Rating

The BTU rating listed on the tag is based on the crib and EPA testing. Advertised ratings will be based on a full load of seasoned cordwood that fully utilizes the firebox size.

Hedge, oak, Birch

Be green, Heat Clean

Cleaner burning wood stoves can reduce your fuel bill, in addition to protecting your health. The internal design of wood stoves has changed dramatically in the last twenty years, with manufacturer's improving combustion technologies. When comparing models, look for the EPA label on the stove – a lower g/h rating means a cleaner, more efficient wood stove.

United States Stove Company
227 Industrial Park Road
South Pittsburg, TN 37380
www.usstove.com

Troubleshooting

Fire won't stay lit: (or will only stay lit with the door open)

- CHECK THEIR INSTALLATION—if the fire won't stay going chances are their chimney is not producing enough draft to bring in air to fuel the fire.
- CHECK THEIR DAMPER PLACEMENT—if the stove is equipped with an intake damper, make sure they are opening it when trying to get a fire going.
- ASK THEM HOW LONG THEIR WOOD HAS DRIED—if their wood has not been drying for at least 12 months this may be their problem. If their wood has just been cut this IS their problem. You will have better luck getting an honest answer if you ask "how long…" rather than "are you using seasoned wood". Customers' definition of "seasoned" may be incorrect. Wet wood produces CREOSOTE rapidly!

Smoke comes out of the door when opened:

- CHECK THE DRAFT—go over their installation. If that seems to be up to code have them hire a chimney sweep/ tech to check the water column pressure. It should measure between .04-.06!

The door glass gets dirty quickly:

- Sooty glass is a sign that the stove is burning dirty.
- This can occur from any of the issues listed above.

The fire burns hot or out of control:

- CHECK THE DOOR GASKET—the door gasket may be worn or damaged. This allows excess air to be pulled into the firebox which, in turn, fuels the fire uncontrollably. If the gasket is in good condition, but the door doesn't seem to close securely, have the customer check for warping around the face of the door using a straight edge. This warrants a claim (assuming their install is correct).
- CHECK THE STOVE FOR CRACKS OR WELD BREAKS—this would also allow excess air to be pulled into the firebox. If cracks/weld breaks are found this warrants a claim (assuming their install is correct).
- CHECK THE DRAFT—have the water column pressure in the chimney measured. If it is more than .06 the stove is over-drafting.

Pellet Stoves

Basic Operation

Main Parts:

- Exhaust Blower (Combustion Blower)—pushes exhaust out of the stoves. Uses negative pressure to circulate air through the firebox.
- Room Fan (Convection Blower)—pushes heat out of the stove once stove is in normal operation.
- Auger Motor—turns the auger at programmed intervals.
- Auger—pushes pellets into the burnpot.
- High limit switch—shuts the stove down in the event of over-heating.
- Low limit switch—turns the Room Fan on once the stove is warm. (Usually 110°F)
- Thermistor—acts as a low limit switch and a high limit switch to measure temperature.
- Control Board—controls all electrical components.
- Burnpot—the area where the pellets burn.
- Ignitor—lights the pellets automatically.
- Gaskets—provide a seal the maintain the vacuum inside the firebox.

1. The exhaust blower will turn on as soon as the stove is powered up. The auger will start dropping pellets and the ignitor will come on to ignite them.
2. Once the stove is heated up to around 110°F the low limit switch will close allowing the room fan to turn on and disperse heat out into the home. Should something keep this from happening in a set time the low limit switch will not allow the room fan to operate.
3. Once in normal operation the auger will drop pellets into the burnpot at normal intervals.
4. Should the stove get too hot the high limit switch will trip and send to stove into shut down mode.
5. When the stove is turned off it will go into shut down mode. The auger will purge pellets from the auger chute (usually for 30 seconds) to decrease the risk of burn-back into the hopper. Both blowers will remain on high to evacuate all heat and exhaust from the inside the stove. The stove has completed the shut down when both blowers cut off (when the stove is around 110°F).

Pellets

- Hardwood: recommended for use. Hardwood pellets will reduce the potential for auger system malfunction as well as give the customer the maximum burn/heat efficiency. If they can be found we recommend a hardwood pellet that has a PFI rating of 4 or higher. This information can be found written on the bag.

- Softwood: DO NOT USE. Softwood pellets will cause frequent auger jams because they break up in the auger chute. They create excess ash which will reduce the life expectancy of mechanical parts in the stove. They also have a lower heat production capability.

- Hard/Soft Mix: These are not recommended, but sometimes they are the only thing the customer has access to. They create some of the same hazards as softwood pellets.

❖ Customers can view reviews and ratings on pellet brands at the following websites:

www.woodpelletreviews.com

www.allaboutwoodpellets.com

www.hearth.com

Pellet Stove Maintenance

Maintenance is a VERY important aspect of owning a pellet stove!

Proper upkeep is the best thing a customer can do to prolong the life of their stove. Also, excessive buildup can keep the stove from operating properly or at all!

The following chart applies to most USSC/Vogelzang/Breckwell pellet Stoves:

	Daily	Weekly	Monthly or as needed
Burn Pot	Stirred	Empty	
Combustion Chamber		Brushed	
Ashes		Check	Empty
Interior Chambers			Vacuumed
Combustion Blower Blades			Vacuumed / Brushed
Convection Blower Impeller			Vacuumed / Brushed
Vent System			Cleaned
Gaskets			Inspected
Glass	Wiped	Cleaned	
Hopper (end of season)			Emptied and vacuumed

Bypassing

Bypassing an electrical component serves to take the component out of the picture in order to see if the stove will run or clear an error code without it. This is used to diagnose which component is causing the issue.

Preparation:

- Have them find a standard metal paper clip.
- Have them remove the side panel under which the component is located.
- Have them locate and identify the correct component.

How to:

- Unplug the two wires from the component.
- Connect the two wires using the paper clip: plug one on each end of the same clip.
- If the clip falls out they don't have the clip far enough into the wire connectors.
- Once connected: lay the clip down or leave it dangling so that it DOES NOT TOUCH METAL!! This will damage the control board.
- With the clip in place they may now plug the stove back in and turn it on.
- If the error code is cleared or the stove runs with the component bypassed, it can be identified as the problem.

Running Direct Power

Direct powering a component allows us to determine if that component is mechanically functional. In other words we are taking the control board out of the picture. The goal is to test for mechanical function with no interference from the control board or wiring harness. If the component is functional with direct power we can isolate the problem to the wiring, control board, or sensor.

Preparation:

- Have them locate a power cord that can be plugged into a 110V AC outlet (standard outlet).
- They may use an extension cord.
- They will need to remove the side panel underneath which the component is located.
- Have them cut the cord at the end opposite the male plug.
- They will need to strip some of the outer covering and use the two wires inside.

How to:

- These two wires will need to be connected to the two plugs/posts on the component. It doesn't matter which wire goes to which plug/post.
- Plug the cord into a 110V AC outlet.
- If the component turns on then we know it is mechanically functional and not the cause of the error.

Furnaces

Burning Wood

Fuel:

Hardwood, 18” to 26” should be split and air dried (seasoned) for 6 months to 1 year.

Lighting:

1. Set the thermostat on “HIGH” for maximum draft.
2. Open the feed door and place paper and kindling on the grate for starting the fire.
3. Light the fire and close the feed door.
4. Add wood after the fire is burning briskly.
5. Once draft is achieved, “MEDIUM” setting is normally satisfactory.

Adding Fuel:

When starting a fire, add small amounts of fuel instead of adding large quantities of fuel. This will give more complete combustion and less buildup of tar or soot in the chimney.

1. Set thermostat the “HIGH” for maximum draft.
2. Add wood to desired level. (Never stack wood up above firebrick retainers)

Burning Coal

Fuel:

Egg size (1-3/16" or larger) bituminous coal for residential furnaces, or any of the specially packed fireplace coals can be used. Coal with a low ash content (2% to 6%) is recommended.

- **Bituminous Coal**—softer coal that burns dirtier, slower and less evenly. Requires more cleaning. Use pieces the size of a large nut to small egg. (1-3/4" to 4")
- **Anthracite Coal**—harder coal that burns cleaner, longer, and more evenly. It is much more difficult to use, requires more care and patience. It is not as available and is much more expensive. Use pieces the size of an egg. (2-5/16" to 4-3/8")

Lighting:

1. Set the thermostat on "HIGH" for maximum draft.
2. Open the feed door and place paper and kindling on the grate for starting the fire.
3. Light fire and close the feed door.
4. Add about 15lbs. of coal after fire is burning briskly.
5. Once draft is achieved, "MEDIUM" setting is normally satisfactory.

Adding Fuel:

1. Set thermostat to "HIGH" before opening feed door.
2. Never smother the fire when adding coal. Gases from the accumulation smoke will explode under certain conditions. Add fresh kindling if the bed of coals has cooled.
3. Add up to 20 lbs. of coal per loading. Never add coal above the bottom of the feed door opening.
4. Stir the coal and watch the fire. Be sure the new coal is burning briskly begore you close the doors and turn the thermostat down.
5. Shake grates vigorously ½" left to right to spill ashes into the ash pan. Do this at least once every 12 hours of operation. Empty ash pan regularly. Do not allow ashes to buildup to grate. This will cause the grate to warp or burnout, and you might spill the ashes when removing the pan.
6. Rotation of the handle (5 o'clock to 7 o'clock) will agitate coals and spill ashes into the ash pan.
7. It is advisable to be familiar with the shaker grate operation before firing.

Burning Coal—continued…

BULLETIN RC454

A GUIDE TO BURNING COAL IN YOUR FURNACE

Furnaces that are capable of burning coal usually will burn both Bituminous and Anthracite coal. Anthracite is perhaps the best coal fuel because of its long even burn time, high heat output, and cleanliness which make it a good choice for the home. However, keep in mind it is a much more difficult fuel to use, requires more care and patience, is not so widely available, and is usually much more expensive than Bituminous.

SIZE OF COAL:

Most sizes of Bituminous Coal will work in a coal furnace; for best results we recommend large "nut" coal to small "egg" coal (1-3/4" diameter to 4" diameter). When burning Anthracite, use "egg" or "broken" with sizes between 2-5/16" thru 4-3/8". Note that it is important to the long life of your stove to buy coal which has been sized and cleaned. Cleaning insures removal of rocks and other minerals. Never use coal smaller than 1" or larger than 5" in diameter. Small sized coal will smother the fire. Too large a size of coal will not burn well.

STOVE OPERATION:

All coal fires should be started with wood which will allow the fire to get hot enough to ignite the coal. The best ignition fires utilize dry pine or other resinous soft woods as kindling, with hard wood (oak, hickory, ash) added to increase the heat prior to addition of the coal.

Before starting the fire, open the stove pipe damper (if epuipped), turn the thermostat to high, open the ash pit door and feed door, place newspaper and finely split kindling on the grate, light the paper, add larger hard wood after the kindling is burning brightly. CAUTION: Never use gasoline, lantern fuel, kerosene, charcoal lighter fluid, or other flammable liquids to start or freshen up a fire in any heater. Place the larger pieces of wood on the fire so that they are slightly separated and form a level for the addition of coal. It will take 10 to 20 minutes before this wood is thoroughly ignited. Adding coal too soon will cut the air supply and smother the fire.

BURNING BITUMINOUS:

Once your kindling and wood fire has produced a bed of well established coals, start adding coal in layers allowing each to ignite before adding more. Bituminous has a high volatile content and, as a result, should be fired with the "conical method" - with the highest portion of your fire bed in the center of the firebox. The first flames will be long and generally orange or yellow and produce quite a bit of smoke. As the gases burn off the flames become shorter, change color and produce less smoke.

Once the fire is WELL ESTABLISHED add coal to the center of the firebox forming the cone. Burning in this fashion allows heat to drive off the volatile gases, and turbulence created increases the burn efficiency. There will have to be some experimenting with the individual setup as no two chimney's or installations are going to be the same. Just remember to allow enough air to enter the firebox and keep the stove pipe damper open so that volatiles are properly burned. Before refueling, take the time to break up the cone a little with a poker, especially if it has caked over or formed a crust. But, be careful not to mix the coal as this increases the chances of forming clinkers. When shaking the grate(s) be gentle. Just a few short movements - a couple of "cranks" - is better than a lot of agitation. The objective is to remove a small amount of the ashes without disturbing the fire. Stop when you see a glow in the ashes or the first red coals fall into the ash pan. Excessive shaking wastes fuel and can expose the grate(s) to very high temperatures which can cause warpage or burnout.

For overnight operation (long duration burn time) shake the fire and add coal, retaining the center cone. Once the volatiles are burned off, close the feed door and adjust the stove pipe damper, if epuipped. Then adjust the thermostat to the desired heat level.

More MAINTENANCE will be needed with bituminous coal than with anthracite coal as more soot will collect on heating surfaces and in pipes, requiring more frequent cleaning.

ANTHRACITE:

Add a thin layer of coal (preferably smaller chunks) to the wood fire, being careful not to disturb it too much or cut off the draft. Then, add a second heavier layer after the coal is ignited and burning well. If necessary, add a third layer to bring the coal up to the top of the front liner (not above!). Be sure to close the ash door.

Burning Coal—continued…

Before adding further fuel, be sure to leave a red spot of glowing coals in the center of the firebox to insure that the fire has not been smothered and to help ignite the gases given off by the new charge. A deep charge will give a more even heat and a longer fire, but it may take one to two hours before the whole bed is fully ignited.

When the fire is well established and the room is becoming warm, partially close the dampers. Some experimenting will have to take place with each particular setting of all dampers and controls as the chimney provides the draft necessary to not only exhaust the smoke, but to pull combustion air into the heater as well - and no two chimney's perform the same. Under ideal draft conditions, one should be able to turn the secondary air supply below the feed door (some models) to a near closed position - but leave the ash pit damper at least partially open to prevent the fire from going out. Adjust the stove pipe damper to reduce the draft on the fire. With anthracite there will be short blue flames above the coal, except when the fire is started or a new charge is added. If, however, there is no flame then the fire needs more air from the bottom (unless it is near the end of its burn cycle and needs to be recharged).

Only when the coal is burned down to half its original depth it is time to add fresh coal. When doing so, open the stove pipe damper and turn the thermostat damper to high, which will allow the fire to burn off any accumulated gases. Open the feed door, and with a small rake, hoe, or hooked poker pull the glowing coals to the front of the firebox. Try not to disturb the fire too much. Next, add a fresh charge to the back being careful not to seal off the top. Close the feed door, but leave the spin damper (or thermostat) open for a few minutes until the volatile gases have burned off. It is not necessary to shake down the ashes each time you refuel the furnace. Experience will be your best teacher.

BANKING THE FIRE:

For extended operation, such as overnight, the fire will need to be banked. To do so heap coal up along the sides and back of the firebox so that the fire gradually burns it over a longer period of time. The intensity of the fire will also be reduced without letting it go out. Follow the same procedure as for refueling. If possible, avoid shaking, as a heavier layer of ash will help reduce the intensity of the fire during this time. After loading, let the fire establish itself for about 30 minutes. Then close your damper and automatic control to the point where the house does not become too cold. It is important that you begin banking early enough before retiring or leaving that you can make necessary adjustments after the fire is well established.

To revive a coal fire that is almost out, (1) open the ash door and stove pipe damper and close the spin damper under the door to get a good draft through the grate. (2) place a thin layer of dry coal over the entire top of the fire. DO NOT POKE OR SHAKE THE FIRE AT THIS TIME! (3) after the fresh coal has become well ignited shake the grate (just a little), refuel.

DO NOT burn coke, charcoal, high volatile bituminous coal, sub bituminous, lignite or cannel coal (sometimes called channel coal or candle coal).

NEVER burn wax or chemically impregnated sawdust logs - their intended use is for fireplaces only.

NEVER fill the stove or furnace above the firebrick or cast iron liner.

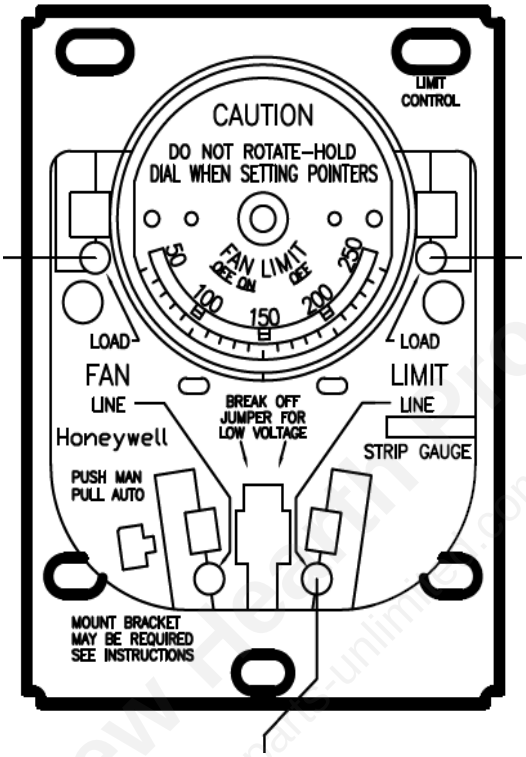
Draft Induction Kit

A Draft Induction Kit allows the customer to force a draft into their wood/coal furnace in order to operate the stove with a wall thermostat.

How it works:

When the customer adjusts the wall thermostat to call for heat, the induction blower forces air into the firebox. This causes the fire to burn hotter. Once the temperature meets the requirement for the FAN ON (default 150°F) setting on the Honeywell limit control the blowers will come on. This situation will remain until the temperature called for is met. The blowers will turn off once the temperature inside the firebox meets the requirement for the FAN OFF setting on the Honeywell limit control (default 100°F).

Honeywell Limit Control



- Factory setting for the blower settings are 100-150-200.
- This means the blowers will come on at 150°F, go off at 100°F
- The 200°F mark represents the heat limit. When this temp is reached the induction blower will be stopped and the distribution blowers will turn on high to evacuate excess heat from the stove.
- If the customer wishes for the blowers to stay on longer they can lower the fan OFF setting a little.
- The cutout containing the adjustable notches should remain at the bottom of the disc. If the cutout is turned so that the ends are not at 9 o'clock and 3 o'clock the part is bad. This probably occurred from exposure to excess/high heat levels.

Troubleshooting

Trouble Shooting Tips for Warm Air Furnace

LIST OF PROBLEMS	POSSIBLE CAUSE	SOLUTIONS
1. Smoking when feed door is open.	a) Insufficient Draft. b) Clogged chimney or chimney connector. c) Down draft in chimney.	a) Set Thermostat higher. b) Clean Chimney. c) Add raincap to chimney.
2. Furnace does not heat.	a) Wood not seasoned and dry. b) Insufficient flue draft.	a) Allow wood to season in a dry area for six months. b) Set flue draft. (See P. 9)
3. Blower Does not run.	a) Improperly wired. b) Bad blower thermodisc. c) Bad relay. d) Bad blower motor	a) Wire unit properly. b) Replace blower thermodisc. c) Replace relay. d) Replace blower.
4. No air from registers-fan running.	a) Registers are closed. b) Duct work improperly installed. c) Improper wiring between central furnace and this unit.	a) Open registers. b) Correct duct work install. c) Wire unit properly.
5. Air from Registers is not hot	Bad blower Thermodisc.	Replace blower Thermodisc.
6. Smoke and/or odor from registers when furnace is used for first time.	Oil from furnace and duct work.	The metal used in constuction of the furnace and duct work has a light coating of oil. This should disappear after a short period of time. Once this burnoff has occurred, it should not reoccur.
7. Creosote build-up.	a) Burning green wood (not seasoned or dry). b) Thermostat setting too low for type fuel.	a) Burn only seasoned wood. b) Set thermostat higher to attain higher flue temperatures. This will aid in preventing buildup of creosote.
8. Flame spillage when feed door is open.	a) Insufficient draft. b) Smothering fire when adding fresh fuel.	a) Set thermostat higher. b) Add fuel so as not to smother fire.

Cold Air Return

Symptoms of not having a cold air return:

- Furnace is not pushing enough hot air through the heating ducts.
- Furnace is not burning fuel right.
- Furnace is overheating.
- Chimney is not drafting correctly.
- Smoke smell.

When installing a cold air return:

THE SIZE OF THE RETURN SHOULD BE EQUAL OR (PREFERABLY) GREATER TO THE SIZE OF THE OUTPUT (THE PLENUM).

MODEL	COLD AIR RETURN SIZE
1300, 1400, 1500, 1537, 1557	280in^2 or larger
1602	320in^2 or larger
1802	360in^2 or larger
1600EF	12in round return
24A, 30A	160in^2 or larger

Stove Specifications

5500 Series

Specifications:

Heating Specifications

Fuel Burn Rate*	2.0 - 6.0 lbs./hr. (0.9 - 2.7 kg/hr)
Burn Time (lowest setting)	60 hrs.
Hopper Capacity	120lbs. (55kg)

* Pellet size may effect the actual rate of fuel feed and burn times. Fuel feed rates may vary by as much as 20%. Use PFI listed fuel for best results.

Dimensions

Height	34 in. (864mm)
Width	26 in. (660mm)
Depth	26 in. (686mm)
Weight	210 lbs. (95.5kg)

Electrical Specifications

Electrical Rating	110-120 volts, 60 HZ, 3.0 Amps
Watts (operational)	175 (approx.)
Watts (igniter running)	425 (approx.)

**WEIGHT on the 5510 is 250lbs.

**WEIGHT on the 5500XL is 275lbs.

Model Differences:

- The 5510 has and ash pan.
- The 5500XL has a 320lbs hopper capacity.
- The 5500 and 5500XL both have ABC boards on older models.

Known Issues: Do not share these issues with the customer!

- The 5502 sometimes has airflow issues. This can cause an err2 code that is hard to clear even with a correct installation. The best way to alleviate this issue is by adjusting the internal draft speeds.
- If a customer is getting an err2 on the 5510 and you are having a hard time clearing it, have them check the ash pan for warping.

5500—continued…

- There is a ledge above the door on the inside of the firebox that needs to be cleaned. This can cause pressure issues if not maintained.

Troubleshooting:

- **If the room fan won't come on**: run through a test and pay attention to the thermistor reading. If it says 0°F the thermistor is unplugged. This happens A LOT! It is very easy to accidentally unplug the thermistor if the side panel ever has to be taken off.
- **When a customer tells you their draft fan is cutting on and off:** 9 times out of 10 it's not! On this series the exhaust fan was designed to ramp up and down. Let the customer know the blower is designed to automatically adjust the amount of air needed to burn through the pellets efficiently.
- **If the auger is not feeding enough pellets and adjusting the feed rate doesn't seem to help:** some older models had and adjustable auger cover at the bottom of the hopper. You can identify these. They will have wingnuts around the auger cover in the hopper. You can have the customer loosen these so that the auger cover is not restricting the flow of pellets.
- **Dirty Glass**: most of the time this is a tale tell sign of an airflow restriction. However, if everything checks out and the glass is still excessively dirty, ask the customer to tell you about their pellets. Soft wood pellets and soft/hard wood blends can cause this. OR if the pellets are just bad quality. Have the customer try a different brand to see if the glass stays cleaner longer.
- **Automatic Mode**: customers will call in saying they need a new control board because theirs won't go into automatic mode. THERE IS NO AUTOMATIC MODE. Let the customer know that the control board on their stove is used on other USSC models as well. The automatic mode pertains to the multi-fuel stoves. They can, however, adjust the blowers manually. If they question you, ask them to look in their owner's manual under the "Control Panel Overview" section.

6041

Specifications:

Fuel	Multi-Fuel
Hopper Capacity	60 lbs.
BTU Range	Up to 52,000
Heating Capacity	Up to 2,400 ft^2
Height	31 in.
Width	29 in.
Depth	28 in.
Weight	309 lbs.
EPA	Certified
Safety Listing	ASTM E1509-04
Mobile Home	Approved

Burning Corn:

SHELLED CORN (Dry, preferably corn with 11- 12% moisture content)

- **Corn must contain less than 14% moisture content.** Wet corn will rapidly deteriorate heater components, reduce efficiency and void all warranties. Purchase a moisture tester if in doubt.
- Corn must be clean and free from debris. Never burn corn right from the field. Damage caused by dirty corn is not covered by the product warranty. Ask for clean **filtered** bagged corn only. Stalk parts, excessive fines and cob remnants will clog the auger. Check your corn for foreign objects.
- **NEVER BURN SEED CORN IN YOUR Heater.** Seed corn is treated with chemical pesticides that are harmful or fatal if swallowed, therefore, seed corn is dangerous to have in the house, especially where children can reach it.
- Never burn "Deer Corn." It frequently contains molasses, sugars and salts.
- Store your corn supply in a dry place and keep bags or container sealed to prevent your corn from absorbing excess moisture. Test the moisture content periodically to ensure the proper dryness.
- There are many varieties of corn grown around the world. Each variety has unique characteristics including the shape and size of the kernel. Your heater will burn more consistently with a small to midsize kernel corn. If the kernel size of the corn varies greatly or if you switch sources frequently, you will get a less consistent burn. Therefore, purchasing corn from the same source will help achieve a more consistent burn. **DO NOT USE CORN WITH A HIGH WAX CONTENT!**

6041—continued...

TO START A FIRE...

- **Never use gasoline, gasoline-type lantern fuel, kerosene, charcoal lighter fluid, or similar liquids to start or "freshen up" a fire in this heater. Keep all such liquids well away from the heater while it is in use.**

Using Wood Pellets: Ensure your display shows a "Pr" for pellets.

- Close all doors, lids, and cleanouts.
- Press the "ON" button and select desired heat range. This will start the ignition sequence.

At this point, the igniter will come on and run for preset time limit (approximately 9 minutes). The auger will begin to turn and feed fuel into the burnpot. After the 9 minutes or if the heater reaches operating temperature, the igniter will shut off and normal operation will begin.

- Make fine adjustments to the air/fuel with the damper located centered, under the hearth.
- Once the heater reaches warm temperature, the room fan will start to circulate air into the room.

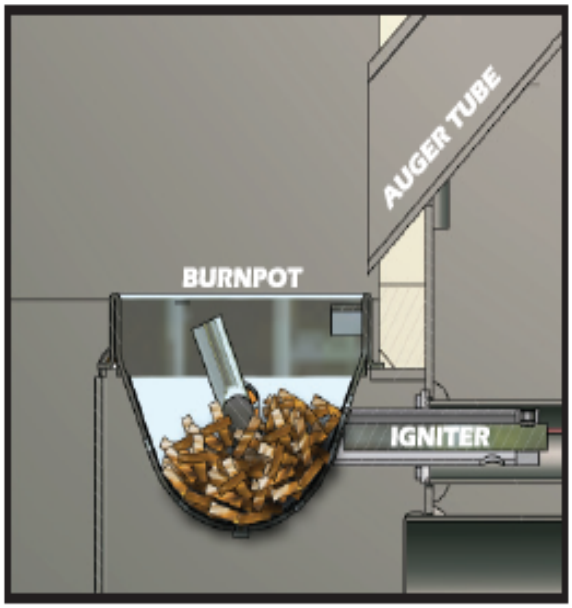
If you would like to increase the life of your ignitor, you can run your heater in the "Cr" mode. However, you **must** place pellets in the burnpot, up to the igniter level as shown in the illustration below for auto ignition. Close the door and press the "ON" button. The igniter only runs approximately half the time in "Cr" as oppose to the "Pr" mode.

Using Corn, Soy Beans, Cherry Pits: Ensure your display shows a "Cr" for corn.

NOTE: Wood pellets MUST be used for auto ignition of the fuel. Corn, Soy Beans, and Cherry Pits have a higher flash point and requires more heat to combust as opposed to wood pellets. Trying to light the heater with a fuel other than wood pellets will decrease the life expectancy of your igniter cartridge.

The use of starter gel or starter pellets is not required for this heater.

- Fill the burnpot with wood pellets up to the level of the igniter port; See illustration.
- Close all doors, lids, and cleanouts.
- Press the "ON" button and select desired heat range. This will start the ignition sequence.



Once the wood fuel is ignited and the heater senses heat, the auger and agitator will begin to rotate, feeding fuel to the burnpot. NOTE: If the starting fuel is not burning hot enough, you may see the fire begin to go out as new fuel is being added. If this occurs, pressing the "Auger Delay" button will allow the auger to pause for 1 minute. Pressing the "ON" button will resume the auger if 1 min. is too long. If not enough fuel is the reason for not burning, pressing and holding the "ON" button will allow the auger to continuously deliver fuel until you release the button.

- Continue to observe the fire until most of the wood pellets have been consumed and only corn or your selected fuel is burning aggressively.
- Make fine adjustments to the air/fuel with the damper located centered, under the hearth. You should pull the damper out approximately 1 inch. It may need to be pulled out more or less depending on your selected heat setting and fuel quality. Try opening or closing by a 1/4 inch at a time.
- Once the heater reaches warm temperature, the room fan will start to circulate air into the room.
- **Overfire Protection** - If the heater is being overfired, burned too hot, the heater will automatically shutdown to avoid damage to components in the heater. Refer to "Lighting Instructions" for proper use.

6041—continued…

Corn Mixtures:

The American Harvest has been designed to burn straight shelled corn with a moisture content of 14% or less. Higher moisture content can be used, but significant heat output will be lost along with increased maintenance. For corn with elevated moisture, you can mix in a few pellets to increase combustion and reduce maintenance. For example: we have successfully tested corn with 16% moisture mixed with pellets at a ratio of 2.5/1 (100 lbs. of corn with 40 lbs. of pellets). For corn that has the tendency to create the troublesome "clinkers" in the burnpot and on the agitator fingers add a little oyster shell. We have found that one cup to 50 lbs. of corn works well. Depending on the corn, this amount may vary.

Known Issues: Do not share these issues with the customer!

- **AUGER SYSTEMS**: this model is notorious for have auger issues. They tend to snap auger shafts or sheer the hairpin frequently. If their serial is 1000-3000 they will need to file a claim.
- **Auger turning but not feeding**: if this happens check the direction of the auger motor. There seems to have been a lot of mislabeled auger motors coming up. The correct direction is CCW.

Troubleshooting:

- **If they are installing a FAK**: Make sure they run a pipe inside the stove from the intake hook up on the back of the stove to the hook up on the burnpot.
- **Cap inside the burnpot**: This cap either needs to be removed or have holes drilled through it. This cap may have been left on during the manufacturing process.
- **To go back and forth between Corn Mode (default) and Pellet mode**: Press and hold HR UP and DOWN arrows for 5 seconds.
- **Air damper**: There are two ash cleanouts on either side of the damper under the door. Make sure the customer doesn't mistake these dampers as well!

B2350

Specifications:

Fuel	Wood/Coal
Log Length	23 in.
Capacity	50 lbs. Coal
BTU Range	Up to 105,000
Heating Capacity	Up to 1,800 ft^2
Blower	Optional
Flue Collar	6 in.
Width/Height	32.25 x 33.5 in.
Depth With Blower	23.5 in.
Depth W/out Blower	19.25 in.
Fire Box	2.8 cubic feet
Door Opening	12 x 11 in.
Weight	250 lbs.
EPA	Exempt
Mobile Home	NOT Approved
"B" after the model #	Blower Included
"B" before the model #	Black in color

Known Issues: Do not share these issues with the customer!

- **On newer B2350 model the doors have a hard time sealing:** Either the latch won't tighten up of the facing around the door is warped.
- **SEASON THE GRATE BEFORE USE:** The grate should be seasoned before use! The grate will burn through in a year if they don't. On page 3 of their owner's manual it states, in bold letters, that cast iron parts are to be seasoned. Building their first fire small doesn't count as seasoning.

Troubleshooting:

- **Out of control fire:** first thing...make sure they are aware of how to work all the dampers on the stove. Check to see if the door shuts securely. Have them check for cracks/ weld breaks in the firebox. They can do this in the dark with a flashlight. WITH THE STOVE COOL, have them turn the flashlight on and set it inside the stove and close the door. If any light escapes there is a crack.

B2350—continued…

- **Burning too hot or burning through wood too fast**: again, ask about all the dampers and make sure they're not running anything wide open. Advise them to hire a chimney sweep/ technician to check their W.C. pressure. It should be between .04-.06
- **All other issues**: See "Wood Burning".

5520

Specifications:

Fuel	Pellet
Hopper Capacity	120 lbs.
BTU Range	Up to 48,000
Heating Capacity	Up to 2,200 ft^2
Width/ Height	26 x 34 in.
Depth	27 in.
Weight	287 lbs.
EPA	Exempt
Mobile Home	Approved

Known Issues: Do not share these issues with the customer!

- **Air Flow issues**: This stove is known for have issues with gaps in the ash pan seal and air wash system.
- **Pellet Buildup in the Burnpot**: The air flow issues also cause a very inefficient burn, which causes the pellets to buildup in the burnpot.

Troubleshooting:

- **If you encounter persistent vacuum errors:** send the customers lift and turn latches (part #891327 Qty: 2). These will secure the seal around the ash pan.
- **If you have diagnosed air flow problems**: look for the flame to be pulled towards the door. Also, if the install is correct and the pellets are still not burning efficiently you will need to send them the 5520FFK. This comes with a gasket to fit behind the burnpot and a piece to close in the air wash system.

5520—continued…

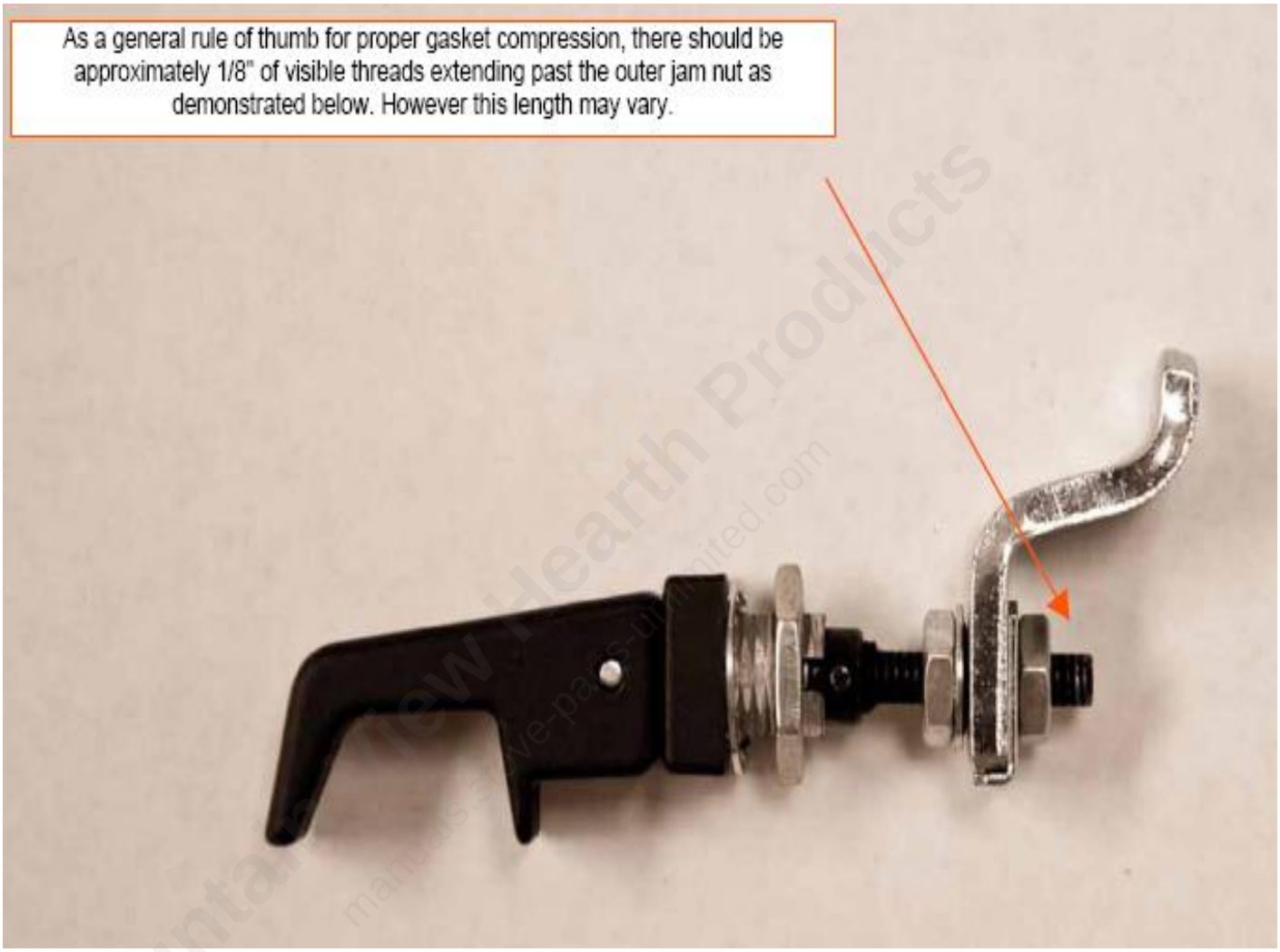
Ashpan Gasket Compression

-

The ash pan gasket should be seated firmly against the face of the appliance. To check for proper compression, place a dollar bill in between the gasket and the face of the stove and then latch the ashpan. The dollar bill should have some tension when pulling pressure is applied, but not so much that the dollar bill can not be removed. If there is not any tension on the dollar bill, then the latches need to be adjusted; please see the following pages of this document.

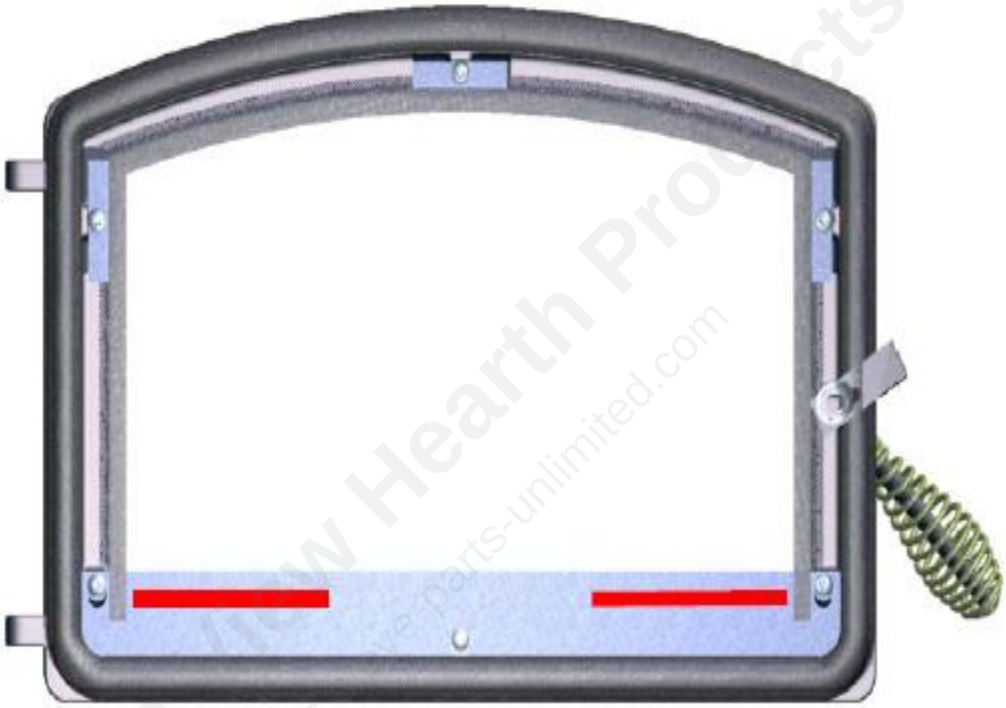
5520—continued...

5520—continued…



5520—continued...

Door Glass Gasket Kit



Remove the 4 glass retainers that are secured by (6) phillips head screws.

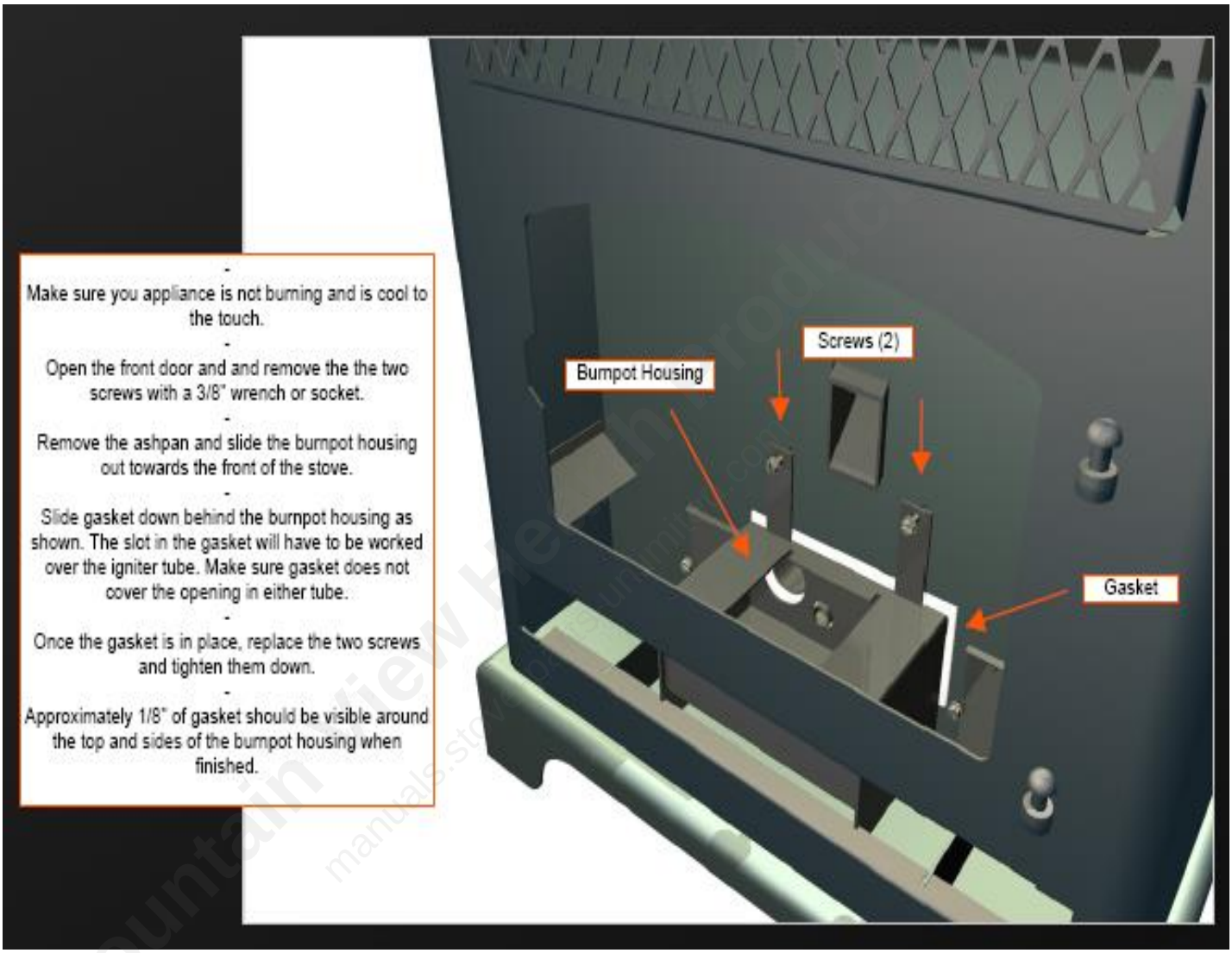
-

Place the two 4" strips of window glass gasket on each side the bottom of the glass in the locations as demonstrated by the red lines in the picture.

-

Replace glass and glass retainers then carefully tighten back the screws.

5520—continued...



Boxwood Stoves

Specifications:

**See individual owner's manuals.

Known Issues: Do not share these with the customer!

- **The body of the stove turns white**: this is caused by excess air being pulled into the stove because the seams are not sealed completely.
- **The bottom burns out:** this happens when the customer burns wood directly on the bottom of the stove. They should have sand of firebrick covering the bottom of the stove.
- **The crimped end of the stove pipe doesn't fit inside the flue collar:** because the damper is inside the flue collar, notches can be cut to fit around the damper pin.

Troubleshooting:

- **Curing smell after the first week or two:** this could be a sign that the stove is overheating. Make sure they have sealed the seams of the body with silicone or furnace cement. Advise them to have a chimney sweep/ technician check their W.C. Pressure. Their chimney may be over-drafting.
- **Slide Damper**: There is an intake damper for this stove located on the hearth plate. It slides back and forth to open and close.
- **Smoke back in the house or fire won't stay lit:** If smoke is coming out of the stove while a fire is burning, it means the stove is not drafting. Check their installation. Have them check for restrictions/obstructions in the chimney.

Hot Blast

Specifications:

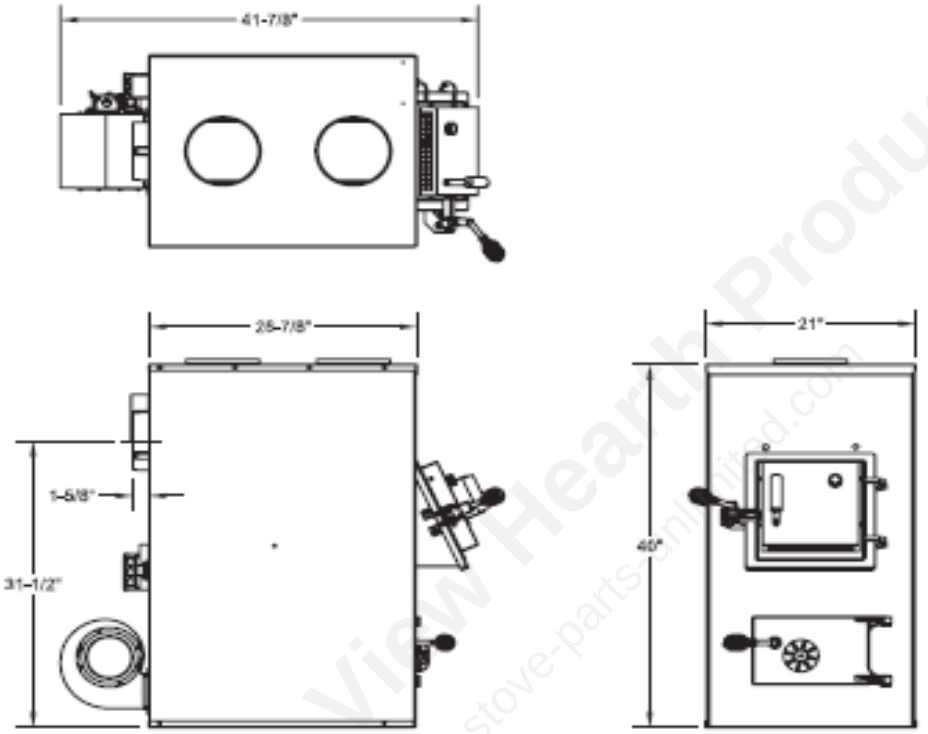


Figure 1
Model 1300

Fuel	Wood Coal
Log Length	21 in.
Coal Capacity	50 lbs.
BTU Range	Up to 115,000
Heating Capacity	Up to 1,900 ft^2
Blower	550 CFM
Plenum	8 in.
Flue	6 in.
Weight	375 lbs.
Door Opening	10 x 11 in.

Hot Blast—continued…

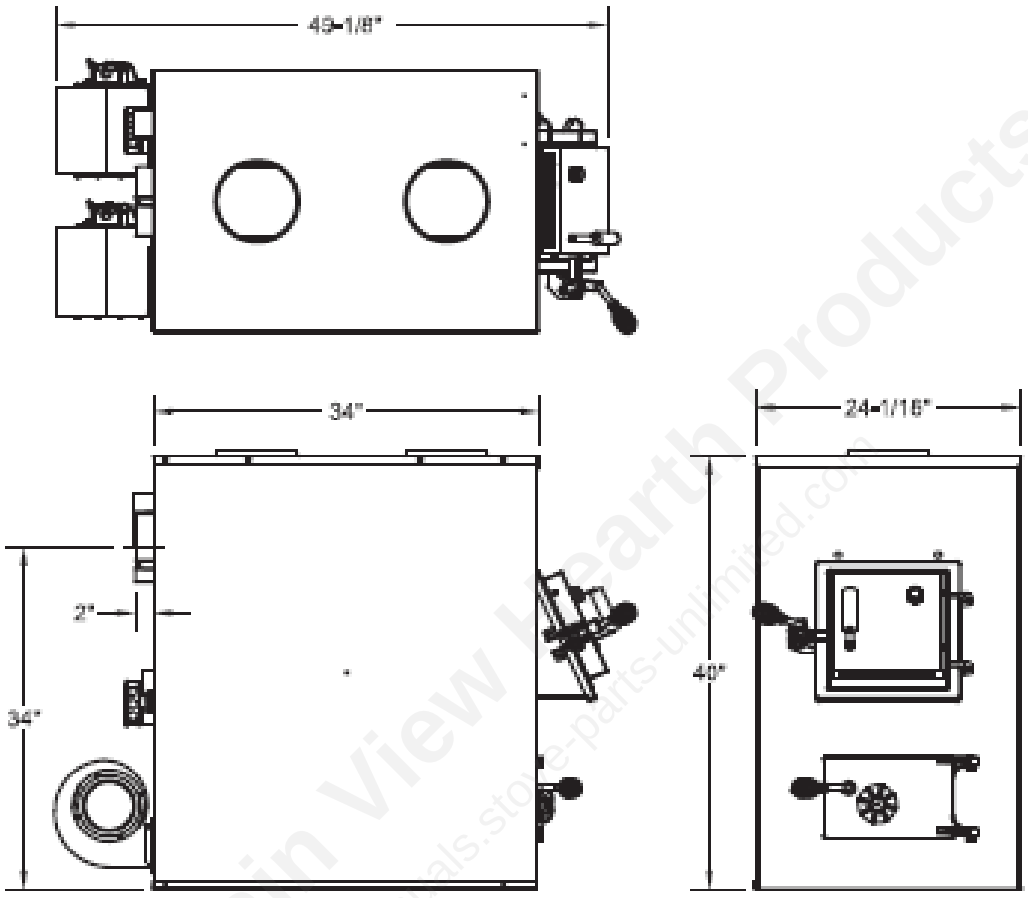


Figure 2
Models 1400/1500

	1400	1500
Fuel	Wood	Wood/Coal
Log Length	27 in.	26 in.
Coal Capacity	--	70 lbs.
BTU Range	Up to 139,000	Up to 139,000
Heating Capacity	Up to 2,500 ft^2	Up to 2,500 ft^2
Plenum	8 in.	8 in.
Flue	6 in.	6 in.
Blower	Twin 550 CFM	Twin 5500 CFM
Door Opening	10 x 11	10 x 11
Weight	480 lbs.	475 lbs.

Hot Blast—continued…

Known Issues: Do not share these with the customers!

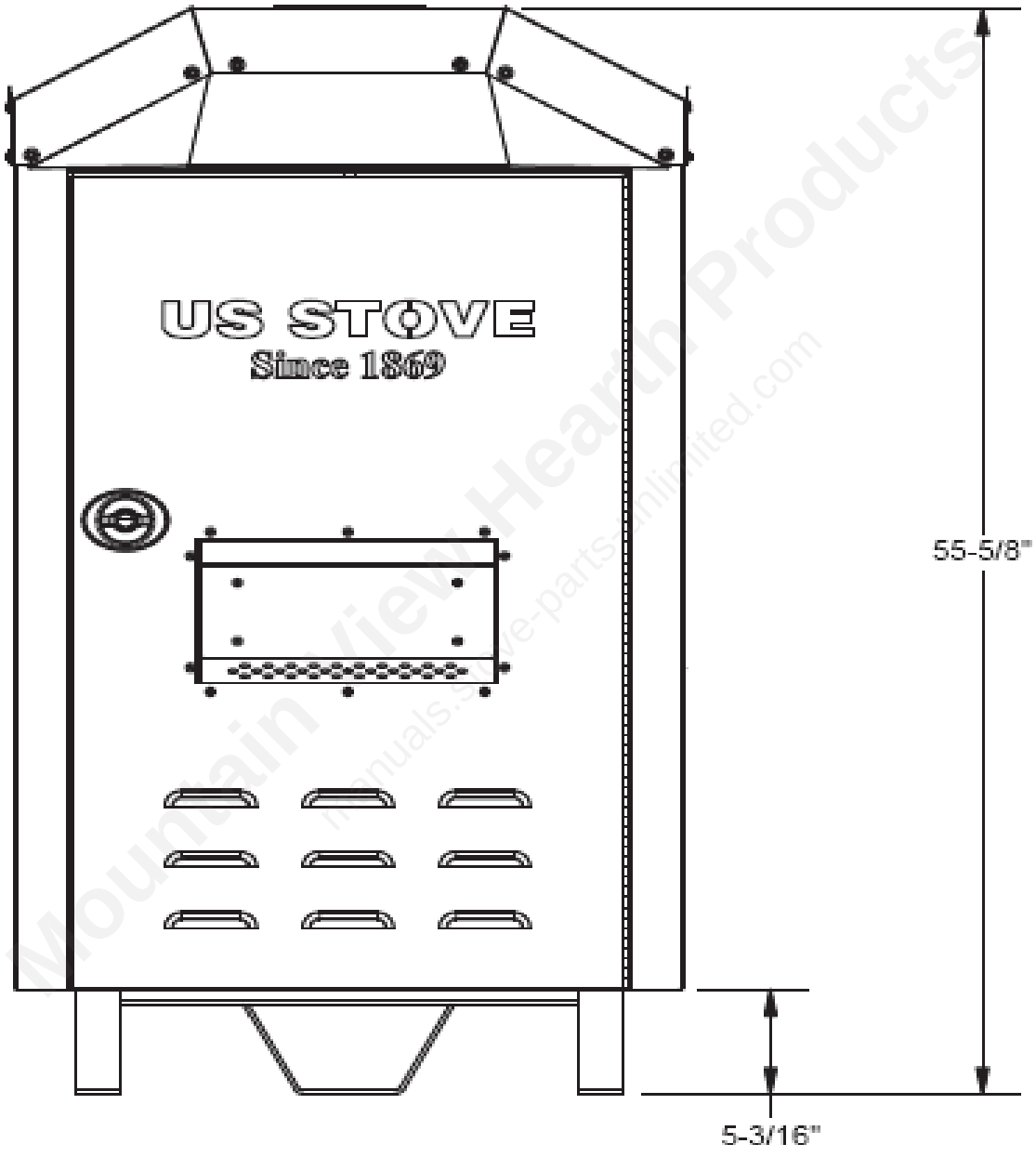
- **No cold air return**: customers think the air in the basement is sufficient to run a furnace. This causes many issues (see the "Cold Air Return" section).
- **Drafting problems**: Check their installation.
- **Burning through grates:** Make sure they know to season the cast iron parts.

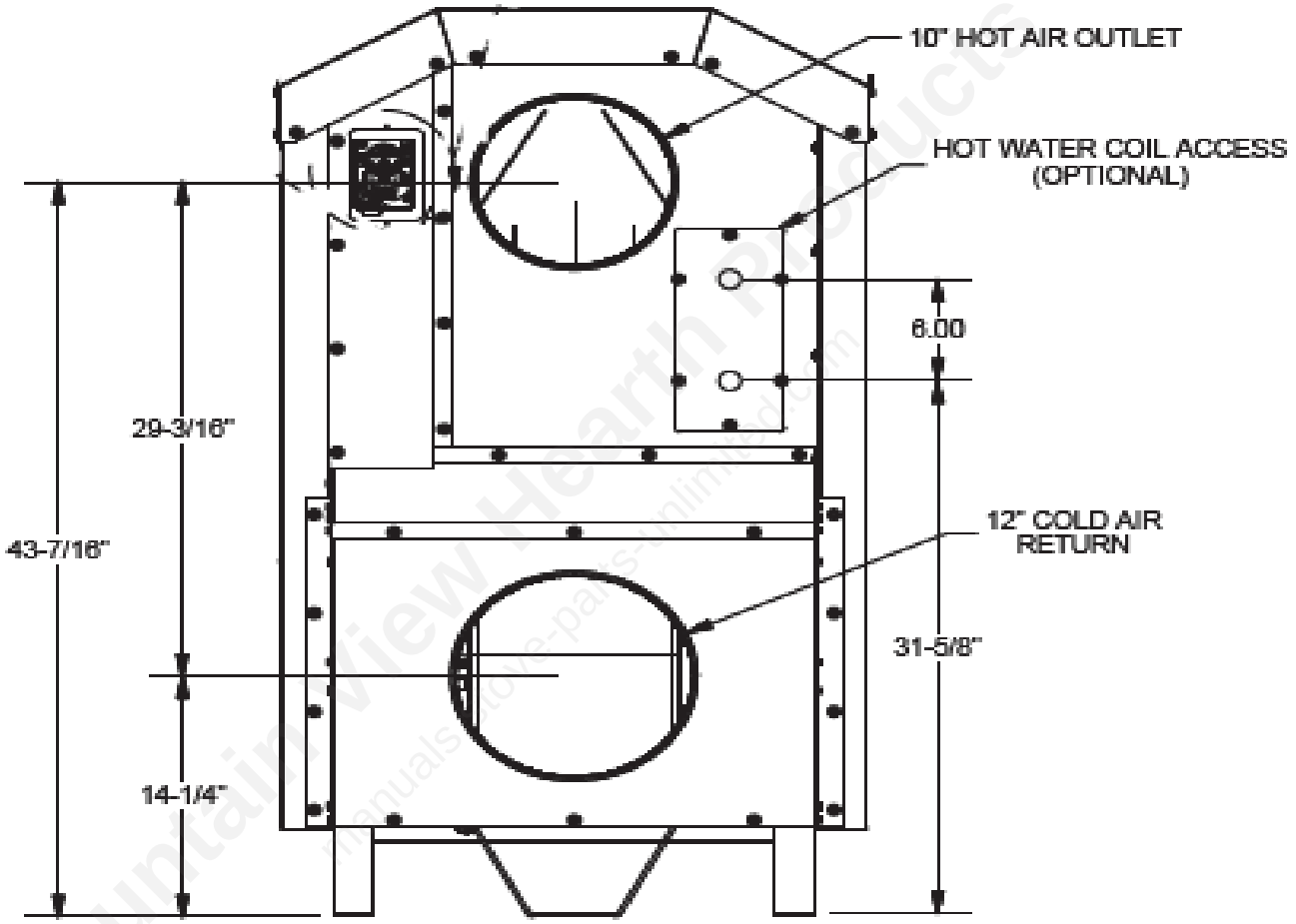
Troubleshooting:

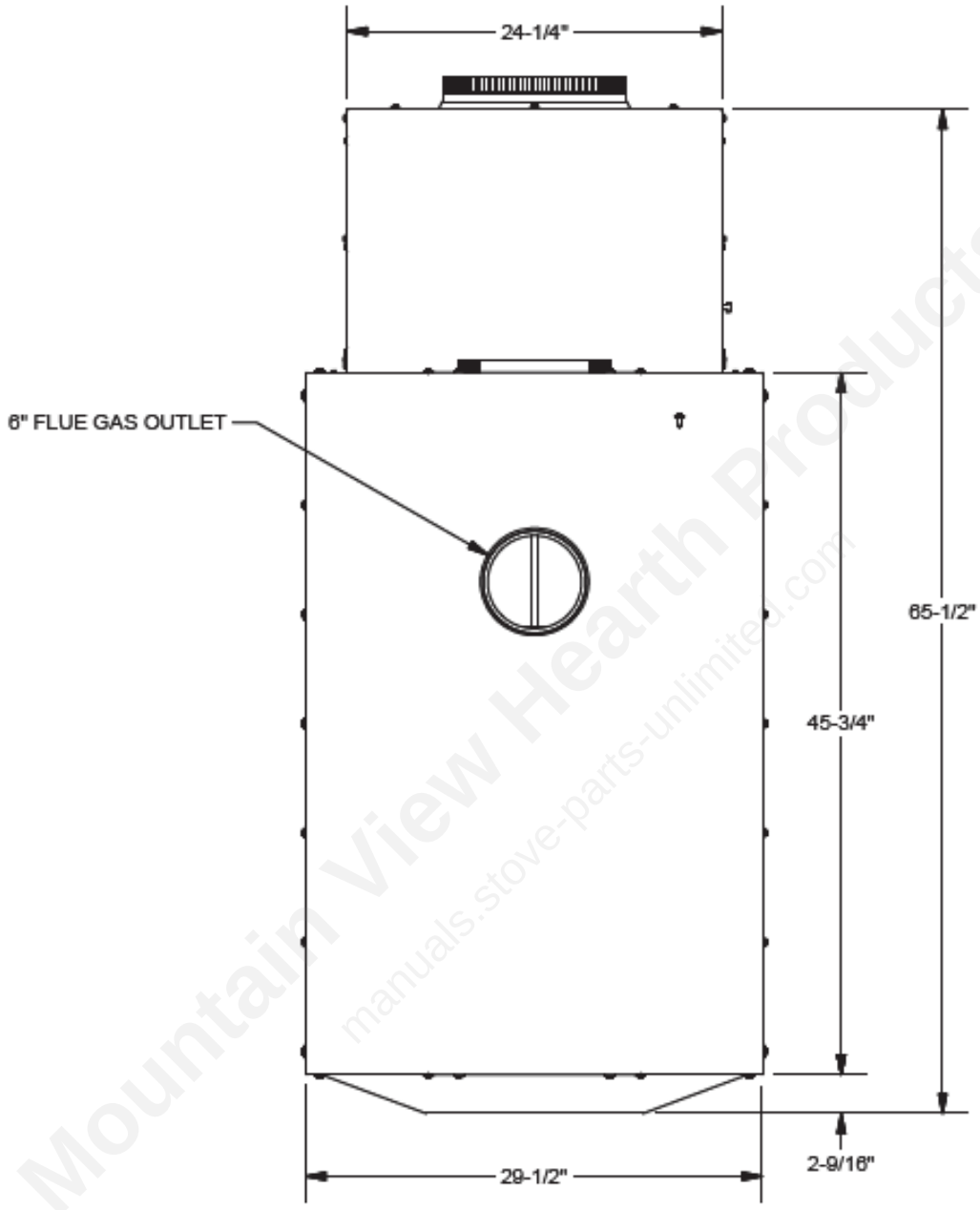
- **Finding the Model #:** a lot of customers call in and only know that they have a Hot Blast furnace. You can narrow this down easily if they can't tell from the model plate which model theirs is.
    - Ask if the T. Stat on the door has a knob or a lever.
        - Knob = 1300, 1400, 1500
        - Lever = 1357, 1537, 1557
    - Ask how many blowers the stove has.
        - 1 blower = 1300, 1357
        - 2 blowers = 1400, 1500, 1537, 1557
    - Ask about the grates.
        - Flat grates = 1400
        - 1 Shaker grate = 1300, 1357
        - 2 Shaker grates = 1500, 1537, 1557
- **If the distribution blower are functioning normally**: either the thermodisc on the back of the stove has malfunctioned or the customer has wiring the stove wrong.
    - **If the blowers won't come on**: bypass the thermodisc to see if they are mechanically functional.
    - **If the blowers won't turn off**: unplug one wire.
        - If the blowers stay on its wired wrong.
        - If the blowers go off the thermodisc is bad.
- **For burning/drafting issues**: refer to installation/cold air return guidelines.

1600EF

Specifications:







1600EF—continued…

Fuel	Wood/Coal
Log Length	28 in.
Coal Capacity	160 lbs.
BTU Range	Up to 180,000
Heating Capacity	Up to 3,000 ft^2
Blower	1,600 CFM
Plenum	10 in.
Flue	6 in.
Door Opening	13 x 13
Weight	735 lbs.
Accesories	1124

Installation:

There are very specific installation requirements for this stove. For example: the chimney stack is only required to be 6 ft. tall. Refer to pages 6-8 of the owner's manual. CANNOT BE PLACED IN A GARAGE.

They may have a damper in the flue if their local codes require it. We cannot recommend this because we have not tested it for safety.

Known Issues: Do not share these with the customer!

- **Limit control damage**: when the power goes out the blowers turn off. If there is not a back-up power source hooked up immediately the Honeywell limit control (along with other induction kit parts) will "burn up" and no longer function.
- **Stove burns out of control:** the draft wheel on the front of the stove does not close all the way. You can advise them not to build the fires up over the brick retainers. There shouldn't be over-heating if the stove is not over filled, despite the draft wheel opening.

Troubleshooting:

- **Blower only stays on for a few seconds at a time**:
  - Have them check the dial on the Honeywell Limit Control.
  - The adjustments should be around 100-150-200.
  - If the fan ON and OFF settings are too close together the blower will turn on and off frequently.
  - Have them check the position of the dial. The cutout should be at the bottom of the ends at 9 o'clock and 3 o'clock.
- **Not pushing out hot air**:
  - Installed wrong
  - Cold air is drawing from outside.
  - Ductwork may be too long. May need an inline blower (provided by HVAC specialist)
- **Smoke smell through ductwork:**
  - Inspect the stove for crack or weld breaks.
  - Have them take the outer cabinet off and check for cracks if necessary.

8500

Specifications:

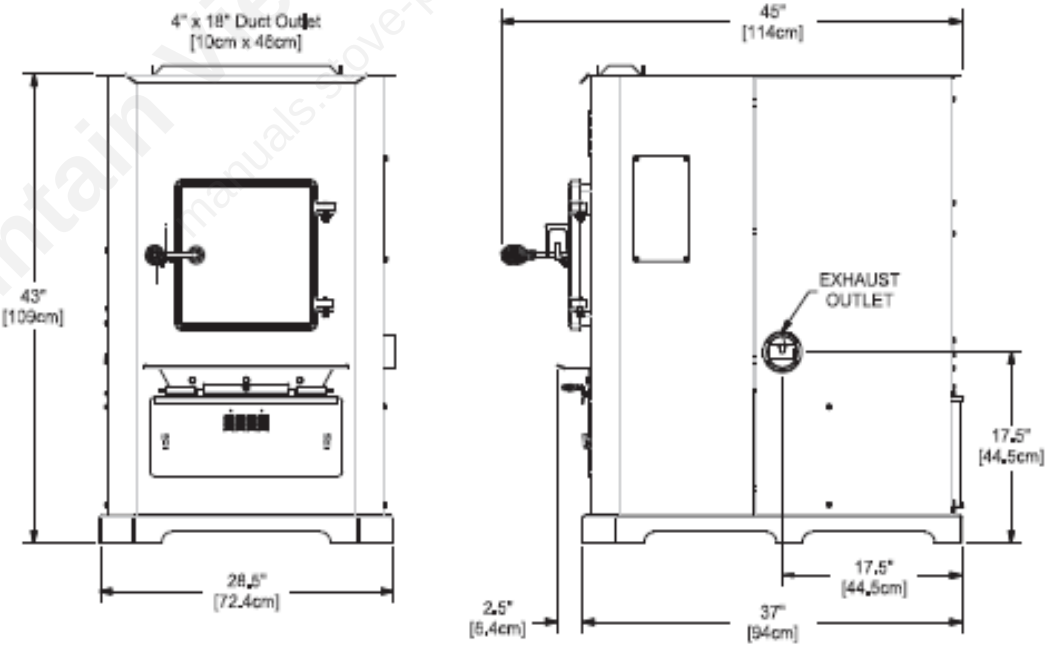
Heating Specifications

Input BTU/Hr[1]	50,000 to 105,000 BTU/hr.
Heating Capacity[2]	1,200 - 2,800 sq. ft.
Fuel Burn Rate[3]	5.0 - 13.0 lbs./hr.
Burn Time (lowest setting)	70 hours continuous
Hopper Capacity	160 lbs

[1] BTU output will vary depending on the quality and type of fuel. Use PFI listed fuels for the best results.
[2] Heating capacity will vary depending on floor plan layout of your home, degree of insulation, and the outside temperature.
[3] Fuel size may effect the actual rate of fuel feed and burn times. Fuel feed rates may vary by as much as 20%. Use PFI listed fuel for best results.

Dimensions

Height	43 in. [109cm]
Width	28-1/2 in. [72.4cm]
Depth	45 in. [114cm]
Weight	250 lbs.



Electrical Specifications

Electrical Rating	110-120 volts, 60 HZ, 9.5 Amps
Watts (operational)	1150 (max. approx.)

8500—continued…

Known Issues: Do not share these with the customer!

- **Door turning white:** this is caused by over-heating.
- **Unable to adjust the control board:** try resetting the control board by holding AUX UP and DOWN.
- **Burnpot over filling:** this can be caused by a bad installation or it may be that they need their feed rate lowered.
- **High feed rate:** these stoves come preset from the factory with a very high feed rate. A lot of times this is over whelming to residential consumers.

Troubleshooting:

- **Door turning white or burpot/agitator burning up:** this is caused by over-heating.
  - They usually have the unit installed wrong. Most likely they're lacking a cold air return.
  - Can also be a symptom of the high preset feed rate. You can adjust the internal rates.
    - **The internal rates should be approximately**:

FEED RATE	DRAFT SPEED
Low end: 4.00	Low end: 180
High end: 12.00	High end: 290

- **Burnpot over-filling**: Check for possible air restrictions in the exhaust installation. This could mean excess horizontal lengths or too many elbows.
- **Firebox area is excessively dirty**: make sure there are no air restrictions in the exhaust installation. Question their quality of pellets or where they are being stored.
- **Not producing a lot of heat**: they need to install a cold air return. If they have one already installed check the plenum. It should be the same size from the stove, all the way to the trunk of the ductwork. It should not adapt to a smaller size. This creates a restriction the warm air must overcome to travel through the ductwork.

AP5660

Specifications:

Fuel	Pellet
Hopper Capacity	**38lbs.**
Blower	200 CFM
Width/Height	24 x 30.5 in.
Depth	28 in.
Weight	270 lbs.
Mobile Home	Approved
EPA	Certified

Known Issues: Do not share these with the customer!

- **Brick Panel disintegrates**: this is caused by over-heating.
- **Advertisements list the hopper capacity as 55lbs**: this is the hopper capacity for the side-mount 5660.
- **Advertisements list the ability to hook up a wall thermostat**: this is also for the side-mount 5660. The AP5660 has a built in thermostat.
- **Room fans go out quickly and frequently**: you can usually hear a grinding or screeching sound over the phone. Replace the room fan (convection blower part #80622).

AP5660—continued…

Troubleshooting:

- **E1 appears moments after the stove is started:**
  - The high limit needs to be reset
    - TURN THE STOVE ON BEFORE PUSHING THE BUTTON!
  - The Molex plug containing the pink wire for the high limit switch is not connected to the control board.

Assembly Instructions

STEP 1
Pull the factory installed wires out of the top of the stove. There will be two wire harnesses, ash shown.

STEP 2
Unpack the top mount controls and ensure that the wiring harness shown is attached securely.

STEP 3
Connect the factory installed wiring harnesses to the control panel as shown.

STEP 4
Attach the control panel to the top of the stove, as shown.

STEP 5
Secure with two sheet metal screws.

AP5660L—continued…

Troubleshooting—continued…

- **If the stove is over-heating:** have the customer tell you where the air intake damper is adjusted to. Some customers will burn the stove up because they don't even realize there is a damper! (BECAUSE THEY DON'T READ THE MANUAL!!!)
    - OPEN = towards the back of the stove.
    - CLOSED = towards the front of the stove.
    - For HR 1-2 we have found the stove runs best with the damper about ¼ of the way open.
    - For HR 3-5 the damper should be 1/4 to 3/4 of the way open.
- **Direct Venting**: this is the ONLY pellet stove USSC carries that lists a direct vent (no vertical piping) installation as acceptable. If the customer has this installation they MUST have a FAK. If they have over-heating issues that can't be resolved you should recommend they add 3-4 ft. of vertical length to their installation to reduce the exhaust back –up into the stove.
- **The customer says the blower is stuck on one speed in T/stat mode**: The stove is probably on HR 1 in the manual mode before they switch it over. It must be set on HR2 or higher to operate normally in T/stat mode. The HR they set it on in manual will be the high setting in T/stat mode that is used to meet the temperature called for.
- **The stove won't go into T/stat mode**: The stove must be out of start-up before you can switch modes.
- **The customer says the stove is warming past the temperature they set**: THE STOVE DOESN'T TURN ITSELF OFF. So, even though it's met the temperature and backed itself down to HR 1, it is STILL producing heat. If this is too much heat tell them to turn the stove off then start it back up when they need heat. OR leave the stove on HR 1 in Manual mode.

5824—Forester

Specifications:

Heating Specifications

MInimum Fuel Burn Rate*	1.75 lbs./hr. ±5%
Burn Time (lowest setting)*	23 hrs. ±5%
Hopper Capacity	40 lbs.

* Pellet size may effect the actual rate of fuel feed and burn times. Fuel feed rates may vary by as much as 20%. Use PFI listed fuel for best results.

Dimensions

Height	33-1/2 in. (851mm)
Width	18-1/4 in. (464mm)
Depth	19-1/4 in. (489mm)

Electrical Specifications

Electrical Rating	110-120 volts, 60 HZ, 4.5 Amps
Watts (maximum)	520 (approx.)

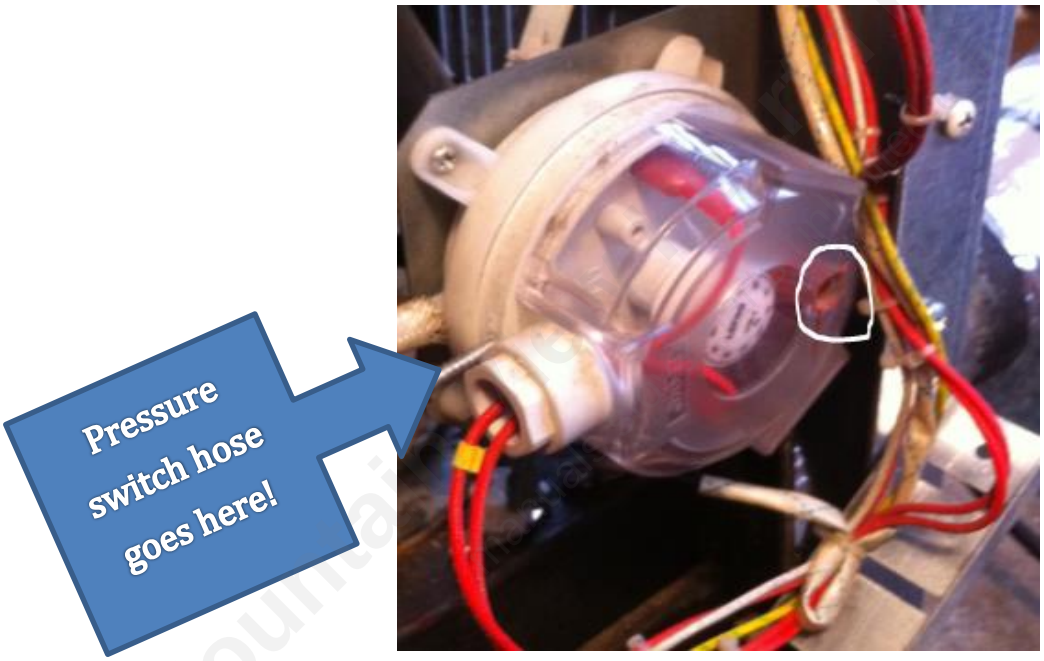
Known Issues: Do not share these with the customer!

- **This stove has not been manufactured in a few years**: some components have been found to be rusty or defective because the stove has been stored by the dealer for so long before it's sold. This applies to customers that have just purchased the stove.

5824—continued…

Troubleshooting:

- **If the stove shuts down as if the plug has been pulled**: bypass the limit switches. One of them is probably bad.
- **When bypassing the low limit switches**: Jump the OUTER wires.
- **New low limit switches have prongs that are turned a different way**: it doesn't matter which two you jump as long as the jumper is on one prong from each switch.
- **The pressure switch has a clear plastic cover**: they will have to scrape the silicone out of the hole on top of the switch to get to a screw underneath. This screw holds the clear cover on. The cover must be removed in order to bypass the switch.



- **If the stove is over-heating:** have the customer open up the vent slides (part #891632) to evacuate some of the heat.
- **If the auger is not turning or the stove is not getting power**: power supply box may need to be replaced.
- **If the keypad won't come on**:
  - Make sure the toggle switch on the back of the stove is not in the off position.
  - Check the com cable for damage.
  - Replace the power supply box.
- **Adjustable Vacuum Switch**: should be set between 30 and 40. Turning to the left = less sensitive. Turning to the right = more sensitive.