



# **Pellet Stove Test Manual**

## **Stricter Emission Standards**

Adopt stricter emission standards than the EPA.

1. Washington: 4.5 grams per hour for non-catalytic and pellet stoves; 2.5 grams per hour for catalytic and pellet stoves.
2. Montana: The tax code, Subchapter 1, 42.4.104 (2) (d) says a tax credit applies to biomass stoves and furnaces which emit less than six grams per hour.
3. Ten states require that only outdoor hydronic wood boilers qualified by an EPA voluntary program be installed: New England states, New York, Pennsylvania, Maryland and Indiana. In two states - Washington and Oregon they are banned altogether.

### **Forbid Sale of Exempt Stoves**

1. California: Forbids sale or installation of residential indoor wood stoves that are exempt from EPA regulation.
2. Washington: Same as California, above.
3. Oregon requires all stoves sold must meet EPA standards.
4. Colorado requires all new wood stoves sold must meet EPA standards, Pellet stoves must be below 4.1, and masonry stoves must not emit more than 6 grams PM per 6 kilograms of fuel. Wood boilers and furnaces are exempt which does allow outdoor wood boilers to be installed.
5. Utah: Solid Fuel Burning Devices must be EPA certified to be installed in the following Utah counties: Box Elder, Cache, Davis, Salt Lake, Tooele, Utah, and Weber Counties.

### **Forbids Sale and/or Installation of Uncertified Stove**

1. Washington: Since 1992, has forbidden sale and installation of wood stoves or inserts that are not certified to the stricter Washington state emission standards.
2. Oregon: Forbids sale and installation of wood stoves or inserts that are not certified. Oregon began certifying stoves in 1986 and the EPA in 1988.
3. Denver-Metro area, Colorado: Prohibits sale and installation of new or used uncertified wood burning appliances
4. Summit County, Colorado: Forbids the installation of a non-certified wood stove in a new home or as a replacement unit for an existing non-certified stove.
5. Idaho: Several counties ban selling second-hand non-certified stoves.

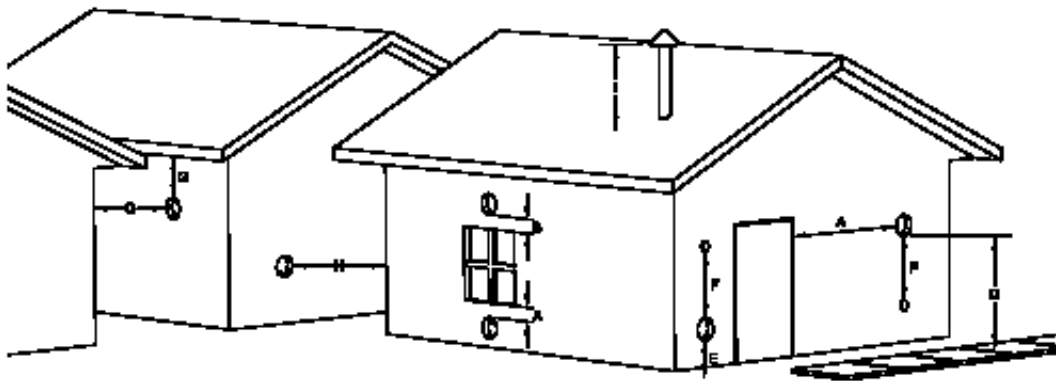
### **Forbids Installation of Fireplaces**

Denver Metro area: Banned unless they are equipped with an EPA Phase II wood or pellet burning insert, or electric or gas log.

## Installation

### VENT TERMINATION CLEARANCES:

- A — Minimum 4-foot clearance below or beside any door or window that opens.
- B — Minimum 1-foot clearance above any door or window that opens.
- C — Minimum 3-foot clearance from any adjacent building.
- D — Minimum 7-foot clearance from any grade when adjacent to public walkways.
- E — Minimum 2-foot clearance above any grass, plants, or other combustible materials.
- F — Minimum 3-foot clearance from a forced air intake of any appliance.
- G — Minimum 2-foot clearance below eaves or overhang.
- H — Minimum 1-foot clearance horizontally from combustible wall.
- I — Must be a minimum of 36-inches above the roof and 24-inches above the highest point of the roof within 10-feet.



VENT TERMINATION CLEARANCES



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**6041 4 Digit Board**



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## Error Codes and Display Indicators

<u>Error codes</u>	<u>Error description</u>	<u>Possible Causes</u>
Err1	<b>High Limit Sensor has Tripped</b>	<ul style="list-style-type: none"> <li>• Inadequate Ventilation</li> <li>• Room Fan Failure</li> <li>• Exhaust Blockage</li> <li>• Electrical Open in Wiring</li> </ul>
Err2	<b>Stove Ran Out of Fuel During Normal Operation or Vacuum Issue</b>	<ul style="list-style-type: none"> <li>• Hopper Empty</li> <li>• Auger Output Failure or Jam</li> <li>• Flame or Fuel Quality Caused Fire to burn to slowly or go out</li> <li>• Electrical Open in Wiring</li> <li>• Vacuum pressure issue</li> </ul>
Err3	<b>The stove was unable to reach temperature to turn on the room fan</b>	<ul style="list-style-type: none"> <li>• Flame or Fuel Quality caused fire to burn to slowly or go out</li> <li>• Auger output failed or jam</li> <li>• Hopper Empty</li> <li>• Thermistor not connected to control board or bad</li> </ul>
Err4	<b>The Power failed while the stove was hot, and when power was restored the fire went out</b>	<ul style="list-style-type: none"> <li>• Electrical Open in Wiring</li> <li>• Power Loss</li> </ul>
Err5	<b>The Auger Output Fuse Has Blown</b>	<ul style="list-style-type: none"> <li>• Auger Motor Jammed or Bad</li> </ul>
Err6	<b>The Igniter Output Fuse has blown</b>	<ul style="list-style-type: none"> <li>• Igniter Shorted out or bad</li> </ul>
Err7	<b>The Draft Fan(Exhaust Fan)Output fuse has blown</b>	<ul style="list-style-type: none"> <li>• Draft fan motor jammed or bad</li> </ul>
Err8	<b>The Room Fan Output Fuse has Blown</b>	<ul style="list-style-type: none"> <li>• Room Fan Motor Jammed or Bad</li> </ul>
Err9	<b>Bad Control Board</b>	<ul style="list-style-type: none"> <li>• Bad board try to reset it</li> </ul>
Err 11	<b>Vacuum Issue</b>	<ul style="list-style-type: none"> <li>• Check to see if stove is clean and exhaust fan is clean</li> </ul>

		<ul style="list-style-type: none"><li>• Bypass the pressure switch</li></ul>
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## **Display Indicators**

Several situations or events are indicated in normal operation by blinking display indicators or segments in the display:

**Flashing On Light:** This means that the stove is in the “Start Up” state waiting for either a 3 minute time-out to begin burning or for the stove to reach the warm temperature whichever comes first.

**Flashing Off Light:** This indicates that the stove is in the shutdown state waiting for the OFF button, or for a 15 minute period after the stove was turned off, or for the stove to cool down, or for the door to be closed.

**Flashing Dash in Heat Range Display:** This indicates that the stove is in normal run mode and is ramping from the current heat range setting to the target heat range setting. Once the ramp is complete the dash will stop flashing. For Ramping from heat range 1 to 5, the default time is 12 minutes (with a 90 second ramp time).

**Flashing Automatic Mode Indicator:** This indicates that the stove is in normal operation and is running in the automatic mode. However either the draft fan or auxiliary setting is manually configured.

**Flashing draft fan:** This indicates that the stove is in normal operation and that the vacuum sensor detects a loss of pressure either because the door is open or because there is a negative pressure in the room with respect to the exhaust.

**Flashing Aux Indicator:** This Indicates that the igniter is on during the lighting stage.

**Quickly Flashing Heat Range Setting Indicator (changes twice per second):** This indicates that the stove is in normal operation and that an over-temperature condition exists causing the fuel to stop.

**Slowly Flashing Heat Range Setting Indicator (changes once per second):** This indicates that the stove is in a cut back condition in an attempt to prevent an over-temperature shutdown

**Factory Defaults:** To return the control to its original factory default settings, Press and hold the AUX UP and AUX DOWN buttons together for three seconds.

## **Possible Causes for a vacuum issue:**

Gasket around door or glass not sealing properly.

Clean-out slides on front of unit open.

Clean-out slides inside firebox not closed properly.

**Unit has not been cleaned:** firebox, underneath firepot, behind clean-outs on inside of unit, brass port inside firebox clogged, vacuum hose clogged-brittle-cracked, exhaust pipe clogged, exhaust pipes not sealed, improper venting—excessive horizontal length—too many elbows—vented INTO chimney, and the last thing to rule out is a faulty pressure switch itself.

90 to 95% of the time a faulty pressure switch is **NOT** the problem.

**Just because the unit will run with the pressure switch “jumped” does not mean the pressure switch is faulty. It simply means we have told the unit to “ignore” the vacuum problem.**

**Cleaning firebox:** clean thoroughly, remove firepot-clean underneath, clean brass port in firebox, remove ceramic brick (6039-6041)—tap on the back wall of the firebox several times to loosen any accumulated soot or ash-lift clean-out slides-remove any and all soot and ash—may need to use a flexible brush or some customers use a straightened wire clothes hanger and push any build-up in between the two clean-outs to one side or another and then remove.

Check gasket around door and glass and make sure it seals all the way around—that it is not frayed or burned allowing any gaps.(some 5500-5510 have gaps at bottom of glass gasket)

Make sure the door seals—doing paper test.

### **UNPLUG UNIT.**

Remove side panel—left side facing stove—locate pressure switch-remove hose from pressure switch-blow through to make sure it is not clogged or cracked. Make sure it is connected well to the brass port going into the back of the firebox,--AGAIN—make sure it is not brittle cracked or damaged—reconnect hose to pressure switch making sure the clamp is tight.

Make sure the exhaust piping has been cleaned—all of it, not just the clean-out tee removed and emptied.

Make sure the piping is sealed—especially the first piece attached to the exhaust pipe.



THESE UNITS CANNOT BE VENTED **INTO** A CHIMNEY. THE PIPE-(3" or 4" PELL VENT)- **MUST**  
RUN ALL THE WAY TO THE TOP.

# 6041

## CONTROL BOARD SETTINGS & INSTRUCTIONS

6041

4 DIGIT

5 HEAT RANGES

IGNITER

PR & CR MODES (MULTI-FUEL)

WITH UNIT OFF, AUX UP TO TURN AGITATOR

HOLDING THE "ON" BUTTON TURNS THE AUGER CONTINUOUSLY

IGNITER PR - 9 MIN

IGNITER CR - 4 MIN CORN

PRESS "HR" UP & "HR" DOWN BUTTONS SIMULTANEOUSLY TO SWITCH BETWEEN CORN MODE & PELLET MODE.

"HR" UP & "AUX" UP ADJUSTS THE HIGH END FEED RATE. (HR 1) DELIVERS APPROX. **2 LBS. OF FUEL PER HOUR.**

"HR" DOWN & "AUX" DOWN ADJUSTS THE LOW END FEED RATE. (HR 3) DELIVERS APPROX. **5 LBS. OF FUEL PER HOUR.**

ONCE THE VALUE OF THE FUEL RATE IS DISPLAYED, USE THE "AUX" UP & "AUX" DOWN BUTTONS TO RAISE OR LOWER THE FEED RATE.

**PRESS "ON" TO SAVE THE CHANGES & EXIT OR PRESS "OFF" TO EXIT WITHOUT SAVING ANY CHANGES.**

## **6041 4 Digit Test**

To run this test the **UNIT MUST BE COOLED OFF**. Power up the unit by plugging in the power supply cord to the back of the unit. Press the on button and the circuit board then press and hold the Off and Auger Delay buttons simultaneously for 3 seconds. To advance through the test press the on key. If the Heat Range Light is on during every test check Hopper Switch Wires.

1. Exhaust Fan Output Test- The display will show "drift". 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. 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 if the output is detected.

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. Igniter Output Test – The display will show "ignr". The igniter motor is turned on full. If the Igniter (AUX) Fuse is not blown and the fuse detection circuit is functioning, the AUX LED will lit and the other three top row LEDs will be off.

6. Low Limit Switch Test- If the stove is warm ( Above 110

7. Thermostat Input Test – The display will show "stat". If the thermostat input is closed, the ON LED light will be on, otherwise it will be off.

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. 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.

7. Flue gas Thermistor Test – The display will show the fluegas temperature in degrees F. This should read 54° F

8. AC Frequency Test - Displays the measured AC frequency in hertz followed by the letter "H". This should read 59, 60, or 61H

9. Watchdog Reset – The Watchdog timer is tested to ensure that the board can be reset. The message "BYE" will be displayed until the Watchdog resets board.

## ADJUSTING OPERATIONAL CONSTANTS

TO ADJUST THE OPERATION CONSTANTS, PRESS & HOLD THE "MODE" AND "AUGER DELAY" BUTTONS SIMULTANEOUSLY FOR 3 SECONDS. THE DISPLAY WILL SHOW "C-1". USE THE HEAT RANGE UP OR HEAT RANGE DOWN BUTTONS TO CHANGE THE CONSTANT NUMBER (SEE THE LIST OF VALUES BELOW). WHEN THE DESIRED CONSTANT IS DISPLAYED, PRESS THE "ON" BUTTON UP, TOGGLING BETWEEN VIEWING AND EDITING THE VALUE. WHILE EDITING A PARAMETER, USE THE "AUX UP" AND THE "AUX DOWN" BUTTONS TO ADJUST THE VALUE TO THE DESIRED POINT. THEN PRESS "ON" AGAIN TO RETURN TO THE CONSTANT NUMBER LIST. PRESS THE "OFF" BUTTON TO EXIT THE ADJUST OPERATIONAL CONSTANTS MODE.

- **C-1**- RESET TO DEFAULTS (HOLD "MODE" AND "AUGER DELAY" BUTTONS FOR 3 SECONDS TO RESET ALL TO DEFAULTS.
- **C-2**- FUEL LBS. PER HOUR HR-1 (0.01-6.50) - THIS IS THE FUEL RATE IN POUNDS PER HOUR FOR A HEAT RATE SETTING OF 1.
- **C-3**- FUEL LBS. PER HOUR HR-3 (0.01-6.50) - THIS IS THE FUEL RATE IN POUNDS PER HOUR FOR A HEAT RANGE SETTING OF 5. THE DEFAULT IS 5.00 LBS. THE FUEL RATES USED BETWEEN SETTINGS 1 AND 3 ARE LINEARLY INTERPOLATED BETWEEN THE TWO SETTINGS.
- **C-4**- AGITATOR ON PERCENTAGE HR MIN (0-50) - THIS IS THE PERCENT ON TIME FOR THE AGITATOR, FOR A SETTING OF 1. THE DEFAULT IS 25%.
- **C-5**- AGITATOR ON PERCENTAGE HR MAX (0-50) - THIS IS THE PERCENT ON TIME FOR THE AGITATOR FOR A SETTING OF 9. THE DEFAULT IS 50%. THE PERCENT ON TIME FOR THE AGITATOR USED BETWEEN SETTINGS 1 AND 9 ARE LINEARLY INTERPOLATED BETWEEN THESE TWO SETTINGS.
- **C-6**- ROOM FAN LEVEL HR MIN (1-500) – THIS IS THE OUTPUT LEVEL APPLIED TO THE ROOM FAN FOR A SETTING OF 1. THE DEFAULT VALUE IS 250/500.
- **C-7**- ROOM FAN LEVEL HR MAX (1-500) – THIS IS THE OUTPUT LEVEL APPLIED TO THE ROOM FAN FOR A SETTING OF 9. THE DEFAULT LEVEL IS 370/500. THE ROOM FAN OUTPUT LEVELS USED BETWEEN SETTINGS 1 AND 9 ARE LINEARLY INTERPOLATED BETWEEN THESE TWO SETTINGS.
- **C-8**- DRAFT FAN LEVEL HR MIN (0-500) - THIS IS THE DRAFT FAN OUTPUT LEVEL FOR A DRAFT FAN SETTING OF 1. THE DEFAULT IS 230/500.
- **C-9**- DRAFT FAN LEVEL HR MAX (0-500) – THIS IS THE DRAFT FAN OUTPUT LEVEL FOR A DRAFT FAN SETTING OF 9. THE DEFAULT IS 270/500. SEE NEXT PARAMETER FOR DISBURSEMENT.
- **C-10**- DRAFT FANFULL ON AT SETTING 9 (0-1) – 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 FANSPEED 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 (0-300) – WHEN THE HEAT RANGE SETTING IS ADJUSTED, THE CONTROL WILL RAMP FROM THE CURRENT SETTING TO THE TARGET SETTING TO AVOID ABRUPT CHANGES IN THE OUTPUTS THAT COULD CAUSE PROBLEMS WITH THE FLAME QUALITY. THE RAMP SECONDS VALUE SETS THE AMOUNT

OF TIME TO SPEND ON EACH HEAT RANGE SETTING (1-9 PSEUDO RANGES NOT 1-3 HEAT RANGES) AS THE CURRENT SETTING IS RAMPING TOWARD THE TARGET. IF THE CURRENT SETTING IS RAMPING DOWN TOWARD A LOWER TARGET, THE RAMP VALUE IS HALF THIS NUMBER. THE DEFAULT VALUE IS 90 SECONDS.

- **C-12**- STARTUP MINUTES FOR DETECTING WARM STOVE- (10-50) THIS IS THE AMOUNT OF TIME THE CONTROL WILL WAIT FOR THE STOVE TO REACH THE WARM TEMPERATURE (110 DEGREES F) AFTER THE STOVE HAS BEEN STARTED BEFORE SHUTTING DOWN AND REPORTING AN ERROR CONDITION ERR3. THE DEFAULT IS 30 MINUTES.
- **C-13**- PELLET CORN SWITCH- (0-1) THIS PARAMETER MAY BE USED TO SWITCH BETWEEN THE CORN AND PELLET MODES. IF SET TO 0, THE UNIT WILL OPERATE IN CORN MODE, AND IF SET TO 1, THE UNIT WILL OPERATE IN PELLET MODE. THE DEFAULT FOR THIS PARAMETER IS 0 OR CORN MODE.
- **C-14**- PELLET AUGER PERCENTAGE ADJUSTMENT- (50-150) THIS PARAMETER CONTROLS THE ADJUSTMENT OF THE AUGER DUTY CYCLE WHEN IN PELLET MODE. IF SET TO 100 (THE DEFAULT), THE AUGER WILL RUN IN 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. IF SET TO 150, THE AUGER WILL RUN AT 150% OF THE CORN RATE.
- **C-15**- PELLET AGITATOR PERCENTAGE ADJUSTMENT- (50-150) THIS PARAMETER CONTROLS THE ADJUSTMENT OF THE AGITATOR DUTY CYCLE WHEN IN PELLET MODE. IF SET TO 100, THE AGITATOR WILL IN THE SAME DUTY CYCLE IN PELLET AND CORN MODES. IF SET TO 50 (THE DEFAULT), THE AGITATOR WILL RUN AT 50% OF THE CORN RATE WHEN IN PELLET MODE. IF SET TO 150, THE AGITATOR WILL RUN AT 150% OF THE CORN RATE.
- **C-16**- PELLET LIGHTING PHASE 1 PERIOD- (1-600) THIS IS THE AMOUNT OF TIME IN SECONDS SPENT IN THE FIRST PHASE OF PELLET LIGHTING. THE DEFAULT IS 180 OR 3 MINUTES. DURING THE FIRST LIGHTING PHASE, THE DUTY CYCLE FOR THE AUGER IS SET TO 100%.
- **C-17**- PELLET LIGHTING PHASE 2 PERIOD- (1-600) THIS IS THE AMOUNT OF TIME IN SECONDS SPENT IN THE SECOND PHASE OF PELLET LIGHTING. THE DEFAULT IS 240 OR 4 MINUTES. DURING THE SECOND LIGHTING PHASE, THE DUTY CYCLE FOR THE AUGER IS SET TO THE VALUE SPECIFIED IN C-19 (DEFAULT 50%).
- **C-18**- PELLET LIGHTING PHASE 3 PERIOD- (1-600) THIS IS THE AMOUNT OF TIME IN SECONDS SPENT IN THE THIRD PHASE OF PELLET LIGHTING. THE DEFAULT IS 120 OR 2 MINUTES. DURING THE THIRD LIGHTING PHASE, THE DUTY CYCLE FOR THE AUGER IS SET TO THE VALUE SPECIFIED IN C-20 (DEFAULT 20%).
- **C-19**- PELLET LIGHTING PHASE 2 DUTY CYCLE- (0.01-6.50) THIS VARIABLE CONTROLS THE DUTY CYCLE OF THE AUGER DURING THE 2ND PHASE OF PELLET LIGHTING. BY DEFAULT, THIS PARAMETER IS 50%.
- **C-20**- PELLET LIGHTING PHASE 3 DUTY CYCLE- (0.01-6.50) THIS VARIABLE CONTROLS THE DUTY CYCLE OF THE AUGER DURING THE 3<sup>RD</sup> PHASE OF PELLET LIGHTING. BY DEFAULT, THIS PARAMETER IS 20%.
- **C-21**- CORN MODE LIGHTING TIME- (1-600) THIS IS THE AMOUNT OF TIME IN SECONDS SPENT IN THE CORN LIGHTING STATE, WHERE THE IGNITER IS ON AND THE AUGER IS OFF. THE DEFAULT IS 240 OR 4 MINUTES.